ARCADIA

Annual Report on Commodity Analytics and Dynamics in Africa

under the direction of
Philippe Chalmin
and Yves Jégourel

Africa and the Global Commodity Markets

2017

CYCLOPE

OCP POLICY CENTER

THINK • STIMULATE • BRIDGE

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About

OCP Policy Center

OCP Policy Center is a Moroccan think tank whose mission is to promote knowledge sharing and contribute to enhanced thought on economic challenges and international relations. Through a Southern perspective on critical issues and major regional and global strategic issues faced by developing and emerging countries, OCP Policy Center provides a true added value and seeks to significantly contribute to strategic decisionmaking through its four research programs: Agriculture, Environment and Food Security; Economic and Social Development; Conservation of Raw Materials and Finance; and Geopolitics and International Relations.

CyclOpe

Cyclope is a study group specialized in the analysis of global raw materials and commodities markets. It takes its name from the Cyclope Yearbook published every year since 1986 by Editions Economica.
Cyclope is headed by Philippe Chalmin (Blog), professor at the University of Paris-Dauphine and a consultant to international organisations (OECD, EEC, UNCTAD) The study group functions as an international network and brings together more than fifty market specialists from around the world.

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Foreword

Jointly produced by CyclOpe and the OCP Policy Center, the first version of the report on Africa and the world commodity markets has attracted the enthusiasm of our readers, whether public decision-makers, industry professionals, academics or students. "Finally, a report on commodities dedicated to the African continent!" These are, in essence, the first words we heard when we introduced it in Rabat, Dakar, Abidjan and Paris. A report that we wanted to be complete and can say, without modesty, useful in an economic context that is today difficult to analyse. For, beyond the expertise and responsiveness of our authors, the strength of our approach is to link, in a single book, in-depth market analyses on the various commodities to macroeconomic explanations that are important for the African producer countries, without which, our understanding would be largely lacking.

Encouraged by these favourable responses, but also from a desire to offer an increasingly coherent vision of African realities and potentialities, we have endeavoured to improve this report by making three major changes in relation to the 2016 edition. Two years is a very young age, but first we had to take a step away from the CyclOpe report by adopting a new name. Arcadia for 'Annual Report on Commodities and Dynamics in Africa': this is now the name of this report, whose meaning will remind readers keen on mythology that the ties of kinship with its predecessor are still present. Arcadia was a mountainous region in the centre of the Peloponnese which was the birthplace of Greek civilization. And then, much later was the cenacle of the Arcadian poets who gathered around Virgil.
Secondly, we felt it was important to strengthen the analyses we could offer on the structural dynamics experienced on the African continent during the year in question. We have therefore not only included macroeconomic approaches, but geopolitics, the environment, taxation and regulation: the first part of this report provides chapters on essential issues such as the reform of mining codes and conventions in Africa, the geopolitical impact of commodities, of renewable and non-renewable energies in the economic development of the continent, and of food security in Africa.

The second part of this report is devoted to analysing the evolution of different commodity markets which, although global, are of economic importance to one or more producing countries in Africa. Among other commodities, the reader will find, oil, natural gas, copper, iron ore, bauxite, coking coal, tropical timber, diamonds, cocoa, coffee, cotton and rice... but will also discover a new addition: steam coal.

The third modification compared to the 2016 edition is that the texts covered have been reconsidered to now offer an exclusively African perspective on products exchanged worldwide. On this note, we would like to thank all our authors, who have contributed to this effort that we know is important, for having taken time out of their daily professional lives to offer you this very unique analysis whether it be about the cashew, the peanut or.....? We are already thinking of commodities that we have yet to deal with and that we could consider for the 2018 edition in order to maintain the comprehensiveness that makes the CyclOpe and Arcadia reports unique in the world.

If we look at the minerals, metals and energy markets, 2016 was clearly marked by strong improvement on the price front compared to the bleakness of 2015. This report reminds us that it remains crucial to take advantage of this embellishment to continue relentlessly implementing structural reforms, which are a 'sine qua non' for economic development.

For there are and always will be questions of ambiguity, in 2017: the ambiguity of the ties that sometimes link an economy, African or not, to commodities whose prices are by nature unstable. 'Diversify to avoid the natural resources curse!' is repeated over and over again, certainly, but beyond the quasi-tautological merits of this assertion, the essential question is "how?" How to drive this diversification? Through increased transformation of the commodities produced, local content policies, or the exploitation of comparative advantages that would not be linked to the primary sector?

It is also known that the question of electricity supply to the African continent is one of the key elements for its development, but what weight should be given between fossil and renewable energies? And what solution to finance this structural transformation when national savings may be insufficient and governments have little control over the conditions of international financing? Finally, how to ensure that these financings are placed on a permanent footing while the strategies of industrial transformation are inherently long term?

Obviously, these questions do not have simple answers that apply to all the countries considered, regardless of their economic or political context and the product in question. On the contrary, they enforce an understanding concerning

the problems of the African continent's dependence on the commodities sector, by multiplying and analysing the facets of analysis be they geopolitics, macro, micro and meso-economic, financial, legal, historical or environmental. In the end, they spur a range of expertise that can feed political debate and, in this, shed light on public action... The very approach that the Arcadia report is trying to develop.

Happy reading!

Philippe Chalmin Yves Jégourel

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Africa and the Global Commodity Markets

'In this the task and mighty labour lies'. Those few words of Virgil in Book VI of the Aeneid still resonate as we enter 2017. The reasons for this are not to be found in the commodity markets which, by contrast with 2015, have held up well on the whole. Nor are they economic, even though we have to admit that the picture for 2016 was especially drab. Worldwide growth in fact came out at 3%, and that is unlikely to change much in 2017, though positive signs were starting to appear in the final months of 2016. As always, this disappointing outcome masks major disparities, not only between the advanced countries (growth of between 1% and 2%) and some of the emerging countries, but also between countries in the same region. Europe encompasses both Ireland, whose economy grew by more than 4%, and Greece, whose problems included a flatlining economy. That phenomenon is even more marked in Africa, with Côte d'Ivoire, Ethiopia, Kenya, Rwanda and Senegal on the one hand, where economic growth is set to exceed 6%, and Equatorial Guinea and South Sudan on the other, whose economies are shrinking. Lastly, what do we make of the much-vaunted BRICS, said to promise constantly renewing economic growth but united now in name only? China and the United States continue to be the drivers of the global economy but their path is now strewn with uncertainties. In the East is a Chinese economy on which the eyes of the world are trained, whose structural shifts, by their nature complex, set the pace of international trade and as such determine the strength of the world's economies, especially on the African continent. In the West is Janet Yellen's monetary policy: its progressive tightening will have to echo the expansionist budgetary policy of Donald Trump, the outlines of which are not always easy to grasp.

Aggravated international tensions

Serious economic uncertainties, then – but the difficulties and greatest challenges probably have to be tackled not at this level but much further upstream, where policy is made. In both Syria and Iraq, where Daesh lost a very substantial part of the territory it had controlled since 2014, and in Yemen and Libya too, war has raged on in a theatre of operations where regional and international powers – the United States, Russia, Europe, Turkey, Iran and Saudi Arabia – are either in alliance or opposition. In response to the use of chemical weapons in Syria, at the start of April 2017 the United States bombarded the Shayrat air base held by the regular army of Bashar al-Assad's regime. Greeted by approval and disapproval alike, the firing of American Tomahawk missiles, one of the most radical measures since the conflict began, served more than anything to emphasize the sheer powerlessness of the United Nations on the international stage. The question in Syria, one that has been raised many times, is also about whether the current President should stay or go, and that is one to which the Geneva Accords have provided no answer. In the same month in Afghanistan, the so-called Mother of all Bombs, the biggest non-nuclear bomb in America's arsenal, was dropped on Daesh hideouts. At the same time a US carrier force was diverted to patrol off the Korean peninsula. The justification given for this response was the military provocation by the Pyongyang regime, which prompted a reminder from Beijing that war could break out at any time with North Korea and that a peaceful outcome to the conflict must be found.

China continued, in 2016, to assert its domination in the South China Sea. Among the bones of contention are the small islands in the Spratley archipelago, title to which is disputed by Taiwan, the Philippines, Malaysia, Brunei and Vietnam, not only for their fishery and hydrocarbon resources, but also because of their geostrategic interest. In July 2016, the Permanent Court of Arbitration in The Hague ruled that China's 'nine-dash line' was incompatible with the rules of the international law of the sea and upheld the territorial rights of the Philippines to the Scarborough Shoal, an atoll of which China had taken possession in 2012. The Philippines hit the headlines in a different context because of the bombastic utterances of their President Rodrigo Duterte, as well as his ambiguous international policies. Russia, though weakened by falling oil prices, continued its manoeuvrings on both shores of the Arabo-Persian Gulf, without losing sight of its activities in Ukraine and Central Asia. And Europe, though it has a presence through its member states in a number of theatres of operation, has kept a low profile, reeling under a Brexit it refused to see coming and stifled by its lack of a common political vision on the big international issues.

It is especially difficult to weigh up all these geopolitical tensions and military developments, but they seem to mark the coming of a new geopolitical reality, characterised by the retreat of multilateralism and the rise in a power balance between the United States, Russia and China whose barycentre is hard to locate, given the inconstant nature of their political relations. Whether this is trivial or a sign of the times, never has the topic 'third world war' cropped up in so many Google searches as now, at the start of 2017. Not forgetting the persistence of historic conflicts, foremost among them that of the Palestinians and Israelis in the Middle East. Or, for that matter, the continuing civil wars and violent social unrest throughout the world, and the proliferation of actual or attempted terrorist attacks in the Middle East (Saudi Arabia, Turkey, Syria, Iraq, Israel, Lebanon, Pakistan, Afghanistan and Yemen), in Europe (Belgium, France, the United Kingdom and Sweden), in the United States, Russia, Asia (Bangladesh, India, the Philippines, Thailand and Indonesia) and also Africa (Burkina Faso, Cameroon, Côte d'Ivoire, Nigeria, the Democratic Republic of the Congo, Somalia, Chad, Mali, Tunisia and Egypt). To this wretched political roll-call must be added the natural disasters that, from 2014 onwards, have struck the continent of Africa in particular: the Ebola epidemic that shook Guinea, Liberia and Sierra Leone from 2014 to 2016, the economic and human consequences of which are still being felt, and, starting

in 2016, the drought that has afflicted eastern and southern Africa and poses a very major risk for food security in the region. Not all of the disasters affecting mankind are of its own making.

In this difficult and anxious climate, it is easy to forget that 2016 and the first months of 2017 have also seen some major political and geopolitical successes. Among these is the peace accord achieved in June 2016, between the Colombian government and the Revolutionary Armed Forces of Colombia (FARC), after more than five decades of conflict, a historic agreement that won Colombian President Juan Manuel Santos the Nobel Peace Prize. Among the other political victories in 2016, this time more symbolic than operational, was the vote by one hundred and thirteen countries in favour of a United Nations resolution to convene a conference 'to negotiate a legally binding instrument to prohibit nuclear weapons, leading towards their total elimination'. The return of Morocco to the African Union, an organisation the Alaouite Kingdom had left in 1984, also proved a major political event continent-wide. While King Mohammed VI has undertaken a number of African tours since coming to the throne, those in 2016 and 2017 were marked by the signing of multiple trade agreements, proving that Moroccan investment was in robust health. It was Morocco too, building on its ambitious policy of favouring renewable energy, that hosted the COP 22 in 2016.

American uncertainty

Held back by the firmness of the dollar and the fall in oil prices, the US economy grew by only 1.6% in 2016. In terms of the economy, however, all was not disappointment in the last year of Barack Obama's term of office. In fact, 2.5 million jobs were created in the trading economy, bringing the country's unemployment rate below 5% and, for the first time since the 2008 crisis, revealing strains in the jobs market. A state of affairs not without influence on the decision by Janet Yellen to increase US Federal Reserve rates.

The record of the former US President is a good one, but certainly not exceptional. In 2016, the US economy was admittedly in much better shape than at the time of his swearing-in at the White House on 20 January 2009. It was, however, boosted by favourable trends not least of which was the continuing technological revolution driven by the famous GAFA, the one in gas and shale oil and a monetary policy that was especially accommodating, combining low interest rates with unconventional asset purchase measures. Nor is there any getting away from the fact that Barack Obama was unable to reach a cohabitation with a Republican Congress, which soon quashed his attempts at reform, and his iconic Obamacare bill, passed in 2010, was already showing numerous flaws even before Donald Trump tried to dismantle it. The main criticism that can be levelled at the former American President is not that, however, but probably lies in his inability to deal more effectively with the structural changes taking place both in the economy and in American society, a factor common, moreover, to all the 'old' advanced nations: the marginalisation of rural and industrial America, the 'farm belts' and 'rust belts', rising inequalities and the exacerbation of social tensions involving racial minorities. That racism, present in American society and denounced by the 'Black Lives Matter' movement, among others, was something Barack Obama lacked the knowledge or capacity to overcome.

Those factors might explain the emergence and subsequent election of Donald Trump, which he won on the slogan 'America First'. It was moreover a narrow victory, helped by an electoral system the new President had been openly contesting just a few days before the poll. A very surprising victory in the end, but one that reflected the failure of Hillary Clinton and above all of Barack Obama, whose elegant exit failed to mask his profound bitterness. From Obamacare to the Trans-Pacific Partnership via the Keystone oil pipeline, it was his predecessor's legacy that Donald Trump was most concerned to demolish. His attempts were defeated several times, with serious consequences for the early months of his Presidential term: his anti-immigration decrees were repeatedly overturned by the US courts and

his reform of the healthcare system resoundingly defeated, a patent indication of dissent in the Republican ranks in Congress. It now remains to be seen whether the vast infrastructure modernisation and development plan Donald Trump wants will be fully implemented, and, if so, if it will be effective enough to regenerate the country's economic growth. Some, like the Nobel Prizewinning economist Joseph Stiglitz, are already questioning that. When taken together with the promised tax cuts, the budget spending involved in that plan would inevitably cause the budget deficit to soar. In 2017 it could reach $650 billion and, worse, $950 billion in 2018 against 'only' $439 billion in 2015. Between the rising US dollar, hampering the price competitiveness of 'Made in America', the strains it could impose on the jobs market and the doubts as to whether it can really benefit American businesses without breaching the rules of the World Trade Organisation (WTO), its effectiveness remains to be demonstrated. At the beginning of April 2017, the US bond markets, one of the cursors tracking the credibility of the country's budgetary policy, were showing their first doubts. The pragmatic Christine Lagarde, Managing Director of the International Monetary Fund, stated in February 2017 that she was optimistic about the situation in the US though admitting that it was much too soon to take a firm position.

But once again, it may not be Donald Trump's domestic policies that prompt the greatest concern about what he has in his sights. In practice, it is in his relations with the rest of the world that he has proved to be most unpredictable. 'Take him seriously but not literally' could be heard on the other side of the Atlantic, as a way of explaining not only the new President's resolve to deliver on his policy commitments but also the incongruity of some of his statements and his sometimes disconcerting capacity to shift his position. That flexibility, however, is highly relative. Trade disputes, already numerous under Obama, are set to multiply, especially with China, while the US President's protectionist leanings are threatening both existing trade agreements and those in negotiation, including the Transatlantic Trade and Investment Partnership (TIPP), the Trans-Pacific Partnership (TPP) and the North American Free Trade Agreement (NAFTA). In addition to which, there is the environmental policy – if indeed it can be called that – of an administration that is threatening to withdraw from the Paris agreement on climate change and aspires, among other measures favouring fossil fuels, to revive the coal industry.

Divorce European style

The other big political surprise of 2016, of course, was the United Kingdom vote in favour of 'Brexit'. While Europe had for a long time been living – though it never really believed it – with the prospect of a British withdrawal, it still came as a surprise: had not David Cameron, in February 2016, succeeded in obtaining a number of exceptions from his European partners that had him telling the British they need no longer be afraid to vote against Brexit as Europe would soon be no more than a free trade area? On 24 June 2016, however, it was the anti-Europe vote that prevailed with 52%. From the European standpoint, that decision does at least have the advantage of clearing the way for the European project and enabling the rest of Europe to make common cause in negotiating the terms for Brexit. It looks like a rocky road ahead, which is why in mid-April 2017 Prime Minister Theresa May announced – in another surprise for Europe – that she was calling an early general election, a way of rallying her troops against a Labour party in broad disarray. While the economy and the financial markets have come to terms with this request for a divorce, nobody really knows precisely what the economic or political consequences will be of the United Kingdom's departure. The warning delivered by Brexit, along with the rise in populist movements fuelled by 'Brussels phobia', cannot, however, be ignored by anyone who believes in the European ideal. But it is a Europe with the shine taken off. In April 2017, it watched from the other side of the Bosphorus as Turkey voted 'yes' by 51% in the referendum, considerably strengthening the executive powers of President Recep Tayyip Erdogan. The choice is bound to have an influence on the country's relations with the

European Union, as well as on the 'Kurdish question'.

As usual, all eyes have also been trained on China. With a major political deadline looming in the autumn of 2017, Xi JinPing has been doing his best to maintain the country's growth above 6.5% and he has succeeded, mainly thanks to public investments and an accommodating monetary policy. Though the key issue of the conversion of its economy is still in abeyance, it has to be said that China has provided reassurance. At the economic level, Donald Trump and Xi Jinping are agreed in their determination to revive their respective economies, but beyond the simple matter of budget support policy, that could well give rise to friction where their trade policies are concerned. In this connection one only has to look at the US President's pronouncements and his famous tweets about the alleged manipulation of the renminbi, or the thorny issue of China's production overcapacity, and Beijing's responses. As a sign of the changing times, China has achieved the historic turnaround of becoming the champion of globalisation while the United States wants to turn its back on it. Faced with the increasing lure of protectionism, Xi Jinping's statements at the Davos summit in January 2017 were deliberately conciliatory: 'Pursuing protectionism', he said, 'is like locking oneself in a dark room. While wind and rain may be kept outside, that dark room will also block light and air. No one will emerge as a winner in a trade war'.

South Africa loses its way but Morocco shows vision

The continent of Africa, too, was marked by a number of political events in 2016, first among them the Presidential elections in several countries (Cape Verde, Gambia, Ghana, Benin, Niger, Sao Tome and Principe, Gabon, Congo-Brazzaville and the Democratic Republic of the Congo, Chad, Zambia, the Comoros, Equatorial Guinea, Uganda and Djibouti). Others too are scheduled for 2017, not counting the parliamentary elections. While there has been no election there, South Africa continued to give cause for concern in both the economic and political arenas. Jacob Zuma in particular has seemed increasingly isolated, and is facing corruption charges and impeachment proceedings. Among the latest in the innumerable twists in this political saga was Jacob Zuma's ministerial reshuffle in March 2017. That resulted in ten ministers being ousted, foremost among them the respected Finance Minister Pravin Gordhan. That decision strengthened the protests of the opposition parties and provoked the disapproval not only of the Vice-President from his own party, the African National Congress (ANC), but also the country's powerful trade union confederation. Setting the seal on the severe institutional and political uncertainty in which Africa's number one economy is mired, the Standard & Poor's ratings agency downgraded the country's bonds from 'investment' to 'speculative' grade. Seriously bad news, at a time when the South African rand is plummeting and the economy stagnant.

As already mentioned, the return of Morocco to the African Union fold was an especially important event in 2016. 'Africa is my continent and my home': those were the first words spoken by King Mohammed VI at the 28th summit of the African Union in Addis Ababa, and they forcefully underlined the reciprocal nature of the ties that bind that country to its continent. Aside from its political and symbolic significance, the event bore witness to Morocco's economic vision, and in so doing, if any reminder were needed, to the continent's extraordinary and largely untapped potential. Whether looked at in terms of investment growth, the integration of trade markets, the buoyancy of domestic demand, agriculture and mining policies or the development of transport or energy infrastructures, Africa can only achieve economic success by strengthening its intracontinental interactions.

Africa and the global commodity markets: what is the verdict on 2016?

Against this still-unpromising economic backdrop, and in a political and geopolitical environ-

ment awash with uncertainty, commodities fared rather well on the whole in 2016. Some of them, like many mineral ores and metals, staged a healthy recovery. The reasons for this are many and would require specific treatment, but it has to be said that the winds blowing from the United States and China were favourable overall. The Trump effect drove up copper and steel prices in late 2016 on the prospect of increased spending on infrastructure investment and the stated intention of the US President to give preference to US businesses. China's capacity to maintain growth at above 6.5% has also been good news for the commodities sector. The fact that, in November 2016, the Organization of the Petroleum Exporting Countries was able to reach an agreement – for the first time in eight years – to reduce production, was enough to prompt a revival in severely depressed oil prices.

Despite some products like cocoa that are bucking the trend, this upward momentum has clearly been good news for Africa's many producer countries. There is no room for complacency, however, as this upturn comes after the price collapse observed in 2014 and 2015. And, as can be seen with Brent in particular, this trajectory is still unstable as it is partly fuelled by a rise in speculation. It must also be remembered that extreme price volatility is almost as bad in terms of triggering macroeconomic instability as low prices, by virtue of the notorious commodities curse. That is why the question, at once fundamental and complex, that has been asked for decades on the African continent is: what is its growth model? It is accepted that, for obvious reasons, it cannot depend on exports of unprocessed materials. But that does not necessarily mean that investment in initial processing businesses is, by nature and for all African economies, a profitable option. Economic diversification that relies on supporting domestic demand as well as a strategy of vertically integrating the commodity industries is not in fact a contradiction.

First part

Structural changes of the African continent

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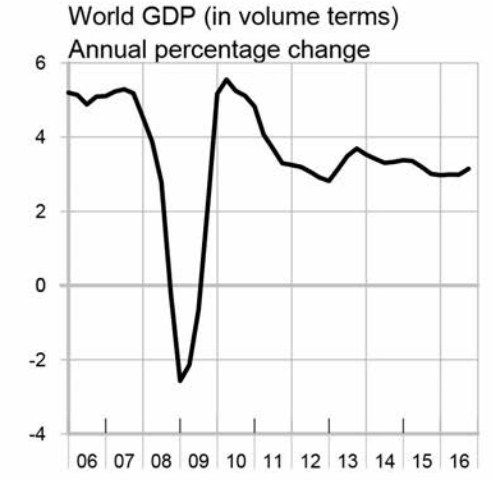
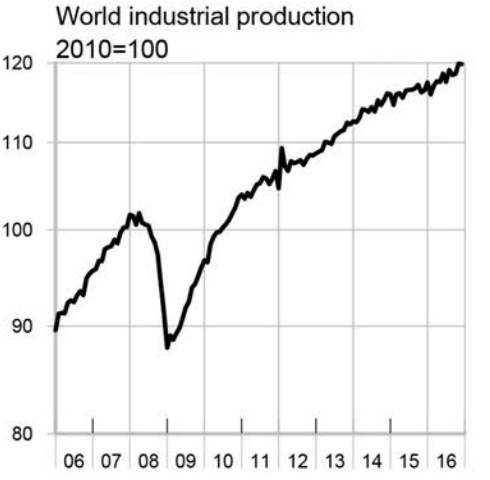
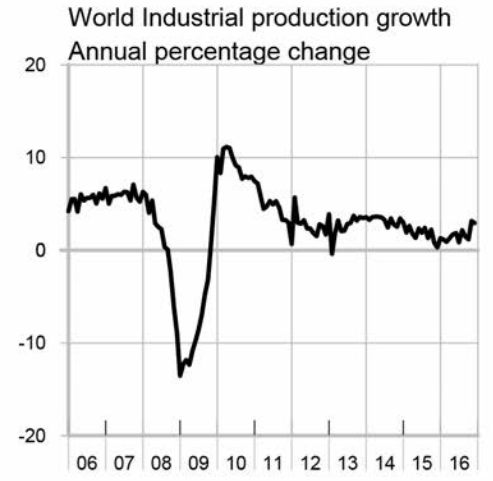
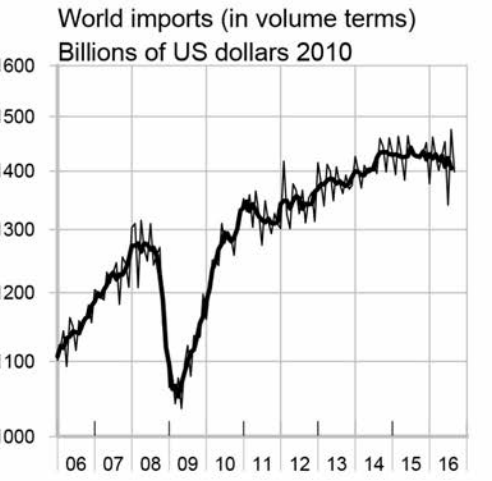








Global economic growth in 2016: assessment and outlook

With global economic growth for 2016 estimated at 3% by the Organisation for Economic Co-operation and Development (OECD), the state of the world economy still looks somewhat flat. Its performance is even less impressive in the light of very slow growth in global trade. 2017 and 2018 could nonetheless see economic activity take off again, fuelled by the fiscal recovery policies put in place recently, in China and the United States especially. That said, there are still many factors around that tend to cause fragility, and which, coupled with the prevalent high levels of political and geopolitical uncertainty, could hold back a return to genuinely healthy macroeconomic growth.

According to the March 2017 data from the Organisation for Economic Co-operation and Development (OECD), the world economy grew by 3% in 2016, which is slightly less than in 2015. Unsurprisingly, it was largely sustained by Asia and in particular China, whose growth was officially 6.7%, while that of the United States and the euro-zone stayed below the 2% threshold, at 1.6% and 1.7% respectively. India can be proud of its growth rate of 7%, achieved in spite of the upheaval produced by the Modi government when it announced the demonitisation of the economy to combat the underground economy. The dynamism shown by Asia's tigers and dragons also made a major contribution to the growth of the global economy. Brazil, mired in a crisis that was as much political as economic, saw its gross domestic product (GDP) shrink by 3.5% in the context of a depreciating real and inflation that was hard to keep in check. South Africa, with close to zero growth, is hardly faring any better with President Jacob Zuma's political powerlessness as a backdrop. As for Russia, while it benefited somewhat from the recovery in the price of oil and commodity minerals, it never managed to achieve positive growth. The famous BRICS

(Brazil, Russia, India, China and South Africa) turned out to have nothing in common but their name, such has been the divergence in their macroeconomic performance for several years now. Sub-Saharan Africa is mostly struggling, given its dependency on global demand, but what has probably hit it hardest is the difference in macroeconomic paths between those African countries that are exporters of commodities and the rest. Many of these economies have sailed through the period since the financial crisis, while others have foundered with the fall in commodity prices observed from 2014 up to early 2016. It should nonetheless be remembered that some of these latter countries have been confronted with large-scale natural disasters such as the Ebola epidemic that struck Liberia, Guinea and Sierra Leone from 2014 to 2015 and the drought that has afflicted eastern and southern Africa from 2016 onwards. Like South Africa, the continent's other engine of growth, Nigeria, is at a standstill. 2016 was hardly a year for excitement, therefore, but the short-term prospects still look more favourable with anticipated growth in the global economy of 3.3% or 3.4% for 2017 and 3.6% for 2018, according to the OECD and the International Monetary Fund. Once again, the drivers of that growth will have to be found among the emerging countries, especially those in Asia. Neither Japan nor the euro-zone seems to be ready to take full advantage of this recovery.

Sluggishness in world trade and private investment

2016 was a lean year, but more promising signs appeared at the end of it, giving rise to hopes that the skies will clear a little for the world economy. But the winds of economic activity, whether fair or damaging, seem to be blowing more unpredictably than ever and it is the relative fragility of the foundations of economic growth as a whole that is now causing concern.

Among the worrying aspects of 2016, obviously, was the sluggishness of world trade, with the World Trade Organisation (WTO) forecasting growth of a mere 1.7% in September 2016 instead of the 2.8% originally announced in April. A recurring error of judgment that prompted the French international forecasting agency CEPII (*Centre d'études prospectives et d'informations internationales*) not only to nuance its 'circumstantial' explanations for trade growth that has – for the first time in many years – fallen below that of world GDP but also to raise the question whether the globalisation phenomenon has entered a new phase: one that fragments the productive processes leading to delocalisation, preventing further growth in trade flows. Moreover, it is hard not to be concerned about the protectionist impulses that are cropping up here and there. The fears are such that they prompted the Chinese President Xi Jinping to

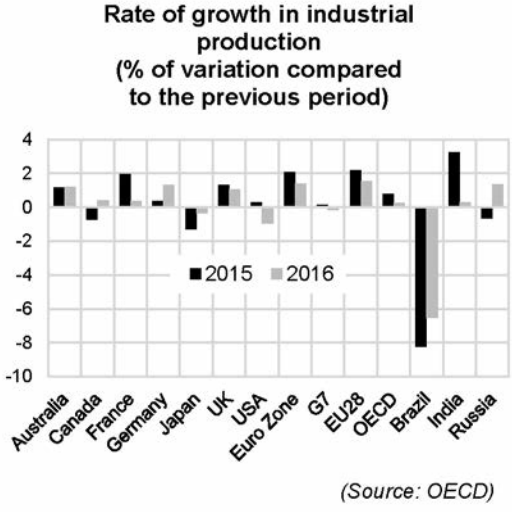
Estimation and projection of real GDP growth in the world

	2016	2017	2018
World	3.0	3.3	3.6
USA	1.6	2.4	2.8
Euro Zone	1.7	1.6	1.6
Japan	1.0	1.2	0.8
China	6.7	6.5	6.3
Brazil	-3.5	0.0	1.5
Restof the world	2.3	2.7	3.2

(Source: OECD Interim Economic Outlook, March 2017)

point out, notably at the Hangzhou summit in September 2016 but also at the World Economic Forum in Davos in January 2017, all the risks that interference with free trade would pose for global growth. The argument underlying protectionism is primarily political, and one can only hope that the macroeconomic arguments will also convince. That said, in some sectors of industry it seems difficult to distinguish between political grandstanding and economic rationality. The year 2016 saw, among other things, a heightening of trade tensions between China on the one hand and the United States and Europe on the other, with much of the discord focused on the huge amounts of crude steel and primary aluminium exported by China, not to mention Donald Trump's accusations of exchange rate manipulation by Beijing. It is ironic to observe the paradox of China in the role of champion of globalisation while the western countries, in particular the United States, cry unfair competition and currency manipulation. And we cannot fail to mention, in this section on politics and geopolitics, the raft of uncertainties thrown up by the war in Syria, Iraq and Yemen where foreign interests – American, Russian, European, Saudi, Turkish and Iranian – converge or clash, over international terrorism and territorial claims in the South China Sea, the attitude of North Korea and the resurgence of social movements, some of them violent, in many parts of the world.

Looking beyond the political and geopolitical picture, it is the lack of vitality in industrial production that is most worrying. Its rate of growth in fact weakened from 2015 to 2016. Between 2015 and 2016, it rose by only 0.26% in the OECD countries and fell back by 0.36% in Japan and almost 1% in the United States. The same thing happened in the euro-zone, which saw industrial production grow by 1.4% in 2016 against slightly over 2% in 2015. It is continuing to fall in Brazil, with -6.5% in 2016. Incidentally, the *Bolsa empresário*, the subsidised lending policy of the Brazilian development bank (BNDES), has largely worked to the benefit of the national champions, while costing the State a considerable amount and having almost no impact on the country's industrial diversification.



If one favours a demand-based interpretation of economic growth, moreover, one is forced to notice the relative weakness of private investment. While household consumption has more or less held up, gross fixed capital formation (GFCF) has shrunk. It apparently grew by a mere 1.4% in 2016 in the OECD countries as a whole. This finding is borne out especially in the United States, where the rate of growth in private investment in 2016 was 0.7% against 3.7% in 2015 and 4.2% in 2014. The situation in the European Union is hardly any better, with GFCF of 1.9% in 2016 while in 2015 it was 3.6%. This overview, however, conceals important disparities between European countries: while private investment lost much of its momentum in the United Kingdom (+ 0.5% in 2016 against + 3.4% in 2015), it showed a marked rise in France and Germany. In Brazil, the picture is dramatic.

Among the encouraging signs, however, is an improvement in business confidence since the end of 2016, according to the index devised by the OECD. While still especially high in some European countries (Greece and Spain, as well as Italy and France), the unemployment rate has also fallen slightly in a number of industrialised economies.

With an unemployment rate of 4.9% in 2016 compared to 5.3% the year before, the United States is now not far from full employment. A total of 2.5 million jobs were created in 2016 in the trading economy, and no fewer than 235,000 in February, well above expectations. Combined with rising wages, this has, unsurprisingly, translated into a rise in the country's level of inflation. Taking the annual average, it was running at 1.3% in 2016 against 0.1% in 2015. In the euro-zone, inflation remained desperately low, a sign among other things of weak domestic demand.

Harmonized unemployment rates in some OECD countries

	2015	2016
France	10.4	10.1
Germany	4.6	4.1
Italy	11.9	11.7
Japan	3.4	3.1
USA	5.3	4.9
Euro Zone	10.9	10.0
G7	5.8	5.5
EU28	9.4	8.6
Total OECD	**6.8**	**6.3**

(Source: OECD)

Indifference returns to the stock markets

This economic gloom and geopolitical uncertainty seem not, so far, to have bothered the global stock markets, which were in rude health in 2016: further evidence, if needed, is the short-term disconnect between the financial sphere and the real world. The American S&P 500 index thus went from 2,043 points on 1 January 2016 to 2,238 on 30 December, making an increase of 9.5% over the year, while the Dow Jones Industrial Average (DJIA) put on more than 13% over the same period. The same phenomenon was observed in the United Kingdom, where the FTSE 100 showed a rise of nearly 14.5% once it had stopped wavering over the effects of Brexit. Things were very different in the euro-zone, which saw the Euro Stoxx 50 making gains during 2016 of a mere 0.7%. Germany's Dax, however, rose by

Components of GDP in OECD countries and Brazil
(Growth rate in % of the previous period)

	Consumption			GFCF			Government Expenditure			Exports			Imports		
	2014	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
France	0.7	1.5	1.9	-0.3	1.0	2.9	1.2	1.4	1.4	3.3	6.1	1.2	4.7	6.6	3.6
Germany	0.9	2.0	2.0	3.4	1.7	2.3	1.2	2.8	4.0	4.1	5.2	2.6	4.0	5.5	3.7
Japan	-0.9	-0.4	0.4	2.9	0.0	1.0	0.5	1.6	1.5	9.3	3.0	1.2	8.3	0.1	-1.7
UK	2.2	2.4	2.8	6.7	3.4	0.5	2.3	1.3	0.8	1.5	6.1	1.8	2.5	5.5	2.8
USA	2.9	3.2	2.7	4.2	3.7	0.7	-0.7	1.6	0.8	4.3	0.1	0.4	4.4	4.6	1.1
Euro Zone	0.8	1.8	2.0	1.5	3.2	2.6	0.6	1.3	1.8	4.4	6.5	2.9	4.9	6.5	3.5
G7	1.8	2.3	2.2	3.1	2.1	1.0	0.2	1.5	1.4	4.3	3.3	1.5	4.4	4.4	1.7
EU28	1.2	2.1	2.3	2.7	3.6	1.9	1.0	1.4	1.7	4.4	6.2	2.9	5.0	6.2	3.5
OECD	**1.8 e**	**2.4 e**	**2.3 e**	**3.1 e**	**3.0 e**	**1.4 e**	**0.7 e**	**1.7 e**	**1.8 e**	**4.5 e**	**4.6 e**	**2.3 e**	**4.3 e**	**4.8 e**	**2.7 e**
Brazil	2.3	-3.9	-4.2	-4.2	-13.9	-10.2	0.8	-1.1	-0.6	-1.1	6.3	1.9	-1.9	-14.1	-10.3

(Source: OECD)

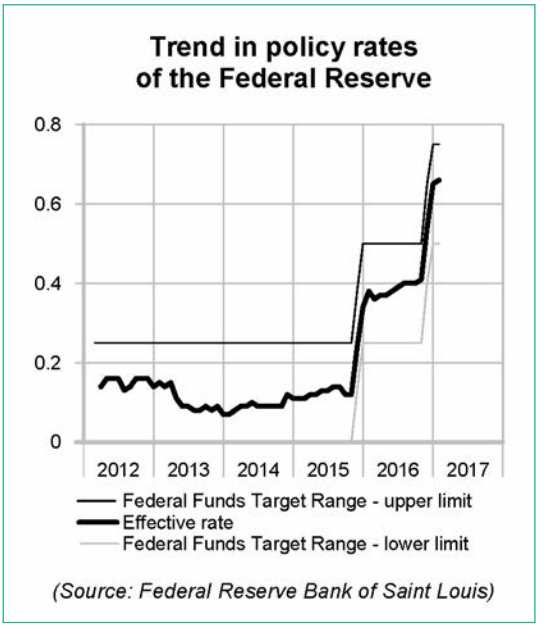
almost 7% over that period and the French CAC 40 by just less than 5%. On the Asian stock markets, the Nikkei was desperately flat, ending the year at a level only slightly higher than at the start. Admittedly, it had fallen sharply during the first six months. An almost honourable performance compared to the Shanghai Shenzhen CSI 300, which dropped back more than 11% during 2016.

The indifference of the financial markets is really no more than a front, if there is one thing market traders detest it is uncertainty. From that standpoint, 2017 could well have some surprises in store with the rise in populist movements and elections in a number of European countries (France, the Netherlands and Germany), as well as the complex matter of Brexit. In the Netherlands, the victory of Prime Minister Mark Rutte over the nationalist Geert Wilders in the parliamentary elections of resulted in the loosening, in mid-March, of bond spreads, notably between the French OAT and the German *Bund*. A close up study of all the markets revealed that this was short-lived, as the possibility of a confrontation between the extreme Right and extreme Left in the French Presidential elections in April 2017 drove that yield spread up again. On the American side, confidence seems the order of the day but a few cryptic lines in the minutes of the meeting of the Federal Open Market Committee on 15 March 2017 hinted that the stock markets, buoyed up by lower taxes on companies and the prospect of an expansionist budgetary policy, might be overvalued. The warning was swiftly brushed aside by a number of traders, who recalled that, in his time, Alan Greenspan had said that the markets were irrationally buoyant. He made the statement in 1996 and it was thought at the time to be premature, as the speculative bubble in technology stocks came only three years later. Premature – or maybe visionary.

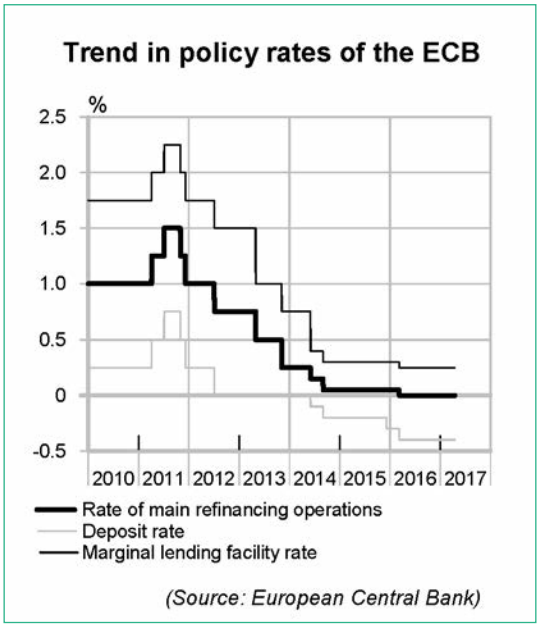
Towards a new American policy mix?

It would be an understatement to say that the global economy in recent years has been kept going by accommodating monetary policies of central banks in industrialised countries, with the United States leading the field. In that country, though, the Federal Reserve (Fed) put an end to the game because inflation was rising again, economic growth was under control, and there was a perception that the economic weak spots in some of the major economies, especially China, had lessened in the short term. After a rise in December 2015 that saw each of the Federal rates increase by 25 base points to 0.25% (lower limit) and 0.5% (upper limit) respectively, it was decided to raise them again in December 2016 and then March 2017 because economic growth was deemed acceptable and the job market tight. On the road to 'normalisation' of American monetary policy, the pragmatism of Janet Yellen should again make itself felt in 2017, and for good reason. The new American policy mix built around a tighter monetary and budgetary policy that – all things being equal – is expansionist will in reality largely depend on how Donald Trump and the American Congress deliver on their campaign promises. Regarding the early days of this US Presidency and in particular the resounding failure to reform Obamacare, it would seem wise to tread carefully here. The United States' budget deficit could reach $650 billion in 2017, and even $950 billion in 2018 against 'only' $439 billion in 2015. Admittedly, the general state of America's major infrastructure justifies such a programme, but its implementation is highly likely to trigger tensions in the jobs market just at the time when the flow of immigration has been cut off. Whether or not it will be effective is a matter of widespread debate. While it is easy to understand the 'demand' effect, that demand will still have to be aimed primarily at national businesses. The 'America first' concept may have been a great popular and political success, but translating it into economic terms looks set to be more complicated. The Nobel Prizewinning economist Joseph Stiglitz has expressed grave doubts about the effectiveness of the budgetary policy of the new American President. By reducing national savings, it could in fact create the conditions for an increased trade deficit, leading to a rise in the value of the dollar that is damaging to traditional business sectors.

On the euro-zone side, ECB key interest rates have, quite logically, remained unchanged since



(Source: Federal Reserve Bank of Saint Louis)



(Source: European Central Bank)

March 2016 and are unlikely to alter much in the coming months, much to the irritation of German Chancellor Angela Merkel who has repeatedly made it clear that she wants to see an end to Mario Draghi's quantitative easing. But the ECB is independent from political power and has the final word in this field, not just in times of inflation and when key interest rates are high. Asset purchases and low if not negative interest rates should still be around for a few months at least, as the name of the game is to reboot inflation to stimulate household consumption. Inflation has indeed firmed up in the first months of 2017, even reaching the 2% mark in February 2017, but that is down to increasing energy prices and not a rise in underlying inflation. Which would justify the ECB in cutting back its monthly asset purchases – or equally, in extending the programme.

The slow transition of the Chinese economic model

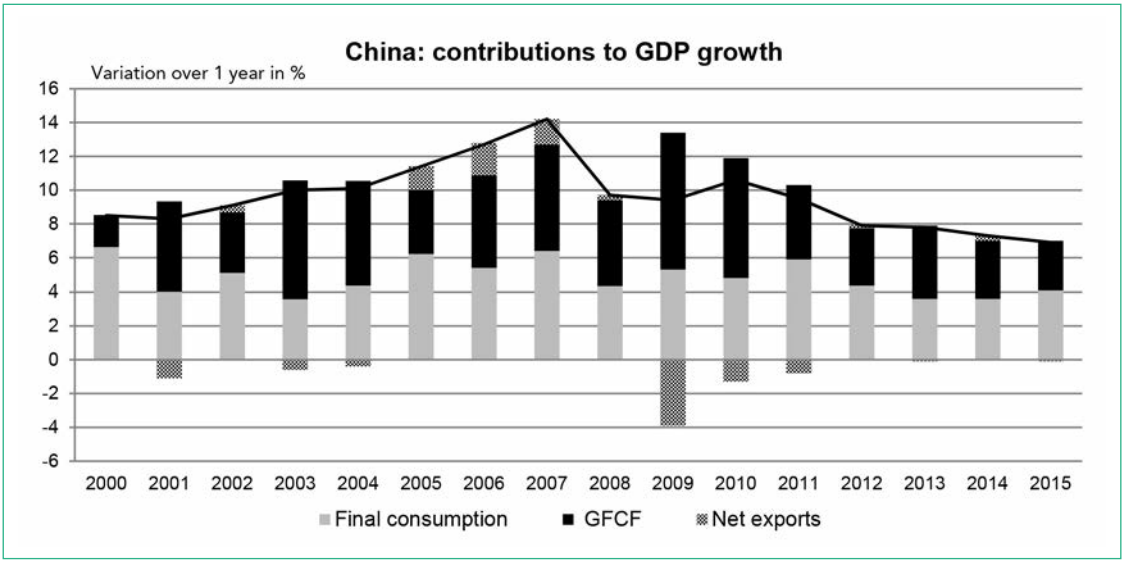
The growth in China's GDP in 2016 might seem low compared to its past performance, but in reality it is probably a triumph given the shift in the country's growth model from one originally based on external demand, industrial production and investments to one that must henceforth rely more on consumption and services. Or if not a triumph, then at least a relief, if one remembers the anxiety that overtook the markets in 2015 when China appeared to be wavering. Having avoided a stock market crisis in 2015 and again at the start of 2016 and managed a property bubble in some of its cities, the Chinese economy seemed to be under control in 2016, and that was certainly the view the traders took. The price of this stability, however, has been the unravelling of certain fundamentals (China's budget deficit was 3.8% of GDP while Beijing had announced it as 3%) and the lack of badly needed major economic reforms. Admittedly, publicly owned groups are now obliged to file more accounts and pay dividends to the State shareholder. Also, the anti-corruption policy seems to have worked. And Beijing has made it a priority to reform its massive mining and steelmaking sector not only to tackle the huge problem of pollution in its urban areas but also to face up to the expectations and pressures of the international community. But what might have been a priority on the micro- and macroeconomic level does not seem to go far enough – towards opening up the country's capital, reforming the often over-indebted public companies, improving

the pensions system and the policies for redistribution of wealth to reduce the income gap between rich and poor (that said, the growth in income observed in rural areas has been one especially positive aspect of 2016, as has the substantial reduction in rural poverty for several years now), and effective channelling of private savings to better channel it into productive investments. As evidence of the slowness of change in the country's economic structure, household consumption contributes only 4% to China's GDP, though urban household savings are steadily rising. In other words, the changes are not enough in the medium term to ensure a level of growth that does not depend on the – sometimes dangerous – practice of increasing the money supply and bank lending in order to boost investment.

In 2016, however, China seemed to have found the right balance in its monetary policy to reconcile the contradictions inherent in the country's economic transition: particularly accommodating credit terms, which have fuelled the rise in property prices but, over time, eased the financial burden on heavily indebted companies, and an exchange policy that has driven up the cost of imports against a background of relatively low energy prices, but made exports easier in order to satisfy the country's growth objectives. In the medium term, though, risk factors remain. As the IMF pointed out in its Global Financial Stability Report of October 2016: 'Continued rapid credit growth in China and expanding shadow banking products pose mounting risks to financial stability. The rapidly growing financial system is becoming increasingly leveraged and interconnected, and a variety of innovative investment vehicles and products are adding to the complexity'. According to the OECD, China's economic growth is expected to fall slightly in 2017 and 2018 to 6.5% and 6.3% respectively, but here again, it will be the relative contribution of each of its components that matters most.

The Indian economy is on track

India's economic growth in 2016 was robust, despite the fact that the devaluation programme introduced at the end of the year triggered major upheavals that damped down household consumption and probably cost the country one or two points of GDP. Against all expectations, on 8 November 2016 Prime Minister Narendra Modi announced a huge operation that implied devaluing the demoninations of 500 and 1,000 rupee banknotes though these accounted for 86% of the bearer currency in circulation in a country where cash transactions represent over 80% of retail



sales and 12% of GDP. The aim? To attack the illegal economy and money laundering after many years of popular demonstrations against corruption, and also to encourage widespread use of banking as a way of increasing tax receipts in a country where the ratio of taxes to GDP never rises above 10% or 11%. An operation that ran up against a slew of technical issues, and the effects of which in the medium term might not be as favourable as expected. Among the short-term negative effects was the 44% collapse in property sales in the last quarter of 2016, which had an adverse impact on the construction sector. Another important factor in 2016 was the slight recovery in the Indian economy triggered by public spending and the tax policy. This was a delicate strategy with little room for manoeuvre, which forced the Minister of Finance Arun Jaitley to increase the expected deficit from 3.2 to 3.6% of GDP despite a commitment not to let the federal fiscal deficit pass 3. Among the key measures were investment in infrastructure, a reduction in the tax rate on new SMEs from 35% to 25% and the broadening of the sectors open to foreign investment. Major reforms in the country include the swift introduction of the new pan-Indian value-added tax (GST), which has been under negotiation for more than a decade, to alleviate the tax burden. This has mainly been passed on to the states, whose accumulated deficits have gone from 2.2% of GDP in 2012 to nearly 3.5% despite a big increase in federal transfers following the recommendations of the 14th Federal Tax Commission.

India's advantages include the growth of its active population, its higher productivity than the rest of the world, the low level of debt of its private sector and its low level of dependence on foreign markets at a time when world trade has stalled. The country's political fragmentation could however delay implementation of the necessary reforms, holding back the structural transformation of an economy that nonetheless has a bright future. India will also have to tackle the problem of its deteriorating bank balance, with bad debts now representing 14% of gross lending by the publicly owned banks that still form the backbone of India's banking system. Another challenge will be to reduce overcapacity in production in sectors such as steel and cement.

Lending terms are tightening for the emerging countries

The raising of Fed rates naturally prompts the question of what effects that will have on both the national economy and on international financing conditions. From that standpoint, while the impact on the borrowing capacity of American households and businesses should be limited, the same might not be true beyond the country's borders. On the bond markets, the ten, twenty and thirty year rates rose strongly in the wake of the Fed's decisions and the announcement of two probable rate rises in 2017, and that has implications for the rest of the world.

The US dollar continued its rise in 2016. As a reminder, one euro was worth 1.1 dollars in January 2016 and 1.06 dollars on 30 December 2016, while one dollar was worth around 6.53 renminbis on 4 January against 6.92 one year later. Aside from these bilateral and nominal exchange rates, what was seen in 2016 was an overall appre-

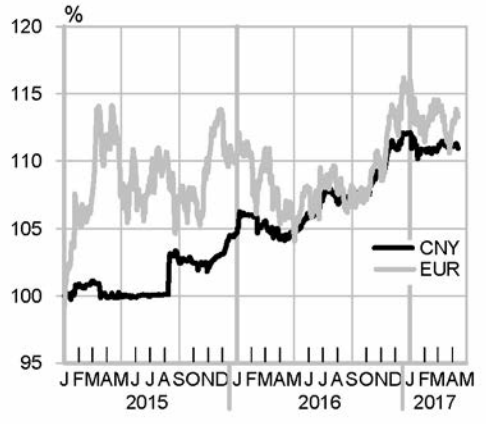
Evolution of long US rates (in %, constant maturity)

(Source: American Federal Reserve)

ciation in the value of the US currency and, more fundamentally, a falling off in the price competitiveness of the country's exports. As calculated by the OECD, the dollar's 'real effective exchange rate' index thus went up markedly during 2016, though it settled back slightly in the months of February and March 2017 despite the hike in Fed rates.

In May 2013, what has come to be known as the 'taper tantrum' (the lively reaction of the finance markets to the announcement of the phasing-out of 'unconventional' parts of American monetary policy) served as a reminder, if one were needed, of the high degree of dependency of the international bond markets on the Fed's decisions and, to a lesser extent, those of the ECB. In the euro-zone, the bond spread between Germany and Italy therefore rose in 2017. For the emerging countries' debt, investors will undoubtedly be demonstrating pragmatism in 2017, even if the slight improvement in prospects for the global economy should sustain the attractiveness of a class of assets that is still underrepresented in global portfolios. It is not impossible, though, that emerging countries' bonds denominated in US currency will be abandoned because of their sensitivity to American Treasury-bond yields. That would, obviously, have implications, not just for the financing strategies those countries would then have to adopt, but for the absolute necessity for them to offer solid macroeconomic fundamentals, first among which is to bring inflation under control.

Change in exchange rates of the dollar against the euro and the yuan (Base 100: 02/01/2015)



(Source: American Federal Reserve)


Coe-Rexecode indices for commodities martkets in $
Global Indices
January 1988 = 100
Everything except precious metals and petroleum
Everything except petroleum
Everything including precious metals and petroleum
500
400
300
250
200
150
100
70
1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
© Coe-Rexecode

Chapter I

Evolution in the price of commodities and African macroeconomic perspectives

Since mid-2014, commodity prices have been generally down. While Africa showed some resilience in 2015, though with contrasting trends between commodity-exporting countries, particularly oil exporters, and importing countries, the spreads widened in 2016. The fall in the prices of raw materials has knock-on effects for the entire economy, first impacting external balances and, hence, public finances and then private consumption and investment, which inevitably weighs on gross domestic product (GDP). Africa is currently developing very unevenly, with some countries maintaining high growth rates of more than 6%, while others are in recession.

In 2016, sub-Saharan Africa recorded its lowest growth rate, at 1.6%, in more than 20 years, well below the rate of population growth. The continent's three economic locomotives are in fact at a standstill. In 2016, the Nigerian economy plunged into a recessionary crisis, contracting, by 1.5%, for the first time in two decades, the South African economy registered its weakest growth since 2009 at 0.3%, while Angola's stagnated. The growth rate of countries exporting non-renewable resources halved and the much proclaimed idea of improved macroeconomic management in recent years has been undermined by rising imbalances and indebtedness. In addition, the commodity-exporting economies have often seen a weakening of their currencies, resulting in galloping inflation and greater difficulty in attracting external financing.

The problem is not, however, specifically African. The global environment is weak, with the economic slowdown of Africa's major partners. Although China's growth remains robust, the decline in commodity prices has automatically led to a decline in the value of African exports and budgetary revenues. Financing needs are less well covered with tougher global financial conditions. In addition, following a particularly active El Niño phenomenon, some parts of southern and eastern Africa are facing the worst drought in 35 years, bringing with it an extensive human cost. Finally, the security situation appears to have deteriorated.

Oil-producing countries on red alert

Oil prices started falling in the summer of 2014. In January 2015, prices dropped below $50 a barrel and below $30 a barrel a year later, the lowest level since 2003. Prices picked up in February 2016 but have since remained moderate, ending 2016 at $56 a barrel, thanks to the commitments made by OPEC (Organization of the Petroleum Exporting Countries). Two years of low prices, coupled in some countries with a decline in production in 2016, ended up snowballing and weighing on the economy as a whole. Thus Nigeria, Equatorial Guinea, South Sudan and Chad all entered into recession in 2016.

At the root of this state of affairs was the weakness in prices and an often overdue reaction on the part of the authorities in a number of oil-exporting countries to take the necessary budgetary and monetary adjustment measures.

Energy-exporting countries were hardest hit by a downturn in the terms of trade decline. In particular, Equatorial Guinea (revenue down by 50% in 2016 compared to 2011), the Republic of Congo and Angola (down 38%), Gabon (down 32%), Chad (down 15%) and Nigeria (down 12%).

The Nigerian economy entered a recession in 2016, for the first time in more than twenty years, and then lost its place as Africa's leading economic power. The decline in oil prices over the past two years, with the economy still being 70% oil-dependent, resulted in a negative current account balance in 2015 (3.1% of GDP) for the first time in a decade, and again in 2016 (0.7%). The fiscal deficit widened further to 4.6% of GDP in 2016 (compared to 3.8% in 2015), as the country failed to take the necessary adjustment measures by significantly reducing spending as government revenues tumbled. As a result, Nigeria's international reserves fell to just over five months of imports, compared to almost six and a half months in 2015, and are expected to be reduced to less than five months in 2017. To sum up this means two-figure inflation, shortage of foreign currency and consequently a collapse in the Nigerian currency, penalizing all sectors of the economy. The Central Bank finally decided to adopt a floating exchange rate only in June 2016, when the naira then lost 30% of its value. The decision was accompanied by a package of measures restricting foreign exchange transactions and a ban on the import of forty-one different products. The currency shortage stifled businesses from industrial companies to airlines. The financial sector also suffered, with some of the largest banks apparently facing credit deficits. The economy is not the only problem: Nigeria is also still being hit hard by Boko Haram. Its terrorist attacks are destabilizing the North and causing a substantial drain on the national budget. Expenditure related to the Boko Haram threat amounted to $2.6 billion in 2016, according to the Ministry of Foreign Affairs.

Angola, on the other hand, responded more quickly to lower prices, with the 2016 budget being revised in July to cut back public spending. Nevertheless, public debt has more than doubled since 2013, amounting to nearly 78% of GDP, the current account deficit has improved but still stands at 5.4% of GDP, and inflation has risen to more than 33%. However, the country's reserves are comfortable and able to cover more than eight months of imports.

In both Angola and Nigeria, the oil situation is expected to improve in 2017, firstly, with a likely resurge in production. In Nigeria, this should be helped by the ending of attacks on pipelines and, in Angola, by the Mafumeira Sul, East Hub and Kaombo projects and by the resumption in 2016 of LNG production at the Soyo site, according to information provided by Chevron. Oil prices are also expected to reach $55 per barrel, according to the World Bank, 29% more than in 2016, if the two agreements reached by OPEC are successfully implemented. African countries participating in the second agreement include Equatorial Guinea, Sudan and South Sudan. Angola and Nigeria are not part of the deal however.

Other smaller oil-producing countries have also suffered, but the impact varies from country to country and is in any case smaller than in the two

Which countries are most affected by the contraction in Chinese demand?

Although China's growth remains strong, it slowed to 6.7% in 2016, its lowest level in more than 25 years. More worrying for African natural resource-exporting countries is the fact that Beijing wants to orient its economy more toward consumption and services. It will therefore be structurally less demanding in terms of raw materials. In 2016, though, China's appetite for various raw materials was still insatiable, such as coal, copper, oil and soya.

In its World Economic Situation and Prospects report for 2017, the United Nations shows how China's economic rebalancing is affecting the growth prospects of African economies. The first channel is a decline in Chinese imports of commodities. While these have increased more than twenty-fold in the last decade, they have fallen since 2013, both in terms of value and, to a lesser extent, in terms of volume. In particular, they were down 50% in 2015 to $69 billion. According to this UN report, the countries most affected are South Africa, Angola, Congo and Zambia. China's diminishing appetite for raw materials will naturally affect prices, since China accounts for about 50% of world consumption of several base metals, including aluminium, copper, nickel and zinc. Yet copper accounts for 57% and 78% respectively of exports from the DRC and Zambia; nickel accounts for 23% of Malagasy's exports and aluminium 34% of Mozambique's. Another transmission channel is investment. According to China-Africa Research Initiative (CARI) data, Chinese FDI in Africa increased from $0.3 billion in 2003 to $32 billion in 2014, concentrated mainly in the extractive industries. China's slowdown could make it more challenging for companies to invest abroad, including in Africa – although this was not the case in 2016.
The IMF in turn points out that China's loan commitments have fallen since its peak reached in 2013, and have shifted to infrastructure and industry at the expense of commodities. For example, in Mozambique and the DRC, official loans disbursed by China declined by more than two-thirds in 2015 compared to 2014. On the other hand, its loans to Kenya, Rwanda and Tanzania expanded considerably.

major oil-producing countries. Thus, Ghana, a "new member" of the oil producers' club, is less dependent on this sector. It has in fact other substantial resources such as cocoa, of which it is the world's second largest producer, as well as gold. However, its public debt has risen, and although this fell in 2016, it still accounts for 66% of GDP, while its current account deficit stands at 6.3% of GDP.

CEMAC forced to adjust

The countries of the Central African Economic and Monetary Community (CEMAC) for their part are facing a serious economic crisis. For Cameroon and Chad, this is compounded by growing insecurity associated with attacks by Boko Haram, which impede economic activity and, as in Nigeria, drain public finances. With the exception of the Central African Republic (CAR), which is recovering from a political and humanitarian crisis, the five other countries in the zone are all oil-producing countries. However, the terms of trade have declined by more than 47.3% compared to 2014. According to figures from the Bank of Central African States (BEAC), growth in the region was sluggish at 0.7% in 2016, compared to 4.8% in 2014 and 2.4% in 2015. The budget deficit is put at 7.9% and the current account deficit at 14.8% in 2016. International reserves have melted away to below the minimum threshold. Moreover, according to the regional organization, financing needs are mainly met by debt and monetary financing, even though BEAC has reached the end of loan capacities. The time is therefore ripe for adjustment, despite the region's debt ratio being less than 70% of GDP. An

Growth rates of Sub-Saharan Africa 2015-2017

Countries	2015	2016 (1)	2017(2)
Angola	3.0	0.0	1.2
Benin	2.1	4.0	5.5
Botswanab	-1.7	2.9	4.0
Burkina Faso	4.0	5.4	6.1
Burundi	-3.9	-0.6	1.5
Cabo Verde	1.5	3.9	3.3
Cameroon	5.8	4.5	3.9
Chad	1.8	-7.0	0.2
Comoros	1.0	2.2	3.3
Congo, Dem. Rep.	6.9	2.2	4.7
Congo, Rep.	2.6	-2.1	1.0
Côte d'Ivoire	9.2	7.8	6.8
Equatorial Guinea	-8.3	-7.3	-5.9
Ethiopia	9.6	7.5	8.3
Gabon	4.0	2.3	1.3
Gambia	4.1	2.1	2.5
Ghana	3.9	3.6	6.1
Guinea	0.1	4.6	4.4
Guinea-Bissau	4.8	4.9	5.1
Kenya	5.7	5.8	5.5
Lesotho	1.6	2.5	3.0
Liberia	0.0	-1.2	3.0
Madagascar	3.8	4.4	3.5
Malawi	2.8	2.5	4.4
Mali	6.0	5.6	5.3
Mauritaniac	1.4	2.0	3.5
Mauritius	3.5	3.5	3.4
Mozambique	6.6	3.3	4.8
Namibia	5.3	1.2	3.0
Niger	3.6	4.7	5.2
Nigeria	2.7	-1.6	1.2
Rwanda	6.9	5.9	6.0
Senegal	6.5	6.6	6.7
Seychelles	3.5	4.4	4.2
Sierra Leone	-20.6	5.0	5.4
South Africa	1.3	0.3	0.6
Sudan	4.9	4.7	4.1
Swaziland	1.9	-0.6	1.7
Tanzania	7.0	6.9	7.2
Togo	5.4	5.0	4.6
Ugandab	5.6	4.8	4.6
Zambia	2.9	3.3	4.1
Zimbabwe	0.5	0.7	2.3

(1) Estimation 2) Projection

(Source: Global Economic Perspectives of the World Bank, june 2017)

extraordinary CEMAC summit was held in Yaounde at the end of December 2016 with the participation of the head of the International Monetary Fund (IMF), Christine Lagarde, and the French Minister for the Economy and Finance, Michel Sapin. The aim was to implement structural adjustment measures with a view to ending the crisis. The CAR and Chad are already participating in the IMF programme, and the other countries are engaged in negotiations.

Here again, the oil-rich but more diversified economies are getting better macroeconomic results, as testified by Cameroon and, to a lesser extent, Gabon. In Cameroon, investment in infrastructure is holding up, projects in the gas sector are advancing, and agricultural exports (wood, bananas, cocoa, coffee and cotton) are doing well. Furthermore, oil production has recovered. As a result, growth was 5.6% in 2016, debt, though higher, was limited to 31.6%, and foreign exchange reserves amounted to more than five months of imports. By contrast, Equatorial Guinea's economy, which is 90% dependent on oil, is in serious difficulty, having been in recession since 2013 and with 9.9% negative growth in 2016. Although oil contributes only 20% of GDP in Chad, the fall in prices was combined with Boko Haram attacks, leading not only to a sharp increase in spending on security but also to disruption of trade channels with its neighbours Cameroon and Nigeria. On top of all this there was an influx of refugees. The government was forced to take severe austerity measures, generating a very tense social situation.

The macroeconomic burden of low commodity prices

Like South Africa, DRC and Mozambique, other resource-rich countries are also struggling, but the macroeconomic shock they have suffered seems less violent than in oil-producing countries.

2015 and 2016 were difficult years for South Africa. They were, first of all, characterized by weak external demand, particularly from China, which is its most important customer. They were marked by poor commodity prices – and nearly 50% of South Africa's exports consist of metals, precious metals, gemstones, and mineral products. Added to which there were strikes in the mining industry and a challenged competitiveness, sporadic irregular electricity supply, sluggish household consumption, and drought. The result was stalled growth in 2016 (up only 0.4%), following a poor performance in 2015 (1.3%). Inflation, moreover, was still high, against a backdrop of an unsurprising depreciation in the rand. There is a large current account deficit, capital inflows are volatile, and foreign direct investment (FDI) flows are negative – whereas South African FDI abroad increased. In the end, South Africa's sovereign credit rating was not downgraded by the rating agencies in 2016, but this still remains a possibility. The gloomy economic picture was compounded by a pernicious political climate characterized by corruption scandals directly involving President Jacob Zuma.

In the Democratic Republic of Congo (DRC), declining metal prices and political instability contributed to the halving of the growth rate to 4.6% in 2016. Several companies – Eurasian Resources, Trafigura, Glencore – reduced or suspended their activity, resulting in production losses of 10% on copper, but also cobalt, zinc, diamonds, coltan, etc. With mining products accounting for 95% of export earnings, public spending was reduced. The balance of payments deficit nevertheless worsened, the currency depreciated and foreign exchange reserves declined.

Also affected by drought and suffering from the after-effects of the fall in coal and aluminium prices in 2015, Mozambique saw its growth decrease by almost half. While the economic situation is difficult, even more damaging were Mozambique's financial scandals, with more than $1.4 billion of illegal borrowings contracted by public companies used to buy military equipment. In mid-January 2017, Mozambique formally declared that it would be unable to pay the $59.7 million of interest due on its sovereign debt of $726.5 million worth of bonds issued in March 2016. The lenders have unsurprisingly headed for

Evolution of a few macro-economic indicators of Sub-Saharan Africa

	2010	2014	2015	2016	2017
Average inflation (variation in %)	8.2	6.3	7	11.3	10.8
Budgetary balance (in % of GDP)	-3.4	-3.2	-4.3	-4.6	-4
- not including oil exporting countries	-4.2	-4	-4.3	-4.4	-3.8
Balance of current transactions (in % of GDP)	-0.7	-3.7	-5.9	-4.5	-3.9
- not including oil exporting countries	-3.9	-6.5	-6.8	-6.2	-5.4
Coverage in reserves (in months of imports)	4.2	5.3	5.4	4.6	4.3

(Source: IMF, Global Economic Perspectives, October 2017)

Foreign Direct Investment (FDI) from 2010 to 2015
(in millions of dollars)

	2010	2011	2012	2013	2014	2015
World	**1 388 821**	**1 566 839**	**1 510 918**	**1 427 181**	**1 276 999**	**1 762 155**
Developed countries	**699 889**	**817 415**	**787 359**	**680 275**	**522 043**	**962 496**
Developing countries	**625 330**	**670 149**	**658 774**	**662 406**	**698 494**	**764 670**
Africa	**43 571**	**47 786**	**55 156**	**52 154**	**58 300**	**54 079**
Northern Africa	**15 746**	**7 548**	**15 759**	**11 961**	**11 625**	**12 647**
Sub-Saharan Africa	**27 826**	**40 238**	**39 397**	**40 193**	**46 675**	**41 432**
Western Africa	**12 008**	**18 956**	**16 873**	**14 493**	**12 115**	**9 894**
Ghana	2 527	3 237	3 293	3 226	3 357	3 192
Liberiia	450	785	985	1 061	277	512
Niger	940	1 066	841	719	822	525
Nigeria	6 099	8 915	7 127	5 608	4 694	3 064
Sierra Leone	238	950	722	430	404	519
Central Africa	**7 777**	**7 367**	**8 948**	**7 874**	**9 091**	**5 830**
Congo	928	2 180	2 152	2 914	5 502	1 486
DR Congo	2 939	1 687	3 312	2 098	1 843	1 674
Eastern Africa	**4 520**	**4 779**	**5 474**	**6 790**	**7 928**	**7 808**
Ethiopia	288	627	279	1 281	2 132	2 168
Kenya	178	335	259	514	1 051	1 437
Uganda	544	894	1 205	1 096	1 059	1 057
Tanzania	1 813	1 229	1 800	2 087	2 049	1 532
Southern Africa	**3 521**	**9 137**	**8 101**	**11 036**	**17 540**	**17 900**
South Africa	3 636	4 243	4 559	8 300	5 771	1 772
Angola	-3 227	-3 024	-6 898	-7 120	1 922	8 681
Mozambique	1 018	3 559	5 629	6 175	4 902	3 711
Namibia	793	1 120	1 133	801	432	1 078
Zambia	634	1 110	2 433	1 810	3 195	1 653

(Source: statistics base of the UNCTAD)

the exit and the country has turned to the IMF in an attempt to remain afloat.

Dynamism of economically diversified countries

Diversified African economies benefitted from lower oil prices but also from high investment in infrastructure and from dynamic consumption. Côte d'Ivoire, Senegal, Ethiopia, Kenya, Rwanda and Tanzania all recorded real GDP growth rates of more than 6% in 2015 and, according to the latest IMF statistics, are expected to post similar performance in 2016.

The evolution of the two monetary and economic areas of the Franc zone – CEMAC and the West African Monetary Economic Union (UEMOA) – reveals the economic impact of commodity prices. The eight UEMOA countries – Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo – posted solid growth of 6.9% in 2016, with an inflation rate of 1.4 % and debt limited to 32.9% of GDP. This was achieved despite an uncertain security situation in some cases, particularly Mali and Niger, and a less favourable international environment. However, the zone's overall budgetary balance (including aid) deteriorated, with the deficit rising above the Community norm (of 3%) to 4.3% of GDP. The oil bill eased, while the price of many exported agricultural products increased, such as cashew nuts, robusta coffee, cotton and palm oil. On the other hand, cocoa prices have fallen since July 2016, following the major correction of December 2015. The terms of trade were generally favourable.

Côte d'Ivoire, the locomotive of West Africa

Côte d'Ivoire, which accounts for more than 40% of UEMOA's GDP, averaged an annual growth of 9% between 2011 and 2015. Driven by investment and private consumption, the figure was 7.8% in 2016. But the social climate has deteriorated: the military, civil servants and cocoa farmers have all expressed their dissatisfaction by taking to the streets. It is time for more egalitarian and wider distribution of the wealth created. A new constitution has been adopted and a new national development programme (2016-20) launched with 30,000 billion CFA in investment. Benefitting from diversified agricultural production – cashews, cocoa, coffee, rubber, cotton, palm oil – Côte d'Ivoire also has a fast growing mining sector, with gold production almost doubling since 2011. As a result, the trade balance is in surplus by nearly 12.8% of GDP.

However, the sharp downturn in the world cocoa market in the second half of 2016 does not

Slight recovery by countries previously affected by Ebola

The post-Ebola countries – Guinea, Liberia and Sierra Leone – are slowly recovering from the shock wave caused by the epidemic in 2014. Of these, Guinea posted the strongest recovery with growth of 5.2% in 2016, supported by renewed mining investment, increased agricultural production and improved electricity supply. Although operations at one of the world's largest iron deposits, Mount Simandou, were put on hold even before getting under way, bauxite is booming. In Sierra Leone, the recovery in economic activity and mining led to a 4% growth in 2016, compared to a contraction of 21% in 2015. Liberia's economy, on the other hand, was still in the doldrums with its two main export products – rubber and iron – affected by the price declines in previous years. However, the recent surge in prices along with the recovery in agriculture, services and gold production and the implementation of major projects are expected to revive the economy in 2017. The head of state for the last ten years, Ellen Johnson Sirleaf, will step down in 2017.

Evolution of public debt in % of GDP of the ten most and least indebted countries in 2016

	2010	2015	2016
The 10 most indebted countries in 2016			
Eritrea	143.5	127.1	125.5
Cape Verde	72.4	120.5	119.2
Mozambique	43.3	86.0	112.6
Gambia	69.6	91.6	99.4
Sao Tomé	75.3	82.3	90.8
Angola	44.3	64.2	77.7
Malawi	62.9	82.0	72.1
Congo	22.9	70.6	69.3
Seychelles	81.9	69.0	67.2
Ghana	46.3	70.8	66.0
The 10 least indebted countries in 2016			
Nigeria	9.6	11.5	14.6
Botswana	19.4	17.2	16.9
Equatorial Guinea	7.9	14.0	19.6
DR Congo	31.9	18.9	20.0
Comoros	50.7	25.4	27.1
Swaziland	13.5	17.0	26.9
Mali	25.3	30.9	29.8
Uganda	22.9	34.4	36.5
Burkina Faso	29.3	32.8	36.3
Tanzania	27.3	36.5	38.3
Sub-Saharan Africa	28.1	37.1	41.1
Oil exporting countries	16.1	22.9	27.8
Not including Nigeria	31.0	52.7	59.9
Oil importing countries	36.6	48.9	50.7

(Source: IMF, Global Economic Perspectives, October 2016)

bode well for Côte d'Ivoire and for Ghana. From a deficit situation, the market moved into surplus due in particular to Côte d'Ivoire's production in 2016-17, likely to be the highest ever at 1.9 Mt. As well as the fall in prices, Côte d'Ivoire also had to contend with defaults by bean exporters, amounting to 350,000 tonnes at an estimated cost of more than €300 million. The Minister of Finance has said that as a result he will seek further assistance from the IMF. Although cocoa prices nosedived in 2016, prices of robusta coffee, palm oil, cotton and rubber were all up, with production volumes rising steadily, and cashew nut prices stabilized at a high level. Good news for Côte d'Ivoire, which became the world's largest cashew producer in 2015, overtaking India, although with a very low processing rate.

In Burkina Faso and Mali, the two main export products – cotton and gold – made a major contribution to strong growth of more than 5% in 2016. The mining sector is very dynamic. According to the Minister of mines and quarries, Alla Oumar Dissa, gold production in Burkina Faso notched up a new record 40 tonnes, and could increase further in 2017 with the opening of new mines and the overhaul of the mining code. The same trend is evident in Mali, though the security situation is worrying in the north of the country. Similarly, these top two African cotton producers recorded

Evolution in prices of major commodities exported by Sub-Saharan Africa

		Annual average (January-December)			Monthly Averages		
	Unité	Jan-Dec 2014	Jan-Dec 2015	Jan-Dec 2016	December 2016	January 2017	February 2017
ENERGY							
Coal South Africa	$/mt	72.3	57	64.1	82	85.1	83.7
Oil, average	$/bbl	96.2	50.8	42.8	52.6	53.6	54.4
Natural gas index	2010=100	111.7	73.3	56.6	74.5	70.6	69.1
AGRICULTURE							
Cocoa	$/kg	3.06	3.14	2.89	2.3	2.2	2.03
Coffee Arabica	$/kg	4.42	3.53	3.61	3.57	3.72	3.67
Coffee Robusta	$/kg	2.22	1.94	1.95	2.25	2.39	2.35
Tea, Auctions Monbassa	$/kg	2.05	2.74	2.3	2.51	2.85	2.89
Palm oil	$/mt	821	623	700	788	809	779
Cotton	$/kg	1.83	1.55	1.64	1.75	1.82	1.88
Rubber, RSS3	$/kg	1.95	1.57	1.61	2.23	2.56	2.71
METALS							
Aluminum	$/mt	1 867	1 665	1 604	1 728	1 791	1 861
Copper	$/mt	6 863	5 510	4 868	5 660	5 755	5 941
Iron ore	$/dmt	97	56	58	80	80	89
Nickel	$/mt	16 893	11 863	9 595	10 972	9 971	10 643
Gold	$/toz	1 266	1 161	1 249	1 157	1 192	1 234
Platinum	$/toz	1 384	1 053	987	918	971	1 008

(Source: World Bank Commodities Price Data, March 2, 2017)

Mt = metric tonne; Kg = kg; Dmt = dry tonne; Toz = troy ounce (31.1034768 grams)

very good macroeconomic performance in 2016. In Burkina Faso, which has completely stopped producing GM cotton, output is expected to be 750,000 tonnes in 2016-17, up 29% compared to the previous season. In Mali, cotton production reached a record 645,000 tonnes, an increase of 24%. The Malian Textile Development Company (CMDT), the only operator in the sector, agreed to a 36 billion CFA financing plan for the construction of two new ginning mills and the modernization of three others, thus demonstrating its confidence in the future of cotton. In other West African countries, such as Benin and Côte d'Ivoire, cotton is booming.

With Africa's renewed economic turbulence, Senegal's hitherto sluggish growth has picked up and GNP is now growing at more than 6% per year. The country benefitted from a reduction in its oil bill, but other factors are at work too. The $16 billion Emerging Senegal Plan (PSE), launched in 2014, has begun to bear fruit. Numerous infrastructure projects are under way, the electricity supply has increased, agricultural production has improved and exports have diversified. The budget deficit has narrowed, though the current account has deteriorated due to higher imports of capital goods in response to the country's large investment programme.

East Africa is also playing its game well

Several countries in East Africa are also performing very well economically. This is the case for Ethiopia, Kenya, Rwanda, Tanzania and – a country totally devoid of raw materials – Djibouti. Indeed, this small state, in its strategically important geographical position, with French, US and Chinese military bases located there, has invested heavily in port infrastructure, telecommunications, a free economic zone, and airports. The investment rate is more than 50% of GDP, with China as a key partner. On the other hand, the budget deficit has widened and debt increased. But growth is on target and is expected to rise to 7% in 2017. This growth pattern needs to be used to combat unemployment and improve basic services.

Djibouti's large neighbour Ethiopia, Africa's second most populous country, has for the last ten years (with the exception of 2012) posted annual growth rates close to 10%. As a predominantly agricultural country, the government has invested in infrastructure and energy (nearly 40% of GDP in 2016) and has attracted domestic and foreign investors to develop industry. Manufacturing, led by the textile and leather sectors, has grown at a rate of 25% per year. However, growth slowed down to 6.5% in 2016, weakened by severe drought, the slowdown in the world economy and a tense social climate. For more than a year, Ethiopia has been shaken by major protests throughout the country. For the first time in more than twenty-five years, a nationwide state of emergency was declared in October 2016 for a six-month period.

A modest rebound expected in 2017

What are the prospects for 2017? The IMF expects global growth to pick up in 2017 and especially in 2018, particularly in emerging and developing countries. For sub-Saharan Africa, it expects a rebound in growth to 2.9% in 2017 and 3.7% in 2018. But, as ever, growth rates will vary. Commodity-rich countries will see a modest recovery, countries where resources are scarce will maintain sustained growth. Large emerging countries will recover slowly.

Although growth has fallen sharply, sub-Saharan Africa retains some of the fundamentals it acquired over the past decade and which will be growth drivers for the future. These include growth of the middle class, urbanization, better governance, substantial investment in infrastructure and a youthful population. The consulting firm McKinsey & Company expects household consumption in Africa (including North Africa) to

Drought and high vulnerability to climate conditions

Eastern and Southern Africa were affected by severe drought for the second year running, which plunged millions of people into food insecurity, as a result of a particularly strong El Niño. Figures from the World Food Programme reveal that more than 18 million people were in need of emergency aid in early 2017. As well as a sharp decline in agricultural production, there were also disruptions to water production South Africa, Malawi, Swaziland and Zambia, leading to an increase in tariffs and power cuts that weakened these economies. Food prices also rose. In Malawi, for example, the rate of increase was 172% higher in 2016 than the average of the last five years.

With climate change, to which African is particularly vulnerable, it is essential to develop agriculture that is less sensitive to meteorological impacts, by developing irrigation, adopting resistant seed varieties, promoting research, facilitating access to information and using insurance to cover producers' risks.

Main aggregates by zone or category of countries in 2015/2016

	Growth (%)		Inflation (%)		Overall fiscal balance *		Public debt *	
	2015	2016	2015	2016	2015	2016	2015	2016
Sub-Saharan Africa	3.4	1.4	7.0	11.3	-4.3	-4.6	37.1	41.1
- exclud. Nigeria and South Afric	4.7	3.9	4.0	5.2	-4.8	-4.9	49.5	52.6
Oil exporting countries	2.6	-1.3	8.8	18.3	-4.4	-4.6	22.9	27.8
- excluding Nigeria	2.4	-0.2	8.2	25.8	-5.8	-5.5	52.7	59.9
Petroleum importing countries	3.9	3.4	5.6	6.6	-4.3	-4.4	48.9	50.7
- excluding South Africa	5.4	5.1	6.2	6.7	-4.5	-4.7	48.3	50.2
France ECCAS zone	2.1	1.0	2.2	2.1	-4.6	-5.1	36.1	39.2
France ECOWAS zone 6	6.3	6.3	1.0	1.2	-4.1	-4.3	45.0	46.0
COMESSA	5.9	4.8	6.8	7.1	-4.4	-5.0	47.9	49.5
SADC	2.7	1.6	5.5	9.9	-4.0	-4.4	49.7	53.5

* as% of GDP

(Source: IMF, Regional Economic Outlook, Sub-Saharan Africa (October 2016)

grow by 3.8% a year to $2.1 trillion by 2025, while expenditure by firms will rise to $3.5 trillion, compared to $2.6 trillion in 2015. In addition, manufacturing output could almost double to $930 billion by 2025, three-quarters of it from companies in Africa in response to domestic demand. In addition, this would potentially lead to the creation of 14 million jobs, subject to certain conditions being met.

The recovery, even if moderate, in commodity prices and demand will support the rebound foreseen in 2017. The World Bank foresees a substantial upturn in industrial raw materials and energy during the year. The price of crude oil is likely to stabilize around $55 a barrel, up 29% from 2016. Prices of metals are expected to increase by 11%, although agricultural prices will gain less than 1%. Prices for precious metals, for their part, are expected to fall by 7%.

In terms of regions, the United Nations estimates that East Africa will perform best, with growth of around 6% in 2017 and 2018, driven by domestic markets and investment in infrastructure. West Africa is expected to rebound to 3.1% in 2017 against 0.1% in 2016, thanks to Nigeria's emergence from recession. But if only UEMOA countries are included, the Central Bank of West African States (BCEAO) expects growth of 7% in 2017. Southern Africa, on the other hand, is expected to improve only slightly, with an increase of 1.3 % in 2017 and 2.6% in 2018. The recovery in oil prices should boost Central African economies by 3.7% in 2017.

The international picture could, nevertheless, again affect sub-Saharan Africa in 2017: primarily the structural transformation of the Chinese economy, but also uncertainties as to the possible impacts of the Brexit and the new US presidency. Several trade agreements between the United Kingdom and African countries have been instituted through the European Union and could therefore be potentially called into question. The countries most affected could be the UK's main partners, namely South Africa, Nigeria and Kenya. Similarly, the calling into question of various trade agreements by the Trump administration could affect Africa through, for example, the African Growth Opportunity Act (AGOA). The rise of nationalism, both political and economic, in the developed countries could also affect trade with Africa. It could also result in changes to policies with regard to development assistance and the fundamental issue of migration.

Morocco re-joins the African Union

"It is so good to be back home, after a long absence! It is a good day when you can show your affection for your beloved home! Africa is my continent, and my home." These were the opening words of King Mohammed VI's speech in Addis Ababa at the twenty-eighth summit of the African Union (AU), which marked the return of Morocco to the organization. The kingdom had in 1984 left what was then the Organization of the African Union (OAU). Its return marks the high point of King Mohammed VI's strong economic and diplomatic commitment to Africa. Over the last ten years, he has embarked on no fewer than forty-six African tours, mostly in the countries of West Africa, with which links have been considerably strengthened. In 2016, the King also made diplomatic trips to East Africa, visiting Ethiopia, Rwanda and Tanzania. He also made his first official visit to Nigeria, where the mega-project of the African Atlantic pipeline was inaugurated. Associated with the dynamism of large Moroccan companies such as the OCP group, which specializes in the production and export of phosphate fertilizers, this could bolster, through investment in particular, the intracontinental engines of economic growth in Africa.

Chapter II

Natural resources and geopolitical realities of the African continent

To question the possible interactions between geopolitical realities and natural resources in Africa inevitably raises two interrelated questions: does the geopolitical situation of an African country, whose wealth and development depend on natural resources, improve merely because of the increase in value and/or volume of the latter? Commensurably, is it deteriorating if the trade or the production of these materials undergoes significant disturbances? This poses another question raised here for 2016: are the political and geopolitical affairs and events of the year related to fluctuations in the prices and outputs of African commodities?

2016 saw improvements in the prices of most energy and mining raw materials and the decline of some others. However, this does not seem to have led to visible improvements or significant deterioration of geopolitical situations in Africa, at least in comparison with the previous year. Whether, for example, it involves rubber producers whose prices have improved markedly between 2015 and 2016, or cocoa producers whose prices, conversely, fell sharply in the last few months of the year, African countries continued to benefit from the same opportunities and in geopolitical terms, from the same evils which hinder their emergence. Despite some improvements here and there, the African continent does not seem to see its geopolitical reality radically evolving and many of its states continue to not derive from their natural wealth all the advantages that these potentialities allow. This is neither new nor forgotten, and the realization that such a paradox exists is evident in the organization of the Sixth High Level Forum on Security (Tana Forum) on 22 and 23 April 2017 in Ethiopia. The ambition of such a forum? First, to analyse the paradoxical situation of Africa, which holds 12% of the world's oil reserves, 40% of the world's gold deposits and about 70% of the arable land, but remains largely dependent on the rest of the world in many areas. Secondly, to look at how to design, plan, implement new governance frameworks and set priorities to address the recurring contradictions in the natural resource sector.

In 2016, it is clear that the geopolitical situation in Africa has thus continued to be characterized by four realities: fragmentation and disparities both between subregions and between countries, even between areas of the same country, as in Libya; violence, including terrorism and transnational crime; the strengthening of foreign interests on African soil, and the relentless pursuit of integration and cooperation among the states of the continent. With regard to natural resources, Africa's image remains, in 2016, that of a continent which, despite the availability of wealth, is struggling to see some of its states emerge, in spite of the positive developments others have experienced. Moreover, since the dynamics of commodity markets are not controlled by these African countries, the continent does not seem to hold the destiny of its resources in its hands and appears to be dependent on the good will of its customers.

However, this finding is far from being an assertion of a tight border between geopolitical realities (especially in their domestic repercussions) and fluctuating prices or production of certain raw materials. For a correlation exists and it is especially visible through the social realities. The austerity policies initiated by many governments in African countries following the fall in commodity prices have often resulted in wage cuts, a freeze on certain social investments, or increases in taxes and other contributions. This is the case in some countries, such as Chad, Niger and the Democratic Republic of Congo (DRC), by the outbreak of strikes and demonstrations.

The social and political aspect of commodities is not the only one to consider. One of the first geopolitical fears in Africa can be that of bankruptcy or weakening of the state in certain countries that are totally dependent on raw materials. Some disturbances in this sector can indeed result in economic crises which, depending on their degree of severity, can lead to contestation against the State and its destabilization. This is all the more true when these states are already undermined by other crisis factors, such as a lack of good governance, the rule of law, or contested mechanisms of alternating political power for which there are several examples, such as the context of the presidential elections in the DRC. It is in this perspective that the internal and external political realities of certain African countries and their links with commodity markets in 2016 will be analysed. Their very great diversity makes it obviously difficult to claim exhaustiveness. Only the raw materials whose effects on internal or external policies are most evident and the countries where relations between geopolitical facts and raw materials have been the most noticeable will be mentioned.

Hydrocarbons at the heart of African geopolitical realities

Though the fall in oil prices begun in 2014 ended in February 2016, the rebound observed since then has not made it possible to return to 'pre-crisis' levels. Due in particular to the interdependence between crude oil prices and the dynamism of drilling activity in the United States, the threshold of $100 per barrel now appears very distant and the optimism that prevailed before 2012 is nowhere to be seen among African producers. Not only did they feel the effects of falling prices through a sharp decline in their gross domestic product (GDP), as was the case in Equatorial Guinea, but also in the socio-political (internal level) and geopolitical areas. Among these countries, Nigeria and Libya, two major hydrocarbon producers in Africa, saw their production disrupted by peaks of violence that they could not contain in 2016. The case of Senegal and Mauritania can also be mentioned, who must manage, in spite of their differences, oil resources common to both countries, just like that of Chad which sees increasing social demands in a very particular security context.

Nigeria: The hostility of the population of the Niger Delta and the management of the oil windfall

Nigeria is one of the African examples of the interdependence that may exist between politico-social and economic situations in countries that make the production of hydrocarbons their main,

if not unique, source of income. In 2016, some say that up to 70% of Nigeria oil wells (excluding offshore) could have been temporarily shut down due to insecurity and sabotage. The country whose oil supplies two-thirds of its budgetary revenues and almost all of its export earnings, has thus been doubly penalized by the fall in prices on the one hand and by the reduction in output on the other.

Managing the oil supply, in terms of distribution, social justice and governance, remains globally problematic in Nigeria, mainly in the Niger Delta region. This calls for a very brief reminder of the dispute between the State and the populations of the Niger Delta, a region concerned by the exploitation of oil wells. Oil was discovered in Nigeria in 1956, on the eve of independence obtained in 1960. It is exploited in the Niger Delta where the population believes it does not receive its share of the oil windfall. First, the Movement for the Emancipation of the Niger Delta (MEND) and then the avengers of the Niger Delta have never stopped fighting and even waging war against foreign companies and the State of Nigeria who they regard as "looters of their wealth". Today, the avengers of the delta are demanding that 60% of oil revenues be allocated to local communities. In 2016, the situation in Nigeria remained marked by this crisis, which seems to be worsening: the various attacks by the avengers of the Delta caused crude oil production to drop by 2.2 million barrels a day (mbd) to 1.6 mbd. Between January and June 2016, in particular, it decreased by 21.5% according to OPEC figures. During this period, 1,600 oil pipelines were sabotaged by the population and opposition groups and 50% of these sabotages were the work of the avengers of the delta. The arrival of President Muhammad Buhari, a Muslim from the North, complicated the situation further. The people of the delta, mostly Christian, doubt the new head of state and this especially, since he announced the suspension of reconciliatory measures taken by his Christian predecessor from the South. An agreement signed in 2009 with MEND provided for an allowance of $206 per month to the 30,000 secessionist southern fighters as part of an amnesty and reintegration programme. The new president announced the suspension of the programme as soon as he was invested. By the end of 2016, however, the situation had deteriorated and he nevertheless had to announce the opening of negotiations, but the mistrust of the rebel groups seemed to hinder any progress in this area.

The trend of interference between political events and natural resource management in Nigeria continued during 2016. The combination of lower oil prices and reduced production plunged the country into a crisis amplified by the presence of the terrorist organization Boko Haram, by the multiplication of groups of saboteurs in the regions of production and by other uncertainties such as corruption, the state of health of the president and the proliferation of transnational crime networks. These phenomena are liable to destabilize not only Nigeria but also all neighbouring countries, and it must be acknowledged that the trampling dialogue between the state and the populations of the delta does not position the country very favourably for 2017.

Libya: a country that remains divided

In Libya, a politically unstable country, the control of black gold is crucial for the two competing authorities who each wish to assert their legitimacy. These two authorities are not the only ones here to want to capture this resource. Reinforcing the complexity of the Libyan political and security situation, terrorist groups as well as tribes are involved in the conflict. Some wells or terminals have been regularly attacked by armed groups and sometimes invested by tribes in the name of social demands. This conflictual situation affects the production of oil and delays or even makes impossible any solution to the Libyan crisis. From this point of view, the situation in Libya remains marked by three major realities. The first is the significant decline in oil production since the events of the Arab Spring and 2016 has not reversed this trend. Oil production in Libya was maintained for a few months after the revolution: the volume produced, 1.7 mb/d in 2010, remained stable until May 2012. But since

then, crises, conflicts and successive wars have overcome this production to bring it back down at the beginning of 2016 to only 360,000 bpd and at times in the same year to 250,000 bpd.

The second reality of the Libyan situation is that each faction struggling to gain power in Libya must first ensure control of production sites. Geography amplifies this situation: the large production sites are located in the area known as the 'oil crescent', which, while located in Cyrenaica, is enclosed between the latter and the Tripolitania. It constitutes a zone of demarcation between these two regions and therefore a zone of armed confrontations, as witnessed by the developments at the beginning of 2017. In 2016, this region passed through several hands: from Daech to the Libyan National Army (ANL) from Khalifa Haftar via the Benghazi Defence Brigades (BDB) and the eastern militia. Thus, the oil war that prolongs the Libyan conflict and disrupts any political solution opens the country to terrorist groups on all sides.

The third and last reality is the foreign influences. If the head of the national unity government, Fayez el-Serraj, supported by the international community, his opponent Haftar seems to be getting closer and closer to the Russians. The latter supposedly have even sent advisers to a base located on the borders between Libya and Egypt. Moreover, the offensive carried out by the leader of the national army towards the east mean increased tension that will affect the oil production area. Friction has already begun to turn into actions of war between the two clans and 2017 does not seem to be good news with regard to Libya's geopolitical situation and therefore its oil production.

Mauritania and Senegal: a gas field along the pipeline project proposed by Nigeria and Morocco

Discovered by Kosmos Energy in January 2016, the Grand Tortue-Ahmeyin gas field is located offshore on the maritime border between Mauritania and Senegal. It is presented by this company as the most important field in West Africa, with reserves estimated at 450 billion cubic metres of gas and a planned start-up in 2021. The exploitation of this field requires Implementation of a platform on land or offshore. However, even though an installation on the mainland was the initial option, the absence of an agreement between the two countries has weighed the balance in favour of offshore.

The combined exploitation of this field, which the two countries regard as a priority for their respective development, is a test for co-operation between the two States with a fundamental question: can gas dispel the differences between these two countries and bring them closer together or, conversely, aggravate the old tensions? It should also be recalled that this discovery coincides with the initiative proposed in the same year by Morocco and Nigeria. The platform proposed by Kosmos Energy and BP for the exploitation of the Grand Tortue-Ahmeyin field is, indeed, along the pipeline proposed by these two countries. Gas could then be a geopolitical factor in repatching differences and reconstruction of north-west Africa.

Chad faces falling oil prices and social upheavals

The decline in oil prices undoubtedly affected all African producers. But in Chad, the consequences were particularly visible in 2016. To respond to the financial crisis caused by the fall in prices, the country had to initiate a policy of austerity, which soon led to social unrest due in large part to the non-payment of salaries of civil servants in certain sectors and the reduction of premiums and allowances in others. Moreover, being called upon for the regional fight against terrorism, the country was concentrating on security and defence sector at the expense of health and education. This initiative amplified social discontent in sectors affected by the austerity policy.

It is important here to recall that if oil prices do not improve significantly, a long-lasting disruption of state functioning in Chad would not only

be detrimental to that country, but to all the neighbouring countries, which depend on it for the security of the Lake Chad area. This country plays a major role in the mixed multinational force fighting against the Boko Haram organization in the region, as well as in, Nigeria, Cameroon and Niger.

Agricultural raw materials: different situations and fortunes

Ethiopia: Trouble despite strong macroeconomic performance

Ethiopia dominates coffee production in Africa and has established itself as the fifth largest producer in the world, with 6.5 Mt produced in the 2015-2016 season. The coffee sector is thus of strategic importance for this country, which resulted in the hosting in March 2016 of the Fourth World Coffee Conference attended by the Prime Minister, Hailemariam Dessalegn, as well as Roman Tesfaye, First Lady of the country.

In 2016, the country experienced several problems, not only on its territory but also at its borders with Eritrea. Some internal disturbances seem arise from ethnic causes and used as a pretext, the project of broadening and enlarging the capital at the expense of the rural community in the Addis Ababa region. But the deterioration of the economic and financial situation of certain farmers and agronomists, including coffee producers, was not unrelated to the outbreak of disturbances or the stalemate of the crisis. The government does not only rely on repression and force to overcome such problems, but thinking of adopting economic measures to alleviate social discontent. To this end, the increase in coffee prices proved to be an opportunity for the Ethiopian government. Accordingly, for the 2016-2017 coffee season, the Ethiopian government hopes to reach the $940 million mark in coffee export earnings. This ambition, which involves exporting 241,000 tonnes of coffee out of the 702,000 tonnes planned for 2017, has prompted the government to take favourable measures for producers and, therefore, could help to relieve tensions between themselves and farmers.

Cote d'Ivoire and Ghana: responding to cocoa price reduction to ensure social peace

Encouraged by the surge in cocoa prices on the world market observed between 2004 and 2009 and between 2013 and 2015, Ivorian producers have not skimped on the processes to produce more (they have primarily cleared more land and used more fertilizer). This has not, over the recent period, produced immediate effect. The country experienced two seasons, 2014-2015 and 2015-2016, in which production volumes declined due to unfavourable weather conditions: a particularly harsh Harmattan and an important El Niño phenomenon. This resulted in a production of 1.58 Mt for the 2015-2016 season, according to data from the International Cocoa Organization (ICCO). For the 2016-2017 season, however, Ivorian production could reach a record 1.9 Mt. After two difficult seasons, Ghana is expected to reach a production volume of 800,000 tonnes, enough to drive prices down after the surge that saw a tonne of beans reach more than $3,345 in December 2015 at official ICCO rates. Over 2016, cocoa lost 22% of its value on the London market and 34% on that of New York. Obviously, this fall was not without consequence for neighbouring Ghana.

In both of these countries, state authorities set the price of the bean at the beginning of the year, which protects producers from declines in the international market, at least for the current year. In Côte d'Ivoire, the government increased the planter's guaranteed price to CFAF 1,100 per kilogram (€1.76 per kilogram) for the main season 2016-2017, an increase of 10% despite the decline in prices. However, in the opinion of several experts, the two countries cannot continue this policy if prices continue to fall in 2017, which is precisely what was observed in January and February. It is therefore only possible to question the socio-political consequences that would follow from a fall in these guaranteed prices, even though cocoa is essential to the economic and social sphere in these two countries: cocoa represents 20% of Ivorian GDP, more than 50% of export earnings and, above all, two thirds of the population's employment and

income. In Ghana, half of the population lives, directly or indirectly, off cocoa.

Political turmoil and weak institutions deprive some states of part of the income from their resources

Instability in the DRC

The Democratic Republic of the Congo (DRC) is home to 47% of the world's cobalt reserves, 30% of the diamond reserves, 10% of the copper, very large quantities of gold, as well as manganese and coltan. However, the DRC does not appear to have benefited either from the wealth of its resources or from the rebound in prices observed on most of the resources it exploits. The DRC proved to be in 2016, in an economically, politically and socially degraded situation. Three factors contribute to this reality: firstly, the instability of the eastern half of the country, aggravated by interference from neighbouring countries, such as Uganda and especially Rwanda, placing a risk of fragmentation on the DRC. Secondly, the closure of sites or suspension of copper-related activities of the Anglo-Swiss giant Glencore, leading to the loss of more than 13,000 jobs and social movements threatening peace in the country. Lastly, the end of the presidential term for Joseph Kabila and the risks of instability that new elections could generate for 2017. The DRC sees these factors compounding each other and placing the country in a vicious circle. In this context, it is unclear whether the improvement in the country's economic performance could lead to stability for the political situation or, conversely, the resolution of political tensions as a prerequisite for sustainable economic recovery.

Whatever the answer—which is probably not binary—to this question, it is clear that the increases in commodity prices observed since the beginning of 2016 do not seem to give any indication of a resolution for the general situation in the DRC, all the more so as the turmoil in the country can be aggravated by a silent crisis with its Zambian neighbour. Copper, which is a vital resource for both the DRC and Zambia, is also at the centre of the strategic stakes between the two countries. Certainly, the coolness in relations between the two neighbours has not yet become frozen, but the behaviour of President Joseph Kabila towards the Zambian authorities shows that although the conflict may not be apparent, it presumably exists: President Kabila does not travel to Zambia on official or private visits, nor has he ever received the Zambian president. The roots of these tensions in relations between the two countries are to be found in the political support that Zambia gives to Moses Katumbi, a fierce opponent of President Joseph Kabila. This support is due to the fact that Katumbi is a shareholder in one of the largest mines in Zambia, Kankola-Copper Mines (KCM).

Better control of artisanal exploitation of mineral resources in West Africa

A recent report entitled "The West African El Dorado: Mapping the Illicit Trade of Gold in Côte d'Ivoire, Mali and Burkina Faso" and published by the Partnership Africa Canada (PAC), highlights the lack of control in the aforementioned countries of activity in sectors that are as important as artisanal gold. This lack of coherent institutional structures and policies is making it impossible for the countries concerned to plan, monitor and, therefore, take advantage of the economic benefits of the sector. As seen: in 2013 and 2014, the United Arab Emirates reported importing 49.6 tonnes and 59.9 tonnes respectively from Mali, while Mali reported only 40 tonnes of gold in 2013 and 45.8 tonnes in 2014. According to the report, the artisanal gold sector employs about 3 million artisanal miners in Côte d'Ivoire, Mali and Burkina Faso. Their production remains unknown, thus depriving these States of an important source of income. However, the damage is not only a ‘simple’ fiscal loss: it goes beyond to constitute a threat to political stability, due to anarchy, the proliferation of transnational crime and a potential for terrorist financing. It should be remembered that these three countries suffered from attacks by Al-Qaeda-affiliated groups in the Islamic Maghreb (AQIM) between the end of 2015 and the beginning of 2016. This also applies to the Great Lakes

region in East Africa. The artisanal mining sector remains largely informal and subject to violence and widespread corruption. Since gold can rarely be tracked or traced, it can be an ideal way to finance crime and armed groups.

Foreign interests in Africa

The Chinese presence in Africa has become militarized

For some years now, the principle of Chinese intervention in Africa, which relies mainly on what is termed 'soft power', has begun to show signs of change towards a decidedly 'hard' aspect. Faced with the security hazards that are undermining certain countries of the continent, China is thus obliged, in order to defend its interests in Africa, to ensure a more secure presence. In August 2015, a car bomb attack on a hotel in Mogadishu claimed by the Somali Islamists Shebbab, killed 13 people, including a Chinese diplomat and a Somali journalist. Two Chinese diplomatic staff were also injured. In November 2015, an attack by jihadists against the Radisson Blu Hotel in Bamako killed 21 people, including three Chinese nationals. These events testify to China's entry into the club of foreign investors who are victims of terrorism, which explains the changes in the Chinese commitment that emerged in 2016: an anti-terrorism law adopted by the Standing Committee of the National Congress of People in December 2015 and entered into force in 2016 thus authorizing the Chinese military to conduct operations abroad, especially in Africa and the Middle East. In the context of the armed struggle with the United States for the control of trade routes in the Red Sea and the Indian Ocean, China has also started operating from its military base in Djibouti with the arrival of some eight hundred sailors. In the Central African Republic (CAR), Chinese troops are also expected to secure the prospecting, exploration and petroleum exploitation operations in Birao and Ndélé in the north of the country.

The importance of African natural resources for China and the hazards that security issues pose for investments on the continent is pushing China to assert a more militarized presence with a question of geopolitical importance in the background: in the long term, is this transition likely to change the relations that Beijing has with the other powers present in Africa?

Niger's Uranium: between economics and geopolitics for France

Faced with the difficulties of negotiating with Niger and following the security situation in the country, the French company Areva has begun a strategy of diversifying its sources of supply, particularly in Mongolia. France, however, continues to officially invest in Niger in terms of security, due to terrorism and a lack of safety in the region, a reason that some Malian soldiers and a segment of the population seem not to believe. Part of Nigerian public opinion seems to think that the French military presence is not only aimed at stabilizing the region for the good of the population, but also its justification in the desire to secure, for economic reasons, the country from which it continues to derive a significant share of the uranium used for its production of energy and especially of electricity. With a production of more than 2,500 tonnes, Niger remains irreplaceable, despite Areva's efforts in diversification. The second justification for the French presence could also come, according to some, from a desire to respond to the 'competition' of new actors on African soil. China's military presence is increasingly noticed in the CAR, and could be the beginning of China's assistance to secure its territory, perhaps with the start for the CAR, of a policy of diversification of its bilateral defence agreements.

And to conclude

In conclusion, it is important to recall, through the examples mentioned in a chapter which does not claim to be exhaustive, that there is inherently interference between natural resources, in particular raw materials, and geopolitical realities in 2016, even if they often appear very indirectly. The movements in terms of production or fluctua-

tions in commodity prices that occurred between the end of 2015 and 2016 cannot, however, have immediate and noticeable effects in 2016. On the other hand, they make it possible to consider three trends in the medium term. The two African oil giants, Libya and Nigeria, cannot rely primarily on their hydrocarbon resources to ensure economic growth in 2017. Internal struggles for the former, armed rebellion and terrorism for the latter remain unresolved crises that will prevent them from taking full advantage of their wealth. Political transitions, particularly the 2017 elections, risk, in the second place, instability in some African countries which would be aggravated by potential economic crises following a weakening of world prices and/or African production of raw materials. The competition over African commodities and the security threats facing the continent can ultimately lead to a transformation of the nature of foreign presence in Africa. The trend towards the militarization of the Chinese presence could serve in the future as a model for other countries, such as India and Turkey.

Chapter III

Multilateral financing, infrastructure expenditures and investment policies in the commodities sector in Africa

The commodities sector had a favourable economic context starting in 2007, with an uptrend in commodities prices, low interest rates globally and yield-seeking investors. This context supported investment in the sector and facilitated access to financing, particularly in Africa. As of 2012 however, lower commodity prices mechanically weighed against debt and dampened hopes of a yield for investors. In addition, rising longer term rates in the United States, and the general increase in risk aversion on behalf of investors intervened. Risk aversion was further accentuated by apprehension for the mining sector and greenfield projects in particular (those without a pre-existing operation), which contributed to affecting the financing of the commodities sector as a whole.

In Africa, the commodities sector and the financing allocated to it also suffered from a few factors that were specific to the continent. First of all, was the perception of political and regulatory risk and a business environment that remains mixed overall—as seen in the 2015 Fraser Institute report on the mining sector. The index showing the perception of governmental political risk in this report shows African countries with significant mining potential such as South Africa, the Democratic Republic of the Congo (DRC) and Angola ranked as 78th, 87th and 92nd respectively out of a total of 109 countries, altering their attractiveness for investments. The evolution in Chinese investment methods is the second factor having weighed on the continent. Indeed, China, after having assured its own natural resource supplies has now adopted "a more exploratory approach with the aim of creating a manufacturing centre in Africa" according to the African Development Bank (AfBD).

Are we witnessing a drying up of financing in the African commodities sector? While it is difficult to access data that is reliable and complete enough to answer with precise

figures, it is nonetheless possible to confirm that the situation evident since 2012 only constitutes a slowdown of the flow in financing, which, though considerable, represents a tightened supply but one that still allows solid projects to raise needed funds. The more selective context in which the sector has evolved in the last few years has pushed finance professionals to develop less traditional approaches that are more project specific, whether by adapting to the type of commodity to be financed, the phase of the project development or the jurisdiction in which the financing takes place.

Multiple players

It is important to recall that it is debt, as opposed to equity, that assures the large majority of financing needed for the commodity sector in Africa. Creditors active in the sector have been first of all commercial banks, primarily European ones (BNP Paribas, Société Générale, HSBC, Barclays and others) as well as South African banks (Nedbank) that have significant expertise in the oil and mining sector and a historical presence throughout Africa. The drop in commodity prices that started in 2012 pushed several new actors to give up on the market and the continent. These commercial banks have shown over several years a greater selectivity in the study of proposals that been evident in more advanced technical and business analyses. Loans granted are generally of an average maturity (up to eight years) and take the form of traditional loans or structured finance for project finance operations. International financial institutions that have played and continue to play an important role in the financing of major commodity projects in Africa are also to be found among creditors. By offering longer maturities that commercial banks are unable to match, as well as greater flexibility for repayments and, above all, important political support, these institutions allow many projects to become viable which also leads to the securing of financing from yet other creditors. The International Financial Corporation (IFC), the institution of the World Bank Group dedicated to the private sector, is undoubtedly the international institution that is the most active in the commodities sector. Other institutions (AfDB, the Islamic Development Bank, the *Agence Française de Développement*, etc.) more often work specifically on project financing for infrastructure or energy. Export credit agencies such as the US Eximbank should also be mentioned, these banks finance the purchase of equipment or services from businesses in their countries. In the same vein, a certain number of large equipment manufacturers such as Caterpillar and General Electric have established financing subsidiaries allowing their clients, African or not, to finance the purchase of their equipment through loans. Loans can also be accessed through intermediaries such as bond markets that permit the raising of a significant amount of funds directly through institutional investors in the form of negotiable instruments, however, this option is nonetheless primarily reserved for established companies. A few innovative financing tools developed in the last few years by specialised actors must also be mentioned, while they have complex structures they have been able to break into the markets due to the downturn in more traditional loans. This type of commodity-linked financing includes Reserve Based Lending (RBL), which are structured loans secured by reserves. These loans are used especially for the production launch of gas and oil operations or for a royalty system established by a fund. One example is BlackRock in gold mining in which the mining company pays production-based royalties to the fund in return for a loan.

Multiple financing arrangements

Since a debt must be repaid, and the repayment capacity of a commodity project is highly correlated to the selling price of the commodity in question, any reduction of world market prices mechanically reduces the debt capacity of firms, which explains the ebb and flow of debt in the sector over the past four years.

Equity is the second source of financing after debt. More sensitive to the riskier economic context and with greater inherent risk, the main sources of funds are: (1) States—investing directly or through public institutions, alone or with partners, in companies or in projects depending on their fiscal latitude; (2) the large multinationals in the sector (such as Rio Tinto, Vale, Anglo American and Glencore) that develop many projects directly from their own equity; (3) the IFC—in recent years it has expanded its scope to take minority shareholdings in the sector; and (4) listed equity markets—making it possible to use public savings. The stock exchanges in Toronto (Canada), Sydney (Australia) and London (United Kingdom) are the preferred places for raw material producers, enabling them to raise the capital needed to finance their activities. However, when commodity prices are lower, it becomes more difficult for companies to convince investors to participate in IPOs or capital increases. In recent years, the amounts raised by African companies via this channel are therefore not very significant. Lastly (5) private capital—substantial funds are available from private equity funds or family offices managing large fortunes, but investments are slow to materialise from this channel. This private capital does, however, have the advantage of a medium to long-term investment horizon (five to ten years) that is consistent with the requirements and investment cycle of the commodities sector.

China, the banker for African commodities?

It is impossible to complete this panorama of commodity-financing protagonists without mentioning the major role played by China, whose interest in African natural resources cannot be ignored. According to the *Mining Journal*, the Middle Kingdom invested $73 billion between 2000 and 2011 in projects tied to natural resources in Africa including $15 billion in 2011 alone, making the country one of the major investors in the sector (though the lack of official data makes any independent verification difficult). These Chinese investments in Africa take different forms: loans, mergers and acquisitions, joint ventures, and direct investment in infrastructure projects.

Concerning loans, a study by *China Africa Research Initiative* published in April 2016 showed that of $86.3 billion loaned between 2000 and 2014 by Chinese actors (first and foremost the

The stakes of project finance?

Project finance is a technique of structured finance often used in the framework of large-scale projects whose costs are often above several hundred million US dollars: oil production or mining, oil refining, the purchase of gas tankers, construction of power plants, civil engineering structures, etc.

The financing for these projects is centred not on the borrower (the company as a whole) but instead on a clearly defined project whose cash flows will ensure reimbursement and whose assets will be able to act as a guarantee. The possibility that creditors have to turn to the project promoter (a shareholder or parent company) in case of default is therefore limited. Hence, the structuring of such financing requires upfront in-depth due diligence and solid legal contracts. The time horizon of financing is generally for the long term in order to allow for the development of the project and the launch of operations.

China Eximbank and China Development Bank) to states and African public companies, with 10% (close to $9 billion) going to the mining sector. According to the study, the Angolan oil group Sonangol was the sole recipient of $7 billion in loans with the other beneficiaries being the Sicomines project (copper and cobalt) in the DRC, a gold mine in Côte d'Ivoire, another in Eritrea and a uranium mine in Niger.

For mergers and acquisitions, a recent transaction by a Chinese group cannot go unmentioned with the acquisition of 16.5% of the Tonkili project (iron ore in Sierra Leone) by Tewoo for close to $1 billion. This transaction is thought to be able to guarantee the supply of the Chinese iron ore market for two decades!

A difficult year in 2016

Among bankers, investors and other market participants attempting to take stock of 2016, the overriding feeling was it was not a boom year in Africa for financing of the commodities sector in a context of continued low commodity prices.

The analysis of one indicator—the evolution of mining operation budgets—whose 2016 numbers have just been published by S&P, allows one to take the pulse of the economic climate. According to this ratings agency, budgets for exploration in Africa dropped by 24% in 2016 to reach just $916 million. Africa now represents only 13% of the world mining exploration budget, in third place after Latin America (28%) and Canada (14%) and on a par with Australia, while Africa had been in second place in 2012 with 20% of the world's budget. Like in previous years, gold remains the highest drawing sector with more than half of investments. On the African continent, the DRC, South Africa, Burkina Faso and Mali in 2016 received the largest portions of exploration budgets.

Sovereign debt: fewer issues and lower ratings

The second general indicator that corroborates this sentiment of lifelessness is the activity of African states on international sovereign debt markets—indeed many state budgets strongly

Sovereign bond issues for African countries in 2015 and 2016

Date	Country	Amount (in millions of dollars)	Coupon (%)	Maturity
12/10/2016	South Africa	2 000	4,300	12 years
12/10/2016	South Africa	1 000	5,000	30 years
15/09/2016	Ghana	750	9,250	6 years
14/04/2016	South Africa	1 250	4,875	10 years
06/04/2016	Mozambique	727	10,500	7 years
19/11/2015	Cameroon	750	9,500	10 years
12/11/2015	Angola	1 500	9,500	10 years
29/10/2015	Namibia	750	5,250	10 years
14/10/2015	Ghana	1 000	10,750	15 years
30/07/2015	Zambia	1 250	8,970	12 years
16/06/2015	Gabon	500	6,950	10 years
11/06/2015	Egypt	1 500	5,875	10 years
03/03/2015	Côte d'Ivoire	1 000	6,375	13 years
30/01/2015	Tunisia	1 000	5,750	10 years

Sources: BNP Paribas, UBS
Excluding private placement of $4 billion by Egypt in November 2016

depend on the evolution of commodity prices. Three striking facts can be noted on this subject for 2016. The first was the lowering of sovereign ratings by rating agencies for several countries that export raw materials due to the negative impact of lower prices on their fiscal balances. Moody's thus announced in May 2016 that they would lower ratings for Nigeria, Angola, Gabon, Niger and the Republic of Congo due to the decline in oil prices—following the example of S&P who had lowered ratings for these countries in 2015. Zambia suffered from a drop in copper prices and was sanctioned by S&P in March then by Moody's in April. The second major event of 2016 concerned the renewable resource sector: Ematum—a Mozambican public company in the tuna-fishing industry whose debt was guaranteed by the state—defaulted in March 2016 causing the immediate lowering of the sovereign rating of the country by S&P and Moody's. In this unenthusiastic context, the third major element was that only three African countries (South Africa, Ghana and Mozambique) borrowed on the international bond markets in 2016 to raise $5.7 billion, while in 2015 nine countries had raised $9.2 billion.

And what about activity recorded in 2016 for debt or equity destined for the financing of projects or companies in the commodities sector?

Corporate debt: no international issue in 2016 and just one significant national issue

The accessing of national and international bond markets offers companies the advantage of raising significant sums rapidly and with relatively few constraints and with longer maturities—at times up to thirty years. These disintermediated financial markets are nonetheless reserved for companies that are sufficiently mature, with solid cash flows, talented in financial communication and whose financing needs are significant ($200 million being considered a minimum for an international bond loan). Candidates for bond financing are not therefore legion among African companies in the commodities sector—in particular when these take place on New York, London or Frankfurt markets.

The year 2016 thus saw no international bond issuance by an African company in the commodities sector, while three operations were successfully concluded in 2015: the Moroccan OCP Group (phosphates) had raised $1 billion over ten years from American and European institutional investors, the South African company, Petra Diamonds with $300 million and Kosmos Energy, active in oil exploration in Northwest Africa raised $225 million.

For domestic actions, the year 2016 was primarily marked by the OCP Group issue of MAD 5 billion (approximately $500 million) on its domestic market, fundraising that should give the Moroccan group the means to continue the implementation of its development plan. The other issues in the year were more modest, the second in terms of volume was realised by Northam, a South African platinum producer, raising just 425 million South African rand or less than $30 million in two transactions.

Multilateral institutions: a marked fall in 2016

As for bond markets, the year 2016 was also less active for multilateral institutions than 2015, in particular the IFC, who is normally very present in the sector. Indeed, while 2015 had allowed the IFC to announce the financing of seven projects in the oil and mining sectors for a total commitment of $570 million, no operation was able to take place in 2016. On the contrary, the Washington institution that had worked with the Anglo-Australian Rio Tinto and the Chinese Chinalco on the Guinean Simandou mine project, the third world iron reserve, announced its withdrawal in October 2016, a decision justified by current market conditions that were insufficient to guarantee the project's profitability.

One must look to the fertiliser sector—and more precisely to infrastructure related to this sector—to find an IFC-led operation in 2016. In March, the institution announced the granting of a $52.5 million loan for the construction of a port terminal in Port Harcourt (Nigeria) for a total cost of

Investments announced by the IFC in the commodities sector in Africa in 2015

Announce -ment date	Company Name	Project name	Commodity	Country	Total project cost	Investment by the IFC	Nature
20 Aprill	Amara Mining	Yaoure	Gold	Côte d'Ivoire	$225 million	£6.5 million	Equity
11 May	Petra Diamonds	Cullinam	Diamonds	South Africa	$280 million	$70 million	Debt
22 May	Vitol/ENI/GNPC	Sankofa	Oil & gas	Ghana	$7.3 billion	$235 million	Debt
24 June	Roxgold	Yaramoko	Gold	Burkina Faso	$130 million	$23.6 million	Equity
31 August	Africa Oil	n.a.	Oil & gas	Kenya	$140 million	$50 million	Equity
22 October	Tiger Resources Ltd	Kipoi	Copper	DRC	$162 million	$40 million	Debt
22 October	Tiger Resources Ltd	Kipoi	Copper	DRC	$162 million	$5 million	Equity
24 November	Compagnie des Bauxites de Guinée	Sangaredi	Bauxite	Guinea	$752 million	$135 million	Debt

Source: IFC

$152 million, tied to the construction of a nitrogen fertiliser factory by the Indorama Eleme group.

Banking debt: the basis for a recovery

Bank financing make up the principal source of funds for the African commodity sector, but is difficult to measure precisely due to the confidentiality that surrounds a good number of operations—as opposed to market operations that are made public. However, market operators are numerous to mention a rebound in banking activity in 2016 compared to the low points of 2014 and 2015.

Several significant operations in the form of classic loans or project financing were thus realised in 2016 in the mining sector. In the first category, two loans for South African gold-mining companies can be mentioned: the first for $1.29 billion was granted to Gold Fields Ltd. by a consortium of four British and American banks (Scotia Bank, CIBC, JP Morgan and Barclays) with the aim of refinancing existing debt arriving at maturity. The second for 8 billion rand ($550 million) in three instalments of five to seven years was granted to Exxaro by Barclays and a group of South African banks. BNP Paribas, Barclays and Société Générale also raised $1.8 billion for First Quantum Minerals, a diversified mining group based in Canada that works in copper, nickel and gold, and for which Africa represents more than half of the revenues of their global portfolio. Other than the amounts at play, an important element must be retained in the reading of press releases announcing these different loans: the weakening of the banking covenant, these safeguard clauses that protect interests of the bank, mainly to limit the level of indebtedness of the borrowers. This change is a sign that banks are adapting to the economic circumstances of the sector, but also to attest to the fiscal health and future improvement of businesses in the sector.

Who finances infrastructure in Africa?

The Infrastructure Consortium for Africa (ICA) annual reports detail financing commitments for African infrastructure in four sectors: energy, transportation, water and ICT. The table below states commitments above $1 billion, China clearly appears as the top external contributor for the 2013-2015 period:

In billions of $	2013	2014	2015
China	13,4	3,1	20,9
Europe	7,4	6,4	7,1
USA	7,0	n.d.	n.d.
World Bank	4,5	6,5	6,0
African Development Bank	3,6	3,6	4,2
The Coordination Group Member Institutions	3,3	3,5	4,4
Japan	1,5	2,1	1,8
African governments	n.d.	34,5	28,4
Private sector	8,8	2,9	7,4
Total	**99,6**	**74,5**	**83,5**

Sources: ICA, African Development Bank

In the second category, that of project financing, $823 million were granted by a consortium of BNP Paribas, Société Générale and Natixis to the *Compagnie des Bauxites de Guinée* (CBG) in addition to the $135 million loan announced by the IFC in 2015 mentioned above. The Australian bank Macquarie had also granted a $120 million loan to the Canadian company SEMAFO that is developing a gold mine in Natougou, Burkina Faso.

In the oil sector, five operations that were a priori concluded in 2016 for a total of $5.7 billion and are summarised in the table below:

Private Equity: reduced activities in 2016 but significant potential

While private equity funds seemed to have had significant liquidities available to be invested in the African mining sector for several years, in 2016 no operation took place in the sector according to the African Private Equity and Venture Capital Association. Nonetheless the South African fund, Capitalworks Private Equity, announced its willingness to acquire for $70 million the Petmin Company that operates an anthracite mine thereby taking it off the Johannesburg stock market where it is currently listed.

Beyond the mining sector strictly speaking, 2016 saw the announcement of two important operations, the first in oil exploration and the second in fertiliser production. The Carlyle Fund, which had $2.5 billion available through the intermediary of its energy branch, thus announced in May 2016 the acquisition of a significant stake in Mazarine Energy, whose headquarters is in The Hague but owns oil exploration permits in Tunisia. Carlyle also announced the availability of $500 million for Mazarine to allow the company to realise acquisitions for oil exploration and production in Africa and the Mediterranean Sea. The

second major operation of 2016 was the taking of a minority share by the Middle Eastern fund Abraaj in a nitrogen fertiliser production factory in Port Harcourt, Nigeria for an unannounced price. This factory has a capacity of 1.4 Mt and belongs to the Indorama group. The operation took place after IFC financing was announced for the port linked to this factory.

Stock markets: two IPOs and several capital increases—tell-tale signs of a new cycle?

After an unimpressive 2015, 2016 marked a (timid) return of stock market IPOs for junior mining companies operating in Africa (junior mining companies are mid-sized companies specialising in the exploration and development of new mines whose naturally risky operations are financed by their own equity). The bells of the Sydney stock market, one of the top world financial markets for commodities, thus rang on 18 March 2016 for the first time for Soon Mining, a company developing a gold mine in Ghana and on 8 June 2016 for Graphex Mining that operates in graphite in Tanzania, allowing the two companies to raise close to $9 million in equity to finance the start of their operations.

Globally, there were ten stock market IPOs in 2016, compared to just six in 2015. If the amounts raised remain insignificant, this return of companies to the stock market nonetheless reveals a renewed interest by investors in the mining sector in general and for projects developing new mines in particular and can thus be seen as a sign of a much expected recovery in the cycle.

Another indicator confirming this analysis was the use of capital-increase operations that also

Five operations in the oil sector that were 'a priori' concluded in 2016

Date of signature	Project name	Country	Amount (in $ millions)	Borrower	Description of the project
27 Apr, 2016	Neconde OML 42 Oil Field	Nigeria	640	Neconde Energy Ltd	Refinancing of the development project of the OML 42 field in the Niger Delta
20 May, 2016	Anguille Field Phase III	Gabon	340	Total Gabon	Project refinancing for development of the Anguille offshore field (30,000 b/d)
12 Aug, 2016	Mozambique Rovuma Bharat PetroResources	Mozambique	2 644	Bharat PetroResources Ltd (Mozambique)	Development of the Rozuma Field
16 Aug, 2016	Pan Ocean OML 24 Oil Field	Nigeria	750	Newcross Exploration & Production Ltd	Refinancing of acquisition of 45% of the OML 24 onshore field (25,000 b/d)
14 Dec,2016	Offshore Cape Three Point	Ghana	1,350	Vitol Upstream Ghana Ltd	Development of Cape Three Point offshore field (80,000 b/d in 2019)

Source: Dealogic

IPOs in the Mining Sector in 2015 and 2016

Date of IPO on the stock market	Company	Country of activity	Place of IPO	Amount raised (in millions of $)
21 Dec, 2016	Horizon Gold	Australia	Sydney	10.87
19 Dec, 2016	Technology Metals Australia	Australia	Sydney	2.90
16 Dec, 2016	Kalium Lakes	Australia	Sydney	4.37
10 Oct, 2016	Great Boulder Resources	Australia	Sydney	4.68
7 Sep, 2016	Egan Street Resources	Australia	Sydney	0.45
26 Aug 2016	Berkut Minerals	Australia	Sydney	2.68
27 Jun, 2016	Lithium Power International	South America	Sydney and Australia	6.02
8 Jun, 2016	Graphex Mining	Tanzania	Sydney	5.23
18 Mar, 2016	Soon Mining	Ghana	Sydney	3.44
4 Mar, 2016	Tibet Huayu Mining	China	Shanghai	57.38
21 Dec 2015	Alt Resources	Australia	Sydney	1.57
13 Nov, 2015	Graphitecorp	Australia	Sydney	1.42
24 Jul, 2015	NQ Minerals	Australia	London	1.55
7 Jul, 2015	TMAC Resources	Canada	Toronto	105.79
11 Jun, 2015	Merdeka Copper Gold	Indonesia	Jakarta	63.08
12 Jan, 2015	Western Region Gold	China	Shanghai	72.52

Source: SNL Metals & Mining (based on S&P Global Market Intelligence)

showed signs of a recovery in 2016. Two operations must be mentioned in particular: in March Gold Fields Ltd., listed in New York and Johannesburg, raised the equivalent of $150 million and in April the SEMAFO company, which operates several gold mines in Burkina Faso, succeeded in raising CAD 115 million (approximately $90 million) on the Toronto stock exchange in a bought-deal operation by the BMO Capital Bank. These two companies were also active on debt markets, which shows the complementarity of debt and equity financing to maintain balance sheets and to reassure creditors.

In addition to these two operations, a few other small transactions often reserved for institutional lenders also took place in 2016, such as, the capital increase of A$ 28 million (approximately $21 million) realised by Avenira that is developing the Baobab phosphate project in Senegal or that of August 2016 when the JP Morgan business bank entered into the capital of Danakali that is developing a potash project in Eritrea for $4.3 million.

Chinese mega-deal in copper and cobalt

If the changes in the economic context in general and that of commodity markets in particular that started in 2012 have undoubtedly brought about a slowdown in Chinese mining investments in Africa as well as an evolution in their methods (as mentioned above), China nonetheless remains very present, as the country aims to secure the natural resource supply necessary for its industries.

Mega-acquisitions returned in 2016 with the acquisition by two Chinese groups, China

Molybdenum and Bohai Industries of an 80% stake in the Tenke mine located in the DRC for close to $4 billion. This mine has one of the most important world reserves of copper (3.8 Mt of reserves) and cobalt (1.3 Mt of reserves).

China also maintained its involvement in the financing of African infrastructure as seen in the announcement on 12 September 2016 by the China Overseas Infrastructure Development and Investment Corporation Ltd. in partnership with the World Bank with an initial capital of $500 million for infrastructure projects. Also among the major announcements of 2016 was that of the railway that will link the Tanzanian port of Bagmoyo to Zambia, Malawi and the DRC on the one hand and Rwanda and Burundi on the other.

Conclusion: a modest year but with signs of hope

Marked by continuing low commodity prices and high selectivity on the part of international funders, 2016 was not an excellent year in terms of financing with the number of transactions and volumes raised still much below the summits reached in the early 2010s.

However, with capital still abundant, good projects that are solidly built and financially viable never fail in their search for funds. A few encouraging signs also appeared in 2016: the recovery of bank financing and the return of a few companies to the stock markets—a possible precursor for an upcoming recovery in the cycle.

Some experts such as Nick Martin of Northcott Capital who spoke at a mining sector conference in Perth, Australia in September 2016, admit that they see 'a light at the end of the tunnel'. With more than 30% of world mining resources, Africa still remains attractive for investors and should remain a choice destination for capital.

Chapter IV

Organisation of world trade, food security and African agricultural policy

For over a decade, African governments have been reinvesting in agriculture to improve food security, reduce poverty and create jobs, with promising but still very inadequate results.

The great drought that has been ravaging East Africa since late 2016 is bringing back bad memories, such as the famines of the 1970s and 1980s in Ethiopia and others that are more recent. The recurring images of humanitarian operations financed by the international community in poverty-stricken territories ravaged by armed conflict conjure up a continent that is mired in underdevelopment, and chronically unable to nourish its own population.

But the reality is not that simple. If one fifth of Africans are hungry, the continent has nevertheless made real progress in the fight against food insecurity thanks to strong economic growth rates in the last fifteen years that have allowed for higher incomes and lower poverty rates. Agricultural policies launched in the early 2000s are also starting to bear fruit. Urged forward by the African Union (AU), governments have shown their willingness to reinvest in agriculture—a forgotten domain—a trend that has led to the launching of regional and national agricultural development plans with significant financing, precise objectives and regular evaluations. A new element has been the massive investments by large corporations in agri-food subsidiaries in Africa aiming to meet future high demand. Results are uneven and not up to the challenges that need to be met—including a demographic explosion that requires a 60% increase in African agricultural output by 2025 according to the African Union. Efforts will furthermore have to overcome difficulties posed by climate change, which will weigh

on yields. Nevertheless, a dynamic is at work. The main questions therefore are the effectiveness of the transformations under way, as well as the role that states can play to make the most of trade globalisation and promote inclusive and sustainable growth.

The willingness of governments to reinvest in agriculture

At the turn of the 21st century, African agriculture was more or less abandoned with the exception of export-oriented sectors that contributed vital funds to state budgets. City dwellers could be fed by the world's surplus that was purchased at rock bottom prices from rich countries on international markets. Why be concerned about rural peasants? But agriculture employs about 60% of the active population and accounts for 20% of gross domestic product (GDP). A renewed awareness on the part of African governments, catalysed by soaring international commodity prices, has led to a renewal of a political agenda in favour of the agriculture sector.

An emerging awareness

At the time of the creation of the African Union (AU) in 2002, sub-Saharan Africa was coming out of two 'lost decades' (1975-1995) that ended with a decline in per capita GDP and a strong drop in public expenditures due to the Structural Adjustment Programmes (SAPs) set up under the auspices of the International Monetary Fund (IMF) and the World Bank. The AU charged the New Partnership for Africa's Development (NEPAD) with the task of developing a large-scale development plan to define economic and social priorities for the continent and to accelerate its integration into the world economy. The conclusion is clear: African agriculture is going through a deep crisis, evident in the continued increase in numbers of undernourished inhabitants, growth in food-product imports and a drop in Africa's share of world agricultural exports. Agricultural production must therefore increase significantly to fight hunger, and profit from the opportunities on world markets.

Soaring food prices and hunger riots in 2007-2008 strengthened the determination of African governments to reinvest in agriculture. Ensuring food security in the world once again became essential. The World Bank confirmed this in a 2008 report: agriculture is a critical tool that can assist in satisfying the Millennial Development Goals (MDG) adopted by the United Nations, aiming to reduce poverty and hunger by half by 2015. African governments had to end their 'urban bias' that led to the sacrifice of local production to low-priced imports, by taking the appropriate measures to improve the performance of farmers.

The renewal of the political agenda

The establishment of the Comprehensive Africa Agriculture Development Programme (CAADP), the agricultural component of NEPAD adopted by the AU during the Maputo Summit in Mozambique in 2003 was the founding act in the establishment of a political plan. In the Maputo Declaration, Heads of State and Government committed to allocating at least 10% of annual public expenditures to agricultural and rural development. The aim was to reverse the downward trend of investments in agriculture and to reach at least 6% annual growth in agricultural GDP.

The CAADP was not agricultural policy strictly speaking, but rather a common frame of action destined to guide and harmonise strategies and investment programmes regionally and nationally. Reflecting the aspiration for the political and economic integration of the continent, the plan can be broken down not only at the state level but also at the level of the eight regional economic communities that divide up the 54 member states of the African Union (55 in 2017 after the return of Morocco).

An additional step was made with the Malabo Declaration in Equatorial Guinea in 2014. Commitments made in the Maputo Declaration were reasserted and new, very ambitious additions were included (See Box 1). A biannual process of monitoring and evaluation of policy application

was added as was a call for institutional capacity building to support the realisation of these commitments.

The African Development Bank sets the tone

With its significant financial weight, the African Development Bank (AfDB) plays a key role in policy implementation. Under the guidance of its new president, Akinwumi Adesina—the former Nigerian Minister of Agriculture—the Bank adopted a new agriculture strategy in June 2016 entitled Feeding Africa, conceived to both implement the Malabo Declaration and to reach the Sustainable Development Objectives set by the United Nations in September 2015.

In reality, the AfDB goes much further, giving itself the priority not only of eradicating poverty and hunger and reaching self-sufficiency for basic necessities but also of making Africa a net exporter of agricultural products and improving its positioning on the global value chain in order to capture greater value added—all with the time horizon of 2025. These objectives are very ambitious, especially since the continent recorded a deficit of more than $50 billion in food trade in 2014. African agricultural exports, primarily consisting of raw materials or only marginally transformed products, only represent 2% of world agricultural trade. The AfDB is thus giving priority to a 'sector' approach, centred on contract farming as a condition for small producers to access the market. According to AfDB, this transformation

From Maputo to Malabo: the development of a PanAfrican framework for agricultural policy

The Maputo Declaration, adopted by the African Union in 2003, aims to 'Revitalise the agricultural sector (…) through special policies and strategies targeted at small scale and traditional farmers in rural areas and the creation of enabling conditions for private sector participation, with emphasis on human capacity development and the removal of constraints to agricultural production and marketing, including loss of soil fertility, poor water management, inadequate infrastructure, and pests and diseases'. Four domains of intervention are highlighted: sustainable land and water management; the improvement of rural infrastructure and marketing capacities to facilitate market access; the increase of food supplies and hunger reduction; and finally agricultural research, as well as the dissemination and adoption of new technologies. These measures were to be implemented in the CAADP framework with two objectives: reaching agricultural growth of at least 6% annually and allocating at least 10% of annual public expenditures to agricultural and rural development.

The Malabo Declaration in 2014 reasserts the commitments made at Maputo and sets out new objectives: ending hunger and child malnutrition by 2025 thanks to a doubling of agricultural productivity, a halving in post-harvest losses and strengthening of food reserves; halving poverty by 2025 with the creation of new job opportunities in agricultural value chains—including at least 30% of the youth, and the establishment of inclusive public-private partnerships in at least five priority agricultural commodity value chains with strong linkages to smallholder agriculture; tripling by 2025 intra-African trade in agricultural goods and services with the aim of establishing a Continental Free Trade Area (CFTA); strengthening the resilience of livelihoods and production systems so that by 2025 at least 30% of farmers and fishermen will be resilient to climate and weather-related risks.

The Top Five of the African Development Bank

The AfDB has defined five priority areas for its Ten Year Strategy for the period 2013-2022 that aim for a 'growth shared by all and a progressive transition towards green growth'. Feed Africa is one of these five priority areas and its agricultural component has the following objectives for 2025: to help eradicate extreme poverty; eliminate famine and malnutrition; to reach self-sufficiency for basic food products (rice, sorghum, sugar); to make Africa a net exporter of food products; and finally to place Africa at the top of world value chains in the sectors in which it has a comparative advantage (horticultural products, cashew nuts, coffee, cocoa and cotton).

The other four priority areas for the AfDB Ten Year Strategy are: Light Up and Power Africa, Industrialise Africa, Integrate Africa, and Improve the Quality of Life for the People of Africa.

of African agriculture must be led by the private sector.

Varied results in policy implementation

The CAADP has had the great merit of putting agriculture back on the political agenda. It has also allowed to redefine relations between the continent and international donors on the basis of objectives set by African governments even if, as it will be mentioned below, agricultural policies are still far from being self-determined and self-financed.

Nearly fifteen years after the Maputo Declaration, a first review of the CAADP can be established. Any assessment can only remain partial, however, due to differing implementation dates for each country, and to a general lack of data. Moreover, it is difficult to distinguish

Evolution of selected agricultural indicators in Africa (%)

	1995-2003	2003-2008	2008-2014
Growth in agricultural expenditures in constant $ (annual %)	6,07	6,60	2,32
Agricultural public expenditure as % of total government expenditure	3,31	3,54	2,97
Agricultural public expenditure as % of agricultural GDP	5,14	6,11	5,79
Agricultural GDP growth in constant $ (annual %)	2,83	3,77	2,61
Agricultural GDP growth per hectare in constant $ (annual %)	2,20	2,26	0,88
Agricultural GDP growth by assets in constant $ (annual %)	0,76	1,61	0,61

Source: Agra (2016). Africa Agriculture Status Report 2016

between the impact directly due to policies or those of other factors within the positive evolution of the main agricultural indicators (Table 1). According to AGRA's latest annual report (2016), the CAADP has significantly contributed to the increase in spending on subsidies and to the growth in agricultural production and productivity, as well as to poverty reduction. The CAADP has also improved the process of developing and implementing agricultural policies with the participation of different stakeholders—including agricultural organisations. Nonetheless, this process is still under development and suffers from poor coordination between the various development actors and a divergence between policy design and implementation, due to insufficient institutional capacities.

Differing progress depending on the sub-region

The CAADP is based on compacts that combine the commitments of all agricultural development actors (the public sector, the private sector— including producer organisations, civil society and international donors). On the basis of these compacts, agricultural investment programmes are defined on a national level (National

The Regional Offensive for Sustainable and Sustained Rice Cultivation in West Africa

West Africa is one of the main rice-importing regions in Africa since local production only covers 60% of needs. Imports arrive primarily from Asia (Thailand, India, Pakistan and Vietnam). But rice is a strategic sector for countries such as Nigeria, Guinea or Mali where this commodity alone accounts for 5% of GDP.

The increasing rice demand due to demographic growth, urbanisation and changing food habits has pushed up the cost of imports (with an increase in per capita consumption from 10 to 34 kg per annum between 1961 and 2009). Indeed, rising rice prices in 2008 played a role in the launch of new initiatives. Governments first took emergency measures to lower prices (suspension of customs duties and/or VAT, price ceilings, export restrictions, consumption subsidies, etc.). They next launched structural plans to support local production in order to move towards self-sufficiency. These plans essentially consisted of irrigation schemes, input subsidies, support for cultivation mechanisation and aid to improve rice quality. In 2014, ECOWAS adopted the Regional Offensive for Sustainable and Sustained Rice Production in West Africa. This mechanism, which is part of the RAIP, supports national development strategies and aims to produce 25 Mt of husked rice by 2025, which is supposed to ensure the region's self-sufficiency by that date.

Measures taken in favour of rice have speeded up production, but have yet to match demand. For many farmers, prices are not yet sufficient. Customs' duties applied to imported rice are much lower in ECOWAS (10%) than in the ECCAS (between 35% and 75% depending on the country). West African producers would like to have flexible tariff protections that would vary depending on the time of year, volumes of stocks and prices, but this would require reliable statistical monitoring, close coordination among industry players and rapid intervention capacity on behalf of public authorities.

Source: SOS Hunger, Inter-réseaux, ECOWAS

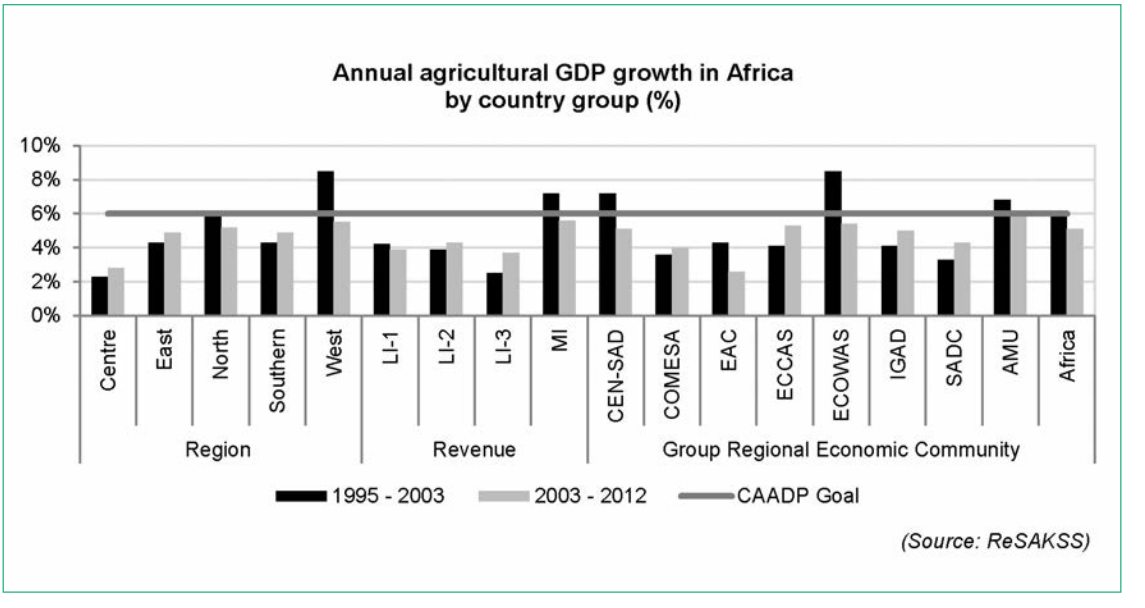
Agricultural Investment Plans, NAIPs) and a regional level (Regional Agricultural Investment Plans, RAIPs)—the latter applying to regional economic communities. As of March 2016, a total of 42 out of the 54 member states of the African Union, or close to 80%, had signed a compact. Out of these 42 states, 30 had developed a NAIP and 26 had organised business meetings to mobilise financing from the international community.

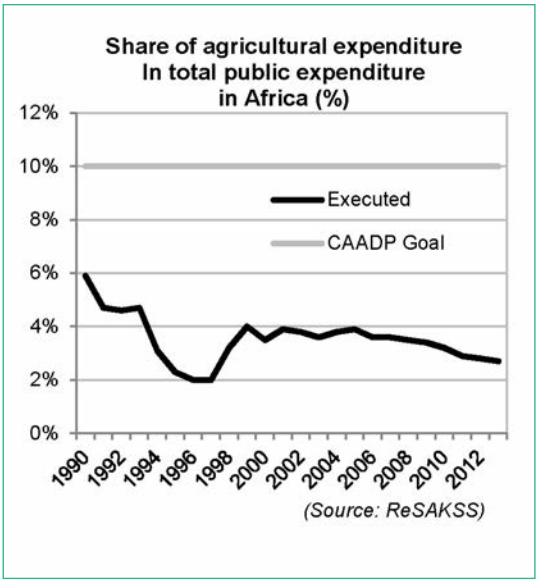
Regionally, the Economic Community of West African States (ECOWAS) has made the most progress by far. Driven by the soaring food prices of 2008, ECOWAS developed a regional compact very early on and has also held business meetings as well. The Economic Community of Central African States (ECCAS) has also signed a regional compact but much later on and has not yet found financing. In other regional economic communities, RAIPs are at diverse stages of development. A noteworthy fact is that the Union of the Arab Maghreb (UMA) is not involved. National and regional plans show different priorities, but all make production and productivity increases the main objective. Thus ECOWAS launched a Regional Offensive in 2014 for the sustainable reintroduction of rice cultivation in West Africa with the aim of becoming self-sufficient.

Quantitative objectives still far from being reached

The Maputo Declaration encourages African countries to take measures likely to ensure growth in agricultural output of at least 6% per year. But only 15 out of 54 countries reached this objective in the 2008-2014 period. Both ECOWAS and UMA performed well (Graph 1). While public expenditures on agriculture have increased by 70% in real terms between 1995-2003 and 2008-2014, they have remained below 4% of total public expenditures on the continent, far from the 10% level set for the 2008-2014 period. The situation varies across countries.

An important observation is that the number of undernourished Africans continues to increase. While the proportion of the population incapable of meeting caloric requirements has fallen from 28% in 1990-1992 to 20% in 2014-2016, this decline is insufficient to eradicate hunger by 2025. Regional disparities are significant. According to studies, 26% of adults in sub-Saharan Africa suffered from serious food insecurity in 2014-2015 compared to 9% in North Africa. Hunger mirrors poverty: in 2013, 41% of Africans south of the Sahara earned less than





$1.90 a day. Two thirds of them live off of agriculture alone.

Another objective of the Malabo Declaration—tripling intra-African trade in agricultural products—will also be difficult to reach between now and 2025. In 2014, 31% of African exports of food products were destined for countries within the continent compared to 28% in 2010. Statistics, however, do not include informal and unrecorded trade flows.

Questions on the quality of agricultural expenditures

The share of agricultural and food support expenditures varies a great deal depending on the country. Specific supports to agriculture focus on the production and productivity of agricultural operations to the detriment of downstream activities (transformation and commercialization, etc.). And yet 40% of added value in the food industry in West Africa is not due to agricultural production but to downstream sectors. Input subsidies in particular are in the hot seat. In 2011, they amount to over $1 billion in sub-Saharan Africa and some wonder if it would not be better to invest a portion of these important sums elsewhere. Top targets would be collective infrastructures and services such as irrigation (only 5% of cultivated land is irrigated in Africa compared to 41% in Asia) as well as agricultural research and greater information access—all of which are under financed in spite of their significant economic potential in the medium-term.

In addition, consumption subsidies only represent a small percentage of support expenditures in

Share of expenditures for agriculture and food in total public expenditures in Sub-Saharan Africa (%)

	Specific support for producers and consumers 1/	General support for agriculture and food 2/	Rural development 3/	Administrative costs	Total
Mali (2008-2010)	3	4	3	1	11
Burkina Faso (2015)	1	1	1	2	6
Uganda (2010)	3	7	12	1	23
Tanzania (2010-2011)	2	2	4	1	9
Kenya (2010-2012)	2	3	2	1	8

1/ Subsidies for agricultural production, subsidies for inputs, food aid for consumption, aid to suppliers of inputs, etc. 2/ Research, extension, training, irrigation infrastructure, storage, etc. 3 / Teaching, roads, energy, drinking water, etc.

Source: AFSAA/FAO

The Green Morocco Plan: dual policies to shape agri-food sectors

Morocco developed a major ambitious agricultural policy in 2008, aiming at production growth strengthening agri-food sectors and reducing rural poverty. Its ten to fifteen-year goals are clear: doubling agricultural GDP, creating 1.5 million jobs and having farmers' incomes multiplied by a factor of two to three. The strategy adopted covers all actors: from modern agriculture to small-scale agriculture and agro-industry. Its main instruments are, on the one hand, the grouping of farmers around agro-industrialists or professional organisations in order to develop sector-specific projects and, on the other hand, contracting between 'aggregators' and 'aggregates' that opens the right to state aid.

To achieve this, the Green Morocco Plan is based on two pillars:

• Pillar I focuses on the 'aggressive development of high value-added agriculture' that is partly export-oriented thanks to investment subsidies (within the framework of programme contracts for high value-added sectors developed in relation to professional associations); farmer aggregation; and access to long-term and low-cost land leases in return for investments made. In the long term, this pillar should concern 400,000 farmers, mainly in irrigated areas or those with sufficient rainfall;

• Pillar II aims to accompany small farmers in mountain areas, oases and areas with low precipitation, thanks in particular to subsidies geared towards intensifying production (through drip irrigation), conversion to higher value-added crops (such as tree growing), income diversification and cooperative farming. Between 600,000 and 800,000 farmers will be affected by this strategy.

Even if the priority is on traditional, high value-added export sectors (tree growing and market gardening), support for different sectors depends on the potential of each terroir. Efforts are made to improve the financing of farming operations in partnership with Crédit Agricole du Maroc (guarantee funds and loan/subsidy schemes, a central risk division, insurance, etc.) and revitalise farm advisory services.

The quadrupling of public investment between 2008 and 2015 has had a leverage effect on the private sector. Total investment in the agri-food industry reached €1 billion in 2013. This resulted in a significant improvement in the sector's performance in terms of agricultural production and value-added, as well as financing and support for producers. However, contracts between cooperatives and companies are struggling to develop and there are still doubts about the ability of the market to absorb surplus production. Another question concerns the potential conflict between the increase in agricultural production and the sustainable management of water resources.

The systemic approach of the Green Morocco Plan is now a model for many sub-Saharan African countries, particularly those of ECOWAS. Indeed, Morocco’s return to the African Union in 2017 could lead to major changes in the continent's agricultural development programmes in the years to come.

Sources: Inter-réseaux développement rural, Ministry of Agriculture and Fisheries of Morocco, Crédit Agricole du Maroc

agriculture and food in sub-Saharan countries. This is a major difference from North African countries. In Egypt, food aid represents on average about 2% of GDP. Reforms have been conducted to reduce the cost of these aids and improve targeting, but the subject is politically explosive.

The weakness of financing tools and regulation

The CAADP contains few provisions for financing agriculture even though this is a major issue since the investment capacities of small farms and small food-processing enterprises are limited. They need both credit and capital, but the private sector is reluctant to lend to them because of the inherent risks. In some African countries, public financial institutions have devised innovative solutions to reduce these risks or to offer farmers appropriate financial products based on their solvency.

Price and income regulation is another weak point of African agricultural policies. However, a distinction must be drawn between the countries of North Africa and those that are sub-Saharan. In Algeria, Egypt and Morocco (as well as in Tunisia, at least until the failure of the 'Arab Spring'), governments intervene massively to mitigate the price variability of staple foods. Their interventions target producers when prices fall or consumers when prices rise and pass through several channels: minimum producer prices, border measures, consumption aids, etc. These measures have a stabilising impact, but they are costly and lead to market distortions. On the other hand, in most sub-Saharan African countries, food price regulation is much less structured. The state intervenes mainly in the event of price spikes through export restrictions and tariff reductions, as in 2007-2008. Protecting producers from low-priced imports is uncommon. In West Africa, the highest level for an ECOWAS external tariff is 35%. The majority of agricultural products, with a few exceptions such as rice (10%) or milk powder (5%), fall into this category and are considered sensitive products for negotiations of Economic Partnership Agreements (EPA) with the EU. The latitude for increasing tariffs is limited given the high share of food expenditure in a household budget. But Senegal, for example, did not hesitate to close its borders to poultry imports in 2005: a decision that will apply until 2020 and one that has allowed the local poultry sector to develop rapidly.

Moreover, African producers have few tools to manage yield and price risks, which hampers their ability to borrow and invest. One initiative is the African Risk Capacity (ARC) that offers drought compensation to its member states. Agricultural insurance against climatic hazards is only just emerging. But organised futures markets or forward commercial transactions are still very uncommon.

Which agricultural model?

The CAADP does not explicitly define the agricultural model it intends to promote, either in terms of production systems or farming structures. There is a consensus on the need to increase African yields, which are much lower than in other regions, but there are different solutions for the technical paths to achieve sustainable intensification over the longer term. The conventional path, based on the use of synthetic inputs (i.e. mineral fertilisers and phytosanitary products), which is limited as of today, would be the most effective path in the short term. The advanced degradation of much of Africa's soils that are highly depleted in organic matter, and the threat posed by climate change to potential agricultural production (and resulting dependence on food imports in the case that production is insufficient) would justify other approaches inspired by agroecology that would aim to reconcile economic and environmental performance. In addition to political will, progress will depend on vigorous agricultural research and communication outreach efforts to educate farmers.

The Maputo and Malabo Declarations target small farms, which are in the majority, but take no steps to prevent the expansion of large farms, whether family farms or otherwise. Morocco has different strategies adapting agricultural and rural

policies that embrace both modern, market-oriented agriculture and small 'social' farms, generally located in disadvantaged areas (Box 4). Generally speaking, in Africa, where large farms offer relatively few direct jobs, the challenge is to develop competitive small and medium-sized farms capable of supplying local and international markets.

Policies influenced by donors and the private sector

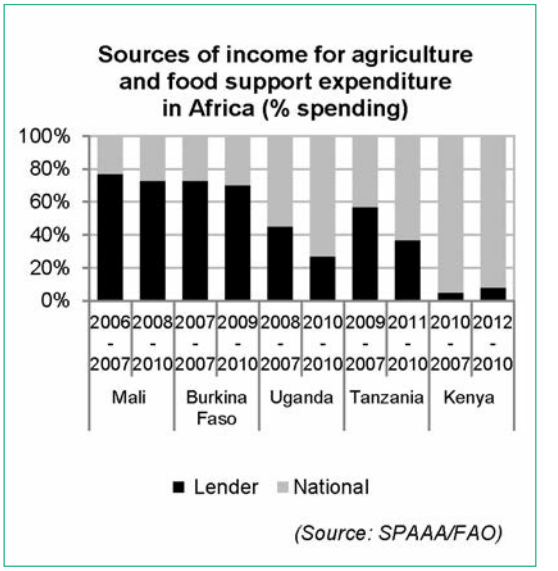
The lack of budgetary resources in African states limits their ability to conduct agricultural policies since funding remains largely controlled by international donors. At the same time, agri-food sector companies are increasingly influencing development strategies through a proliferation of public-private partnerships.

Strong dependence on donors

In Africa, external financing often accounts for the bulk of total government spending on agriculture and food (up to 92% in Ethiopia in 2013), with large variations across countries. Under these conditions, it is not easy for governments to impose their agricultural development priorities. In addition, the lack of coordination between different donors can hamper the coherence of all interventions.

The development of Public-Private Partnerships (PPPs)

Even if donors continue to have a considerable role in the financing of African agricultural policies, the drop in aid for agriculture until the middle of the 2000s opened the way for the greater implication of the private sector. Soaring world prices led to the implication of many more companies from the agri-food industry (often multinationals) to invest on the continent and make the most of a growing demand. Many investments have been made through public-private partnerships (PPP) in which companies bring their know-how and capital and states provide diverse incentives such as subsidised loans, irrigation infrastructure or land access. The most important PPP are in the 'Grow' programme started by a World Economic Forum initiative in 2011 and managed in partnership with NEPAD and the New Alliance for Food Security and Nutrition (NAFSN) created in 2012 at the G8 summit, presided by the African Union Commission. Grow and NAFSN cover a dozen African countries, bring together close to two hundred companies and are co-financed by numerous donors. The United States participates in NAFSN essentially through the Feed the Future programme launched in 2009.



As part of these initiatives, contract-farming projects are set up, centred in a specific geographical area or production. According to their promoters, these projects, designed with the participation of agricultural organisations and other civil society actors, will help to meet the goals of the Malabo Declaration in terms of reducing poverty and hunger. They integrate millions of small producers into value chains and also create jobs throughout these channels. This is not enough to dispel the fears of their detractors however, who denounce the multinationals' control of agricultural development policies. Instead, the major risk is that inequalities become entrenched between farmers who enter the market and those who do not and remain mired in poverty.

Concerns about the increasing involvement of the private sector

Large-scale land acquisitions by international investors is a major area of concern for some critics. According to data collected and analysed by Land Matrix, these acquisitions have multiplied since the beginning of the 2000s. In April 2016, purchases of agricultural land in Africa by foreign investors (enterprises, pension funds, countries concerned with ensuring their own food security, etc.) covered a cumulative area of 10 million ha, equivalent to 4% of cultivated areas. These purchases, often referred to as 'land grabs', are strongly criticised for several reasons: they are seen as a theft of land-use rights from local communities, they bring about environmental degradation, and they are thought to lead to a concentration of wealth for the benefit of an elite. Even if they can have a positive impact on the local economy—in particular by raising wages and enhancing infrastructure—they have provoked numerous disputes and have led to an outcry that resulted in the development of Voluntary Guidelines for Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security by the Committee on World Food Security (under the auspices of the FAO and ECOSOC) in 2012. This text defines a code of conduct, including procedures for consultation and possible compensation that investors are encouraged to respect in to avoid harming local communities.

But problems are not limited to the acquisition of land by international companies. In many African countries, urban dwellers also invest in agriculture, thus contributing to the growth of medium-sized farms (less than 100 ha), which cover an increasing share of the area under cultivation. If these new investors are a factor in the modernisation of agriculture, through their contribution of capital and technology, they also increase competition for land to the detriment of small farms. Moreover, free zones or growth hubs established in some countries to create an environment favourable to domestic or foreign investors may deprive farmers of part of the land included therein.

Projects implemented under Grow or NAFSN do not involve land acquisitions because they are based on contracts between farmers and businesses for the purchase of inputs or the delivery of outputs. However, they raise numerous questions about contract-related risks (information asymmetry, power imbalances, etc.), as well as their impacts on the type of intensification practiced and the securing of land used by farmers. In sub-Saharan Africa, most land belongs to local communities and there are no clearly defined property rights. A prevailing line of thought is to encourage the codification of traditional land tenure systems in the form of cadastres, geared to favour a gradual evolution towards private property that would facilitate the granting of loans to farmers (with the use of land as collateral) and encourage them to invest in their operations. Thus, the cooperation frameworks adopted by African countries participating in NAFSN recommend the securitisation of land ownership. Another line of thought emphasises the risk of exclusion of small farmers in the event of non-repayment of loans secured by land or through the creation of land markets. This line of thought proposes various alternatives to reconciling customary rules and development. Reforms in this area are difficult because they relate to more than simple economics, also pertaining to the overall relationships between individuals and communities in rural societies.

Defining a specific way forward for African agriculture

As mentioned above, a page turned in the early 2000s with the launch of the CAADP, a well-defined process of agricultural policy design and implementation that was developed within a continental framework that is further broken down into national and regional levels. These policies are beginning to bear fruit, but the results obtained in terms of farmers' economic performance, food security and poverty reduction are still unsatisfactory. A further increase in agricultural budgetary expenditures, particularly for research and education, will be necessary to achieve the goals set out in the Malabo Declaration for 2014. In addition to observed operational malfunctions, CAADP defi-

ciencies mainly concern the weakness of agricultural financing instruments and the lack of tools to manage risks from climatic hazards and price volatility.

Agricultural policies are supposed to promote the structural transformation of the continent's economy, with the transfer of part of the working population away from agriculture and into industry and services. But this transformation, already well under way in North Africa, is difficult to achieve in sub-Saharan countries. In the medium term, it will be difficult for this region to follow the development model borne by the industrialised countries, which is based on a massive rural exodus. The prospects of strong population growth, including in rural areas, the need for agricultural production systems that are more resilient to climate change, the staggering industrialisation of the continent, and the constraints of globalisation create an unprecedented context that obliges Africa to define its own path. The continent's entrepreneurial and cultural dynamism, the opportunities offered in all fields by the dissemination of information and communication technologies, the aspirations of young people and women are bringing about profound changes.

In fact, the sharp increase in African agricultural production required to achieve the objectives of the Malabo Declaration (+ 60% between 2015 and 2025) may not be the most difficult challenge to meet. The massive inflow of capital and technology into agriculture through the private sector can rapidly improve output, especially since current levels of input used and mechanisation are modest.

Given the weakness of African states, the more difficult task will be to focus on two key areas. First, creating the legal and administrative infrastructure needed for an agricultural economy that is increasingly contractual and that will take account of the asymmetries between actors in such areas as the respect of contracts and fair contract elaboration, regulation of inputs and agricultural product markets, small farmers' access to resources, support for producers' organisations, etc.. And secondly, facilitating the transition to ecologically intensive forms of farming that will be adapted to the negative effects of climate change. On these and other fronts, the strengthening of inter-industry dynamics and facilitating dialogue and negotiation among stakeholders is a powerful vehicle for expanding public action.

Africa's ability to feed itself, reduce income inequality between urban and rural areas and integrate some of the millions of young people entering the job force will depend on the well managed, inclusive and sustainable modernisation of agri-food chains. Africa's success in this endeavour will also be important to the rest of the world. Depending on the effectiveness of its agricultural and rural development policies, Africa will alleviate or aggravate food market turmoil and will reduce or accentuate the factors of instability and conflict that cause disorder on the planet today.

Chapter V

Reform of mining codes and evolution of the regulatory environment of the extractive sectors in Africa

In Africa, the extractive sector (mines, hydrocarbons) represents substantial economic muscle and is based on considerable geological potential: 7.6% of the world's oil reserves, 7.5% of the world's natural gas reserves, 40% of the world's gold reserves, and between 80% and 90% of the world's chrome and platinum reserves.

Exploiting the natural resources is thus a high-stakes game for producer countries – both domestically, since it constitutes the main source of their revenues and development, and abroad, bolstering the international scene. The situation is not only accentuated by the fact that extracted resources are non-renewable, but also complicated by their high price volatility on the global markets. Commodity price variations affect both private mining groups and producer countries, with the relationship between current and anticipated market prices and production costs determining the economic viability of projects. Among the numerous cases attesting to this is the plunge in iron ore prices in 2015 and 2016, which led to the suspension or closure of a number of projects on the African continent. Over the same period, the drop in oil prices also impacted government revenues, and led to instability in currency exchange rates and boosts in inflation. This prompted the governments to revise their budget strategies, as exemplified in Algeria, Gabon, Congo-Brazzaville and Nigeria.

The exploitation of mining resources brings together actors with both diverging and complementary interests: the host country that receives investment, and holds the rights to the mining resources, and the private contractor, local or foreign, which has the technology and capital necessary to extract these same resources. The scenario offers African economies in particular the means

to finance changes in their societies and represents a factor of economic and social development, especially through training, jobs and the creation of companies, and infrastructures.

In order to optimize natural resource management while respecting environmental restrictions, a growing need for transparency, the demand for corresponding benefits for the local populations, and the necessity of providing modern and high-quality infrastructures, a number of African governments have implemented mining policies meant to attract investors and maximize the contribution of this sector to the social and economic development of the country. What is at stake is a battle against the infamous "curse of natural resources".

It must be acknowledged that the strategy to be implemented for achieving these ends is complex. Mining projects are intrinsically bound up in huge contingencies in the research phase (on average, only one out of 300 projects reaches the development stage, whereas the figure is one in 10 in the hydrocarbon sector), an extremely long preparation period (10 to 15 years elapse between the initial discovery of resources and the actual start-up of mining operations), and very substantial investments that affect the funding of projects. The result is that the main fiscal revenues are often generated very belatedly in the mining or oil production cycle: most taxes are not paid until the mining company has begun production – generally after years of exploration and development – and is generating profits. This long wait can, in reality, call into question the relevance and objectives of the mining or oil contract, and worry national and international observers that the country is, as it were, selling off the family jewels. This is equally true for the surrounding communities, which may expect positive repercussions from the installation of the company in their area when in fact the project is only in the research phase.

It may also be noted that the strategic importance of natural resources leads the countries that hold them, to subject oil-, gas-, and mining-related activities to special provisions, since the specificity of these sectors involves the application of rules exempt from common law, as much from a legal or regulatory as from a contractual point of view.

The legal framework for mining natural resources in Africa

African countries containing natural resources have, since becoming independent, adopted laws concerning foreign investment and set out specific texts for the extractive sector: mining and hydrocarbon codes.

In addition, the particularities inherent in each extractive project imply that these codes, if the case requires it, be supplemented by conventional agreements signed between the government and the private contractor. The goal of these conventions is, given the project under consideration, to reconcile the interests of the state, of the investors, and also of the local populations, while at the same time considering the economic realities and the available or needed infrastructures. The conventions are thus tools that allow for the framing and managing of the individual aspects for each project, and do not constitute preferential treatment, as third parties sometimes believe.

The extraction of natural resources is, in this respect, framed by a multitude of agreements: *i)* actual exploitation contracts, concluded between the government and the contractor (agreements for mining operations, or contracts for production sharing, partnerships, and/or services); *ii)* outsourcing agreements between the contractor and various subcontractors (contracts for mining operations, transport, or more ancillary aspects like catering); and *iii)* financing contracts signed between the contractor and backers due to the financial scale of the project (anywhere from a few dozen million to several billion dollars).

In complementing the mining codes, the legislation specific to the extractive sector is contained in orders and decrees for these codes and also in laws governing specific fields, such as the exploitation of precious materials or explosive substances.

What's more, by including stabilization clauses and also extractive code provisions that give contractors the possibility of opting for the application of the old or new legislation (notably in the manner of Article 4 of the Law of 28 April 2003 pertaining to the enactment of the Tunisian mining code), certain governments simultaneously apply several mining or oil regulations.

The legal environment of the extractive sector is also made more complex by the simultaneous application of different texts that are not specific to the it (laws regarding environmental protection, real estate, finances, labour, health or safety regulations), and by all the regulations concerning infrastructures (PPPs, concessions, public tenders).

Faced with this complexity, and due to the important strategic stakes regarding the extractive sector, numerous African governments have banded together to set out applicable regional and international standards. The West African Economic and Monetary Union (WAEMU) has adopted a legal framework regulating all operations concerning mining substances in its territory (Regulation n°18/2003/CM/WAEMU, December 23rd 2003). Its legal basis is affirmed by its adoption in ministerial councils by way of regulation, making it directly applicable in member states. The purpose of this code is to harmonize, modernize, and clarify the mining legislation applicable in the WAEMU area; it also seeks, from an economic standpoint, to "*create the conditions for a substantial contribution from the mining sector to the economies of the member states by accelerating the development of mineral substances*". Given that the implementing regulation of this code (set out in 2005/2006) was never adopted, the WAEMU launched a request for proposals with the aim of overhauling it and setting out the rules of implementation.

The Economic Community of West African States (ECOWAS) also adopted a legal framework governing mining activities by enacting a directive to harmonize the guiding principles and policies in the mining sector (62nd ordinary session of the Council of Ministers, 26-27 May 2009). This was completed in February 2012 by an additional act adopting the development policy for mineral resources and its action plan. While this directive is legally binding towards the member states of the ECOWAS, the means of carrying out the objectives of the directive were left to the discretion of the member states, who had until July 1st 2014 to comply with it. In November 2016, a draft mining code was submitted to the ECOWAS Council of Ministers.

At the level of the Central African Economic and Monetary Union (CEMAC in French), efforts to work out a mining code got underway in May 2016 in the framework of the Reinforcement Project for the Governance of Raw Materials in Central Africa (REMAP in French).

These different regional initiatives have also prompted contemplation by certain specialists for the drafting of a mining code at the level of the 17-member states of the Organization for the Harmonization of Business Law in Africa (OHBLA / OHADA in French). This effort to systematically standardize different mining legislation (an approach that has not been implemented in the oil sector) is nonetheless based on simplification that does not always take into account the individual reality of each country, and can thus overlook the specific needs for the development of many mining projects.

The most recent reforms of national codes applicable to extractive activities entail numerous common principles inspired by these different regional initiatives which, in general, are intended to boost direct and indirect profits of the states. The sources of these so-called "third generation" or "fourth generation" codes are many: international organizations (notably the African Union's with the African Mining Vision, the United Nations' Kimberley Process and Global Compact); financial institutions (in the style of the Ecuador Principles of 2013); the industrial world (notably the recommendations of the International Council on Mining and Metals, or ICMM); foreign governments (the Extractive

Industry Transparency Initiative, or EITI; the UK Bribery Act, the Foreign Corrupt Practices Act, or the Dodd-Frank Act); the normalization certification bodies such as the International Organization of Normalization; and also NGOs (for example: the National Resource Charter or the Initiative for Responsible Mining Assurance).

The general idea of these codes is to adopt a less liberal approach and aim toward better wealth distribution, notably via an increase in government stakeholding, a revision and limitation of fiscal exemptions, or an increase in taxes and duties. Nonetheless the distinction between third- and fourth-generation codes often seems to result from the determination of international funders to respond to the flaws in pre-existing legislative reforms, while the distinction between the first three "generations" was based on historical and economic realities: the states' independence and the assertion of sovereignty over natural resources (first generation); the effort to attract foreign investors as much as possible in a context of international competition and privatization, which corresponded to structural adjustment policies advocated by financiers (second generation); and the desire for a direct and indirect "rebalancing" in the government's favour (third generation).

The decision to revise a mining code also depends on political agendas that do not always consider the current economic situation and commodity price trends. These are difficult factors to anticipate and control over the long term, creating difficulty in achieving a balance between the attractiveness threshold acceptable for the state and the tolerance threshold of investors. So when a price increase is observed, a number of governments are tempted to effectuate legislative and regulatory modifications in order to collect the additional revenues generated without always giving thought to prices over the long term or the agreements signed. Seeking to increase economic rents through reforms dictated by increased commodity prices can sometimes, on the contrary, discourage investors who favour countries with stable legislation and where the economic balance of their investment is more respected.

The reforms of 2015 and 2016 in the African extractive sector

Mining reform codes quite often intervene in reaction to an increase observed a few months or a few years previously, even though prices may already be on their way back down. This was the case for a number of mining texts adopted in 2015, and particularly for the law n°036-2015/CNT of 16 June 2015 on the mining code and enactment decree n°2015-885 / PRES-TRANS in Burkina Faso; and for the law n°17/2014 of 30 January 2015 on the regulation of the mining sector in Gabon. In the hydrocarbons sector, one could mention the law n°15/012 of 1 August 2015 on the general regulation of hydrocarbons in the Democratic Republic of Congo (DRC); the law n°2015-035 of 16 July 2015 on the organization of research, exploitation, and transportation of hydrocarbons in Mali; and the law n°2015/0016 on the code of crude hydrocarbons in Mauritania.

The year 2016 was also marked by numerous reforms in the extractive sector. Concerning hydrocarbons, there was decree n°16/010 of 19 April 2016 on hydrocarbon regulation in the DRC; decrees adopted on 10 March 2016 relating to the implementation of audit operations and hydrocarbon activity controls, and to legal procedures for access to the oil sector in Gabon; the Petroleum (Exploration and Production) Act in Ghana; law n°13/2016 of 2 May 2016 governing exploration activities and oil production in Rwanda; and law n°28-2016 of 12 October 2016 on the hydrocarbon code in the Republic of the Congo. In the mining sector, noteworthy reforms included law n°138/AN/16/7th L of 23 July 2016 on the mining code in Djibouti; the seven implementing decrees of the new Burkina Faso mining code adopted by the Ministerial Council on 16 December 2016; law n° 2016-32 of 8 November 2016 on the mining code in Senegal; law n° 2016/017 of 14 December 2016 on the mining code in Cameroon; and the publication in the official Journal in April 2016 of the implementation decree of law n° 33-13 of July 2015 relating to mines in Morocco. Over 2016, exchanges also took place between the different

stakeholders involved in the mining code projects in Zambia, Madagascar, the Republic of the Congo, and the DRC.

In spite of the singularities of some of these reforms and divergences between the economic, political, geographic and geological realities of the different countries in question, common trends may be observed, regardless of the mineral resources exploited or to be exploited: a higher government take, national content, consideration of EITI standards and transparency, as well as environmental and societal demands.

A higher government take

The notion of "government take" is subject to various definitions, according to which profits and indirect positive externalities may or may not be taken into account. If the definition is confined to an economic vision that only evaluates direct profits for the state, the government take can be considered as the state's revenue collected through taxes, duties and royalties, as well as revenue derived through its holdings in the share capital of mining companies or projects.

In terms of taxation, the various states that have recently reformed their mining codes have wanted, as previously mentioned, to secure a higher contribution from the mining industry to the economic development of their countries. With this in mind, they have often reduced tax incentives and amortization periods, increased rates and taxable activities (or created new taxes altogether), or established regulations on transfer prices.

The new mining code in Burkina Faso reduces the number of tax breaks that active mining companies may benefit from. Article 160 of the code stipulates that operating mining companies are subject to the "tax on profits at common rates" (which thus jumps from 17.5% to 27.5% compared to the previous code). Capital gains when transferring mining permits are taxed at 20%, unless for the transfer of a research permit to a mine operating company when such transfer is made at the time of the incorporation of the mine operating company which is made without charge (Articles 107 and 109 of the mining code). Taxation on income derived from securities is increased up to 6.25%, whereas the previously applied rate was reduced by half in relation to the standard rate (Article 160 of the new mining code). The implementation decrees adopted in 2016 notably call for the suppression of mining royalty payments depending on the value of the gold extracted, in favour of a fixed 5% rate and an increase in the surface tax for research activities.

A study was carried out in December 2015 by KPMG consultants for the purpose of measuring the impact of changes in fiscal policy on the profitability of mining activities and the distribution of wealth deriving from them. Based on the financial model of a typical gold mine in Burkina Faso, the study suggests that the legislative and regulatory changes mentioned above have resulted in the government receiving an estimated 110% of the wealth generated by mines, from the point when gold prices fall below $1,100 per ounce. With analysts forecasting lower gold prices in 2017, the reform undertaken could thus lead to a postponement or even a halt in investments, which in the end would have a counterproductive effect.

The new mining code adopted by Senegal also illustrates these tendencies. Articles 58 and 63 of the previous code pertaining to tax exemptions in the research and exploitation stages have no equivalent in the new mining code. The fixed entry duties have increased substantially, notably with respect to research permits (with the amounts multiplied by five) and exploitation permits (Article 74 of the new code). The surface royalty was reintroduced (Article 75), just as differentiated rates depending on the resources involved were introduced for the mining royalty. The calculation method for the mining royalty is now based on the market value of the mining product instead of the mine's pithead value (Article 77). Also worth scrutiny is the manner in which taxation will be managed in future application decrees in the case of companies that have signed production sharing contracts; this possibility has been raised

in Article 33 and the following articles in the new code. It should be added that the reform of the mining code in the DRC has been postponed indefinitely, notably due to fiscal restrictions that contractors have found prohibitive – in particular the tax on excess profits, uniquely adapted to a context of high prices.

Regarding state holdings in mining companies, recent mining reforms in Africa, and especially in French-speaking countries, allocate a free and non-dilutable government stake in mine operating companies. The effects of share capital increases and the risk of dilution had been omitted in many codes, posing various practical difficulties during the negotiating and implementing of shareholders agreements. Article 12 of the WAEMU mining code stipulates a free and mandatory 10% stake in mine operating companies. Certain codes specify that the states reserve the right to acquire an additional stake under normal conditions (i.e., buying them according to market conditions).

While the Burkina Faso new code does not change the free and non-dilutable 10% rate as described above, it extends the obligation to companies holding a small-scale industrial exploitation permit, and stipulates the existence of a "priority dividend" linked to this stake (Article 43). An additional stake is possible, with no maximum specified.

In Cameroon too the government's 10% mandatory stake has been extended to companies operating small mines (Article 54). While previously the government shareholdings in mining companies was a possibility, and 10% was the maximum (the old Article 11), the granting of an exploitation permit now gives to the state a free non-dilutable and unconditional 10% stake. The government can also claim an additional 25% stake, either directly or through a public sector company, under conditions applicable to other shareholders.

The new Senegalese mining code, for its part, stipulates that the government benefits from a free 10% stake in all mining companies. Beyond that, and for a fee, it can negotiate the acquisition of a further 25% stake that it can sell back to the country's private sector in order to promote access to the mining sector (Article 31). The state can thus hold up to 35% of the stock in a mining company and wield a blocking minority during the adoption of extraordinary decisions at the annual shareholders meeting (where it could notably oppose any possible changes to the statutes or capital increases).

This mandatory stake seems, by contrast, to have disappeared from the new Djibouti mining code, whereas the previous code (Article 22) stipulated that the government could demand a free stake of up to 5% of the investment capital and the possibility of an additional stake at market prices not exceeding 35%.

Ambitions for national content policies

Generally speaking, national content goals are already present in most of the mining and oil conventions as well as in specific legislation, as in the case of the Law n°3-2000 on subcontracting conditions in the Republic of the Congo. Though present in the new mining codes, it is useful to recall them here.

Inspired by ECOWAS and WAEMA mining regulations, Burkina Faso's new code stipulates an obligation for holders of mining permits as well as their subcontractors to grant *"preference to Burkinabé companies for all service contracts or the supply of goods according to equivalent price, quality, and timetable conditions"* (Article 101 of the new mining code). An implementation decree adopted in 2016 was meant to specify in what way it was advisable to ensure the development of goods consumption and local services by the mining industry. In matters of local employment, the new mining code further requires mining companies to respect progressive local hiring quotas according to an officially decreed pay scale. What's more, the mining companies are now required to submit a plan to the Ministry of Mines for training local managers to gradually replace expatriate staff (Article 102 of the new mining code).

The new Senegalese mining code states in Article 109 that holders of mining permits, and their subcontractors, have obligations in terms of hiring and training that are both traditional (preference for Senegalese with equal qualifications, the establishment of a training and promotion plan for the company's Senegalese staff, the effective training of Senegalese staff) and pioneering (equal opportunity employment and salary parity between male and female employees). The new Senegalese code even provides for the possibility, by decree, of banning or limiting the hiring of foreign workers, which may nonetheless hinder the capacity to organize skills transfers. As far as subcontracting goes, the new Article 85 does not alter the old Article 68 for the use, "insofar as possible", of goods and services manufactured, sold, or available in Senegal, and under competitive terms with respect to price, quality, guarantees, and delivery times. It does, however, require holders of mining titles to carry out the annual formulation and publication of a procurement plan.

The new Cameroon mining code devotes Title VII to local content "that involves a development area for human resources and a development area for local companies and industries" (Article 165). The mining convention must include provisions for transferring technology and skills to locals, as well as a hiring plan for national citizens. This plan must include the percentages reserved to Cameroonian nationals by professional category, a professional and technical training scheme for their benefit, and a detailed programme and modalities of subcontracting procedures with a priority to the benefit of local small and medium-sized companies. For the purposes of carrying out these actions, the mining companies are required to contribute to a local development fund, with the amount set out in the mining convention and ranging from 0.5% to 1% of annual turnover taxes excluded (Article 166). The priority of hiring Cameroonians is affirmed and a 90% quota for positions requiring no particular qualification is instituted (Article 167), as are quotas for the hiring of Cameroonian subcontractors (Article 168).

While the determination to train and develop national skills is deeply commendable, in practice it would be advisable to set the application of national content legislation within a clearly defined framework to be sure that it precisely targets the goals for which it has been established.

The consideration of the standards of the Extractive Industries Transparency Initiative (EITI)

The obligations of transparency, accountability, and avoidance of corruption that have developed in recent years are now also integrated in recently reformed mining codes. The new Cameroon mining code recognizes the EITI as an important counterpart in the governance of the mining sector and "invites" the relevant actors to comply with Cameroon's international commitments regarding the EITI process (Articles 141 and 142). Article 145 sets out the same premises for disclosing and publishing the identities of real beneficial owners of extractive companies (required by the EITI norms 2016 not yet in effect), subject to the adoption of an implementing text that would provide the details. Burkina Faso's new mining code reaffirms the country's adherence to the EITI and establishes the obligation to publish in the official gazette all of the conventions and mining contracts signed with companies operating in the country (Article 6). In Senegal, Articles 95 and 96 of the new mining code are relating to the adherence to the principles and requirements of the EITI and to the declaration of mining revenues owed to and collected by the government, including the economic and social contributions for which the mining title holders are responsible. The provisions regarding data confidentiality have also been reconfigured to comply with transparency requirements as per the EITI standards.

A greater protection of the environment and benefits for the communities

While the latest mining codes are more considerate of the effects of mining projects on the

environment and surrounding communities, it may be pointed out that most governments already had legislation in these areas, except that it wasn't codified. Today it is; and social and environmental requirements now clearly constitute one of the main aspects of national mining legislation. Such requirements include notably the assessment of social and environmental impacts through impact studies before any mining permits are granted, as well as the creation of social and/or environmental protection funds.

In this vein, the new Burkina Faso mining code tightens restrictions pertaining to environmental protection. It requires mining permit holders to carry out an *"environmental management"* audit every two years, which must then be submitted to and approved by the Minister of Environment (Article 139 of the new mining code). Failure to do so carries a two- to five-year prison sentence (Article 195). Article 25 specifies the creation of two funds, one for mine renovations and closures, and the other for renovating and securing artisanal mining sites and for preventing the use of banned chemicals. The first fund is financed by annual contributions from industrial or semi-mechanized mining permit holders, and from companies authorized to carry out industrial mining of quarry substances. These contributions depend on projected costs for the establishment of the environmental preservation and restoration programme as defined in the environmental and social impact study (Article 27). The second fund is financed by 25% of the fixed-rate royalty paid by companies authorized to carry out artisanal exploitation of mining or quarry substances (Article 28). One of the decrees adopted on 16 December 2016 stipulate the means of collecting and allocating the two funds.

The Burkinabé legislation is not alone in reinforcing this environmental and social dimension. In Cameroon the new code stipulates the creation of a fund related to the restoration, renovation, and closure of mining and quarrying sites (Article 235).

In Senegal the new code enlarges the obligation of renovating the mine from the exploitation phase to the research phase, and thus to the holders of research permits (Article 20). In Djibouti the new code provides for the constitution of a provision for reconstructing deposits (Article 78) and of a new provision for restoring sites (Article 79) for a maximum fixed amount of 2% of annual turnover taxes excluded. Environmental concerns also manifest in the requirement for holders of research permits to commission an assessment *"of the exploration studies and works, and of the drafting of exploration reports and technical, economic, and financial feasibility studies and those relating to environmental issues by a qualified person as so defined by the following international standard: JORC (Australia) or Instruction 43-101 (Canada)"* (article 50). Also, the mandatory conformity certification of the risks and environmental impact study must be carried out by an "independent qualified person as so defined by the following international standard: JORC (Australia) or Instruction 43-101 (Canada)". What's more, this must be accompanied by a risk management plan and a restoration study (Article 64). The new code also stipulates that the issuing of mining or quarry exploitation permits by a competent administrative authority *"is in all cases subject to the informed favourable decision by the authority in charge of the environment and, where necessary, by the authority in charge of the Public Water Domain and/or the authority in charge of the Public Forest Domain if the surface of the mining title applied for falls completely/partially within either or both these two domains"* (Article 58).

In order to insure that the exploitation of mining resources directly benefits the affected communities, the new mining codes also impose dedicated funds. The new Senegalese mining code has created two support funds: a social and financial parity fund (meant for local communities), which will be financed by a 20% contribution from state revenues deriving from mining operations (Article 113); and a support fund for local development financed by a 0.5% contribution by the title holder or contractor's annual turnover taxes excluded during the exploitation phase, and an amount to be negotiated during the research and development phase (Article 115).

The new Burkinabé mining code establishes a local development mining fund meant to finance local and regional development plans. This fund is financed by *"a 20% contribution from the government of proportional royalties collected linked to the value of the products extracted or sold"*, as well as by holders of exploitation permits and contractors authorized to industrially exploit quarries, in the amount of *"1% of their monthly turnover taxes excluded or of the value of the products extracted during the month"*. These holders and authorized contractors at the time the present code went into effect are required to contribute to the local mining development fund (Article 26). The first of the implementation decrees enacted in December 2016 relates to the organization, functioning, and means of collection and distribution of this fund.

It is equally important to emphasize the creation of mining sector development funds in Cameroon (Article 233) and a mining sector support fund in Senegal (Article 114). The purpose of these funds is not environmental nor intended to directly benefit the communities, but rather to finance research, inventory, quality control, and personnel training activities carried out by the national mines administrations. The legislation in Cameroon also introduces *"a special local capacities development account", which in a larger sense is meant to "finance the economic, social, cultural, and technological development of Cameroon through the development of human resources, companies, and local industry"*. It is financed by contributions ranging from 0.5% to 1% of the mining companies' annual turnover taxes excluded (Article 236).

Mining code reforms, or the difficult quest for the right balance

The goal of reforming a mining code must be to find a balance between the percentage accruing to the state (directly or indirectly), the reasonable profit that the private contractor makes from mining the national territory, and the related benefits enjoyed by the population.

While the current reforms focus on the points detailed above, it must be said that their intrinsic rigidity limits the room for negotiating within the framework of mining conventions, and that they do not always take into consideration the realities unique to each country. Beyond mining code reforms, it seems especially necessary to coherently harmonize the entirety of the legislation applicable to the mining sector (environment, employment, taxation, etc.). A sectorial reform would thus make sense and truly enable the accomplishment of set objectives by clarifying the commitments and obligations of the economic actors because, in practice, these actors are often faced with contradictions and diverging interpretations between the mining code provisions and those of other codes and legislation.

The most recent reforms have often had the effect of increasing the contractors' responsibilities and their financial contribution to the development of the countries; at the same time, numerous projects since the fall in prices the last two years, are experiencing difficulties on the African continent. Possibly they could have been based on improvements of previous legislation based on an in-depth analysis of the effects of such previous legislation rather than on the enacting of new codes as such – especially given that a number of new codes refer to implementation decrees and orders that have not yet been established, which often renders the new legislation unclear or incomprehensible. For this reason it is important that each government develops, prior to reforming its mining legislation, a political, economic, and national (or indeed subregional) vision of its mining sector, whose ambition would be the actual implementation of projects.

It is also advisable to promote contractualization between actors in a context of fluctuating markets. The practice proves in particular that a certain flexibility and adaptability is one of the conditions for negotiations on a mining or oil and gas project to succeed. If this flexibility is not sufficiently present, the consequence may be a reduction in investments or even the failure of a project, with the financial risk for the investor being too great and the government unable to deal with a changing economy without changing its legislation.

This strengthening of contractualization could, in addition, allow for the consideration of an aspect often insufficiently emphasized in national reforms, whereas it is nonetheless essential: infrastructures. The execution of numerous mining projects is conditioned by access to existing infrastructures and/or the construction of new ones. For the exploitation stages, mining operators must themselves finance and build mining infrastructures specific to the activity (processing plants, infrastructures for transporting and removing ores, private access roads, etc.), but also infrastructures for community use (health centres and schools). This amounts to considerable investments that often cannot be assumed individually by the contractor. It is thus important, in the first place, that these infrastructures be shared among several users and/or that they be part of the country development plan. They must, as a consequence, not only meet the technical and economic needs of the mining operators, but also the expectations of the state. In order for these infrastructures to be efficient, their construction must, in the second place, be coordinated within the framework of the mining projects. An infrastructure for transporting ore would obviously be useless in the absence of exportation infrastructure, and a mine would be unable to produce in the absence of available energy.

This necessary coordination is also required upstream of the project itself. Since mining projects and infrastructures are interdependent, any construction or maintenance delays in one of the infrastructures negatively impact the timetable for the global accomplishment of mining projects and generates extra charges for the contractor. Likewise, delays incurred during the execution of a mining project compromise the profitability of an infrastructure built exclusively or scaled in accordance with it. Yet the availability of these infrastructures, their reliability, their financing, the timetables and costs of completion and access, influence the investment decision and determine the future of the mining projects. Access to these infrastructures at competitive costs (compared to similar projects in other countries) becomes particularly important, especially in the international context of volatile ore prices. Only projects with competitive operational costs have the possibility of being carried out, and the price paid for using these infrastructures is an important component of those costs. As a consequence, the reform of a mining code can only be accompanied by an ambitious mining policy – which, in a context of internationalization and meta-projects, can only be regional, and mindful of the economic and geological realities, and of the infrastructures in place or to be built.

We may hazard that a "fifth" generation of codes will contain a genuine vision for project fulfilment, with a more detailed consideration of the regional stakes and infrastructure development. We may also hazard that it will promote an adaptability (contractualization) allowing for a true long-term, win/win partnership between governments and investors, but also further decorrelate more short-term variations of commodity prices. Africa's geological potential is considerable, and this will be one of the conditions of its enhancement.

Chapter VI

Renewable and non-renewable energies: how to foster the electrification of the African continent?

Among the major challenges facing the African continent to ensure growth, economic and societal development is its energy supply. While this issue is clearly multifaceted, the problem of electricity is as vital as it is complex. This applies at several levels: the availability and price of the energy resources needed for power generation, the cost of developing and maintaining generation and distribution facilities, matching these to the needs of the population and industry and, finally, the financing of these facilities. The management of the negative externalities that they can create is also an integral part of the problem. Within this logic, the complexity and urgency of the African situation means adopting a (seemingly paradoxical) approach that combines pragmatism and a long-term outlook.

Electricity consumption as an indicator of a country's economic activity was the subject of a research paper written in 2014 by two economists from the International Energy Agency (IEA). If the methodology used and the findings produced are, as always, open to debate, the intuition underlying the analysis is largely not in dispute: since the electrification of a country is one of the absolutely essential conditions for growth of its gross domestic product (GDP), electricity consumption must, therefore, be a relevant measure of its economic activity. As recent events indicate, investment by a mining group in a resource-rich country depends on a multiplicity of factors: the

quality of the deposit of course, the medium-term prospects for the demand for the ore (and therefore its price), the regulatory and fiscal framework in which the investment would be made and, more generally, the nature of the compensation the host country demands for the exploitation of its mineral resources, the existence of sea and land transport infrastructure enabling the ore extracted to be exported, and the provision of a stable electricity supply without power cuts. In 2015, as mineral prices collapsed, this last point proved to be one of the determining factors for the continued presence or departure of international groups established in African countries. Electricity shortages in South Africa, Ghana and Zambia also affected the economic performance of these countries.

Obviously, the need to satisfy the continent's electricity demand is more important than industry alone. Indeed access to electricity is one of the essential conditions for human and societal development. Without electricity, how can a health service function properly or, to take just one more from a myriad of examples, the educational sector flourish? These questions are not only relevant for the present but also for the future, since Africa's electricity needs will rise exponentially. The reasons for this are not only as a result of the continent's demographic growth, but also in the strong prospect of economic development and new uses for electricity. While some 633 million Africans live without access to electricity today, this figure could double by 2030. The question of what strategy to adopt is therefore fundamental. The average electrification rate in Sub-Saharan Africa is estimated to be 31%, the lowest among developing regions. The survey carried out in 2014-2015 by Afrobarometer shows that in the thirty-six African countries considered, only four out of ten people benefit from reliable electricity supply. While a country's electrification is one thing, access to the network is another, as is the reliability of supply. Among the many examples of power distribution failure in African countries, we can single out a situation in Equatorial Guinea, where Bata, the country's economic capital, was plunged into darkness for almost two weeks in August 2015, due to lower production from the Djibloho hydroelectric dam. The World Bank's conclusion on the African situation is quite explicit: low power generation capacity in the face of high needs coupled with inadequate network access, low reliability, and a high cost per kilowatt-hour (kWh). To this, one could also add the traditionally high cost of electricity on the continent.

On the scale of the African continent as a whole, however, the issue of production and consumption has only a limited impact, whereas the disparities are enormous. In terms of consumption, these occur at four main levels, depending on the country, households' income level, households' location (in rural or urban areas) and, more subjectively, how private households perceive reliable access to the electricity grid and the urgency of their situation. Access to electricity, on a country by country basis, is thus the primary factor accounting for Africa's heterogeneity in this respect. According to the Afrobarometer survey, whereas 92% of households in North Africa have access, the rate falls to 46% in East Africa and 55% in the West. Burundi (17%), Burkina Faso (25%) and Sierra Leone (29%) are among the most disadvantaged countries in the survey. Other statistics, including those from Global Tracking Network, reveal even lower figures. Thanks to significant investments, considerable progress has been made in terms of access to electricity in some African countries – Kenya, Ethiopia, Malawi, Cape Verde and Uganda – but as previously mentioned, this is often insufficient compared to the continent's expected growth in electricity needs. But, although the rate of electrification on the African continent has increased on average between 1990 and 2014, it is now declining in some countries. This disparity in access and consumption of electricity is also observed internally within countries. A study published in 2016 by the World Bank shows, unsurprisingly, that wealthy urban households consume the most electricity, while among poor households, those located in urban areas are the least disadvantaged. The cost of access to electricity and/or the capacity of households to meet it, coupled with the difficulty of electrification in rural areas are inescapable issues.

These disparities do not disappear when one turns to the continent's electrical power genera-

Rate of electrification around the world

	People without access to electricity (in millions)	Electrification Rate	Urban Electrification Rate	Rural Electrification Rate
Sub-Saharan Africa	632.22	35.23%	62.69%	18.87%
North Africa	1.28	99.29%	99.89%	98.57%
Developing Asian Countries	512.29	86.44%	96.21%	78.94%
Latin America	21.77	95.47%	98.24%	84.83%
Middle East	17.73	92.08%	98.30%	77.86%

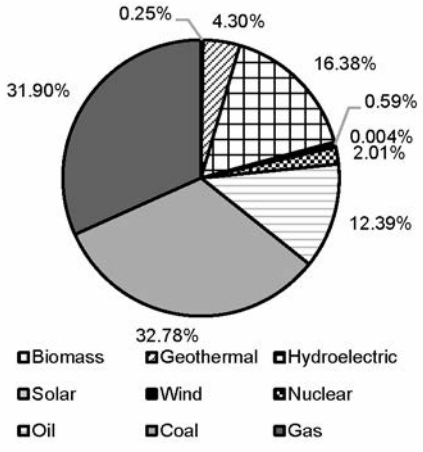
(Source: World Energy Outlook (2016) - IEA)

tion. The latest figures from the International Energy Agency show that for 2014, total electricity production in Africa was 765,039 GWh . With a consumption of less than 500 kWh per capita, geographically sub-Saharan Africa is the world's most deprived area in terms of electricity. Most power generation relies on fossil fuels, with coal, gas and oil accounting for more than 70% of electricity production.

This general observation obscures large intra-continental disparities, partly due to the combination of marked economic differences between African countries (and therefore differences in the degree of electrification of their territories) and the type of resources available to each for electricity production. For example, South Africa, Africa's largest economy, produced more than 33% of the continent's electricity in 2014, with coal accounting for more than 92%. Egypt, for its part, produced 20.70% of Africa's electricity, most of it from gas (74%) and oil (17%) – a proportion that is hardly surprising since Egypt is the second largest gas producer and the fifth largest oil producer in Africa. For many other African countries of lighter economic weight – Angola, Central African Republic, Democratic Republic of the Congo, Malawi , Namibia, Ethiopia, Kenya, Mali, Namibia, Sierra Leone, Sudan, Togo, Uganda and Zambia – the proportion of hydropower in their total electricity production is more than 70%.

Which power mix to choose?

From these figures on both electricity production and access to it, a clear picture emerges: apart from the need to increase generation capacity, the issue of the electrification of Africa is multifactorial. The economic pragmatism that would lead a



(Source: IEA)

country to exploit its mining, hydraulic, oil or gas resources as a priority for the electricity production for national purposes cannot fully explain the reality of the African situation and, more importantly, shed light on developments in this area. For governmental decision-makers, weighing up the priorities for the development of electricity generation between renewable and non-renewable energies or, broadly speaking, between one source of power and another, results in complex trade-offs whose outcome is never simple. Among the technical, economic, financial and societal factors to be taken into account are:

• the magnitude, nature (industrial vs. non-industrial) and the intensity of the electricity needs to be met,

• the financial cost of energy infrastructure in the development and operational phases,

• the ability to find investors/funding partners to cover these costs and, for private funders, the ability to offer them financial conditions allowing to amortize them over the long term, in particular through the existence (or not) of guaranteed buy-back prices,

• the desired lifetime for the energy infrastructure,

• the physical and economic availability of the resources needed for electricity generation,

• the cost of energy resources for power generation,

• access to and control of technologies making it possible to exploit these resources effectively,

• the nature of the territory to be electrified, as well as the extent of the existing distribution networks, their transit capacity and the possibility of connection,

• the degree of vulnerability to hazards of electrical installations and distribution grids, in particular meteorological or climatic conditions,

• he existence of conflicts and rivalries concerning use,

• the degree of acceptance, by the populations concerned, of the negative externalities produced, particularly from an environmental standpoint and, as the case may be, the cost involved in their management.

The first two considerations are in principle self-evident: the choice of a priority source of supply depends on the magnitude of the needs to be met and the resources available. However, certain points need to be made: the availability of resources essential for electricity generation is not only geological (coal, fuel oil, natural gas), physical (hydraulic, biomass) and meteorological (wind, sunshine), but also economic. As with the strategy implemented by Egypt, countries with non-renewable resources must choose between exporting them or using them locally for power generation. By opting for their sale in international markets, the economic availability of high-priced resources may be reduced. The origin of the resource also matters and can potentially raise both geopolitical problems (notably with regard to the supply of terrestrial gas and the use of water resources), environmental and ecological problems, such as deforestation for biomass or population displacement, diminishing fishery resources, the disruption of ecosystems as a result of hydropower schemes, or the emission of greenhouse gasses from fossil energies.

Since electricity can only be stored with difficulty, it should also be remembered that an efficient grid must, through what is known as base, semi-base and peak production, be able to cope with peaks in demand and sufficient flexibility. Hydraulic retention (lakes in particular) and fossil fuel burning (fuel oil in particular) offer the best options from this perspective, unlike solar or nuclear energy. For so-called "extreme peak" production, combustion turbines fired by fuel oil or natural gas that can be started in less than twenty minutes, are essential. The question of the most efficient power mix for a particular country therefore requires the development of power generation units capable of responding to the "temporality" of demand.

Small is beautiful!

The nature of the territory to be electrified as well as the quality and capacity of the existing grid are also decisive criteria. Centralized electricity production makes sense in densely populated areas but does little to address the problem of electrification in rural areas. In particular, it requires the transmission of electricity over long distances, which is expensive in terms of develop-

ment and maintenance. One of the solutions is therefore to generate decentralized electricity. From this standpoint, the development of individual systems or mini-grids capable of supplying a village has become a mode of electric generation suited to small towns located in remote areas. While diesel was used to fuel a high proportion of these mini grids in Africa, solar or hybrid systems (combining solar and diesel to mitigate the intermittency of solar energy) have advanced strongly, as have individual systems such as solar lanterns. This shift has been confirmed by a report by the think-tank African Progress Panel, which not only emphasizes the effectiveness of such modes of generation but also their rapid growth. The problem is that their financial cost often has to be borne by the operator, which sometimes limits their distribution in villages. Less well-known, "mini hydros" are also suited to Africa. With power of less than 1 MW, they can also be adapted for electricity generation in rural areas.

Financing and profitability: two key aspects of electrification

Financial considerations are of course central to the problem of electrification in Africa. These are twofold which, although distinct, are interdependent: funding, and the profitability of the project. One recent trend concerns the impressive growth of photovoltaics. The cost per kWh of photovoltaic, although higher on average than other forms of power generation, has fallen dramatically, while its efficiency has correspondingly increased. Combined with the speed of construction of a power plant and the potential for African demand, these various characteristics explain the growing presence of international investment funds. Due to the financial constraints faced by national electricity companies, the financing of renewable energy is often diverse, in terms of both the instruments used – equity capital and debt – and the actors involved – private investors, international donors such as the African Development Bank, Proparco (a subsidiary of the French Development Agency), the World Bank and the European Investment Bank (EIB), and finally state agencies in the countries concerned.

For private investors, it is essential that financing yields a profit. As economists at the Oxford Institute for Energy Studies (OIES) point out, the viability and sustainability of investments in this sometimes non-liberalized electricity sector depend on a number of factors: the stability of future revenues (as with any investment), and therefore the possible existence of long-term contracts for the purchase of the electricity produced, the capacity for access to the electricity grid along with its quality and state of repair, and the extent of the country's public policies favouring renewable energy. The question of the return on capital investment is thus central. The well-known "risk-return" trade-off of such investment is largely dependent on the relative price of alternative energies, particularly fossil fuels when the country in question is itself a producer. The existence of subsidies and/or taxes on one or more of the sources of energy will also profoundly alter the equilibrium, as happened in Europe in the early 2010s with regard to fossil energies. In addition, the relative state of what is agreed between 'dark spreads' and 'spark spreads', namely the gross margin of an electricity producer, which is itself a function of the price of electricity, the power plant's thermal conversion efficiency (yield) and the price of the fuel (in this case coal and gas respectively), is one of the determinants of the type of plant that can be developed. While CO_2 allowance prices and coal prices fell in the early 2010s, taking into account the 'carbon cost' through the 'clean dark spread' and 'clean spark spread' formulas significantly changed the existing competitive equilibrium in Europe between gas and coal-fired plants, to the benefit of the latter. Gas-fired power plants, however, are faster to build, less capital-intensive, emit less carbon dioxide and are therefore generally more acceptable to the public. Overall then, an unstable equilibrium: the introduction in 2013 of a minimum carbon price this time in the UK favoured the development of gas and combined cycle power plants. The nature of a country's energy policy depends on physical realities and economic and financial variables, but it is also an expression of political choice through subsidy and/or taxation measures.

Managing negative externalities

While the use of non-renewable resources does not normally give rise to conflicts of interest, this is not necessarily the case for dams built on rivers that flow through several countries. Indeed, dams of this kind can cause serious tensions between countries and populations, as shown in particular by the recent construction of the Ethiopian Gibe III dam. This issue of resource sharing is both complex and unavoidable and often requires setting up an interstate management body. This is one of the missions of the Organization for the Development of the Senegal River (OMVS), the Niger Basin Authority (ABN), the Nile Basin Initiative (NBI), the Gambia River Basin Organisation (OMVG) and the Komati Basin Water Authority (KOBWA). Nor can the environmental aspect be ignored. While thermal power plants produce carbon dioxide, nitrogen and sulphur oxides; nuclear power plants inevitably raise the issue of radioactive waste management; renewable energy sources for their part have a clearly more favourable environmental balance sheet. Nevertheless, other negative externalities need to be taken into account. The irresponsible use of biomass – whose renewability is ultimately largely dependent on the plant resource used – has been identified as one of the causes of deforestation in some African countries.

These different variables have led African countries to either construct their new electricity generating units, or to opt for renewable energies, or sometimes fossil fuels. Thus, in 2017, Niger inaugurated the diesel-fired Gorou Banda power plant in the south-west of the country, with a capacity of 100 MW. But the cost of fossil fuels and the willingness of African countries to exploit their hydroelectric or solar potential seem to have largely favoured the development of renewable energies.

The great expectations of Senegal and Morocco in solar energy

As a country that is largely dependent on hydrocarbons, Senegal has made the development of renewable energies and the liberalization of electricity production the central element of its Emerging Senegal Plan (PSE). In this context, the solar photovoltaic power plant Senergy 2 in Bokhol in the Saint-Louis region was commissioned in 2016. With 77,000 solar panels and total power of 20 megawatts (MW), it is expected to produce 34 GWh annually. A further addition was the 22 MW solar power plant located in the Malikounda municipality. Further solar power stations are under construction or planned, in the region of Thiès, Louga and Dakar. In addition to solar energy, the country is also developing wind power, in the form of the future 150 MW Taïba Ndiaye wind farm. Senegal's ambition is threefold: to increase its electricity capacity from 820 MW to around 1,260 MW by 2019, to increase the share of renewable energies in the national energy mix to 20%, and to use this volume to significantly reduce the price per kWh. Zambia is also expected to benefit from two 50 MW solar power plants in the coming years, supported by the World Bank's Scaling Solar programme, which was officially launched in 2015 and initially aimed for at Zambia, Madagascar and Senegal.

There are numerous examples of the development of solar energy in Africa, but it is nevertheless Morocco, the COP 22 host country, which took the lead with the inauguration, in February 2016, of the first of the four development stages of the giant Noor (Arabic for light) solar power complex located near the city of Ouarzazate. The ambition is considerable: while Noor 1 has a power of 180 MW, all stations will provide 580 MW for an overall investment of $9 billion. Combined with the Tarfaya wind farm, which entered service in December 2014 and has a capacity of 300 MW, these production units will cover more than 40% of the country's electricity needs. They will also contribute to the Moroccan strategy of supplying more than 50% of the nation's energy needs through renewable energy by 2030, along with the capacity to export its surplus to Europe and neighbouring African countries.

Proliferation of hydroelectric dams in East and Central Africa

While the development of photovoltaics was one of the key elements of African energy policy

in 2016, hydroelectric power in other parts of the continent has not stood still. The Soubré hydroelectric dam in south-west Côte d'Ivoire, whose construction started in 2013, is expected to become operational in March 2017. Adding 275 MW to the country's electricity generation capacity, this dam will help Côte d'Ivoire to further rebalance its energy mix in favour of renewable energy. The same goes for Morocco, where no fewer than six hydroelectric projects are in the development phase. To the east, in Ethiopia, the Gibe III dam on the Omo River, in operation since 2015, was inaugurated in December 2016. It will have a capacity of 1,870 MW. Indeed Ethiopia has very ambitious plans with regard to hydroelectric production. As well as Gibe III, there is the Grand Ethiopian Renaissance Dam (GERD) project, a 6,000 MW capacity dam that will help the country exploit an estimated potential of 40,000 MW, and to export electricity. A legitimate ambition bearing in mind that Ethiopia has been experiencing high economic growth for several years and is the African country, after the Democratic Republic of Congo (DRC), with the second largest hydroelectric potential. Hydroelectric power in Africa is also embodied in the Inga 1 and 2 dams in the DRC, whose turbine renovation, initiated in 2014, and was still ongoing in 2016 (similarly to the Kariba dam on the Zambezi River, which supplies Zimbabwe and Zambia). The DRC also has considerable ambition in terms of hydroelectric production, through the development of the 4,800 MW Inga 3 dam. This project suffered a major setback in 2016, due to the withdrawal of the World Bank, after it had agreed in 2014 to finance it to the tune of $73 million. In June 2016 an agreement was signed to build another dam in the DCR, this time with a capacity of 240 MW, which should become operational in 2021 and is expected primarily serve the energy needs of the DRC copper sector. In Madagascar, the 200 MW Sahofika plant is in the preliminary phase of development, while in Cameroon the 30 MW Lom Pangar dam in the eastern part of the country is under construction. The Ruzizi III dam, with a capacity of 147 MW, will supply Burundi, the DRC and Rwanda, and the East African Power Pool (EAPP) is an electricity interconnection project involving the countries of the Common Market for Eastern and Southern Africa (COMESA) Also worthy of note was the inauguration in Guinea of the Kaléta dam, with a capacity of 240 MW in September 2015, and the development of the Souapiti dam, within the framework of a public-private partnership with the EDF-Artelia-Nodalis consortium. In short, this long, though probably not exhaustive, list of projects for the development and rehabilitation of hydroelectric units is fulfilling the agenda of many African countries.

The game changer of LNG

The development of hydroelectricity and solar energy is undoubtedly a strategy as inescapable as it is relevant for exploiting the extraordinary hydrological and climatic potential of the continent. This situation should nonetheless not obscure the continuing development in the global energy markets of a multi-faceted revolution: liquefied natural gas (LNG). While this resource is by no means new, its international market has been radically evolving for several years, and is continuing to do so. The trading of LNG has historically been organized around a close relationship between a producer and a user, a relationship characterized by long-term supply contracts and indexed prices. Carried along by the idea that LNG demand could only increase, and that Europe's energy policy would be favourable to them, producers have nevertheless developed additional supplies that are now priced on the spot market. While the shale gas revolution contributed to lower energy prices, improved liquefaction technology, through the development of floating storage and regasification units (FSRUs), has increased the flexibility of international trade in LNG. By eliminating the physical, geopolitical and financial constraints associated with terrestrial gas, LNG has thus emerged as an attractive option for many African countries in defining their optimum energy mix. This vision is, moreover, shared by Tom Earl, vice president of Total, who in October 2016 said he believed in the great potential of the African market for LNG. Once again, the prospect of a huge expansion in elec-

tricity demand supports this viewpoint. Thus, in December 2014, Morocco announced the development within five years, of a regasification terminal at the port of Jorf Lasfar, near the city of El Jadida, and of a pipeline to Casablanca and Tangier. Such a terminal is expected to import of 7 billion cubic metres of gas and thus considerably diversify Morocco's sources of supply.

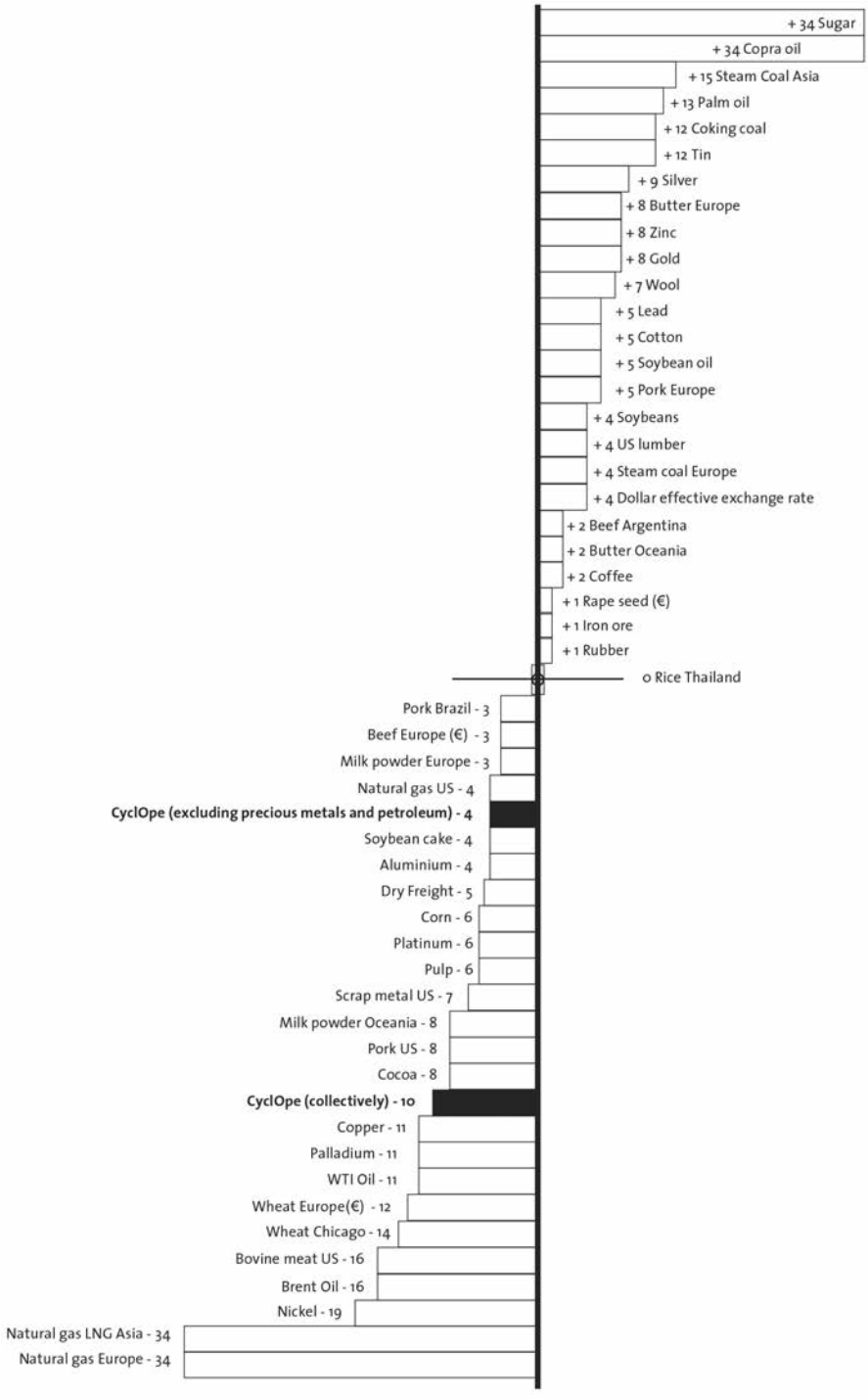
The key question of the development of African electricity grids

Lastly, the question of the development of intracontinental grids must be raised in the context of the electrification of Africa. In Africa, as in the rest of the world, the interconnection of electricity grids is particularly important for ensuring greater efficiency in power distribution, hence better price smoothing: peak demand that cannot be met by a local source can then be responded to by electricity supplied by a neighbouring country whose capacities are not being fully utilized. For example, during periods of very high demand for power, France has the option of importing electricity from Germany.

With various regional and sub-regional integration projects on the African political agenda, the energy sector it seems, is not lagging behind, as is evident from the Africa Power Vision agreed by African Heads of State at the 2014 Davos Summit and the Sustainable Energy for All (SE4ALL) initiative supported by forty-four African nations. This interconnection of grids already exists between many African countries (notably in southern and eastern Africa), but is expected to expand, as testified by the agreement reached in 2017 between Ethiopia and Sudan in the context of the inauguration of the Grand Ethiopian Renaissance Dam. This initiative lies within the framework of the East African Power Pool, created in 2005, initially involving Burundi, DRC, Egypt, Ethiopia, Kenya, Rwanda and Sudan, and subsequently joined by Tanzania (2010), Libya (2011) and Uganda (2012). Its aim is to ensure the coordination of energy trading between member countries and thereby to reduce the cost of electricity. For the same reasons, the Economic Community of West African States (ECOWAS) established the West African Power Pool (WAPP). For this repositioning to be possible, however, funding needs to be found for additional investment in interconnections. It was for this reason that the EIB extended an €85 million loan to Gambia and Senegal in 2015 with the aim of developing a 925 km power grid between the two countries with a transit capacity of 800 MW. In 2013, the AfDB, for its part, issued a $145 million loan for the Côte d'Ivoire, Liberia, Sierra Leone and Guinea grid interconnection project, which is expected to be completed by 2019. In Morocco, the extension of the 400 kV network to Dakhla in the direction of Mauritania, coupled with a substantial increase in generation potential, is probably another step towards interconnection. This account would not be complete, however, without mentioning smart grids, which enable users to adjust their demand according to their needs and which are particularly useful in the context of power generation based on intermittent energy sources such as solar – an opportunity that Africa is fully aware of.

In sum, the implementation of the development of access to electricity on the African continent is governed by a vision that is at once pragmatic and ambitious. The extraordinary potential in water resources in some countries and the extent of sunshine in others very much legitimize the willingness to increase the proportion of renewables in the African power mix. LNG, as a median solution in the search for greater environmental performance, could also play a growing role in some African countries. Due to the substantial needs to be met and the countries' different physical and energy profiles, renewable and non-renewable energies complement more than they oppose each other.

Commodity prices in 2016
(Average change in 2016 against average for 2015)



Second part

Africa's major commodity markets

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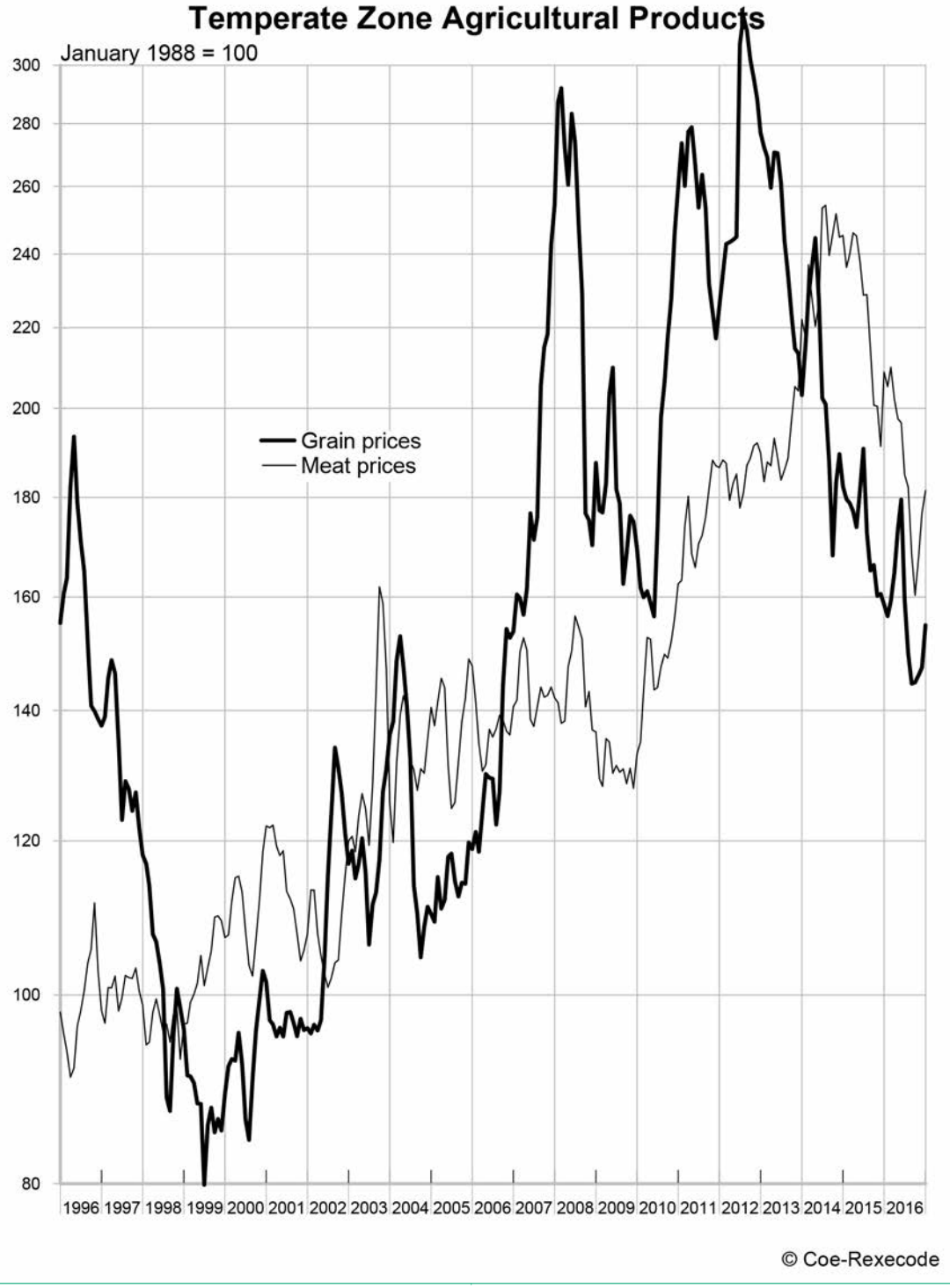

– I –

Grains and Temperate Zone Agriculture

- Grains
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Grains

The 2015-2016 grain round was characterized by low prices and the lack of any clear trend. This depressing mood has persisted into 2016-2017: despite a few climatic incidents, in East Africa and India especially, global production has stayed resolutely higher than consumption since 2013. Every year brings fresh evidence that February is far too early to predict yields in the northern hemisphere; all that can be said is that, for the moment, no negative factor has emerged. But yet another season with no clear recovery in prices will make things tough for more than one player in this field. Against a background of abundant supplies of grain worldwide, Africa has experienced two years in succession of bad harvests in 2015 2016 and 2016 2017, admittedly in different regions: severe drought in the north of the continent in 2015, then in the east in 2016. Imports therefore surged by 8 Mt compared to 2014 2015.

One year ago, we ended the overview of the 2015-2016 season fearing that 2016-2017 would bring yet more doom and gloom; the fact is that we were right. None of the factors listed that would normally fuel an upward trend had any lasting or notable impact, and those that appeared later also came to nothing – which is not to say that they were insignificant. But the players did not take them seriously, and they have ultimately been proved right, as production will most probably exceed consumption once again. We need to take a step back to understand why.

Complex situation in Egypt

In spring 2016, a number of questions were worrying the dealers where Africa was concerned: an inextricable situation in Egypt, a disastrous 2015 harvest in East and South Africa, and a gloomy outlook in Morocco. From the start of 2016, Egypt, relying on a 2001 decree despite it having been overturned by a 2010 regulation, prohibited the import of wheat containing the slightest trace of ergot while the pre-existing limit had followed the *Codex alimentarius* standard of

0.05%. The underlying reasons for this change are still to some extent obscure. It should also be pointed out that bread is an important issue in Egypt, and hardly a day goes by without it being discussed in the press, radio or television. Under the circumstances, it was no easy matter to revert to a level of 0.05% after having proclaimed that the slightest trace of ergot would kill Egyptians and ravage the farming sector. By mid-February 2016 things seemed to have returned to normal, but in fact the saga dragged on for another six months, with import licences for wheat containing up to 0.5% ergot alternating with stark prohibitions. Each time the level fell back to zero, the pool of bidders suddenly dried up. In April, the government received a report from the FAO on acceptable levels of ergot, but no decision was taken as a result. Ships were regularly turned away. Added to this imbroglio was the catastrophic financial situation: with traffic in the Suez Canal grinding to a halt and tourism in free fall, this meant a drastic cut in revenues for a

Cereals

(in millions of tonnes)

	2011/12	2012/13	2013/14	2014/15	2015/16 (e)	2016/17 (p)
World production	**1 850.0**	**1 802.7**	**2 008.0**	**2 048.2**	**2 003.7**	**2 084.4**
United States	377.2	346.8	425.7	432.8	423.5	467.2
China	318.5	334.2	348.5	350.2	363.5	354.0
EU (27)	284.5	273.8	301.4	326.7	310.5	293.5
India	129.1	136.4	136.7	138.9	124.6	136.2
Russia	89.7	66.9	88.7	100.5	99.4	111.8
Canada	48.1	51.6	66.3	51.4	53.2	56.2
Ukraine	56.0	45.6	62.5	64.4	60.8	64.4
Argentina	44.5	49.5	51.0	54.3	59.6	63.5
Australia	42.4	34.4	37.6	36.5	36.8	42.5
World trade	**271.0**	**270.8**	**310.3**	**322.2**	**343.7**	**337.6**
Major exporters						
United States	72.6	49.8	78.6	79.1	76.7	88.3
EU (27)	21.9	28.3	40.0	48.1	47.0	35.0
Ukraine	21.5	23.0	32.2	34.1	39.4	39.0
Canada	21.7	23.4	28.0	29.1	26.2	25.9
Australia	30.2	27.2	25.6	23.5	22.0	25.5
Argentina	32.2	35.2	17.4	26.8	30.7	34.9
Russia	27.2	15.5	25.4	30.6	34.6	39.4
Major importers						
Japan	23.0	24.3	23.4	21.9	22.1	23.1
Egypt	18.4	14.0	17.9	18.9	20.7	20.7
Mexico	18.2	11.6	15.1	15.6	19.3	19.8
South Korea	12.3	13.5	13.4	14.2	14.1	15.0
Ending stock	**360.0**	**338.0**	**413.0**	**454.0**	**475.0**	**504.0**

(Source: IGC, Grain Market Report)

Total production of grains (Mt)

	2013-2014	2014-2015	2015-2016	2016-2017
	139.60	**143.30**	**136.00**	**134.80**
of which:				
Egypt	15.30	15.50	15.40	15.50
Morocco	10.00	7.00	11.70	3.60
Ethiopia	17.10	18.50	13.40	16.40
Nigeria	18.10	19.10	18.10	18.70
South-Africa	17.60	12.80	10.10	14.90

country whose economy is partly dependent on the Gulf monarchies – they have invested over $20 billion there in three years – and the International Monetary Fund (IMF.)

This state of affairs is probably not unconnected to the ongoing reform of the grain sector: previously, bread was subsidised to bring this basic foodstuff within everyone's reach. Inevitably, the system led to waste and misappropriation, as happened in Iran, and not without controversy, it was therefore decided to migrate gradually to a system of electronic cards enabling each family to buy five baladi loaves a day; the unused amounts are credited at a value that is double the price of bread and can be used to buy other food products, which operates as a strong incentive to buy only the bread the family needs to eat. The savings in wheat that have resulted are hard to quantify: there is talk of 1 to 1.5 Mt. At the same time, however, two million Egyptians are born every year. In the end, the General Authority for Supply Commodities (GASC) bought as much wheat in 2015 2016 as in 2014 2015, slightly over 5 Mt.

A little further west, just when it was becoming clear that, because of a record drought, the wheat harvest in Morocco would be a disaster, a much higher than predicted flow of imports showed that the 2015 harvest had not reached the record levels announced. Importers were already asking the government to reduce to a minimum the summer period during which imports are restricted by high customs duties. Now, for the first time, the Moroccan government decided to

Total grain imports (Mt)

	2013-2014	2014-2015	2015-2016	2016-2017
	65.30	**67.10**	**75.90**	**76.00**
of which:				
Algeria	11.70	12.60	13.10	13.50
Egypt	17.90	18.90	20.70	20.60
Morocco	6.40	6.60	7.30	8.20
Nigeria	4.80	4.50	4.40	4.60
South-Africa	2.10	2.10	5.10	4.10
Sudan	2.80	2.80	2.20	2.40

allow imports after the end of April, up to the end of June.

Algeria ended the 2015 2016 season with its grain imports rising: the country was digging into the financial reserves it had accumulated when oil was dear in order to preserve civic order.

In the east of the continent, the powerful El Niño episode had devastated the straw crops in 2015, leaving farmers in those countries facing a cruel shortage of seed by spring 2016. This necessitated massive imports in the first six months of 2016. The region that stretches from Ethiopia to South Africa thus imported some 2 Mt more wheat than in 2014 2015, which was scarcely apparent in the final forecasts at the start of the round but ultimately did not have a disruptive effect on the market. Only Sudan, despite being equally badly stricken, reduced its purchases, as the government stopped giving aid to the importers. Quite the reverse: the country announced in spring 2016 that it was in mind to sell 420,000 hectares to Saudi investors to produce wheat and barley.

Wheat

(in millions of tonnes)

	2011/12	2012/13	2013/14	2014/15	2015/16 (e)	2016/17 (p)
World production	**695.4**	**655.0**	**717.1**	**730.3**	**737.0**	**748.6**
EU (27)	137.4	131.6	143.2	156.1	1595.8	143.4
China	117.4	120.8	121.9	126.2	130.2	128.0
India	86.9	94.9	93.5	95.9	86.5	93.5
United States	54.4	61.8	58.1	55.1	56.1	62.9
Russia	56.2	37.7	52.1	59.1	61.0	71.0
Australia	29.9	22.9	25.3	23.7	24.2	28.3
Canada	25.3	27.2	37.5	29.4	31.0	31.0
Ukraine	22.3	15.8	22.3	24.7	27.3	26.5
Turkey	18.8	20.1	22.1	19.0	22.6	20.6
Argentina	14.5	8.0	9.2	13.9	11.3	14.2
World trade	**153.8**	**141.9**	**156.5**	**153.3**	**164.3**	**166.2**
Major exporters						
United States	27.9	27.5	31.3	22.6	21.6	25.7
EU (27)	15.6	21.7	31.0	34.4	33.9	25.9
Canada	18.2	18.7	22.9	24.9	21.9	21.5
Australia	23.1	21.3	18.4	16.6	15.8	19.5
Russia	21.6	11.2	18.5	22.2	25.4	30.0
Ukraine	5.4	7.1	9.5	11.2	17.5	15.0
Kazakhstan	11.1	7.2	8.4	5.9	7.3	8.9
Argentina	11.3	7.1	1.5	4.1	8.7	8.2
Major importers						
Egypt	11.6	8.2	10.1	11.1	12.2	12.0
Brazil	6.8	7.7	7.0	5.7	6.0	6.5
Indonesia	6.5	7.2	7.5	7.3	10.2	8.8
Algeria	6.3	6.4	7.4	7.3	8.2	8.1
Japan	5.8	6.3	5.9	5.6	5.6	5.8
South Korea	5.1	5.2	4.1	4.0	4.5	5.1
EU (27)	7.2	5.3	4.1	6.2	7.0	6.6
Ending stock	**191.0**	**170.0**	**190.0**	**205.0**	**222.0**	**235.0**

(Source: USDA)

Wheat production (Mt)

	2013-2014	2014-2015	2015-2016	2016-2017
	27.40	**24.40**	**25.70**	**21.40**
of which:				
Egypt	8.70	8.50	8.50	8.60
Morocco	7.00	5.10	8.10	2.70
Ethiopia	3.90	4.20	2.80	3.60
South-Africa	2.00	1.80	1.40	1.90

Aside from the problems in the east, sub-Saharan Africa continued to increase its grain purchases in 2015 2016; only in Nigeria did this level off, because of the crisis besetting the country and the depressed oil prices. In that country there was also a notable drop in imports from the United States, which worked to the benefit of Russia, Canada, Australia and the Northern European countries.

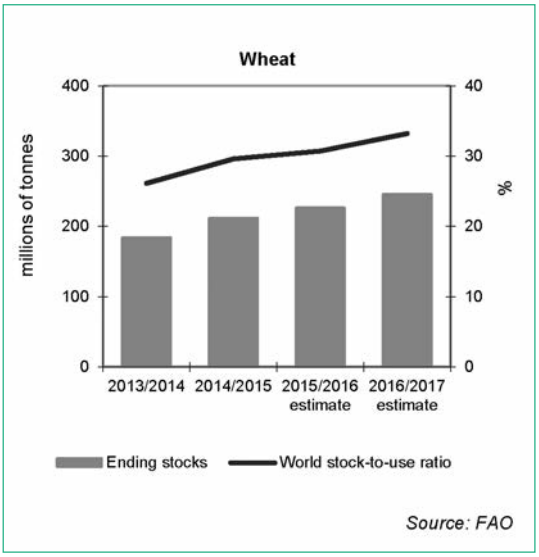
In South Africa and its neighbouring countries, the market in maize came under strong pressure. After a disappointing crop in May 2015, the 2016 harvest proved to be even worse, necessitating imports of close to 3 Mt when the country suffered one of the harshest droughts of the century. Not only did South Africa not have enough maize for its domestic needs, it was also unable to export any to its neighbours. Added to which a significant proportion of South African maize is white maize, a variety of which there are only a handful of producers worldwide.

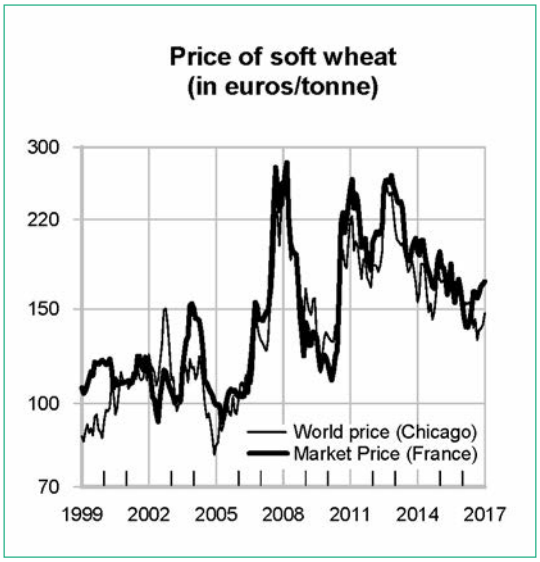
The 2015-2016 season ended with a worldwide increase of over 10 Mt in movements of wheat, an exceptional spike due to a spiralling increase in demand in Asia and Africa. In Asia, the reason is not only organic growth but also policy measures, as in Indonesia. Africa, too, is experiencing organic growth – it is here that population is rising fastest – and there was also severe climatic disturbance in the east of the continent.

On 11 July 2016, Egypt finally issued a decree increasing the admissible level of ergot to 0.05%: no sooner was a tender announced then the numbers of dealers responding shot up. But on 28 August, the Minister of Agriculture again banned any ships carrying the slightest trace of ergot. The

Wheat imports (Mt)

	2013-2014	2014-2015	2015-2016	2016-2017
	44.90	**45.20**	**50.00**	**49.20**
of which:				
Algeria	7.40	7.30	8.10	8.20
Egypt	10.10	11.10	12.10	11.70
Morocco	3.90	4.00	4.40	5.10
Nigeria	4.60	4.30	4.40	4.40
South-Africa	1.90	1.80	2.30	1.90
Sudan	2.60	2.70	2.00	2.20





result was that, by the end of September, purchases by GASC were almost 1 Mt down on the previous year. In October, the problem seemed to be headed for a resolution while new import controls rules were introduced. Parliament also decided to launch an investigation into the persistent rumours of fraud: the first inspections in fact proved that the stocks declared did not correspond to the stocks actually there. Charges have been laid and the Minister of Supplies has moreover resigned. As for the system of ration cards, already the focus of numerous frauds, it was announced that they would be placed under the control of the Ministry of Military Industry. The sudden devaluation of more than 50% of the Egyptian pound against the dollar was a blow to the importers who had not hedged their lines of credit opened in local currency: the four biggest Egyptian importers are said to have made losses of around $500 million. At the end of 2016, the government also announced its desire to reduce the numbers of people entitled to subsidised bread, and in early 2017, it stated that the number of beneficiary families would be cut from 84 to 70 million with the aim of reducing it later to 30 million. This did not go down very well in a country where inflation is close to 25%. At the start of 2017, Egypt decided to take the global price of wheat as the point of reference for what it would pay for the next domestic harvest. The price would be calculated based on the average GASC tender price in the two months preceding the harvest, which could give around €180/t. In past years, the purchase price was set well above the global level, at €300/t in 2016 for instance, opening the way to large scale fraud, with local dealers importing wheat which they then sold as local wheat. What is more, by early 2017 no agreement had yet been reached between the importers and the government, the Central Bank having rejected their terms.

Shrinkage in French exports to Africa

After a buoyant start to the 2016 2017 season, it became clear from September that France would be much less present in Africa than usual. Aside from the fact that wheat production had plummeted from almost 41 Mt in 2015 to 28 Mt in 2016, there were problems with quality: while the protein content was high, the quality of the gluten was not good enough for the bakers and the specific weight was very low. That gave rise to problems in exporting to Algeria, whose Interprofessional Grains Office (OAIC) requires a specific weight of 77 kg/hl on arrival. As might be expected, this worked to the advantage of exports from northern Europe, as in 2014. In addition,

Maize

(in millions of tonnes)

	2011/12	2012/13	2013/14	2014/15	2015/16 (e)	2016/17 (p)
World production	**875.5**	**872.6**	**998.4**	**1019.0**	**970.8**	**1041.7**
United States	312.8	273.2	351.3	361.1	345.5	386.7
China	192.8	205.6	218.5	215.6	224.6	217.0
Brazil	73.0	81.5	80.1	84.7	67.0	85.4
EU (27)	66.0	56.3	64.2	76.2	58.2	59.5
Ukraine	22.8	20.9	30.9	28.5	23.3	26.5
Argentina	21.2	32.1	33.1	33.8	39.8	42.5
India	21.8	22.2	24.3	24.2	21.8	25.0
Mexico	17.6	21.6	22.9	25.5	25.8	24.5
World trade	**97.8**	**99.7**	**121.8**	**125.1**	**135.8**	**134.9**
Major exporters						
United States	42.7	20.0	42.8	47.2	45.8	56.2
Brazil	8.5	26.4	23.5	20.6	35.9	16.5
Ukraine	13.6	13.8	19.9	18.2	17.3	18.7
Argentina	16.5	21.6	12.0	19.8	18.6	23.8
India	4.1	4.9	4.1	1.4	0.5	0.7
EU (27)	3.0	1.5	2.8	3.7	2.0	2.2
South Africa	2.2	2.0	1.8	1.8	0.7	0.7
Major importers						
Japan	14.5	14.5	15.2	14.2	14.7	15.1
Mexico	11.6	5.6	9.8	10.8	13.8	14.2
South Korea	7.2	8.2	9.2	10.1	9.6	9.9
Egypt	6.7	5.8	7.7	7.7	8.5	8.6
China	4.7	3.7	3.9	5.1	4.1	1.9
Taiwan	4.4	4.2	4.1	3.9	4.5	4.4
Ending stock	**130.0**	**133.0**	**182.0**	**207.0**	**208.0**	**224.0**

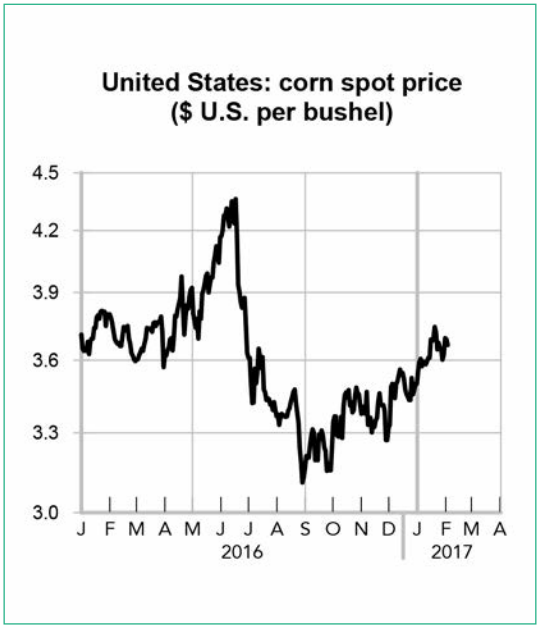
(Source: USDA)

Corn production (Mt)

	2013-2014	2014-2015	2015-2016	2016-2017
	69.40	**69.00**	**61.80**	**66.40**
of which:				
Egypt	5.80	6.00	6.00	6.00
Ethiopia	6.50	7.20	5.60	6.30
Nigeria	7.70	7.50	7.00	7.50
South-Africa	15.00	10.60	8.20	12.50
Tanzania	5.40	6.70	6.00	5.50

Algeria is an atypical case in the African landscape. The country has insisted on importing mainly French, or at any rate European, wheat, in particular by imposing restrictive quality criteria. Clearly, the financial problems caused by the drastic fall in oil prices have prompted the government to review this 'historical annuity'. Moreover, there has been no shortage of controversy in the local press, pointing out how much the refusal to import Russian wheat is costing the country. At the moment, the status quo is being strictly upheld, but for how much longer? That said, it seems Algeria is planning to import slightly less than the 6.5 Mt of the 2015-2016 round, but the question of origins remains open. France's share will inevitably fall because of poor quality and the northern European countries will partly take its place, along with Argentina. Also, how much will the United States – whose wheat is, all things considered, uncompetitive – finally sell? Algeria has also announced the ending of the barley subsidy. In all likelihood, there will be changes to the system of bread subsidies too, as in Egypt.

As had been feared, the Moroccan grain harvest turned out to be three times below the 2016 level. Imports began on 15 August, much earlier than usual. France was conspicuous by the almost total absence of its exports to Morocco. In September, the country officially applied to rejoin the African Union, having left in 1984, and in October, King Mohammed VI went on a tour of East Africa (Rwanda, Tanzania and Ethiopia) mainly to secure economic and agricultural cooperation agreements.



French exports to sub-Saharan Africa have also fallen off markedly this year. For many years the West African countries have been a 'reserved domain' for exporters of French wheat. In a region with ever-rising demand because the population is not only growing but becoming more affluent, French sales have gone from 1.0 1.25 Mt at the start of the 2000s to more than 2 Mt in recent years. But the quality issues with the French crop in 2016 have reshuffled the deck: millers in these countries have been trying other sources, Russian wheat in particular, and the expectation is that French wheat will have to face stiffer competition than ever, as it has in Morocco for several years.

Corn imports (Mt)

	2013-2014	2014-2015	2015-2016	2016-2017
	17.50	**18.50**	**21.70**	**22.30**
of which:				
Algeria	3.70	4.40	4.10	4.50
Egypt	7.70	7.70	8.50	8.80
Morocco	2.00	2.20	2.10	2.10

Sorghum production (Mt)

	2013-2014	2014-2015	2015-2016	2016-2017
	21.30	**28.00**	**25.20**	**26.60**
of which:				
Ethiopia	3.80	4.30	2.60	3.70
Nigeria	5.30	6.70	6.20	6.40
Sudan	2.20	6.30	5.50	5.60

Abundance looks here to stay

With the start of spring there are no factors to clearly indicate an upturn. Other things being equal, the 2016 2017 season looks set to be one of oversupply. End-of-season stocks of both maize and wheat have increased, with worldwide record levels of grain production at almost 2.1 billion tonnes. The resulting depressed prices have enabled regular importers to make substantial savings. For wheat, Argentina has harvested between 15 and 15.5 Mt – against 11.3 in 2015 – and Australia has produced some 32 Mt, which is 8 Mt more than in 2015. Winter sowing was hardly impacted by the cold snap in January, and if one multiplies the growing areas in the northern hemisphere by a yield in line with the trends – the best guess at this point – the result is high winter grain production. Since it is unlikely that Russia and Australia will have managed to export all their available wheat by the end of June 2017, their carry-over stocks will be high. The fact that areas growing winter wheat in the United States are at their lowest since 1909 is not causing undue concern.

With the finish of winter in 2017, weather conditions are favourable in the northern part of the continent of Africa: the rainfall in recent months, especially in December, was enough to get the winter sowing off to a good start. The southern part of the continent is also favoured. Harvests in West Africa look set to be good. By contrast, there are fresh threats of drought in East Africa, and sowing of maize, rice and millet have been delayed in Kenya, Tanzania and Burundi.

Of course, nothing should be taken for granted, as the sharpest hikes in prices in recent years have all been the result of meteorological phenomena occurring in June or July. To trigger a clear and sustainable trend, they would still have to cause a very substantial reduction – 20 to 40 Mt – including in particularly sensitive areas such as Russia and Ukraine.

Rice

A very modest rise in global production, with prices slightly up over the year, stocks down but still substantial, and a falling off in international trade due, among other things, to sluggish demand in Asia: 2016 was a lacklustre year for the world rice market. While production increased in Africa as a whole, especially East and West Africa, the drought precipitated by El Niño damaged the harvests in the southern part of the continent. Despite the measures taken to develop the cultivation of rice and the impressive performance of countries like Mali, rice is in chronically short supply in the face of ever-growing needs.

Upsets in the global market

While worldwide rice prices rose slightly, on average, during 2016, there were considerable variations, especially in Asia. After a definite upturn in the first six months, prices fell back markedly in the months that followed, only to recover somewhat at the end of the year. In Thailand, the world's second largest exporter with 9.6 Mt of rice exported in 2016, the price of Thai 100 B rice (less than 5% broken) showed an upturn of 2% from 2015 to 2016, from an annual average of $386/t to $394/t. On a monthly basis, however, it rose by more than 18% between January and July, from $369/t to $436/t, only to fall back by just under 16% between July and November. While the Vietnamese reference (Viet 5%) remained stable at $358/t on average in 2016, prices in India were 1.5% weaker though they did not fall below the price floor of $350/t. However, they followed a similar trajectory to prices for Thai rice, with Vietnamese rice peaking in March and the Indian references in July.

What should we make of these trends? On the supply side, global production has shown only limited growth. 748 Mt of paddy rice (496 Mt milled basis) were produced in 2016 against 740 Mt the previous year. Among the reasons for this small increase were the fact that, while in South Asia more areas were planted and rainfall was high, production was disappointing in Indonesia, Malaysia and Vietnam. Coupled with relatively weak production in Latin America and a high demand for imports from Asia, despite Chinese demand being lower than forecast, 2016 turned out much less auspicious than it might have been. Nonetheless, global stocks, estimated at 174.7 Mt in 2016 against 171 Mt in 2015 according to statistics from the United Nations Food and Agriculture Organisation (FAO), held that upward momentum in check. Thailand's substantial sales, boosted by stocks of poor quality rice built up since 2009, were a factor contributing to the flattening of prices noticed in the second half of the year, serving as a reminder that the market for rice is still dominated by export sur-

Rice
(in millions of tonnes)

	2012	2013	2014	2015	2016 (e)	2017 (p)
Paddy Rice						
World production	**735.7**	**744.6**	**744.8**	**739.8**	**748.0**	
China	205.9	205.2	208.2	209.8	208.6	
India	157.9	160.0	158.2	156.5	161.5	
Indonesia	69.1	71.3	70.8	73.0	71.9	
Bangladesh	50.8	51.2	51.8	52.5	52.5	
Vietnam	42.3	44.0	45.0	45.2	43.9	
Thailand	38.0	36.8	33.4	28.5	31.1	
Burma	29.0	28.3	28.2	27.5	28.0	
Brazil	13.6	11.8	12.1	12.4	10.6	
Japan	10.5	10.9	10.8	10.5	10.7	
Husked rice						
World exports	**38.4**	**40.1**	**45.6**	**44.7**	**42.0**	**43.0**
Thailand	6.7	6.6	11.0	9.8	9.6	9.9
Vietnam	7.7	6.7	8.0	6.5	5.0	6.0
United States	3.3	3.3	3.0	3.5	3.2	3.6
India	10.4	10.8	11.0	11.2	9.9	9.8
Pakistan	3.4	4.0	3.6	4.1	4.3	4.4
China	0.3	0.5	0.4	0.3	0.5	0.4
Others	6.6	8.2	8.6	7.8	9.2	8.1
World imports						
EU (28)	1.3	1.4	1.6	1.8	1.8	1.9
China	3.0	3.5	5.9	7.1	6.4	6.6
Indonesia	1.8	0.7	1.3	1.3	1.3	0.8
Iran	1.5	2.2	1.7	0.8	1.0	1.0
Nigeria	3.4	2.4	3.3	2.2	2.3	2.5
Russia	0.2	0.2	0.3	0.2	0.2	0.2
Philippines	1.5	1.0	1.8	2.0	1.0	1.2
Saudi Arabia	1.2	1.3	1.4	1.6	1.3	1.4
Japan	0.7	0.7	0.7	0.7	0.7	0.7
Brazil	0.7	0.7	0.6	0.3	0.7	0.7
Eastern Asia	8.6	8.9	14.4	14.9	13.0	13.3
Africa	13.6	13.1	15.2	13.7	14.1	14.3
Near and Middle East	9.4	9.5	8.5	7.9	7.4	7.8
Latin America	3.7	3.6	3.6	3.8	4.1	4.0
Industrial countries (excluding Japan)	3.4	3.3	3.3	3.4	3.4	3.5
Closing stocks	**161.0**	**175.6**	**171.5**	**174.7**	**171.0**	**170.3**

(sources: FAO & USDA, 2017)

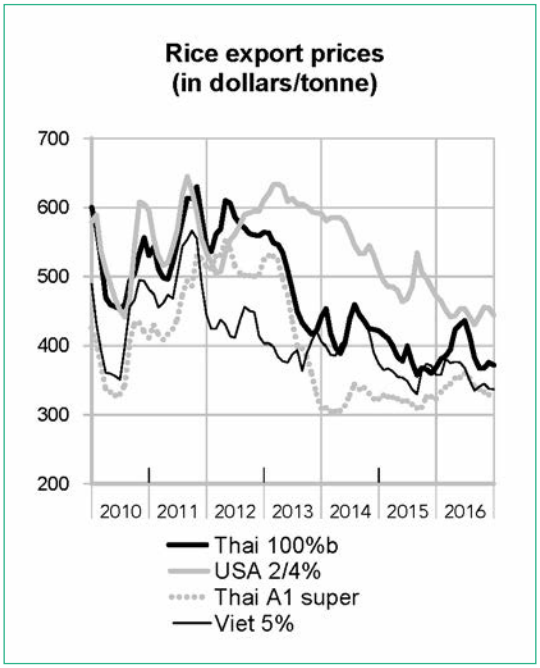
pluses and fierce competition between the exporting countries.

The situation in Africa: chronic shortage in the face of ever-growing needs

As evidenced by the fact that Nigeria is the world's second largest importer, rice, a product traditionally cultivated and consumed in Asia and seen as an emblem of that continent, also occupies a dominant place in the diet of the African population. All the more so since consumption of rice has soared since the 1990s, exceeding 34 Mt (in milled equivalent) in 2016, or 25% of the grains consumed in sub-Saharan Africa, just behind maize. That said, there are wide disparities in terms of consumption and market growth. West Africa constitutes the main market for rice on the continent, with 60% of total consumption, and is the most dynamic in terms of changing eating habits. Average consumption per head of population is 45 kg, and this is growing at the rate of 2.5% each year. That is double the average consumption in sub-Saharan Africa as a whole, and comes close to average consumption worldwide, which is strongly influenced by consumption in Asia representing 90% of the total. One of the main factors driving growth in consumption, not only in West Africa but also in Central and southern Africa, is demographic pressure and the strong trend towards urbanisation. The rate of urbanisation of the population of West Africa is already thought to have exceeded the 50% mark in 2016 and could be as high as 60% by 2035. It is in the towns that rice consumption is highest, as it is a product that is easily obtainable, thanks to imports, and quick to prepare compared to traditional cereals (millet and sorghum). Culinary tradition is another factor that determines food preferences. It is the only region in Africa where rice is endemic, with varieties that have been cultivated for several thousand years. This alone gives rice a much more significant role in people's everyday diets than in the rest of Africa. Production has thus continued to improve with the expansion of areas under cultivation and yields that are on the increase, though they are still among the lowest in the world. But even these advances are not enough in the face of ever-growing needs. In practice, despite the stated goals of many countries in the region to reduce their dependency by growing rice, the percentage of consumption needs they can themselves meet is stuck at around 55%. While private initiatives and public support to reactivate the local growing industry and drive up production in the long term met with some success in the first years after the 2008 crisis, they have not been enough to reverse the dependency on imports for supplies of rice. Sub-Saharan Africa thus remains the number one import hub, with around one third of the world's imports.

Production remains inadequate

In 2016, rice production in Africa saw a significant upturn of 5%, reaching 30 Mt for the first time (20 Mt milled basis). These good results were especially notable in the western regions where there had been good weather conditions and abundant rainfall. This was especially true of Nigeria, where production was up 4% to 5 Mt (3 Mt milled basis). High domestic prices due to



Rice
(in millions of tonnes)

	2012	2013	2014	2015	2016 (e)	2017 (p)
Paddy Rice						
World production	**735.7**	**744.6**	**744.8**	**739.8**	**748.0**	
Africa	26.8	27.5	28.7	28.7	30.2	
Sub-Saharan Africa	20.8	21.4	22.4	22.8	23.9	
North Africa	6.0	6.1	6.3	5.9	6.3	
- Egypt	5.9	6.1	6.2	5.9	6.3	
West Africa	12.7	13.8	14.0	14.3	15.3	
- Ivory Coast	0.7	0.8	0.8	0.9	0.8	
- Guinea	1.9	2.1	2.0	2.0	2.1	
- Ghana	0.5	0.6	0.6	0.6	0.7	
- Mali	1.9	2.2	2.2	2.3	2.8	
- Nigeria	4.4	4.7	4.9	4.8	5.0	
- Senegal	0.5	0.5	0.7	0.8	0.6	
- Sierra Leone	1.1	1.3	1.2	1.0	1.1	
Central Africa	0.5	0.5	0.6	0.5	0.5	
- Cameroon	0.1	0.2	0.2	0.2	0.2	
East Africa	2.4	2.8	3.2	3.5	3.6	
- Tanzania	1.8	2.2	2.6	3.0	3.0	
Southern Africa	5.1	4.2	4.6	4.3	4.3	
- Madagascar	4.6	3.6	4.0	3.7	3.8	
- Mozambique	0.3	0.3	0.4	0.4	0.3	
Husked rice						
World exports	**38.4**	**37.2**	**45.6**	**44.7**	**42.0**	**42.9**
Africa	0.3	0.6	0.6	0.5	0.6	0.6
- Egypt	0.1	0.4	0.4	0.4	0.4	0.4
World imports						
Africa	13.6	13.1	15.2	13.7	14.1	14.3
- Ivory Coast	1.3	1.3	1.2	1.4	1.4	1.4
- Nigeria	3.0	2.4	3.4	2.2	2.3	2.5
- Senegal	1.2	1.1	1.3	1.4	1.2	1.2
- South Africa	1.3	1.3	0.9	0.9	0.8	0.9
Closing stocks	**3.5**	**4.1**	**4.6**	**5.7**	**5.3**	**5.3**

(sources: FAO & USDA, 2017)

restrictions on imports, assistance for seasonal loans and subsidies for inputs also helped to expand the areas planted. Mali followed a similar pattern, with favourable conditions enabling production to leap by 22% to 2.8 Mt (1.7 Mt milled basis). The country can be counted as a success story, with local production that has grown on average 8% per year since the 2008 crisis. That success has enabled it to maintain a level of self-sufficiency of over 90%, which is remarkable bearing in mind that the average for the continent as a whole is 60%. Added to which, Mali might produce a surplus of 400,000 tonnes in 2017.

In Senegal, which is also aiming for self-sufficiency in rice growing, the results have been much more ambivalent, in spite of a significant improvement in local production since a plan was implemented to revitalise rice growing after the

2008 crisis. In 2016, production was expected to rise by 15% to 900,000 tonnes (665,000 tonnes milled basis), but at the same time, imports have hardly slowed and are still running at an average 1.2 Mt per year (milled basis), which is close to two-thirds of local consumption needs. Guinea (Conakry) is another major African country with a tradition of rice growing. In 2016, its production was 2.1 Mt (1.4 Mt milled basis), putting it among the three leaders in West Africa, behind Nigeria and Mali. In spite of recurrent economic problems, production continues to grow at the rate of 5% per year and, even though imports are also rising at the same rate, they represent only one quarter of domestic consumption. In Côte d'Ivoire, by contrast, rice production is still struggling to recover after the years of civil war it endured in the 2010s. Production has in fact increased only very slowly, 2% per year on average, and scarcely topped 500,000 tonnes (milled basis) in 2016. As for imports, they have risen by 6% per year since 2010. They are set to be 1.4 Mt for 2016 (milled basis), which covers three quarters of domestic needs. In the east of the continent, good weather conditions have favoured growth, especially in Tanzania where the rice harvest hit a new record at 3 Mt (2 Mt milled basis) because of better yields. In the southern parts of the continent, on the other hand, the rice-growing seasons have proved more arduous because of the drought triggered by El Niño. In Madagascar, production for 2016 was thus expected to be close to 3.7 Mt (1.5 Mt milled basis), which is lower than the average for the past three years.

Modest growth in imports

In 2016, Africa's rice imports were up 3% to 14.1 Mt, against 13.7 Mt in 2015. That said, the demand for imports from Africa's main importing countries was less buoyant than in previous years because of the recent improvement in local production. In Nigeria, Africa's number one importer, and the number two worldwide after China, purchases on foreign markets in 2016 were set to exceed 2.3 Mt. That volume may be slightly

Two examples of structural measures taken to reboot rice production after the 2008 crisis

Aside from the commercial policy measures and the consumer support measures undertaken as soon as prices soared, West African governments have shown their determination to set up ambitious programmes of support for the farming sector and rice production in particular. Mali's Rice Initiative, launched in 2008, aimed essentially at improving the producers' access to inputs through subsidies (for improved fertilisers and seeds) and lending (for fertilisers and farm equipment). In Senegal, the government launched a major plan aimed at making the country self-sufficient in rice. The National Self-sufficiency in Rice Programme (PNAR), set up before the crisis, has been succeeded by the Great Farming Offensive for Food and Abundance (GOANA), announced with much fanfare by President Wade in April 2008. The long-term intensification of irrigation of rice grown in the valley of the River Senegal, which represents 70% of the nation's rice production, has been identified as a national priority. Both countries have shown encouraging results from the farming campaigns launched since the crisis. Mali has managed to preserve its relative self-sufficiency in rice, and even produce surpluses. In Senegal on the other hand, despite a notable upturn of 15% per year on average in production, imports have continued to rise, from 1 Mt in 2007 to 1.2 Mt in 2016. Admittedly, the rate of self-sufficiency in rice has improved, going from 15% before the crisis to 25% in 2016, but it still falls far short of the goal of self-sufficiency proclaimed by successive Senegalese governments.

above the 2015 level, but is still relatively low when compared to the 3.4 Mt imported in 2014. There are multiple factors at play in this significant downturn. The fall in oil revenue and the depreciation of the naira against the dollar have forced Nigeria to cut back its imports. This has also had the effect of driving up domestic prices and encouraging producers to expand their rice-growing areas. The wholesale price of imported rice thus went from $1/kg in January 2016 to $1.20 by the end of 2016, with spikes of $1.40 in mid-2016. For local rice, too, prices rose strongly, from $1.40/kg in January 2016 to $1.70 in December 2016, peaking at $2.60 in May 2016. These upward trends were also caused by extremely steep hikes in customs tariffs (up by around 100%) in an attempt to restrict official imports. However, the Nigerian traders have sidestepped those measures by resorting to 'informal' imports from Benin, where large quantities of Asian rice, especially, arrive via the port of Cotonou. In 2016, based on official statistics from the main global exporters as well as international statistics, 're-exports' from Benin into Nigeria have been put at close to 2 Mt.

In Senegal, the policy of supporting local production and marketing of rice has enabled imports to be stabilised, but they have only partly been replaced by local rice. Measures aimed, among other things, at granting import licences in exchange for purchasing local rice affect only a small proportion – less than 4% – of the quantities sold by Senegalese importers. While the preponderance of imported rice on the Senegalese markets goes against the government's declared self-sufficiency goals, the stability of international prices in 2016 had a strong influence on consumer prices on the domestic markets. The price of retail rice imports into Dakar held very steady throughout 2016, at around $0.60/kg. By contrast, consumer price fluctuations were more noticeable in the regions, especially in the areas of production, because of seasonal competition with local rice. In South Africa, demand for imports continued to hold firm, as the country is entirely dependent on the rest of the world to supply its consumption needs, which have been growing substantially for the last three decades. South Africa used to be more a consumer of maize, but has seen a marked shift since the end of the 1990s. The volume of rice imports has risen from 500,000 tonnes on average to 800,000 tonnes since 2010. In 2016, imports were set to reach 1 Mt. In Côte d'Ivoire too, despite local production having tripled since the end of the civil war, rice imports surged from 500,000 tonnes on average at the start of the 2000s to 1 Mt in the 2010s. In 2016, they were approaching 1.4 Mt.

Demand for imports is unlikely to slow down in 2017

In 2017, amounts of rainfall in the main rice-growing regions will prove decisive for the level of the harvests, as the majority of the rice is grown in areas with less than total control over the water supply. Irrigated rice cultivation, which receives a very substantial share of national and international investments, accounts for less than one quarter of Africa's rice-growing areas, and almost 40% of production. Consumption needs will continue to grow and the demand for imports is unlikely to weaken, even allowing for the possibility that world prices will waver throughout the first half of 2017. Once again, then, supplies will come for the most part from the Asian exporters, especially India and Thailand. For them, the African markets represent strategic outlets with enormous financial stakes: the cumulative value of Africa's rice imports in 2016 is expected to be over seven billion dollars.

Cotton

Following 2015 which was notable for a stability now unfamiliar to the cotton market, 2016 proved to be a year of spectacular recovery. There was no less than 22 cts difference, or a 40% variation, between the extremely low beginning of March 2016, at 55.67 cts per pound on the New York futures market, and the August peak at 77.80 cts. This volatility was due to a mixed and swollen inventory of stocks at the start of the season, untrustworthy weather conditions, and policy changes. The African continent was also marked by some of these factors, but with a certain variation from one region to another. We must remember that Africa is a significant exporter of cotton and that, in general, this was a beneficial price rise; all the more so, given that the actual levels are higher than the notional production costs.
Nevertheless, the final result for Africa in 2016 has to be scrutinized with care. Although the situation in West Africa (which represents 70% of African production) is positive, it is quite worrying in East Africa, and especially in Zimbabwe, Zambia, Malawi and Mozambique, where production is falling continuously. The same is true of Egypt, which has experienced a 50% reduction in its quantities of combed cotton in slightly less than ten years, and whose formerly much-trumpeted production has been divided by three.

2016: twice as strong as 2015

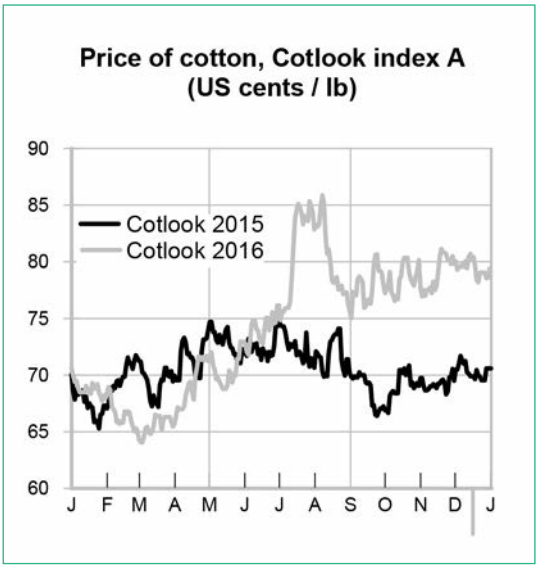
Two indicators make it possible to understand the development of cotton prices: the New York futures market and the Cotlook index. The former quotes an American cotton delivered to the USA; the latter a range of CIF Far East sources. Since several African origins are covered by the Cotlook Far East CIF index (Benin, Ivory Coast, Mali, Burkina Faso, Cameroon, Chad, Zambia, Zimbabwe and Tanzania), this is the index of choice for interpretation.

In 2015, this index developed in a relatively narrow range between 65 cts and 75/lb (CFR Far East) with an annual average of 70.50 cts/lb. In 2016, the range doubled with a minimum at

	ICE - New York (USc/lb)		Cotlook Indices (USc/lb)	
	2015	2016	2015	2016
Minimum	57.30	56.19	65.30	64.10
Average	63.23	65.63	70.46	74.17
Maximum	67.98	76.64	74.90	85.85

64 cts/lb and a maximum at almost 86 cts, for an annual average of 74.17cts/lb. Accordingly, the global price rose at an average 5% between 2015 and 2016, and its volatility doubled. This was due to record stocks causing falling prices at the beginning of the season, and a second half with significantly higher prices, given the unexpected disappearance of a number of buffer stocks. The development of the New York futures market (the only one that operators use for arbitration) is similar overall in terms of volatility, with an average rise of only 4%.

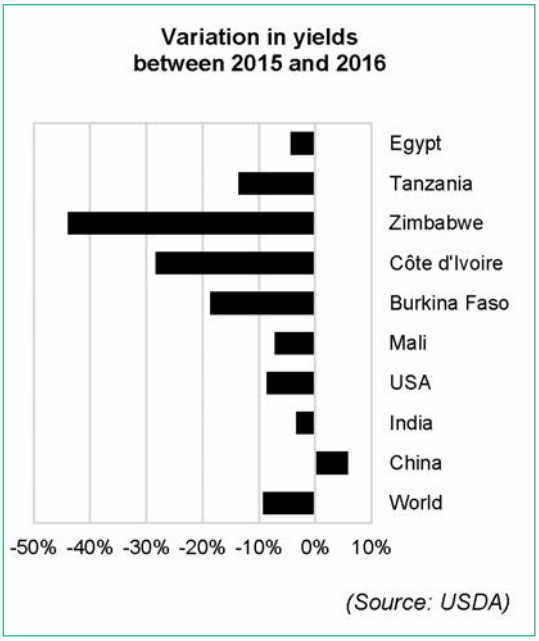
Without a futures market and a wholly African reference index, however, it is difficult to offer a detailed analysis of export prices. Nevertheless, it would seem that exporters as a whole have sold their products at higher prices than those obtained the year before. The maintenance of the US$ at a high level has also helped to raise prices paid in local currency, especially at the end of 2016. For their part, the prices paid to farmers depend on logistical costs, fertilizers used, the quality of products, and many other factors. This makes them difficult to characterize summarily. It appears, however, that in most cases prices in West Africa, which are fixed in advance, have been identical to those paid in 2015. Furthermore, in some countries farmers have been able to obtain increased profit-sharing in a second phase. In East Africa, however, the prices paid to farmers have been rising again, sustained by growing competition between ginners for supplies of cotton-seeds in spite of a downturn in production.

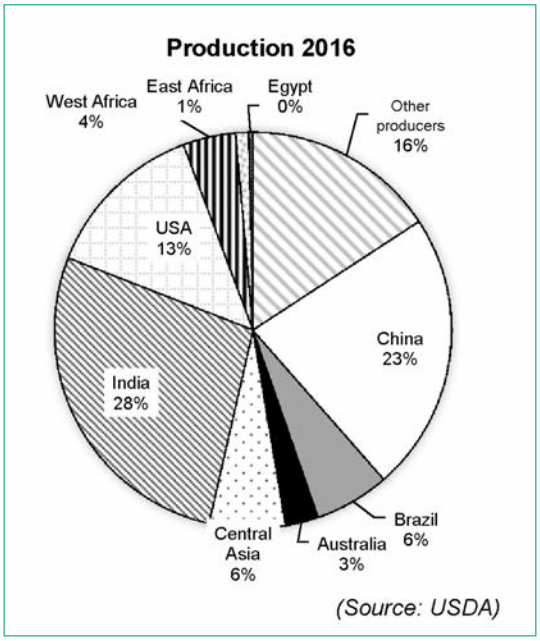


2016: the year of extremes

At the beginning of 2016, global cotton stocks reached a level never seen before at the point where they represented more than one year's consumption. In principle, there was enough to cope with times of need. Mainly located in China (60% of global stocks), they are largely held by a State body, the Reserve, which announced their sale from April 2016. With 12% of global stocks, India, which is second in the ranking order, sold its stocks from Autumn 2015. These abundant stocks have been bad news for West African cottons (mainly exported between January and July) for two reasons: because China, their main export area, was de facto buying less, and because they were subject to direct competition from Indian cotton. In fact, West-African and Indian cottons are harvested by hand and have similar characteristics: spinners can easily be substituted for one another.

Nevertheless, when cotton from East Africa came onto the market (from June until September) the situation was totally reversed: available sup-





plies were reduced and the market climbed day by day. But what has happened in between?

A disastrous scenario

From the beginning of the season, cotton scarcely proved attractive to farmers: global land areas had dropped by 10% to 30.5 million hectares. The downturn was greatest in China with 1,350 million fewer hectares sown, or a 30% decrease. Very uncertain weather conditions throughout the world magnified this trend: a bad seasonal harvest in India and Pakistan, a drought then excess rain in the USA, and a staggered rainy season in West Africa. The impact on yields was immediate, with an average drop of around 10% compared with 2015, or 689 kg of fibres per hectare. Global production fell accordingly by 21 Mt compared with 2015 (or a 20% decrease), according to the US Department of Agriculture (USDA).

In spite of stable acreages of 2.65 million hectares, West Africa has not escaped the trend as far as yields are concerned, with a 20% drop compared with 2015 and only 340 kg of fibres harvested per hectare.

In East Africa, the acreages have greatly diminished, especially in Zimbabwe, where they have been divided in two, and in Zambia (-25%). Tanzania has been the exception to the rule with stable acreages of 400,000 hectares. Egypt has not been spared this fate, for its acreages have been reduced by one third (according to USDA statistics, once again). These reductions in cultivated areas have been accompanied by bad yields, like everywhere in the world. This was a year that went sour from the start and produced abominable results. In 2016, African production fell by 20% to 1.3 Mt and represented just under 6% of the global harvest.

Cotton: a less attractive resource

For many years, global consumption has developed in accordance with two parameters: demographic growth and economic growth. Although the first is relatively predictable, the second is much more difficult to analyze, and of course the market share of cotton has been eroded by synthetic fibres. So much so, indeed, that today cotton may be said to represent no more than 30% of textile fibres consumed in the world, compared with 70% in the nineteen-seventies.

Cotton production
(in millions of tonnes)

	2014	2015	2016 estimated	2017 projected
World	**26.21**	**25.95**	**21.00**	**22.94**
China	7.13	6.53	4.79	4.79
India	6.75	6.42	5.75	5.88
USA	2.81	3.55	2.81	3.69
West Africa (Franc Zone)	**0.94**	**1.10**	**0.90**	**1.07**
Benin	0.13	0.16	0.11	0.15
Burkina Faso	0.27	0.29	0.24	0.28
Côte d'Ivoire	0.17	0.19	0.13	0.14
Cameroon	0.11	0.12	0.11	0.11
Mali	0.19	0.23	0.21	0.27
Chad	0.03	0.06	0.06	0.08
Togo	0.03	0.05	0.03	0.03
East Africa	**0.30**	**0.29**	**0.23**	**0.24**
Uganda	0.02	0.02	0.02	0.02
Malawi	0.04	0.04	0.03	0.03
Mozambique	0.03	0.03	0.02	0.03
Tanzania	0.08	0.07	0.06	0.04
Zambia	0.04	0.05	0.05	0.04
Zimbabwe	0.06	0.04	0.01	0.03
South Africa	0.01	0.02	0.01	0.01
Egypt	0.09	0.11	0.07	0.04

Cotton consumption
(in millions of tonnes)

	2014	2015	2016 estimé	2017 projeté
World	**23.82**	**24.28**	**24.23**	**24.30**
China	7.51	7.40	7.62	7.89
India	4.95	5.33	5.28	5.06
Bangladesh	1.16	1.26	1.33	1.42
Vietnam	0.70	0.89	0.96	1.07
Turkey	1.37	1.39	1.45	1.45
West Africa (Franc Zone)	**0.03**	**0.03**	**0.03**	**0.03**
East Africa	**0.08**	**0.10**	**0.11**	**0.12**
Ethiopia	0.02	0.04	0.05	0.06
South Africa	0.02	0.02	0.02	0.02
Egypt	0.13	0.14	0.14	0.13

(Source: USDA)

This competition has become all the more intense in recent years because distributors have tried to reduce their production costs by every means possible in order to maintain high-street prices and quantities sold. This has led to a fierce contest of choice between cotton and synthetic fibres, mainly represented by polyester. A significant improvement in the quality of polyesters has intensified this competition. The combat between cotton and synthetic fibres is also weighted towards the latter by a world production of polyesters in surplus and a downturn in oil prices that has improved their competitiveness, since polyester is derived from refined oil. In this context, the industrial consumption of cotton in 2016 was reduced by 50,000 tonnes compared with 2015, with a final result of 24.2 Mt in 2016 (source: USDA).

The part played by Africa

Africa is still relatively unimportant as a cotton-processing location and treats less than 2% of the total processed in the world. Although consumption (at 450,000 tonnes, according to the USDA) remains relatively stable on a continental scale, there are certain disparities from one area to another. In North Africa, consumption has been falling back year-by-year, as in Egypt, which now processes no more than half of its cotton throughput of ten years ago. Nevertheless, it is still the local leader responsible for 30% of the 450,000 tonnes processed every year in Africa. Furthermore, the quantity of cotton processed in Nigeria is still at a lower level than in the past (52,000 tonnes in 2016 compared with 90,000 tonnes at the beginning of the two-thou-

Burkina Faso: the use of GMO seeds is being phased out

The first African country to test the cultivation of GMO cotton with Monsanto in 2003, Burkina Faso released BT cotton-seeds to farmers beginning in 2008. BT cotton is genetically engineered with a gene from the bacteria *Bacillus thuringiensis* (Bt), and is toxic to the pink bollworm, a very common and extremely pernicious pest that preys on cotton plants. At that time, the arrival of BT seeds made the headlines in the newspapers, Burkina Faso being one of the main producers of cotton in Africa and cotton one of its main (though not the leading) source of currency. Of course, similar BT cotton-seeds were applied in India from the beginning of the two-thousands, where their use developed exponentially. The first results were encouraging: higher yields and less use of pesticides thanks to a reduced amount of spraying in the fields.

However, the quality produced from these GMO seeds soon became a matter of concern. Reputed for the length of its cotton fibres, Burkina Faso has seen the proportion of shorter, less desirable short-nap (short-lint) cotton increase and become the majority. This is an important problem, since the gap between 1 and 1/8" (28.57 mm) and 1 and 1/16" (26.98 mm) is 5% to 8%, depending on market conditions. The cotton is used in entirely different ways in processing, and therefore new factories are necessary. There were many attempts to curb this deterioration, but none of them was successful.

After so much disappointment, the 2016 harvest was (for the moment, at least) the last genetically- modified cotton harvest in Burkina Faso. But the story doesn't end there, since the three Burkinabe cotton companies as well as the National Union of Cotton Growers of Burkina (UNPCB) are now calling for 48 billion Francs CFA (€73 million) compensation for financial losses caused by BT cotton.

The irony is that just when Burkina Faso is stopping the use of GMO seeds, Ethiopia has begun a first two-year experimental GMO BT cotton programme.

sands). Only an infinitely small part (3 %) of the quantity produced in West Africa is processed locally, with a total consumption of 30,000 tonnes. The sole exception is Ethiopia, where consumption tripled in ten years to result in 50,000 tonnes in 2016. Although that is only 11% of the amount processed on the continent today, Ethiopia shows the best rates of growth thanks to Turkish and Indian investments. The opening of the Djibouti to Addis-Ababa railway in 2017 should prove another favourable influence on this development by improving the import/export logistics formula, which is too expensive at present.

Stable consumption and significantly-reduced production: the global supply/demand ratio was down by 3.2 Mt in 2016, or 13% of global consumption. This has produced a record shortfall in stocks that are, nevertheless still very high (21 Mt).

A disturbed global flow

At world and local levels, cotton movements have been put out of kilter by the downturn in Chinese imports. Nevertheless, African export rates are still regular, especially in a context of a significant fall in world production. Accordingly, in 2016 Bangladesh became the leading world importer of cotton, with a 7% growth rate compared with 2015, and 1.35 Mt imported (according to USDA). Vietnam was in second place, with 1 Mt imported, just ahead of China and then Turkey. Processors in both Bangladesh and Vietnam were already very familiar with African cotton, and therefore these two countries became the main destinations for African cotton. Exports to China are now of little consequence.

The 2016 season in Africa was also marked by a sharp rise in exports to Pakistan. which should

China is less of a threat

At the beginning of 2016, the Chinese Reserve, a governmental body that puts the global cotton community in a truly precarious situation, had an available supply of about 11 Mt of strategic cotton stocks, consisting mainly of Chinese cotton, and to a lesser extent of imported cotton. This represented neither more nor less than a year and a half of domestic consumption or six months of global consumption. These stocks have been accumulated so rapidly because Chinese consumption has fallen by 30% in seven years (10.8 Mt in 2009 and ‘only’ 7.6 Mt in 2016).

In other words, when the government confirmed its intention to sell its stocks, no one knew what to expect, even though in each announcement the Reserve made it clear that these sales would be managed to avoid destabilizing the international market. This was indeed necessary since, from April 2016, 50,000 tonnes were put on sale daily: first of imported, then of Chinese cotton. The sale was an instant success. Spinners and traders bought almost all the quantities offered each day. The Reserve even took some bidding up to 70,000 tonnes. Altogether 2.5 Mt were sold from April to September and helped the spinners to recover a competitiveness that had been disrupted in recent years. In fact, domestic prices were supported by the Reserve’s buying, and remained at levels for the most part higher than world prices, while import quotas were increasingly difficult to obtain.

Apart from the fear of an impact on prices that was quickly dispelled, many questions were asked about the quality of the cotton offered after several years of storage. Here again, the surprise was relatively beneficial, since spinners managed to find the qualities they needed.

The result: imports of cotton in China were divided in half in 2016 and were restricted to quotas granted in the context of WTO agreements: 894,000 tonnes. This change has had major effects on the global flow of cotton since China was the main importer of US, African, Indian and Australian cotton.

compensate for the collapse of production there. In countries where open-end processing is dominant, these record imports are mainly focussed on short-nap Burkinabe cottons. (see boxed text)

Fierce competition

A small harvest often means lower quantities for traders, but also growing competition in order to ensure optimum buying at source and to keep business going. The volumes traded in 2016 were down by 25% compared with 2013. A bidding war was initiated among merchants, to the great satisfaction of producers.

A poor harvest also usually results in smooth export logistics. This was the case with minimum port congestion in 2016, and a very different situation from 2014 and 2015, in the ports of Abidjan, Lomé, Dakar and Cotonou (the main African cotton-export ports). Nevertheless, the situation in Douala remains more difficult, with higher loading times than in neighbouring ports.

2017: deficit or surplus?

In spite of the rise in prices in the second half of 2016, global land areas are again set to drop to 29.2 million hectares (-4%) in 2917, according to USDA, mainly in India (-11.7%) and in China (-7%). They could be partially compensated for by a significant rise in storage locations in the USA (+17%), West Africa (+6% to 2.8 million hectares) and Australia (+75% to 550,000 hectares). East Africa, is set to remain at historically low levels in this respect at 1 million hectares (-2%). Nevertheless, with average yields, this should lead to an increase of almost 9% in production, to 22.9 Mt.

Demand follows that of the last two years, for it looks set to remain relatively stable at about 24.3 Mt, between the effects of the difficult economic situation in OECD countries and those of a still strong competition from synthetic fibres.

Confronted with the prospect of a basic 1.4 Mt deficit context, one might suppose that the tensions evident in the second half would continue in 2017. But that would not take into account the sales of the Chinese Reserve from March 2017 (potentially from 2.5 to 3 Mt) that put the global supply/demand account into surplus. Initial estimates show that stocks went down as a result only in China (-20%) but increased (+3.7%) in what is commonly known in the cotton community as ‘the rest of the world’.

It should be noted that, with the high price levels evident in the second half of 2016, to a considerable extent producers as a whole have sold their 2017 harvest. After being surprised in 2016, spinners have covered a large part of their requirements for 2017 in advance by recourse to their ‘on-call ‘ contracts with a fixed final price to be based on the quotations of the New-York futures market. In other words, the sales pressure will be reduced because of the quantities already committed by producers. Nevertheless, spinners have to support the futures market by fixing their purchases ‘on-call’, invoking a mechanism by which traders who take on the price risk for the spinners have to buy their security on New York. Finally, it is important to remember the investment funds’ almost record buying positions at the end of 2016. It is certainly difficult to know what strategies those funds will employ, but it is nevertheless interesting to note that, on a five-year scale, present price rates are at relatively low levels.

As a contribution to predictions for 2017, we might say that at the moment prices overall look set to come down as a consequence of increased stocks. They could approach the levels observed in 2015 (10 cts of variations over the year). Prices might well remain at levels equivalent to those

Statistical note

This annual report refers constantly to 2016 as its the main reference year. But the cotton year begins on 1 August and ends on 31 July. In this report, therefore, ‘2016’ refers to the statistical year 2015/2016. For 90% of global production, this corresponds to cotton sown between May and July 2015, harvested between September and November 2015, and exported from November 2015 to July 2016.

observed in the second half of 2016, that is, a Cotlook index between 75 and 85 cts /lb. But only one prospect seems guaranteed: average sales by African ginners will be higher than in 2016 and remain at advantageous levels.

The World Cotton Contract crashed before take-off

Launched in November 2015, the World Cotton Contract (WCT) was the first quoted cotton futures contract (on the Intercontinental Exchange, ICE) to anticipate the delivery of different origins: Australia, Brazil, India, Benin, Burkina Faso, Cameroon, Ivory Coast, Mali and the USA. This contract joined N°2 CT, which had existed for a long time and only focussed on US-cotton deliveries. Other differences: the quality quoted (the WCT quotes a higher quality than the CT), and WCT delivery points. They are located not only in the USA but in Australia, Malaysia and Taiwan, with variable premiums and discounts, depending on places of delivery and origin. Introduced to counter the risks of disconnection between the global market and the US futures market (in case of an extremely small US harvest, for example), the experiment seems however to have failed. The top outcome for the first maturity quoted, 16 May, was an open position of less than 200 contracts. The July that followed did not exceed 44 lots and, lastly, the '16 December', did not get beyond 28 open-position lots. At the beginning of 2017, the result for the open position 'all maturities combined' was zero contracts, whereas the CT open position is almost 250,000 contracts.

It was an ambitious project that might well have become the global reference market, but it is difficult to now imagine that it could attract traders and speculators. The former would seem finally to have preferred to run a basic risk by covering non-US purchases on the CT contract, rather than run the risk of 'dilution' in a global market with a reduced number of operators.

– II –

Tropical Products

- Coffee
- Cocoa
- Tea
- Vanilla
- Tropical fruits in Africa
- Sisal and Hard Fibres
- Tropical Timber


Coe-Rexecode indices for commodities martkets in $
Tropical agricultural products
January 1988 = 100
Agricultural raw materials
Coffee, Cocoa, Sugar
240
220
200
180
160
140
120
100
90
80
70
60
50
1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
© Coe-Rexecode

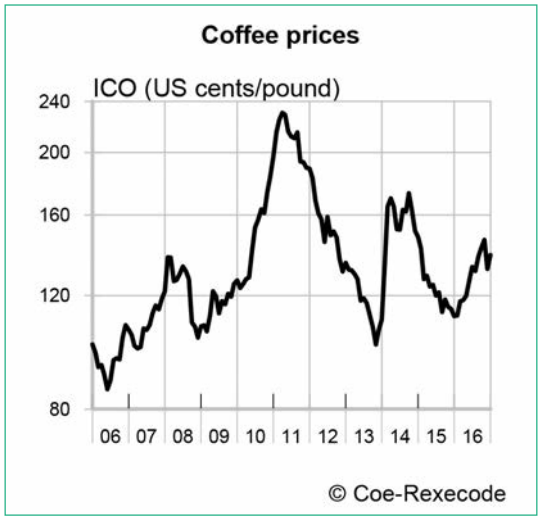
Coffee

The African coffee world is winning thanks to Robusta

Other than a few examples from origins that are evocative of top-end coffee, African coffee is relatively rare on the world market. And yet, close to half of the countries on the continent are both producers and exporters—countries that in many cases are benefitting from the price increase of Robusta last year, but whose industries must further develop.

While Africa is a land of coffee, it is relatively absent from the world coffee scene. Of the continent's 54 countries, 22 are coffee producers and exporters but in the 2015/2016 season (October to September), their exports only represented 9.1% of world coffee trade, Robusta and Arabica combined, or 10.9 million 60-kilo bags out of 119.5 million. With the notable exception of Ethiopia, an important producer but also a major consumer, the continent still exports the quasi-totality of its production. Therefore, unsurprisingly, the share of Africa in world production is almost as low as its contribution to world exports, on the order of 10.7% in 2015/2016. Though Africa represents around 16% of world population, consumption only amounts to 7% of coffee produced globally.

Another element of Africa's coffee profile is that Africa exports more Robusta than Arabica—around 7 million bags for the former and 4 million for the latter. However, Robusta does not have as good of an image because it is synonymous with instant coffee and is the 'robust' coffee to wake you up, as opposed to a pleasurable coffee like Arabica, with its more delicate and pervasive aromas. Indeed, one giant coffee chain, Starbucks, refuses to serve Robusta, even as part of a mix. But for once, the quantitative predominance of Robusta in Africa did work in the favour of the



Coffee

(in millions of 60kg bags)

	2011	2012	2013	2014	2015	2016
World production	**123 027**	**147 953**	**152 130**	**148 724**	**151 438**	**151624**
Brazil (A/R)	39 470	50 826	54 698	52 299	50 376	55 000
Vietnam (R/A)	17 825	25 000	27 610	26 500	28 737	25 500
Colombia (A)	8 098	9 927	12 163	13 339	14 009	14 500
Indonesia (R/A)	11 380	13 048	11 265	11 418	12 317	10 000
Ethiopia (A)	6 931	6 233	6 527	6 625	6 714	6 600
Honduras (A)	3 603	4 537	4 578	5 258	5 766	5 934
India (R/A)	4 806	5 303	5 075	5 450	5 800	5 333
Peru (A)	3 286	4 453	4 338	2 883	3 301	3 800
Mexico (A)	4 109	4 327	3 916	3 591	2 800	3 100
Guatemala (A/R)	3 835	3 743	3 189	3 310	3 420	3 500
Uganda (R/A)	2 845	3 914	3 633	3 744	3 650	3 800
Nicaragua (A)	1 871	1 991	1 941	1 898	2 137	2 100
Côte d'Ivoire (R)	1 795	2 072	2 107	1 750	1 893	2 000
Costa Rica (A)	1 304	1 571	1 444	1 408	1 634	1 486
El Salvador (A)	1 065	1 235	506	669	552	623
Papua New Guinea (A/R)	1 038	717	835	798	712	900
Venezuela (A)	1 214	952	805	651	501	400
Tanzania (A/R)	675	1 109	811	753	930	800
Ecuador (A/R)	813	828	666	644	644	600
Thailand (R)	795	608	638	497	485	435
Cameroon (R/A)	902	366	404	483	391	480
Kenya (A)	630	875	838	765	789	783
Dominican Republic (A)	352	488	425	397	400	400
World exports	**94 700**	**110 900**	**115 033**	**111 933**	**119 480**	
Brazil	28 500	28 500	32 761	36 876	36 928	
Vietnam	22 864	22 864	24 902	21 294	26 437	
Colombia	7 170	7 170	10 842	12 281	12 302	
Indonesia	10 720	10 720	9 954	6 679	7 985	
India	5 000	5 000	5 095	5 115	5 861	
Honduras	5 508	5 508	4 173	5 020	5 140	
Guatemala	3 750	3 750	3 121	2 925	3 030	
Uganda	2 685	2 685	3 500	3 455	3 316	
Mexico	3 556	3 556	2 457	2 458	2 326	
Ethiopia	3 203	3 203	3 044	2 872	3 092	
El Salvador	1 044	1 044	497	595	445	
Nicaragua	1 987	1 987	1 823	1 810	1 924	
Papua New Guinea	925	925	833	796	710	
Costa Rica	1 374	1 374	1 237	1 145	995	
Ivory Coast	1 712	1 712	1 702	1 438	1 554	

A: Arabica R: Robusta

(Source: OIC)

continent in 2016 and into 2017 because even if world Robusta prices remain, and will continue to remain, inferior to those of Arabica, they have increased more than those of their prestigious cousin.

Robusta's price soars

Coffee prices took off in 2016 after a severe drop in 2015 (compared to 2014). All coffee varieties combined, the composite index of the

International Coffee Organisation (ICO) went from 155.26 cts/lb in 2014 to 124.67 cts/lb in 2015, climbing back up to 127.31 cts/lb in 2016. From January to December 2016, the global monthly index gained 20.81 cts/lb pulled up by Robusta (+27.14 cents) followed by Colombia Milds (+21.43 cents), Other Milds (+16.75 cents) and Brazilian Naturals (+15.93). This price rise, Arabica and Robusta combined, is due to the 2015/2016 season being the second in a row to be in deficit, with global production of 151.4 million bags and demand of 155.7 million bags. The 2016/2017 season looks to be identical, with very low variation in volumes according to the preliminary data from the ICO. Production should be 151.6 million bags with consumption at 155.1 million bags. This deficit is, above all, linked to the Robusta sector whose production is set to fall from 63.1 million bags in 2015/2016 to 56.4 million bags in the current season. Vietnam, the world leader for this coffee variety, has pointed to poor meteorological conditions for the drop in production (from 28.7 million bags in 2015/2016 to 25.5 million bags expected in 2016/2017). The same will be the case for Brazil, which recorded a drop in its production of Robusta Conilons, the local variety—ttoo such an extent that Brazil is planning to import up to 1 million bags to allow the country's processing factories to run. But this is a highly polemical move, confirmed and refuted in turn, leaving the market in the dark, to the great pleasure of speculators.

As for stocks, although they remain significant in consumer countries, they have contracted in the last seasons going from a stock-to-consumption ratio of 40% in 2013/2014 to fall to 31% at the end of the 2016/2017 season and likely further still in late 2017/2018. Certified stocks on the New York and London futures markets have fallen significantly, going from 1.95 million bags in December 2015 for Arabica in New York to 1.4 million bags in December 2016 while those of Robusta have dropped even further from 3.31 million bags to 2.39 million bags.

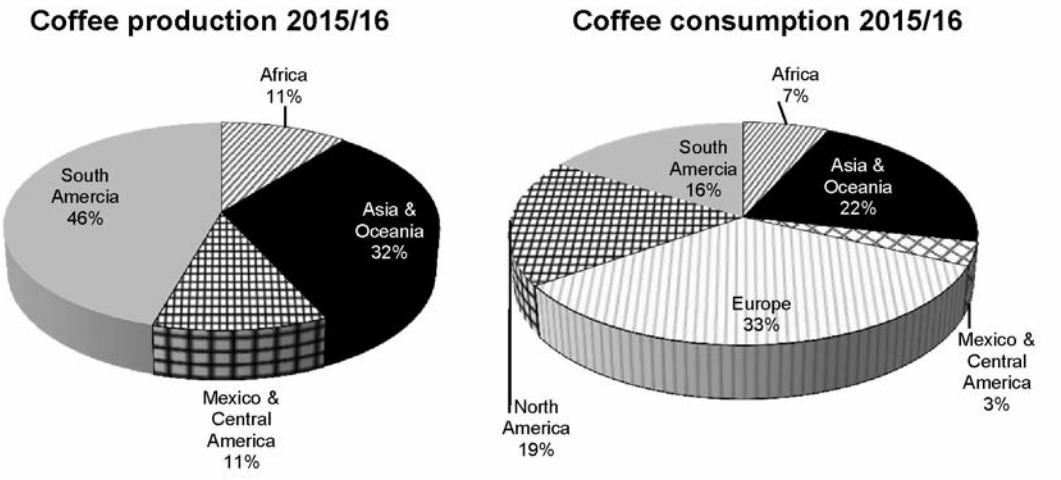
Prices therefore were buoyant in 2016, with a peak on 7 November 2016 for both coffee varieties and then a drop until the end of the calendar year. The latter decline was due to improved weather conditions in Vietnam and Brazil, but also to the depreciation of the Brazilian real (following the results of the US elections) after several months of firmness, which boosted exports for the world's No. 1 coffee producer. Colombian production has reached its highest monthly volume since November 1998. Note that in November 2016, Arabica prices lost more than Robusta, but both recovered in January 2017 after a rather sluggish December.

Overall, in the 2015/2016 season, the value of total world coffee exports reached $20.1 billion, according to the ICO, for 104.8 million bags sold, an increase of 5.9% in value compared with 2014/2015, while volumes contracted by 1.4%.

What about the 2016/2017 campaign? The ICO expects the volume of total coffee production to be 151.6 million bags (+0.1%), practically unchanged from a year earlier. But Arabica production is expected to reach a record level (+7.9%, an increase of 6.9 million bags, to 95.2 million bags), notably in Brazil and Colombia but also in Honduras. As for Robusta, performance is likely to remain mediocre (-10.7% or a decrease of 6.7 million bags, to 56.4 million) according to the ICO. All these factors should keep prices up during the current season. From October 2016 to the end of January 2017, cumulative exports, all countries and varieties combined, totalled 39.9 million bags according to the ICO against 36.7 million bags over the same period in 2015/2016, an increase of 8.9%. But again, Arabica exports grew by 9.7%, compared with 7.4% for Robusta, which reinforces the idea that the prices of the latter should remain firm.

Ethiopia still stands out

In volume terms, African production is roughly equivalent to that of Mexico and Central America at around 16 to 17 million bags, much less than the Asian giant with its 40 million bags and, a fortiori, less than South America whose output is about 70 million bags.



(Source: OIC)

Ethiopia, the global cradle of coffee, remains the continent's leading producer. Significantly, it is the only country in Africa that is both a major producer and consumer of coffee: out of 6.7 million bags produced in 2015/2016 (6.6 million bags anticipated for 2016/2017), only 4.3 million bags were exported, according to the ICO (these figures were 6.5 million bags for production and 3.5 million bags for export, according to the United States Department of Agriculture, USDA). This is not anecdotal, as these 4.3 million bags represent 31% of the country's export earnings. And the No. 1number one number one African producer was lucky in 2015 and 2016: the main production regions of the South and West escaped the worst drought in thirty years—linked to the El Niño weather phenomenon that has struck other parts of the country. However, smaller crops in the East have been affected, and drought is still prevalent in 2017. It should be noted that in the Ssouth-Wwest of the country, small-scale family farms or 'backyard' production as well as 'forest coffee' are disappearing, while new commercial plantations are emerging as well as small family farms further Nnorth towards Amhara.

The Ethiopian coffee sector is progressing both upstream and downstream. The Ethiopia Commodity Exchange (ECX), in conjunction with the US Agency for International Development (USAID) and the Global Coffee Platform Programme (created in 2003, including the 4C Association) launched a new coffee traceability system in November 2015. The $4.2 million investment in this new system is intended to increase the value of specialty coffees from the world-renowned producer country, with traced coffee selling for higher prices on the global market. It should be noted that in 2014/2015, 19% of Ethiopia's coffee exports were destined for Germany, 18% for Saudi Arabia, 10% for the United States and 9% for Japan. On the government side, training programmes for planters are underway, both in terms of harvesting, storage and conservation. In 2016, a five-year programme was launched to develop second and third level coffee processing in order to capture the maximum value added.

Uganda, the leading African exporter, is expected to grow its output by 4.1% (composed of

80% Robusta), which would reach 3.8 million bags in 2016/2017 according to the ICO. It could even reach 4.2 million bags according to the Uganda Coffee Development Authority (UCDA), which for its part estimates production at 4 million bags in 2015/2016 (against 3.6 million bags according to the ICO). The orchard renovation started over the last two decades should indeed begin to bear fruit, with rising yields. The ambitious goal is to reach 20 million bags by 2020 by planting 900 million trees before June 2019 with coffee varieties that would start providing beans two to three years after planting.

Uganda, like other African producer countries, has a majority of smallholder farmers: 1.7 million households earn their living from coffee grown on plots ranging from 0.5 to 2.5 ha. The country's exports are expected to grow by 5.6% in 2016/2017, to 3.8 million bags. They were at 3.6 million bags in the last season, still according to the UCDA which had to revise its export figures downward by 200,000 bags in 2015/2016 due to the severe drought that struck this part of East Africa beginning in 2015. The 2016/2017 season should therefore be more successful with international sales already totalling 404,673 bags in January 2017, an increase of 21% compared to January 2016. In 2014/2015, Ugandan coffee's main export markets were Italy (26%), Germany (19%), Belgium (11%), Spain and the United States (6% each), France (5%), India (4%), Portugal (4%), South Korea and Morocco (2% each), but also the neighbouring Sudan according to the USDA. Domestic consumption accounts for 3% of domestic production, given the low local purchasing power and especially the importance of traditional tea consumption locally.

Côte d'Ivoire is continuing its work of renewing coffee orchards, just as it has done with its cocoa industry, and is adding new varieties where appropriate. It should be recalled that in October 2013 a €12.1 million programme to revive coffee production was launched for a five-year period from 2013 to 2018. The ambition? Increase and improve the volume and quality of domestic production to reach 400,000 tonnes (6.6 million bags) of marketable coffee by 2020. To this end, 75,000 ha of orchards are being rehabilitated with an increase in capacity of more than 100,000 producers. In 2014, Nestlé, long established in Côte d'Ivoire, launched its Nescafé Plan with the training of 30,000 planters and the distribution of 27 million high-yielding plants. For its part, the National Agricultural Research Center (*Centre National de Recherche Agronomique*, CNRA) launched a new variety in 2016, which starts producing after twelve months instead of twenty-four, with a yield of 2.5 to 3 t/ha. For memory, the Arabusta hybrid was also created in Côte d'Ivoire almost thirty years ago now. For the time being, Côte d'Ivoire has seen its production increase from 1.7 million bags in 2014/2015 to 1.9 million bags in 2015/2016, the threshold of 2 million bags will be crossed during the 2016/2017 season according to ICO forecasts. As evidence of the significance of some African markets: 98% of Algerian imports from Côte d'Ivoire are coffee.

The climate threat

In Tanzania, most of the production is located on the slopes of Mount Kilimanjaro and Mount Neru near the Kenyan border, areas very sensitive to global warming. New areas of cultivation are being developed and new agronomic processes as well. A total of 19 varieties of Arabica hybrids and four Robusta hybrids have been developed and were announced in 2016, with higher yields and above all, greater resistance to disease and drought. Coffee production in Tanzania (two thirds of Arabica Milds and one third of Arabica and Robusta) is 90% owned by some 400,000 small growers. Coffee accounts for about 5% of the country's total exports, according to the USDA. In 2016/2017, the USDA forecast a decrease in production to 1.15 million bags against 1.2 million bags in the previous season due to the biennial plant cycle of coffee, an estimate far superior to that of the ICO, which forecast the current season to reach 800,000 bags. Japan and Italy are the top destinations for Tanzanian green coffee, accounting for 28% of the total in 2015/2016, according to the Tanzania

Coffee Board, followed by the United States and Germany (15% each), Belgium (10%) and Finland (3%). As for local consumption, it is estimated at 7% of national production, with growth of 1.5% to 2% per year linked to urbanisation.

Kenya has also been heavily impacted by El Niño, with rainfall remaining low from November 2016 to January 2017. Coffee is typically grown on large and small areas, unlike in other African countries. That said, rampant urbanisation has encroached on plantations near Nairobi and new crop areas or former coffee zones have been developed, resulting in an increase in the number of small growers involved, according to the USDA. According to the ICO, production is expected to decline slightly in 2016/2017 to 783,000 bags, while the USDA foresees a sharp increase instead, to 700,000 bags against 600,000 bags for the previous campaign that had been impacted by El Niño. In this country, almost all coffee is marketed through the spot market of the Nairobi Coffee Exchange. Domestic consumption is low, with Kenya being traditionally a tea-drinking country. But urban consumption is growing. As for exports, 20% went to Germany in 2014/2015, 17% to the United States, 10% to Belgium, 8% to Sweden, 6% to Finland, 4% to South Korea, and 3% each to France, the United Kingdom and Canada, with 2% for Switzerland.

Sectors under development elsewhere

Cameroon is sparing no effort to revitalise its coffee sector, as the country has done for cocoa. Thus, with the support of the European Union, $21 million has been invested in the sector in order to increase production from about 500,000 bags currently to 1.7 million bags within five years. The government, through the National Office for Coffee and Cocoa (L'*Office National du Café et du Cacao*, ONCC) and the Trade Council for Coffee and Cocoa (*Conseil Interprofessionnel du Café et Cacao*, CICC), also wants to put $1 billion into the coffee and cocoa sectors by 2020. Thus, 2.9 million coffee plants have been made available to growers in recent years, which have increased the area of Robusta by 1,600 ha and the Arabica area by 700 ha. Local processing has jumped from 448 tonnes in 2014/2015 to 3,786 tonnes in 2015/2016, due in part to an increase in domestic consumption. The fourth producer of Robusta behind Uganda, Côte d'Ivoire and Tanzania, Cameroon however is barely managing to take off. It exported 24,500 tonnes in 2015/2016 against 23,865 tonnes the previous season, according to the ONCC.

The situation of the sector in Madagascar is relatively uncertain with volumes exported remaining largely uneven, from 110,000 bags in 2014 to 59,000 bags in 2015, according to the ICO. Again, the sector suffers from ageing orchards, difficult meteorological conditions and poor cropping practices yielding low yields and therefore low remuneration to planters. It should be noted that the Vatovavy Fitovinany region is the top Robusta production area and accounts for 95% of the Malagasy supply, the remaining 5% being Arabica.

Rwanda has 400,000 farmers who produced 22,000 tonnes of coffee in 2016, of which 18,600 tonnes were exported mainly to Switzerland, the United Kingdom, the United States and South Africa, generating $58.5 million according to the National Agricultural Export Board (NAEB) and $36.8 million according to the Rwandan Agricultural Exports Board, figures far removed from the ICO statistics. The country expects to derive $66.3 million from coffee exports during the 2016/2017 season. To boost the sector, in March 2017, the government raised the guaranteed minimum price by 64%. In addition, it plans to double the volume of its exports of roasted coffee, with 15 roasters already established in the country. However, from January to September 2016, only 0.04% of Rwandan coffee was roasted. Among the other smaller African producers, it can be noted that in Guinea, the Robusta Ziama Macenta coffee (18 t in 2013) received a protected geographical indication in 2014.

Coffee becomes trendy

When one evokes Africa and coffee, 'produc-

Continental dynamics being tested

Africa has a number of organisations aspiring to boost the sector in its various segments. Thus, the Interafrican Coffee Organization (IACO), created in 1960 and with 25 member countries, is attempting to get back on track after years of floundering. In 2016, it worked in partnership with the African Development Bank (AfDB), to create a Special Fund for Coffee.
On the Arabica side, the African Fine Coffees Association (AFCA), established in 1999, is considered to be the largest specialty coffee trade platform in Africa exclusively for Arabica and has 11 member countries: Burundi, DRC, Ethiopia, Kenya, Malawi, Rwanda, South Africa, Tanzania, Uganda, Zambia and Zimbabwe. Aware of the challenges it needs to face, its annual conference held in Ethiopia in 2017 focused on 'Reshaping the African Coffee Industry for Productivity and Investment'. On the Robusta side, the Robusta Coffee Agency of Africa and Madagascar (l'*Agence des cafés Robusta d'Afrique et de Madagascar*, ACRAM) was created in 2008 from the ashes of the former African and Malagasy Coffee Organisation (*Organisation Africaine et Malgache du Café*, OAMCAF), which in recent years has focused particularly on coffee research.

Production of African exporting countries - thousands of 60 kg bags

		2012/13	2013/14	2014/15	2015/16	2016/17
Ethiopia	A	6 233	6 527	6 625	6 714	6 600
Uganda	R/A	3 914	3 633	3 744	3 650	3 800
Côte d'Ivoire	R	2 072	2 107	1 750	1 893	2 000
Tanzania	A/R	1 151 811	753	930	800	
Kenya	A	875	838	765	789	783
Cameroon	R/A	371	404	483	391	480
Madagascar	R	500	584	500	449	475
DR Congo	R/A	334	347	335	323	335
Rwanda	A	259	258	238	278	240
Burundi	A	406	163	248	274	235
Guinea	R	234	101	147	177	200
Togo	R	84	172	143	81	119
CAR	R	23	90	63	100	100
Sierra Leone	R	61	32	46	51	50
Nigeria	R	41	41	43	42	42
Angola	R/A	33	35	39	41	40
Malawi	A	23	28	24	15	20
Zimbabwe	A	7	9	14	14	15
Liberia	R	10	6	7	8	8
Ghana	R	82	45	13	3	
Congo	R	3	3	3	3	3
Zambia	A	5	11	3	2	2
Gabon	R	1	0	0	1	1
Benin	R	0	0	0	0	0
Equat. Guinea	R	0	0	0	0	0
Total Africa		**1 013 735**	**793**	**811**	**840**	
Total World		**149,740**	**152,130**	**148,724**	**151,438**	**151,624**

(Source: OIC/CommodAfrica)

tion and export' immediately come to mind. But Africa also consumes and several factors are making the market evolve that include younger generations (the attraction of the 'barista' phenomenon), rapid urbanisation and the emerging middle class. In addition, parts of Africa—especially the English-speaking countries that have traditionally been tea drinkers—are turning more and more towards coffee, with its fashionable consumption styles. With these dynamics, Ethiopia, which has already been mentioned, is the leading African consumer and ranks third in the world among coffee-exporting and consuming countries, with 3.7 million bags, behind Brazil, which consumed 20.5 million bags in 2015/2016 and Indonesia with 4.5 million bags, according to the ICO. Elsewhere in sub-Saharan Africa, there is also Sudan (690,000 bags), South Africa (590,000 bags), Madagascar (390,000 bags), Côte d'Ivoire (310,000 bags) and Uganda (234,000 bags), to mention only the primary consumers. North Africa is also home to coffee lovers. Algeria ranks first with 2.1 million bags in 2015/2016, followed by Egypt (597,000 bags) neck-and-neck with Morocco (583,000 bags) in 2015/2016.

Consumption patterns are also changing. According to the ICO, African consumption increased by an average of 0.9% between 2012/2013 and 2015/2016. But according to other sources, the coffee industry should increase in Africa by 2 to 3% per year. Cape Town is unsurprisingly the leader in the opening of trendy coffee shops; Starbucks opened its first store in April 2016. But many local chains have emerged on the continent and are still flourishing today such as Neo Café in Nigeria, Kaldi in Ethiopia, Artcaffe and Java House in Kenya. A new era is dawning on the African coffee scene.

The USAID Initiative

In the framework of the Feed the Future programme launched in 2010 by the Obama Administration, the US Agency for International Development (USAID) supports programmes for small-scale coffee growers in a dozen low-income countries across Africa including Uganda, Ethiopia and producing countries in the Great Lakes region. USAID is partnering with governments, foundations, donors and the private sector, including the major US coffee actors: Starbucks, Keurig-Green Mountain, Smucker's, Cooperative Coffees, and World Coffee Research, among others.

In October 2015, USAID signed a $1.8 million partnership with the University of Michigan to help the Great Lakes region maintain its position in the international coffee market through the Feed the Future African Great Lakes Region Coffee Support Programme. Researchers are in particular working on coffee diseases in Rwanda. From Ethiopia, in mid-March 2017, Starbucks released a 'unique origin' coffee for a one-time marketing operation in its stores in the United States and Canada. From the Democratic Republic of Congo (DRC) in August 2016, Starbucks launched a coffee shop in South Kivu as part of its ‘Starbucks Reserve’ programme, which offers the highest quality coffee from around the world. Coffee farmers are part of the 'Kivu Specialty Café: Kahawa Bora Ya Kivu' project funded by USAID and the Howard G. Buffett Foundation.

Cocoa

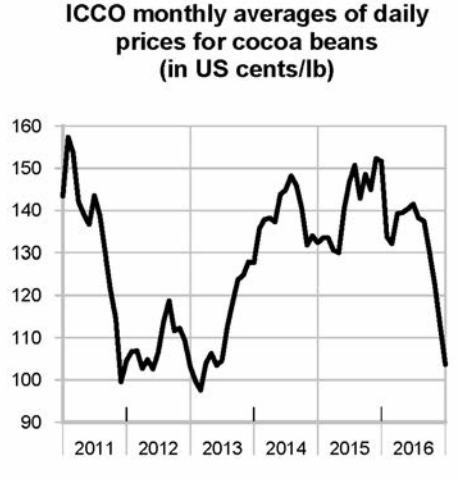
Major changes in the African cocoa sector

Côte d'Ivoire, Ghana, Cameroon and Nigeria alone account for 70% of the world's cocoa production and 90% of the continent's supply. Strengthened by this domination, Africa is nevertheless a colossus with clay feet in the face of a fall in world prices in 2016, which have shaken the organization of its national sectors.

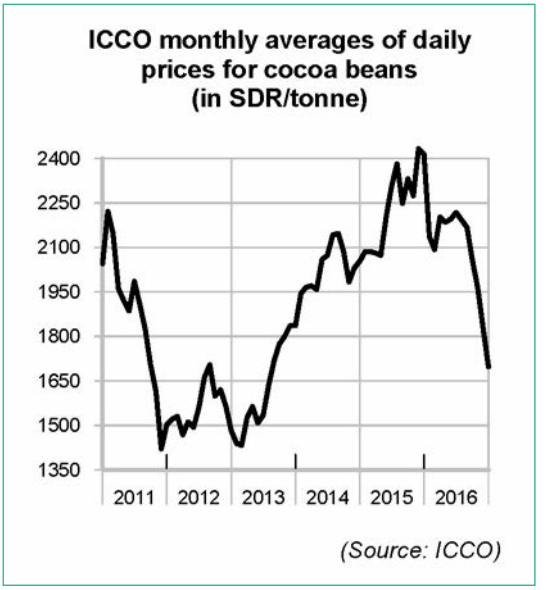
The African continent accounts for more than 70% of world cocoa production and went from 72.3% in the 2014/2015 season (October/September) to 73.1% the following year, according to the International Cocoa Organization (ICCO) estimates. During the 2016/17 season, it should break all records, with its leader, Côte d'Ivoire reaching an unprecedented record production of 1.9 Mt. Ghana, the world's second largest producer is not lagging either in spite of the fact that after two seasons of lapses, it recovered with a production of 800,000 tonnes anticipated for the 2016/2017 season aiming for a target of 1 Mt in the future. The African cocoa sector also includes Nigeria and Cameroon but these remain far behind Cote d'Ivoire and Ghana in terms of volume. It must also be noted that some other small producer countries are seeing their offer, although very modest, progress rapidly, while others have asserted themselves in niche markets, like Sao Tome and Principe for organic cocoa.

The reversal

Cocoa is the backbone of many African countries, and the drop in world prices observed last July-August has been painfully felt in several exporting-producing countries, foremost among them Côte d'Ivoire. During 2016, a tonne of beans lost 22% of its value on the London futures market and 34% on the International Continental Exchange (ICE) New York. In fact, cocoa was one of the few agricultural commodities to have expe-



(Source: ICCO)



rienced such a drop, while in 2015 it was one of the few to have seen a spectacular rise. This reversal in trend is the consequence of a reversal of certainties. In recent years, the spectre of a shortage of beans has been agitated in the face of rising consumption, driven by emerging countries. This outlook was still very real in the first half of 2016, with the ICCO reporting a deficit of 113,000 tonnes in February, and up to an estimated 212,000 tonnes in August. Olam, who are cocoa merchants, put forward the figure of a 308,000 tonnes of deficit, a level that had not been recorded since 1980. But in this same month and especially September, the prospect of a season in surplus reversed the paradigm: there was no fatality to the deficit of cocoa but only cyclical situations. And this 'new' reality has brought down prices.

World prices in free fall

This turnaround was reflected, of course, in the evolution of prices over the months. By the end of 2015, they were at the highest level in four and a half years on the London futures market, triggering profits in January and thus falling prices, all the more so as the Chinese economy was lagging, like global growth in general.

The fear of 'Brexit' in the following months had a major impact on cocoa, not because of its impact on market fundamentals, but because of its impact on the Pound sterling, cocoa being one of the last commodities to be still listed in this currency, at least on the London Stock Exchange. The depreciation of the sterling thus encouraged investors and speculators, but also industrialists, to position themselves as buyers of futures contracts on the cocoa bean. This, coupled with the strong belief in a long-term structural deficit in the global cocoa market, created a sharply positive trend for several months. On June 23, 'Brexit' was confirmed and the Pound sterling fell again to its lowest value in thirty-one years, thus raising cocoa prices to their highest levels in thirty-nine years, to £2,449 per tonne.

Meanwhile, the intermediate harvest in both Côte d'Ivoire and Ghana was laboured due to slow deliveries and poor quality and with the Harmattan and drought having a serious impact on the harvest. The beans were therefore small in size and rejected on export, which was not without influence on the export statistics and reinforced the fear in the operators for a cocoa shortage. At the beginning of July, the Pound sterling was down, the deficit of 2015/2016 was confirmed, and the weather was not favourable for a good start to the 2016/2017 season. To top it off, US quarterly grinding was up compared to the same period last year, and for the first time in seven quarters.

It was, in fact, during the second half of July that signs of the reversal appeared, but they were not immediately foreseeable. The decline in cocoa prices was initially interpreted as a consequence of the rise of the pound sterling. This decline, in fact, reflected the prospect of a 2016/2017 season which, over the course of weeks, was increasingly favourable in West Africa. Positive agronomic perspectives were reinforced by the fixing, on October 1st, of very incentive-inspiring prices guaranteed to the planters. In addition, the Harmattan did not blow at the end of the year in West Africa and the season conditions were also favourable in other production areas, especially in Latin America, a rising player on the world cocoa scene. In November, the bean price fell to its lowest level in a year and a half in London and in

three years in New York. And since then, it has not stopped dropping. In the end, world cocoa production is expected to increase by almost 15% in the 2016/2017 season to 4.55 Mt, generating a surplus of 264,000 tonnes, according to the ICCO. A slightly higher surplus than previously estimated.

The abundance of supply during this season is closely related—even exclusively—to Africa. Production in Côte d'Ivoire could reach the absolute record of 1.9 Mt against 1.58 Mt in 2015/2016. World grinding is expected to grow by 2.9% to 4.24 Mt in 2016/2017, with the largest increase in Africa of 8% to 830,000 tonnes. Grinding in Asia should increase by nearly 5% to 919,000 tonnes, while it should remain unchanged in Europe and the Americas.

The commodity chains in doubt

The paradigm shift in the global cocoa market—from a global structural deficit to a surplus—has had a heavy impact on African commodity chains.

Firstly, for Côte d'Ivoire where the combination of the end of the political crisis in 2012/2013, the total reform of the sector with the introduction of anticipated sales and a guaranteed price to the planter, and the near certainty that world prices would be sustainably bullish, led the country to ride the cocoa wave. This feeling was probably reinforced by the fact that the country had two seasons, 2014/2015 and 2015/2016, with volumes falling due to one of the worst Harmattan in three decades and very dry weather linked to El Niño: between 2014/2015 and 2015/2016, Ivorian production decreased by 215,000 tonnes to 1.58 Mt according to ICCO estimates. World prices remained bullish, and the weak start-up of the 2016/2017 season blurred signals of a reversal of the trend during the second half of 2016. Accordingly, from October to December 2016, in the first quarter of the new season, exports of beans from the world leader fell by 15% to 305,125 tonnes. However, the delay was caught up early in 2017: from 1 October to the end of January 2017, exports reached 1.1 Mt, a level sim-

Cocoa beans

(in thousands of tonnes)

	2012/13	2013/14*	2014/15*	2015/16**
World production	**3 943**	**4372**	**4248**	**4 031**
Côte d'Ivoire	1 449	1746	1796	1 581
Ghana	835	897	740	778
Indonesia	410	375	325	350
Nigeria	238	248	195	200
Cameroun	225	211	232	250
Brazil	185	228	230	140
Ecuador	192	234	259	232
World grindings	**4 173**	**4322**	**4154**	**4 141**
Holland	545	530	503	520
Ivory Coast	471	519	558	492
Etats-Unis	429	446	400	398
Germany	402	412	415	438
Malaysia	293	259	195	194
Brazil	241	240	224	225
Indonesia	290	340	335	383
Surplus / Deficit	**-269**	**6**	**52**	**-150**
Ending stocks	**1 559**	**1565**	**1597**	**1 447**

* Estimations ** Forecasts

(Source: ICCO)

ilar to the previous season over the same period, but at the beginning of February, they exceeded them.

A sign of this optimism was the increase in the price guaranteed to the planter at the opening of the 2016/2017 season, despite the observed decline in the world price of cocoa. The government increased the guaranteed price for the main season 2016/2017 to CFAF 1,100 per kilo (€1.76 per kilo), up 10% over the previous season. This decision was not unanimous among the decision-makers of the sector in Côte d'Ivoire, but it was a sign that was very political, not only because of the electoral context, but also because lowering the price guaranteed to the planter would probably have undermined the country's policy aimed at increasing the attractiveness of the sector for young people.

A cocoa policy that, season after season since the great reform, is being refined to allow the Ivorians to further strengthen their role as world leader, while ensuring that they benefit more from the economic spin-offs of the sector. In order to try to capture the maximum value in Côte d'Ivoire, the country's objective is to eventually transform 50% of the national production against 30% to 35% currently. To do this, the authorities announced, during 2016, a tax relief ranging from CFAF 40 to 70 per kilo of cocoa to local grinders. They also increased the share of the intermediate crop for local industry to 60% (compared with 50% previously). An auction system reserved for grinders so that they do not compete with international traders is also being studied. Finally, in July 2016, the government reduced export taxes on powder (9.6%), butter (11%) and mass (13.2%), while beans were taxed at 14.6%. The export of chocolate, on the other hand, is not taxed. Currently, the twelve local mills (including Barry Callebaut, Olam, Cargill, Cemoi) have an installed capacity of 720,000 tonnes, but most operate at only 60% or 80% of their capacity.

As for quality, the CCC had to make concessions during the interim season 2015-2016, which was put to the test by the weather: in June, it authorized 125 beans for 100g against 120 at the beginning of the intermediate season (110 beans for 100g in 2014-2015). In spite of this, small exporters were unable to honour their contracts because, on the one hand, most of the available beans were even smaller (125 to 160 per 100g) and on the other hand, many contracts signed the previous year were based on 110-115 beans per 100g. And the local processing industry, technically capable of processing small beans, unlike large western milling plants, does not have sufficient global demand to sell such production. It should be noted that the decline in bean exports, due to inadequate quality, has forced large operators to tap their stocks to supply their plants in consuming countries. Hence the positive grinding figures in consumer countries in the third quarter of 2016: +2.9% in Europe, +12.45% in Asia, +0.5% in North America.

But the thorniest issue was the CCC's very own system of early auctioning, the cornerstone for the national cocoa policy. As of the beginning of May 2016, the CCC announced that it had made pre-sales of 1 Mt for the 2016-2017 season (the threshold reached only in September the previous year), taking advantage of high prices: a good performance, a priori, but ultimately crippling because of lack of financial surface area and/or experience of several Ivorian 'exporters' who did not cover themselves in the futures markets. When they had to honour their contracts, with the start of the 2016-2017 season, the price of cocoa had dropped and they failed. At the end of November, trucks loaded with beans drove around the ports of Abidjan and San Pedro, searching for takers. Thus, in two months, 200,000 to 400,000 tonnes, perhaps more, remained blocked. At the end of January 2017, the CCC took note of the default situation and offered to re-sell the non-compliant lots, obliging the exporters to cover the full costs, otherwise they would no longer be able to access advance sales.

At the end of February 2017, after months of silence and rumours, the authorities publicly admitted that about 350,000 tonnes of cocoa had been resold at auction, a volume resulting from these defaulted contracts but also from an "underestimate of production from the main season". An audit of the sector was launched. At that time, trucks loaded with cocoa, the quality deteriorating, were standing dormant in the Ivorian ports.

A situation that could prompt fraudulent exports to neighbouring countries, first and foremost Ghana, where a kilo of cocoa could be bought at CFAF 900. In Côte d'Ivoire, despite the drop in world prices, CCC asked exporters to continue to buy physical cocoa at the guaranteed minimum price, with the Council undertaking to cover any financial loss related to the discrepancy in prices against the world market. Which is worrisome, because the reserve fund of the CCC, which amounts to about €180 million, may not be enough to make up the difference.

Cocobod in Ghana targeted

Ghana, the world's second largest producer, experienced the same climatic and meteorological troubles as its neighbour. In 2015/2016, exports were ultimately only 780,000 tonnes compared to the expected 850,000 tonnes. The intermediate harvest was mediocre with small beans, as in Côte d'Ivoire, offered with a discount to local grinders be it Cargill, Olam, Touton, Barry Callebaut, Cocoa Processing Company which grind year in and year out about 30% of the national harvest. When they lack beans, they usually import them from Côte d'Ivoire. The 2016/2017 season, for its part, started slowly although the authorities did everything to stimulate the sector: at the beginning of the season (in October 2016), the price guaranteed to the planter was increased by 11.8% over the previous season, to €1,700 per tonne and arrivals accelerated over the months. However, in mid-March, Cocobod said that the harvest would barely exceed 800,000 tonnes, short of the 850,000 tonnes target again this year.

On the sector side, the year was turbulent. Cocobod, long regarded as the 'Rolls-Royce' of the chain's organization, has been increasingly criticized. Approved buyers have complained about waiting weeks before Cocobod grants them advances to buy cocoa from growers. Cocobod raises funds ($1.8 billion this year) in the international market so that it can advance the sums necessary for buying cocoa to the 20 approved and licensed buyers.

Reaffirming the production target of 1 million tonnes for the country, the new head of state Nana Akufo-Addo declared, on taking office, that he would reform the sector, in particular by making the Cocobod administration more transparent. He immediately replaced Joseph Aidoo, the existing Cocobod manager who had ostensibly supported the former head of state, unfortunate loser of the presidential election. As for the Minister of Agriculture, at the end of January 2017 he raised the possibility of fully liberalizing the sector—a revolution for Ghana—and promoting public-private partnerships.

On the grinding side, Ghana fell below 200,000 tonnes in 2015-2016, again due to the drop in the intermediate harvest. This represents a drop of 32,000 tonnes from 2014/2015 (234,000 tonnes), according to ICCO estimates.

Cameroon in a state of doubt

According to ICCO estimates, Cameroonian production increased by 7.8% during the August / July season to reach a threshold of 250,000 tonnes. It exceeded its record of 240,000 tonnes in 2010/2011. However, production remains very weak and cannot seem to take off, though this cocoa is very popular on the world markets, due to the brick-red colour which produces a nice cocoa powder. Yaoundé is pursuing its ambition to reach 600,000 tonnes by 2020, having spent $11 million in investments in the sector between 2010 and 2015. Cocoa and coffee account for more than 30% of the country's non-oil exports.

Cameroon also intends to process more beans on the spot. In 2016, it announced that it would increase its capacity by 30% by creating 10 new processing units. According to ICCO estimates, its grinding increased by 32,000 tonnes in 2015/2016, an increase of 2.6% compared to the previous season. To achieve these objectives, the government is also considering structural reforms, mainly through a possible merger of the three structures involved in the sector: the Cocoa Development Corporation (Sodecao), the National Cocoa and Coffee Board (NCCB) and the Cocoa-Coffee Sector Development Fund (FODECC). It should be noted that the CICC (Conseil Inter-professionnel du Cacao et du Café), Inter-professional Cocoa and Coffee Council, a private structure comprising all

the players in the sector, would apparently not be targeted. This government project seems to be a return to a structure similar to that of the former National Commodity Marketing Board (NPBO), which existed in the 1990s, before the liberalization of commodity chains. This new structure would have the task of boosting production volumes but also of promoting local processing. That said, the price paid to the planter will undoubtedly remain the crux of the matter and with the Cameroonian sector being liberalized, the price in the field will follow world pricing. In February 2017, it varied between 750 (€1.14) and 1,000 CFA francs (€1.52) per kilogram, 38% less than a year earlier. On the same month, the (NCCB) indicative price ranged from 930 (€1.41) to 1,050 CFA francs (€1.6).

On the quality side, Cameroon decided in early January 2017 to ban the import and marketing of pesticides containing metalaxyl in its territory, a product that is carcinogenic when used in high doses. Côte d'Ivoire has banned it since 2014 and the European Union (EU), for its own crops, since 2005. The use of this pesticide is very widespread, especially in the coastal and South-West production zones, to combat brown rot. Significant residues have been found in exported cocoa, beyond the standards imposed on entry into the EU. The Cameroonian Ministry of Agriculture has given until May 2018 to eradicate the product from the market and from the practices of producers. A decision that weighed on prices to the planter in January because many buyers were reluctant to pay for beans that might have been treated with metalaxyl and which would be, therefore, difficult to sell at a good price. This was compounded by a situation of insecurity in the English-speaking region of production in the South-West, linked to demonstrations against President Paul Biya, which did little to encourage buyers to go to the area, other than to obtain advantageous prices from growers.

Nigeria, still visionary

Nigeria ranks sixth among the world's cocoa producers, never managing to rise above the threshold of 200,000 tonnes of cocoa. For the 2016/2017 season, forecasts still had to be revised downwards, even though it was just 5,000 tonnes more than the 2015/2016 harvest, according to the latest ICCO estimates. The sector was confronted with heavy rains that triggered diseases (black rot) but also increased production costs due to the depreciation of the naira, the national currency. Nigeria had set a target of producing 340,000 tonnes in 2016/2017 and a million tonnes in the near future. The ICCO had also forecast 270,000 tonnes for this season.

This lethargy in production during the campaign is not related to the price paid to the producer, which climbed by 39% between April and November 2016, reaching a record high of 1.25 million naira (€3,667) per tonne in November. The reasons? The depreciation of the naira, since the Central Bank decided in June 2016 to let the currency float, but also panic purchases caused by dry weather. For example, the main season, which usually runs from October to March in Nigeria, was shifted this year to November because the dry season was longer and therefore delayed the growth of the beans. Producers hardly benefited from higher prices because input costs are also rising. In addition, with August rains that exposed trees to disease, then the extended dry season, 2016/2017 production could be deficient.

It is thus a sector that has difficulty in making itself dynamic, in particular because of the lack of synergy between the private and public sectors involved. In March, the Department of Agriculture announced that it was approaching the professional organization, the Federation of Agricultural Commodity Association (FACAN), which is expected to distribute cocoa plants free of charge to growers.

The slow but unstoppable move towards the local transformation of African cocoa

While the four ‘big’ African cocoa producers accounted for 70% of world production in 2015/2016, they accounted for 90% of the continent's production. However, other countries are emerging shyly. This is the case for Liberia, which is expected to reach 32,000 tonnes in 2015/2016, more than four times its 2014/2015 volume, and Uganda, with 30,000 tonnes in 2015/2016 compared with only 16,000 tonnes in 2011/2012. The same dynamic holds for Guinea-Conakry, whose

production increased from around 5,500 or 6,000 tonnes in 2012/2013 and in 2013/2014 to 16,000 tonnes in 2015/2016. A level close to the Tanzanian production estimated in 2015/2016, at 15,000 tonnes, whereas it was only 6,000 tonnes in 2012/2013.

In addition to the sharp increase in grinding in Africa, it should be noted that the world of chocolate is beginning to evolve favourably on the continent. In 2015 in Côte d'Ivoire, the French group Cemoi opened the first chocolate factory in the country. This is intended to supply the regional market: chocolate consumption in West Africa is only 30 to 50 grams per capita compared with 8 kg in Europe and 500 grams in China. This represented an investment of €8 million for a company that employs a hundred people. It should also be noted that the former director of Cemoi Abidjan, Olga Yénou, launched the Tafi chocolate factory in 2008, which previously manufactured semi-finished products. In 2017, it should start manufacturing chocolate bars for the regional market. Choco Togo meanwhile, was launched in 2014, specializing in the production of 'organic' chocolate. The example is not alone: in Ghana, Niche Cocoa Industry (Touton Group), formerly manufacturers of semi-finished products, embarked on chocolate making in 2017; in Uganda, Pink Food has been producing chocolate from local beans since 2014, while in South Africa, South African Tiger Brands owns Chococam and the Societe Chérifienne de Chocolaterie du Maroc created the Cameroon Investment Company (CIC) in 2012. Let's not forget that it was the artisan chocolatier Bayala André from Burkina Faso who won, in September 2016, the second international contest for chocolate in Cote d'Ivoire. The African cocoa scene is truly changing.

Widespread seduction campaign towards young people

One of the major difficulties of the cocoa sector in Africa, but also in many producing countries of other continents, is the aging of orchards and planters. According to a study carried out by CABI in 2010, the average age in the cocoa sector in Cameroon, for example, is 56.8 in the productive region of the East and 65.11 in the West. That is why Cameroon, through the Inter-professional Coffee and Cocoa Council (CICC) in particular, launched the New Generation programme in 2012, a real seduction campaign for young people in order to encourage them to engage in Cocoa farming. For three years, young people from agricultural training centres, motivated by cocoa farming and having at least three hectares of land, receive agronomic and entrepreneurial training, the inputs required to start their planting, personalized follow-up and sponsorship for the certification. At Festicacao 2016, the annual national cocoa festival also organized by the CICC to improve the image of cocoa and promote the local consumption of Cameroonian chocolate, it was noted that 1,248 young Cameroonians had joined the sector since the beginning of the programme. A real success for this programme, which, however, may be put to the test with the fall of world cocoa prices.

That said, the New Generation programme is attracting interest. First of all, with other African producing countries, such as Côte d'Ivoire, who plan to imitate it, but also with the EU and European countries who see it as a way of reducing immigration, or of even bringing young Africans from the diaspora back to their countries of origin. Also noteworthy is the joint initiative of the ICCO and the African Development Bank (AfDB) to increase local processing of cocoa. For example, if the value of the production of beans is estimated at $12 billion, with the planters receiving $8 billion, the world market of chocolate would be worth $110 billion...

Sugar

Production is stagnating on a continental scale, while consumption is increasing, leading to a growing deficit. North-south disparities abound, small rain-fed agriculture coexists with irrigated plantations, domestic production combines with the refining of imported sugar and uncontrolled trade flows continue. In Africa, the sugar sector is just as promising as ever—it shows many contrasts, remains open to other continents, and is extremely attractive to competing countries. All this in a global market that proved tense in 2016 with a marked imbalance between supply and demand, fertile ground for significant speculation on the London and New York markets.

A lively global market

With an increase of between 24% and 28% over the year, prices for white and raw sugars soared in 2016, so much so that we must go back to 2009 to see such a performance. If one refers to prices of the white sugar futures contract negotiated on the Intercontinental Exchange (ICE) Europe with a March 2017 maturity date, they went from $404/tonne on 4 January 2016 to $524/t on 30 December, after peaking at $612 at the end of September. The same can be said of the No. 11 raw sugar contract traded in New York that started 2016 at almost 15 cts/lb before reaching its highest value of the year on 5 October at 23.81 cents. Prices were a little under 20 cts/lb at the end of December. In the first two months of 2017, prices rose again reaching more than $550/t on 6 February for white sugar and 21 cts/lb for raw sugar.

At the origin of this price dynamic was a global market in deficit for the 2016/2017 season, against a backdrop of consumption that is continuing to grow faster than production. According to International Sugar Organisation (ISO) statistics from February 2017, world production for 2016/2017 is expected to reach almost 168.33 Mt (raw value), an increase of 2.26 Mt from 2014/2015 (+1.36%). However, regional production disparities are nonetheless evident: while production has increased in the United States, Europe, Russia, China and possibly Brazil, it has regressed where demand is high, particularly in India with a decrease in volumes of 7% compared to 2015/2016 according to the first estimate of ISMA, the Indian Sugar Manufacturers' Association. Global supply is therefore growing, but at a slower pace than world consumption, which is expected to rise by 1.62% to 174.2 Mt. The logical consequence is therefore a deficit.

While the estimate made in September 2016 reported a world deficit of 7.05 Mt, that of February 2017 assumed a lower deficit at 5.87 Mt with a decline in global stocks of nearly 6 Mt. Again according to the ISO, the availability of exportable sugar globally is estimated at 58.25 Mt, while import demand is estimated at 58.09 Mt. The stock/consumption ratio for 2016/2017 would then be 43.78%, the lowest rate since 2010/2011 and close to the level of 40% considered to be critical.

Market fundamentals, however, do not alone explain the increase in sugar prices, for it is necessary to note the extent of speculation, especially during the first part of the year. Encouraged by inadequate supply (even though meteorologists were referring to the probable climatic phenomenon 'La Niña') and further egged on by low stocks, as well as the appreciation of the Brazilian real and fears about the rate of production, hedge funds and index funds during this period multiplied strategies for purchasing futures contracts in the two reference markets. After significant profits were taken—explaining the price decline observed in the last quarter of 2016—speculators returned to the market at the end of the year, encouraged in particular by disappointing news from India and the strengthening of the real.

A growing structural net deficit in Africa

The key figure on the African continent (excluding the Middle East) is its structural net deficit, which amounted to nearly 8 Mt in 2015/2016. And this deficit is increasing: from about 2 Mt before 2005, it has risen to nearly 6 Mt in the 2010s and will exceed 10 Mt in the coming years. The continent's production accounts for about 7% of world production and consumption represents about 11% of world consumption, while import demand accounts for more than 17% of world imports (37% if the Middle East is included). This is above all due to demographic growth, the increase in urban populations, and the evolution of food-consumption styles that accompany the emergence of middle classes and that are the basis of consumption growth that has amounted to nearly 3% annually in the last three years.

The increase in the African deficit is therefore the result of simple arithmetic: while the continent's output has increased by 1.5 Mt in ten years and has fluctuated in recent years around 10.6 Mt, consumption has increased by almost 4 Mt over the same period. An additional 5.6 Mt will be needed just to meet demand in sub-Saharan Africa by 2025. In this tense context, any climatic event that affects domestic production in a given region results in destabilisation of the domestic market and high volatility of domestic prices, encouraging uncontrolled flows from neighbouring countries with the consequence of further increases in the difficulties encountered by the domestic industry.

Therefore, the central question becomes: which countries will be able to supply sugar to the African continent in the years to come? And how will these needs be covered? By a domestic cane industry (with a marginal role for beets); by a domestic refining industry of imported raw sugar, or by direct imports of white sugar? Across the continent, the trend line for the flow of raw sugar imports crossed above that of white sugar imports in 2010, reflecting not only the increase in refining capacity for imported raw sugar but also the choice of some countries to develop industrial tools and capture value. However, growing competition from white sugar producers from the EU and the Middle East, could give priority to imports of white sugar even though there should be room for everyone as demand is and will remain strong.

EU-dependent exports are down

With the exception of North Africa, sugar produced in sub-Saharan African countries enjoys privileged access to the EU market through historical agreements between the EU and Least Developed Countries (LDCs) and the ACP (Africa, Caribbean and Pacific) Group of States. The sugar flows from these countries to the EU

Sugar

(in thousands of tonnes)	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
World Production	***183 631***	***181 482***	***171 340***	***166 072***	***168 334***
Brazil	40 975	41 100	33 785	38 676	38 775
India	27 300	26 500	28 200	25 200	21 000
EU (27)	17 550	16 190	18 059	14 201	15 775
China	14 200	14 200	10 556	8 700	9 900
Thailand	10 009	11 000	11 300	9 755	9 450
USA	8 175	7 895	7 144	7 855	8 445
Mexico	7 400	6 550	5 985	6 119	6 100
Russia	4 885	4 350	4 425	5 200	6 025
Australia	4 250	4 425	4 450	4 950	5 000
Pakistan	5 375	5 750	5 200	5 325	5 500
Guatemala	2 900	2 900	2 890	2 823	2 900
Philippines	2 465	2 465	2 320	2 235	2 235
Ukraine	2 420	1 650	2 100	1 592	2 000
Turkey	2 345	2 345	2 245	2 040	2 400
Argentina	2 200	2 200	2 025	2 075	2 000
Colombia	2 400	2 400	2 405	2 155	2 155
South Africa	2 500	2 500	1 843	1 700	1 750
Indonesia	2 700	2 800	2 525	2 275	2 375
World Consumption	***173 031***	***176 752***	***169 160***	***171 431***	***174 203***
India	25 260	25 750	24 750	26 000	25 900
EU (27)	20 040	20 424	18 360	18 200	18 350
China	15 800	16 300	15 300	15 695	16 140
Brazil	13 350	13 575	12 125	11 000	11 000
USA	10 600	10 690	10 075	10 700	10 800
Russia	5 800	5 800	5 485	5 500	5 650
Indonesia	5 740	5 920	6 265	6 200	6 420
Mexico	4 900	5 100	4 250	4 420	4 450
Pakistan	5 030	5 145	4 850	4 940	5 060
Egypt	3 250	3 360	1 920	3 375	3 510
Japan	2 200	2 200	2 200	2 125	2 125
Ukraine	2 025	1 650	1 830	1 815	1 825
World Exports	***56 442***	***57 144***	***55 530***	***58 955***	***58 250***
Brazil	27 625	26 100	23 270	27 676	27 600
Thailand	5 430	7 915	8 225	7 750	7 000
Australia	3 300	3 450	3 565	3 970	3 995
India	1 160	1 500	1 975	2 800	1 500
EU (27)	1 480	1 350	1 350	1 350	1 350
Guatemala	2 075	2 155	2 155	2 147	2 124
United Arab Emirates	1 750	1 045	1 742	1 730	1 845
Mexico	2 120	1 825	610	1 565	1 460
World Imports	***55 297***	***52 866***	***55 484***	***59 194***	***58 095***
EU (27)	4 285	4 879	3 025	3 995	3 925
USA	2 927	3 085	3 115	3 030	2 450
Indonesia	3 950	3 120	3 740	3 925	4 150
China	3 685	2 350	4 800	5 975	4 700
United Arab Emirates	1 935	1 940	1 962	1 980	2 110
Malaysia	1 805	1 690	1 797	1 807	1 867
South Korea	1 850	1 520	1 945	1 935	1 950
Japan	1 501	1 475	1 520	1 445	1 445
Saudi Arabia	1 350	1 395	1 430	1 465	1 550
Nigeria	1 300	1 335	1 610	1 570	1 540
Iran	1 500	1 280	905	995	940
Egypt	1 375	1 285	3 265	1 200	1 285
Canada	1 290	1 370	1 163	1 172	1 110
Bangladesh	1 450	1 500	1 983	1 650	2 164
Algeria	1 685	1 645	1 173	1 795	1 849

(Source: ISO, November 2015)

have structured their trade since the 1970s through the Lomé Convention, followed in 2000 by the Cotonou Agreement. Since 2001 and the entry into force of the 'Everything but Arms' Agreement, LDCs have enjoyed duty and quota free access to EU markets. Since 2007 and the entry into force of the trade component of the Economic Partnership Agreements (EPAs), access to the European market is also quota and duty free for all ACP countries. The European sector is limited by domestic production quotas that have kept output below consumption since 2006 (and until 2017). These flows should logically have been consolidated, but significant price reductions in the European market and the opening up of the European market to other trading partners (Central America, Peru, Colombia, Ukraine, Brazil) have gradually eroded the value of these preferred trading arrangements. Since 2013/2014, EU imports from the ACP and LDC countries are down.

In 2015/2016 these ACP/LDC flows fell to 1.7 Mt. Mauritius is by far the largest exporter of sugar to the EU (about 460,000 t of white sugar in 2014/15), followed by Swaziland (313,000 t of raw sugar), Mozambique (280,000 t of raw sugar), Sudan (200,000 t in 2014/2015) and Zimbabwe. The end of EU quotas on 1 October 2017 and the liberalisation of sugar (and isoglucose) production in the EU is likely to reduce import demand, increase competition and further diminish the attractiveness of the European market. In its modelling of the EU market out to 2025, the European Commission estimated that total EU imports, from all origins, should be around 1.7 Mt.

On the basis of flows at historical levels, some African countries also benefit from access to the United States market that is duty free but with quotas, including: Côte d'Ivoire, Gabon, Madagascar, Malawi, Mauritius, Mozambique, South Africa, Swaziland and Zimbabwe. The quantities allocated are, however, very low when compared with the quantities exported to the EU and there is no prospect of increasing this market outlet in the short and medium term. The current political context in the United States, the lack of progress in the Doha Round of the World Trade Organisation (WTO), and the United States' difficulties in managing its import flows from Mexico, mean that the American market will remain very limited as an export option.

The challenge of the decline in demand from the EU for imports from African producing countries is daunting. Mauritius has successfully restructured its sector towards greater value added and has increased market differentiation, also opting to produce only EU-grade white sugar and special sugars as of 2009, and is therefore likely to maintain its outlets to the EU. However, it may be more difficult for other raw sugar exporters to do so.

A strong north-south imbalance

The emergence of two blocs can be seen on the continent: a bloc in the north which is significantly in deficit and a bloc in the South that is slightly in surplus. Logic would have a rebalancing take place, but it is clear that the flows between these two blocs are struggling to be made.

Localisation of sugar deficits in Africa

The first bloc, comprising North, West and East Africa, has a considerable net deficit of more than 7.5 Mt, of which 50% is in North Africa (3.8 Mt) and 20% in Nigeria. Per capita consumption in North Africa (Algeria, Libya, Morocco and Tunisia) is between 35 and 39 kg per capita per year, which is well above the continent's average (about 16 kg per capita per year) and above the world average of 23kg per capita per year.

Algeria does not produce sugar and imports all it consumes, about 1.4 Mt (against 1.25 Mt in 2010), mainly raw sugar from Brazil which is refined domestically. With the recent construction of two new refineries, its refining capacity, dominated by the Cevital Group, exceeds consumption. For producing countries like Egypt and Morocco (Fimasucre), the imperative is not only to invest and improve productivity for the domestic

sector—both countries produce cane and sugar beets—but also to invest in refining capacity for imported raw sugar, mainly from Brazil and Central America. They also have to compete with EU sugar and refiners of imported raw sugar in the Middle East, whose production capacity has exploded in recent years and is now estimated at 12 Mt. This overcapacity for raw sugar refining in the Middle East/North Africa (MENA) region is worrisome. It is hardly sustainable and should logically lead to the closure of refineries in some countries in the Middle East, unless this refined white sugar manages to compete with Thai, Brazilian, European and Indian sugar on the African continent.

The development strategy of the domestic industry in these countries thus depends on controlling the level of imports of raw and white sugar, incentive policies for the development of cane and beet planting areas and support of planters, in particular through minimum prices. In these countries, there has been a significant increase in beet production due to increasingly hardy and adaptable varieties and due to the plant's lower demand for water. In 2016/2017, Egypt is expected to produce 0.915 Mt of cane sugar and 1.27 Mt of beet sugar. In Morocco, the structuring of the sector and investments in productivity, in particular for beets, have made significant progress. Sugar production thus exceeds 0.5 Mt. Combined with the refining of imported raw sugar (about 0.7 Mt), these efforts have enabled Morocco to become self-sufficient and to be able to export to neighbouring countries.

In West Africa, the level of per capita consumption is much lower: around 10-15 kg per capita per year. Nigeria accounts for two-thirds of the deficit with consumption of 1.6 Mt. Since the 2000s, the country has relied heavily on the substitution of raw sugar for imported white sugar and has strongly developed refining capacities at the same time as it privatised and updated state-owned enterprises. The Dangote groups, which became the largest refiner in sub-Saharan Africa, along with BUA and the Golden Sugar Company have thus increased their activity on the basis of certain competitive advantages: a location near ports where Brazilian sugar is unloaded along with low energy and labour costs. Since 2012 and 2014, Nigeria—whose government views agriculture as a key sector (alongside oil)—has put in place a plan for the integration and development of its agro-industry. It has targeted sugar produced from cane, the control of import flows (through restrictive import quotas and tariff policies), as well as the enhancement of the rural economy and the development of ethanol production. Several projects are expected to come on line within the next ten years, ranging from mini-organic sugar refineries to a traditional 'green field' project on about 14 sites. But the political and economic situation of the country are powerful brakes to further development.

Plans also exist in Cameroon, Gabon and Côte d'Ivoire. Somdiaa recently announced an investment plan of 320 million euros over five years to increase production capacity and improve yields that remain disappointing to date. But the flow of more or less fraudulent imports from Nigeria and Sudan is delaying the implementation of these projects.

Raw sugar flows in Africa and the Middle East

Imported sugar in the countries of North Africa and Nigeria is thus mostly raw sugar (about 5.5 Mt) destined for refining. It comes directly from the ports of Brazil and Central America. For West African countries, imported white sugar is imported in smaller quantities (about 1.6 Mt) from Europe, Brazil and the Middle East.

East Africa offers a different picture: it is home to major sugar producers (Sudan, Kenya, Ethiopia and Mauritius), two exporters (Sudan and Mauritius), with Mauritius being a net exporter that does not yet import raw sugar to refine. Disparities in terms of sugar consumption are high: Ethiopia remains one of the continent's lowest per capita consumers with about 5 kg per capita per year. With consumption almost ten times higher, Sudan, meanwhile, reaches world

records. Ethiopia and Kenya are struggling to restructure their domestic industry based mainly on independent growers and is trying to control sugar flows. Ethiopia's ambition is to become one of the world's 10 largest sugar producers by 2023, but is struggling to modernise cane supply and industrial tools. With 0.35 Mt of production in 2015/2016, the country appears to be well below the production target of 2.25 Mt for 2014/2015. In Kenya, low cane yields, difficulties in accessing credit and inputs for farmers, inefficient transport infrastructure, delays in payments and in the privatisation process have all increased production costs. Today they are 60% higher than they are for neighbours in Uganda, Tanzania or Zambia that all belong to the same trade area (the Common Market for Eastern and Southern Africa, COMESA). Kenya (20 kg per capita per year) produces only raw sugar and all white refined sugar needs (for industrial demand) are met by imports from neighbouring countries.

Four sugar-producing complexes produce about 330,000 tonnes in Tanzania, where about 520,000 tonnes (12 kg per capita per year) are consumed. These complexes treat a total of about 31,000 hectares of cane with an average yield of 68 t/ha and 27,000 hectares of plantations of independent planters with an average yield of about 27 t/ha. The discrepancy is blatant. The country's deficit is covered by import flows of about 250,000 tonnes, which are difficult to control and consist essentially of low-quality sugar. The construction of a new sugar factory is being planned for 2020 to increase the country's production capacity to 420,000 tonnes. Other mini sugar-refining projects more suited to the agricultural structures in place are also under consideration. To enable these projects to become a reality, the Tanzanian government has also decided to gradually increase tariffs on sugar (and confectionery) imports from 10% to 25% as of the 2016/2017 fiscal year. The customs duty will thus increase from 10 to 15% before being increased to 20% in 2017/2018 and then to 25% in 2018/2019; the Minister of Finance and Planning pointed out that this increase is also intended to discourage abuses of tax exemptions by sugar importers.

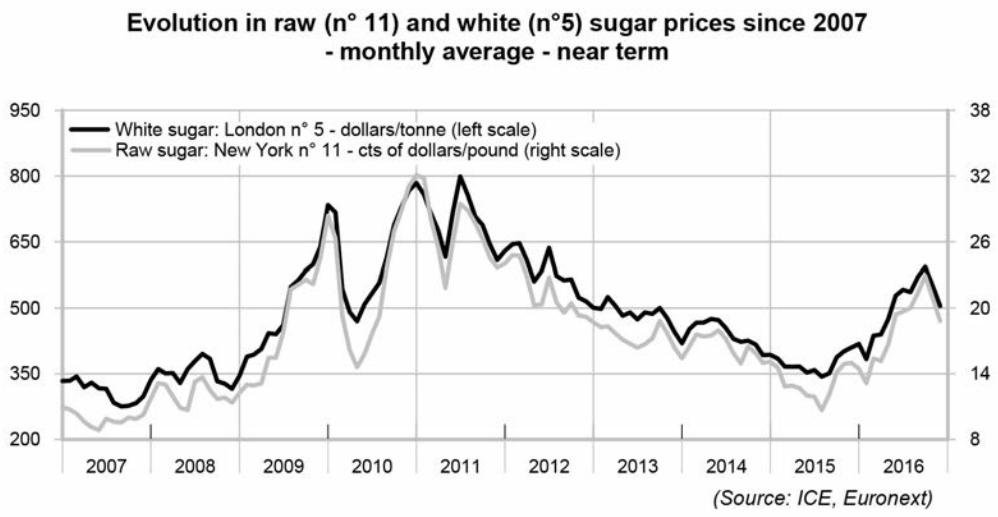
Sudan, on the other hand, possesses some of the most modern sugar complexes, based on plantations irrigated by the waters of the Nile. The Kenana Sugar Company (KSC) is one of the largest integrated complexes in the world, with two production facilities, including the White Nile Sugar Company, with a production capacity of 450,000 tonnes of sugar. With two other projects, including a refinery for imported raw sugar, the Sudanese company is positioning itself not only to supply its domestic market but also to increase its export position, in particular for neighbouring countries. Pending the development of its refining capacity, Sudan imports refined white sugar from Thailand or India.

Southern Africa struggles to increase production

The second bloc brings together Central and Southern Africa. It has a net surplus of about 0.35 Mt and is home to the largest number of exporting countries, including Swaziland, Mozambique, Zambia and South Africa.

Central Africa is almost in equilibrium: two major producing countries, Uganda (five sugar companies) and Malawi (one sugar company: the Illovo group) produce about 0.8 Mt and a surplus of about 0.2 Mt. Malawi benefits from good climatic and soil conditions as well as water resources that make it one of the best cane regions in the world with production costs that are among the most competitive. Illovo produces raw and white sugars and special sugars for direct consumption and for industry—40% of its production is exported beyond the continent to the EU and US markets.

With the exception of South Africa, which will only benefit from duty-free market access with quotas as of 2017 (150,000 tonnes, including 100,000 tonnes of raw sugar to be refined), the countries of southern Africa also export mainly to the EU. Swaziland, Mozambique and Zambia are countries with surplus raw sugar that is being refined in Europe. Will they be able to maintain these volumes of exports to the EU after the 2017

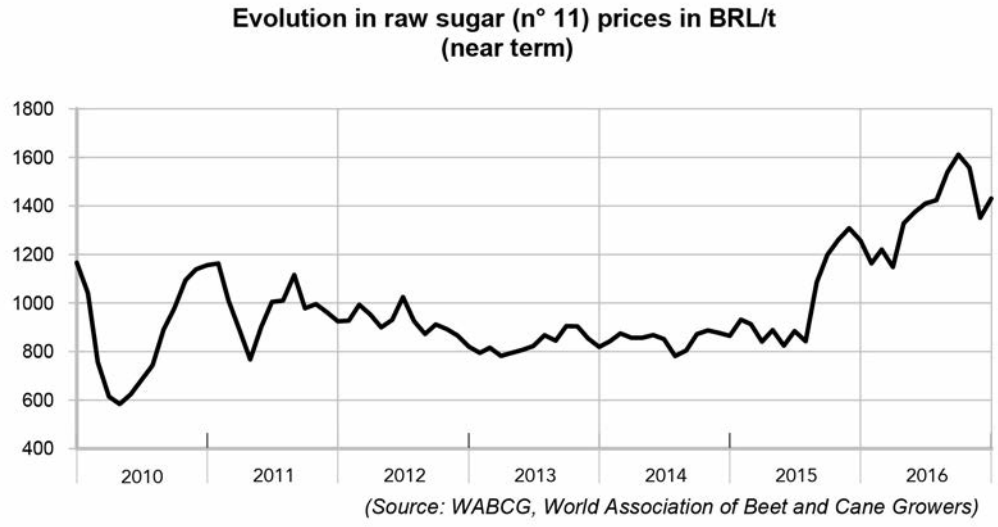


reform of the European market? And what other markets, especially on the African continent, could absorb this surplus? While regional markets a little further north are dynamic, their solvency and transport infrastructure are limiting factors.

White sugar flows in Africa and the Middle East

South Africa and Mozambique faced a drought in 2015/2016. The lower water availability resulted in a decline in the output of these two countries from an average of 2.2 Mt to 1.7 Mt in 2015/2016 for the former and from 0.42 Mt to 0.35 Mt for the second. The Illovo Group is the major historical operator for the whole area, it is present in Malawi but also in Zambia, Swaziland, Mozambique and of course in South Africa where it originated. A subsidiary of Associated British Food (ABF), it has a total production capacity of 2 Mt. The Tongaat Hulett group is also originally from South Africa and is present in Swaziland, Mozambique and Zimbabwe and has an equivalent production capacity. Integrated within the Southern African Development Community (SADC), these groups nonetheless face regional complexity with the juxtaposition of other trading areas. In the absence of further trade integration or unification through a tripartite agreement (a recurring subject), flows between surplus and deficit countries will be limited. In the end, South Africa, less dependent on the EU market, exports its white sugar to Asia (Indonesia, Malaysia, Burma), but it must also face import flows of Brazilian sugar, especially when the world market is depressed, which forces it to raise its tariffs to avoid the destabilisation of its markets.

In conclusion, one has to recognise that the cane industry (and marginally that of sugar beets) is definitely a structuring industry in Africa. Producing both sugar and energy (ethanol, cogeneration), it supports millions of farmers, federates rural communities, enables the development of cutting-edge agricultural practices, employs millions of people across the continent and provides a commodity that is essential for the agri-food industries. But it faces many challenges: addressing the gap between growth in demand and investment, improving productivity vis-à-vis competitors in other countries (Brazil, India, Southeast Asia, the Middle East, Europe), limiting its dependence on the EU market (a political and commercial challenge to try to stabilise its mar-



kets), curbing illegal flows and rebalancing legal flows. Finally, the challenge of climate change must be met as well. More extreme conditions, such as the drought in East and South Africa in 2016/2017, also raise questions about the availability of the water resources that cane needs, the adaptation of cane varieties and, more generally, agricultural productivity and the structures of small independent growers. Africa has certainly remained somewhat behind the recent dynamics in the global sugar market, particularly in the context of developments in the Middle East, India and Southeast Asia. But Africa harbours significant agricultural potential and an incomparable consumption potential as well.

Tea

In 2016, prices for African tea sold at Mombasa auction dropped by 15.2%, while the CTC black tea composite price index declined by 4.5%. In other areas of cultivation, tea prices, on the other hand, increased, notably in India and Sri Lanka. In 2016, Kenya remained the largest exporter of tea on the world market.

Falling prices in 2016

Based on the Composite Indicator of the United Nations Food and Agriculture Organization (FAO), consisting of the CTC (Cutting-Turning-Curling) black tea from different provenances, the price of tea in 2016 has experienced intra-annual variations that are different from those of previous years. Though the price of tea reached particularly high levels in July 2015 (as in 2014), this was not the case in 2016. The price of tea started in 2015 at $246 per quintal, then rose steadily to $290 per quintal in July. It then varied, depending on the month, between $263 and $281 before reaching $267 in December. In January 2016, it was $253 per quintal before suffering a first decline in February ($242), followed by a second decline in April ($229). However, this did not last: it peaked at $265 in July before starting a further decline in August ($258). It then rose month by month to $284 in November 2016 to finish the year at $281. The average tea price, down 4.5% between 2015 and 2016, ultimately set at $257 in 2016.

As an essential reference for African tea, the price of tea sold at the Mombasa auction was $238 per quintal on average in 2014 (-11.2% compared to 2013). It rose sharply in 2015 (+43.2% compared to 2014), with an average price of $340. In 2016, the average price of the auctioned tea reached $288 (down 15.2 % compared to 2015). 2017 nevertheless began at high levels: $370 per quintal in January and $380 in February. As with the CTC composite index, intra-annual variations were quite different from year to year. In January 2015, tea prices were $270 before rising in the first three months of the year ($310 in March) and then falling in April ($290) and resuming their progression the following month. Like CTC tea, it reached its maximum in July ($400) and then declined, with the exception of October, until it reached the price of $340 per quintal at the end of the year. In 2016, the price of tea in Kenya started the year at $320 per quintal. It then dropped by 25% until April ($240) before progressing until the end of the year. It was $340 per quintal in December 2016, an increase of 41.7% between April and December 2016.

In other production areas, notably in India and Sri Lanka, the price of tea increased in 2016. In Sri Lanka, the price increase was due to the weakness of the supply but also by the devaluation of the Sri Lankan rupee against the dollar.

Increased production volumes and surface development projects in several countries

The world's largest tea producers remain China and India, whose volumes increased in 2016. These two countries share more than 60% of the volumes produced, with China being the world's largest producer of green tea and India the first producer of black tea. Different African tea-producing countries supply about 13% of the world's volumes (a rate valid for 2013 which can be estimated at 15% in 2016). Kenya (8.7% of world production), Uganda (1.2%), Malawi (0.9%), Tanzania (0.6%), Rwanda (0.5%), Zimbabwe (0.2%), Burundi (0.2%) and South Africa (0.1%). Other African producing countries supply 0.6% of the world market.

In 2016, Kenya produced 473,000 tonnes of tea, an increase of 18.5% compared with 2015. This increase appears to have been fuelled by the late 2015 and early 2016 rains linked to the presence of El Niño. The country thus remains the third largest producer of tea, behind China and India, and the leading producer of CTC black tea. However, the fact that the country produces few orthodox teas penalizes its export earnings. Kenyan production is ensured, either by 60% of the volumes, by agricultural producers cultivating tea on their own farms or, for the remaining amount, by large plantations belonging to national or international groups.

At the beginning of 2017, crop forecasts for the current year showed a production of 416,000 tonnes of tea, down 12% from the record harvest of 2016. These forecasts, in fact, are the consequences of the persistent drought that has plagued the country. The latter, linked to the meteorological phenomenon of La Niña, has caused the irrigation water sources of many producers throughout the country to dry up, which has inevitably affected the development of tea leaves.

Uganda is the second largest producer of tea in Africa, with an estimated harvest of 58,300 tonnes in 2016, compared with 51,600 tonnes in 2015, a 13% increase in volumes. It also appears that the country has significant development potential thanks to favourable land. Some sources estimate that only 15% of the areas suitable for tea cultivation are actually being exploited.

Production in Malawi, for its part, rose to 39,000 tonnes in 2016, making it the third largest producer in Africa. The decrease in production of 1% compared to 2015 (39,400 tonnes) is due to an absence of rainfall and by record temperatures which have shortened the harvesting period. Although the decline in the 2016 crop has been modest, poor climatic conditions have limited replanting for crop development and maintenance. The proper development of the 2017 crop could therefore be threatened. For producers, however, the declining production costs seem to have offset, in part, the effects of this slight contraction in volumes. For the development of tea-growing, the country has launched a programme entitled "Malawi Tea 2020". Its objectives are to increase

Tea

(in millions of kg)

	2011	2012	2013	2014	2015	2016
World production	**4 364.7**	**4 628.5**	**4 784.2**	**5 064.7**	**5 125.4**	
China	1 632.2	1 789.8	1 924.5	1 950.0	2 387.3	2 249.0
India	1 119.7	1 129.0	1 200.4	1 210.9	1 208.8	1 239.2
Africa	591.8	580.3	652.1			
Kenya	383.1	373.1	436.3	448.7	399.2	473.0
Ouganda	56.3	57.9	61.0	65.4	51.6	58.3
Malawi	47.1	42.5	46.5	45.9	39.4	39.0
Tanzania	33.0	32.3	32.4	36.8		36.2
Rwanda	24.1	24.7	25.2			25.2
Zimbabwe	8.4	8.5	8.5			15.0
Burundi	7.0	8.7	8.8			11.0
South Africa	2.2	2.2	2.5			
Other African countries	30.6	30.4	30.9			
World exports	**1 763.9**	**1 777.2**	**1 864.1**	**1 830.3**	**1 801.5**	
China	325.8	313.4	322.6	302.5	325.0	
Sri Lanka	303.2	306.1	311.0	327.9		
Africa	601.7	601.3	683.4			
Kenya	421.0	429.6	494.9	499.0	420.5	480.0
Ouganda	55.7	55.2	62.0			55.4
Malawi	46.0	34.7	43.2			
Tanzania	27.1	27.8	26.2		29.5	30.8
Rwanda	23.2	23.0	23.5		24.7	24.4
Zimbabwe	5.7	5.9	5.9			12.0
South Africa	2.7	2.8	5.2			
Other African countries	20.3	22.3	22.5			
World imports	**1 899.4**	**1 935.0**	**1 893.4**			
Egypt	100.4	109.4	104.7			
Morocco	64.5	53.1	59.2			
Sudan	25.0	25.1	27.9			
South Africa	24.1	24.1	25.6			
Kenya	99.8	86.9	12.7			

(Sources: ITC. FAO. Van Rees. Tea journey harvest review and national sources)

the competitiveness and profitability of the industry, while improving the conditions for growing tea and its quality and offering better working conditions to both employees and producers.

In 2016, Tanzania produced 36,200 tonnes of tea, of which 68% were grown on plantations (24,500 tonnes) and 32% on smaller farms (11,700 tonnes). The tea is then mainly processed in eleven processing plants handling alone 92% of the volume. Tanzania has declared to the FAO its intention to increase the area planted with tea to 25,000 hectares by 2022. The country wants to produce 50,000 tonnes per year.

Rwanda, for its part, produces mostly CTC black tea in fourteen factories, but it should be noted that the production of specialty tea is expanding. Total production reached 25,200 tonnes in 2016. Tea production is carried out at high altitude, facilitating its cultivation by pro-

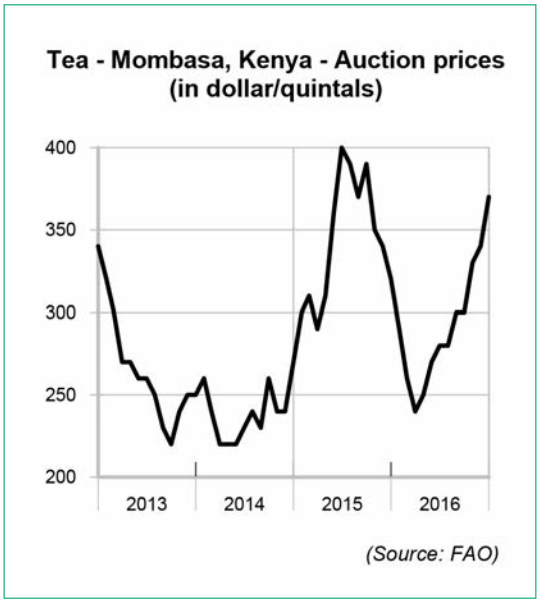
tecting it from the presence of harmful organisms. The volcanic soil also makes it possible to limit fertilizer inputs. Domestic production is supported by the government, which has supplied seedlings to producers.

In Zimbabwe, 15,000 tonnes, mainly CTC black tea, were produced in 2016 by three main companies. Agricultural areas devoted to tea growing are still limited, but according to the experts, they could make considerable progress. Finally, Burundi produced 11,000 tonnes in 2016.

Kenya, world leader in tea exporters

Kenya is the world's largest exporter of tea. It distributes, in effect, most of the African volumes of black tea. According to the Central Bank of Kenya (KCB), tea exports reached 480,000 tonnes, up 14% from 2015 (420,500 tonnes). The country sells 95% of its crop at the Mombasa auction. In 2015, the country exported $1.27 billion against $1.19 billion in 2016, a decrease of 3.6% due to larger quantities being available at the Mombasa auction. Kenya has the United Kingdom, Egypt, Pakistan, Afghanistan, Sudan and Russia among its main customers. In order to increase its exports, the Kenya Tea Development Agency has succeeded in increasing its sales volumes with its historic customers, notably the United Kingdom, but has also ventured into new markets, such as those in Iran, Kazakhstan, etc.

Uganda, meanwhile, exported 95% of its tea crop, or 55,400 tonnes, mainly at the Mombasa auction. Sudan is one of its main customers, but the turmoil in that country has resulted in a decline in purchases in 2016. Tanzania, for its part, sold 85% of its products, i.e. 30,800 tonnes (compared to 29,500 tonnes in 2015). These are CTC teas, for the most part. The same observation was made for Rwanda, which exported about 97% of its tea production, i.e. 24,400 tonnes in 2016, slightly lower than in 2015 when 24,700 tonnes were marketed. 60% of the volumes are marketed by Mombasa, the remaining 37% are sold over the counter, according to the National Agricultural Export Development Board. Finally, Zimbabwe exported 12,000 tonnes in 2016, largely CTC black tea. The majority of the production is exported to the UK to be mixed.



Kenyan ambitions

The Kenya Tea Development Agency wants to invest in its processing facilities to produce orthodox tea, while the country is mainly producing CTC tea. The challenge: improving the value of its exports. With this tea, Kenya hopes in particular to promote sales to Iran and Russia. The machines needed to transform this quality of tea seem to have been imported and production of orthodox tea should begin by the end of 2017.

Meeting of the Intergovernmental Group on Tea in Kenya

The meeting of the twenty-second session of the Intergovernmental Group on Tea was held from 25 to 27 May 2016 in Naivasha, Kenya. At this meeting, participating countries assessed the state of the tea market by studying trends in production, consumption and prices. The Group also examined the changes in the various national policies and attempted to measure their effects on the world market. During the meeting, ninety-two delegates were present, from Burundi, Kenya, Malawi and Morocco in particular. Observers from the International Organization for Standardization (ISO) and the International Tea Committee (ITC) also attended the meeting.

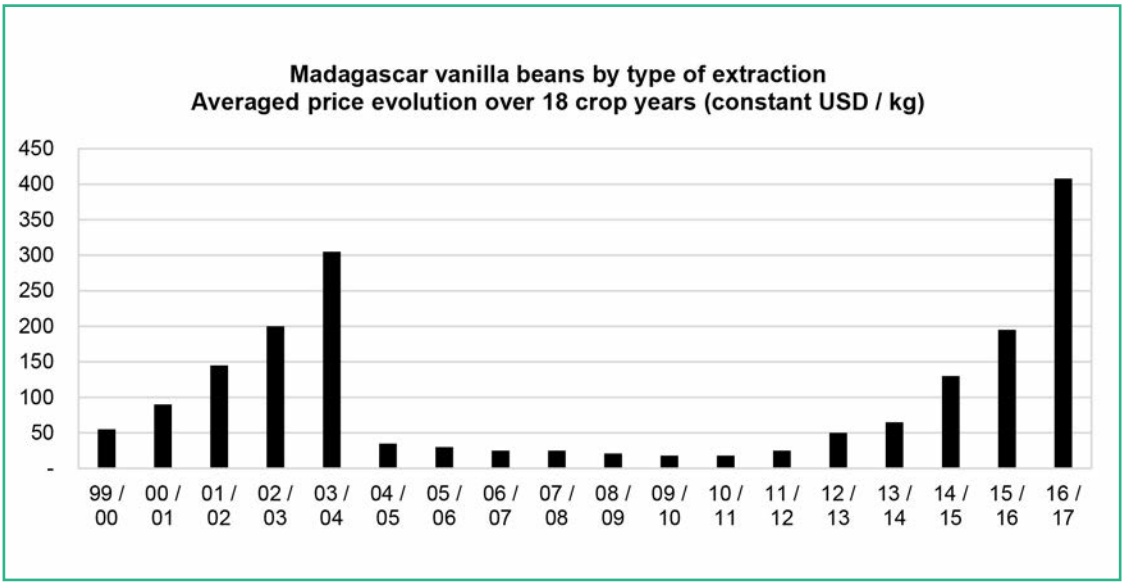
Vanilla

In a crisis, the only predictable thing is the uncertainty that follows, and nothing seems truer for the vanilla sector in Madagascar. The overall situation in the main production area, commonly known as SAVA –for Sambava, Antalaha, Vohemar, Andapa, the four main cities in this region of North Eastern Madagascar– is indeed critical. Prices have soared, as the quantity available and the quality are not always aligned, while the demand, strongly inelastic, has been maintained. In a quasi-monopoly context held by Madagascar, exporters seem very worried about this situation and all expect that the bubble will eventually 'burst', but the question remains when.

By January 2017, there were no fewer than eighty vanilla exporters in Madagascar, including seventy-two official, for an overall local market of 1,500 to 2,000 tonnes in normal production periods. The number of these exporters has evolved considerably over the past five years, actively participating in the gradual rise in prices of this coveted spice. These exporters are for the most part grouped into associations—at least three official—who seem to be struggling to propose solutions to rationalize the sector and appear to be respected less and less by members who now prefer to act alone and 'freely'. For the record, since the mid-seventies and for about twenty years, only the Malagasy State was empowered to sell vanilla production. The 20 or so SAVA operators—former exporters—only had the task of preparing, packing and storing vanilla on behalf of the State, which unilaterally fixed the export price.

The 2016 season is virtually over

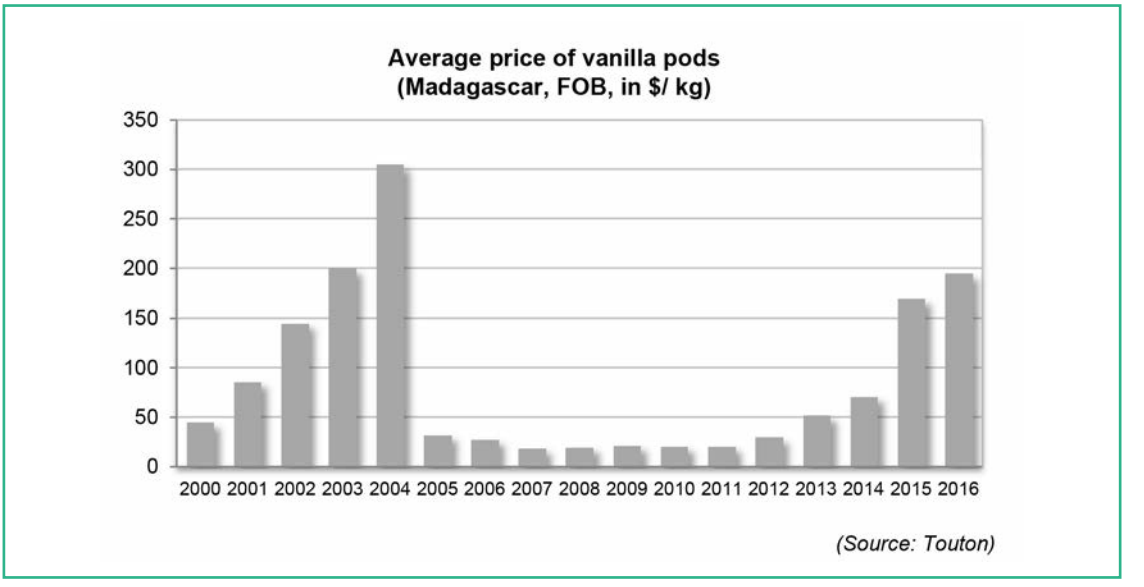
By late January 2017, exporters' warehouses were surprisingly practically empty and a large majority of them prepared to 'close shop' to take a few weeks off before resuming the 2017 crop. Estimating available stocks among the collectors in the bush is not easy, but it would be very surprising if they were high given the size of the harvest, the exports already made, and the phenomenal amounts of money circulating in the SAVA that attest to the trade that has already been conducted. It must be noted that, in parallel with this



market for vanilla, and because of the prices charged, an inflationary spiral has developed on all the consumer goods offered in the region, whether they are primary (rice, oil, soap, chicken, fish, etc.) or comfort.

Moreover, the vanilla qualities offered are generally very poor and prices are rising. Levels from $475 to $500 FOB for ready-to-export goods are no surprise. Some prices advertised, such as those dealt with on the local market between collectors, would be equivalent, after taking into account desiccation, rebates, packaging and FOB standard fees, at levels close to $600.

The 2016 season was marked by a satisfactory green vanilla harvest, but also by very poor yields (curing) due to a too early harvest of immature



pods. The yield reduction could thus be nearly 50%. There was great pressure from the extraction industry as soon as the green vanilla was harvested in their need for 'quick curing' vanilla, with highly anticipated 'bush' financing, which led to a lot of speculation at the opening of the season. In the end, total production is estimated at 1,200 tonnes of vanilla for export, of which 650/700 tonnes of pods stamped 'new crop' already exported at the end of January 2017 against a global consumption exceeding 2,500 tonnes! The main exporters acknowledged that they processed volumes well below their usual levels and the only ones to announce large volumes were the big aromatic manufacturers present in Madagascar (although some quietly confessed to having suffered major setbacks. In spite of significant pre-financing injected at the beginning of the season (around $ 200 million), the world's aromaticians did not in the end get the expected and pre-financed qualities. This could prompt them to accelerate their establishment in Madagascar, or via joint ventures, in order to produce vanilla extracts in a very 'opaque' way at the prices demanded by the market. The stocks available in the bush, both among exporters and consumers, have undoubtedly been possible at the lowest level ever recorded. The logical consequence: export prices have practically reached, in current dollars, prices paid in 2004 just before the market crash. The main beneficiaries were the collectors.

While consumption did not appear to be fundamentally impacted by these realities, it is evident that the reformulation of vanilla products is under way and that the vanillin market (natural or synthetic) is active. The increase in the demand for essential oil of cloves, of which the extracted eugenol is heavily used to produce vanillin, attests to this.

Moreover, in recent years there has been a real revolution in the vanilla market with the increasing use of the so-called quick curing process, which, even if the green vanilla is of medium quality, makes it possible to obtain industrial vanilla—for extraction only—ready to be exported in less than thirty days with relatively good vanillin levels, when the process is well controlled... which is not always the case. To date, there are a dozen units of vanilla preparation for quick curing, which, according to our estimates, consume at least 20% of the green vanilla crop. This explains the pressure put on the green vanilla market by the industry players at the beginning of the harvest.

What then do we expect from the 2017 harvest, which should logically start in June 2017 and last until the end of the year? Alas, probably not better market conditions. The flowering has certainly been good and it is estimated that the green vanilla production potential could be increased by 20% compared to 2016. This increase in production is mainly due to the introduction of new plantations made since the market began its ascent. Thus, the possible production (12,000 tonnes x 1.20 = 14,400 tonnes), reduced by the use of green pods for quick curing (2,880 tonnes), would result in a supply for traditional preparation of 11,520 tonnes. Flowering has, however, been very spread out over time and it is absolutely impossible to imagine, under current market conditions, that farmers and/or collectors will wait for the pods to be fully ripe to harvest and sell their produce. The risk of placing a high percentage of immature pods on the market therefore appears to be high and the yield in preparation may again be extremely low with an available prepared vanilla volume that can be estimated at 1,450 tonnes.

Considering (1) the amount of money available in the bush and local purchasing habits, (2) external funding of green vanilla for quick curing, (3) the bottle preparation process, decreasing yields, jeopardizing the qualities produced and significantly increasing costs, (4) the lack of stocks upstream and downstream of the supply chain, (5) a global consumption of natural vanilla with low price elasticity but also (6) the 'Ariary' factor (the Malagasy currency) whose price has been steadily increasing for several weeks, there is very little chance of the market returning to normal in 2107.

Is it even possible, however, to define for vanilla what is or could be a normal market? As

long as Madagascar accounts for nearly 80% of world production, this quasi-monopoly situation will dictate the laws of a market for the most consumed flavour in the world! The challenge for the outsiders (Indonesia, Papua New Guinea, Uganda, India, etc.) is therefore enormous, to take part quickly and in a sustainable manner in the international trade in vanilla and to participate in its regulation which is highly desirable from a quantitative and qualitative point of view and something that is already sought by all actors in the supply chain.

On 7 March 2017, at 9am, 13 years to the day after the devastating GAFILO Cyclone, Cyclone ENAWO struck the north-east coast of Madagascar, 25 km north of Antalaha.

With winds of more than 200 km/h (280 km measured close to the eye) and a speed of around 10 km/h, ENAWO devastated much of the SAVA South Zone, causing serious material and agricultural damage.

At the time this was written, it was too early to pronounce the final repercussion of this tragic disaster on vanilla production. But after collecting reliable information we can anticipate, without guarantees, a loss of up to 30%. Potentially, this loss will be offset by the increase in production mentioned in the adjacent text, without the need to refer to the crisis factors within it. One thing is certain, this unpredictable climatic condition, which might be compared to the sword of Damocles raised above the SAVA region from January to April each year, will in no way help a quick exit from the crisis.

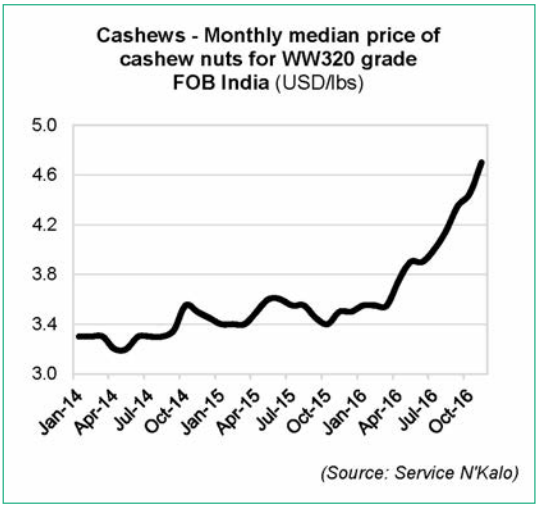
Tropical fruit,

its production and trade: an untapped potential

Africa is a major player in the international fresh-fruit trade. It produces and exports a very wide variety of products in accordance with an extremely diverse range of climates. It benefits from its relative proximity to the European economic zone while developing a flow of exports to the countries of the Arabian Peninsula and, even further, to those of Asia. Nevertheless, its productive and commercial potential is restricted by certain major constraints: the problem of land tenure, water resources, difficulties in organizing a regional market, access to high-quality, regular and cost-efficient sea transport, and so on. But the continent is making progress. The value of exports was $1.5 billion in 2001 and is now close to $8 billion. The next hurdle for Africa is to satisfy local and regional markets with good-quality fruit.

Fruit production in Africa represents just under 100 Mt, according to FAO statistics. In 2014, it was responsible for 13% of the global fruit supply. In less than fifty years, this production has tripled in volume. The sector is constantly growing. It reached 3% per year in the last decade. African production is organized around three major types of fruit: the dessert and cooking banana (44% of the supply), citrus fruit (20%), mango (6%), grape (5%) and pineapple (5%). These top five represent 81% of the total supply. The date, apple, papaya, peach and nectarine and, lastly, the avocado complete the list of the ten fruits most produced in Africa. Although the list mainly comprises tropical and sub-tropical fruit (banana, pineapple, mango and papaya), citrus fruit with its larger production area is also a significant presence. Finally, temperate-climate fruits such as apple, grape and even peach also come out well on the list. Consequently, Africa offers a very large spectrum of production reflecting the breadth of climate conditions throughout the continent. Although it is extremely difficult to map out this production simply, citrus fruit and temperate fruit are mainly located in the Northern and Southern parts of the continent, whereas 'tropical' fruits are shared between and on both sides of the tropics.

The very large production (2.8 Mt) of nuts and especially cashew nuts (80% of the total) is often included in the fruit category. Cashews are mainly produced in Côte d'Ivoire (the leading global producer with 700,000 tonnes of raw nuts in 2016)



and in Guinea-Bissau (195,000 tonnes). They give rise to a significant flow of exports, principally of raw (un-shelled) nuts, to India, which is the turntable of the global market. The processing operations are carried out in India. A major concern of African countries is to take over these added-value downstream activities themselves. Altogether, the continent's nut exports (cashew nut, coco, etc.) of the continent represent a volume of 1.9 Mt. The sector is expanding. According to the agricultural information site N'Kalô (set up by the NGO Rongead), a leading specialist in the cashew-nut market, the Northern-hemisphere season (which ended on 31 July 2016) was marked by rising global demand (particularly in Europe) and supply slightly down in Asia and Africa. Global prices reached record levels in November 2016, in the second month of the Southern-hemisphere season (East Africa, Brazil and Indonesia). The price of shelled cashew nuts (grade WW320) FOB Asia and Africa rose to $4.7/lb against $3.4/lb one year before. The upward trend is set to continue at least during the early months of 2017.

The necessary development of an African regional market

With regard to the destination of African fruit production, a very large part is for domestic consumption. This is the case, for instance, with cooking bananas, whose consumption is integral to a wide section of the population. They are exported to far-distant markets only in very small quantities. In contrast, the cross-border and regional trade is very considerable, even if it is difficult to characterize due to unreliable data. This is mainly the case with Eastern, central and Western African cooking bananas, but also with mangoes between Burkina Faso, Mali and Côte d'Ivoire. Consequently, one of the major issues for Africa is to get to the point of constructing viable trade areas for the very perishable fresh products. In spite of economic unions, there are numerous formal and informal tariff and non-tariff barriers between countries. Logistical problems, and especially the often mediocre roads and lack of reliable rail connections, are some of the obstacles to this regional trade, which is not only one of the main keys to the future development of the continent, but a solution that will enable it to ensure that its food is secure in the context of a significant population expansion.

In 2015, the fruit (excluding nuts) export market represented a turnover of around $5.3 billion (source: TradeMap). Fresh citrus fruit represents a third of this figure at some 3.6 Mt (2.5 Mt of which are oranges). South Africa, Egypt and Morocco dominate this market. Although all three export to the EU, they also have diversified export markets to the Near and Far East and the Arabian Peninsula, Russia and even the USA. It is important to remember that South Africa, unlike the Mediterranean area, produces out-of-season citrus fruit, and thus enjoys the benefit of an almost exclusive export window. Egypt is one of the sources that are coming up fast, with significant increases in its land area for citrus-fruit growing (+10,000 ha in five years) reclaimed from the desert. The main mid- and long-term concerns for these countries remain access to water resources and their sustainability. Overall, although prices on import to Europe have been favourable for citrus fruit in the 2015-2016 season, the 2016-2017 season is another matter. In the case of oranges, the transition between the winter season (supplied by South Africa) and the Mediterranean season (known as the winter season) occurred

Average import price - France winter citrus harvest
In Euros / kg

	2014/2015	2015/2016	2016/2017 Provisional as of 31 January
Small citrus	1.04	1.09	1.11
Orange	0.72	0.84	0.67
Lemon	1.04	1.60	1.10
Pomelos (from Florida)	1.19	1.28	1.41

Note: 2016-2017, incomplete data to end of January 2017

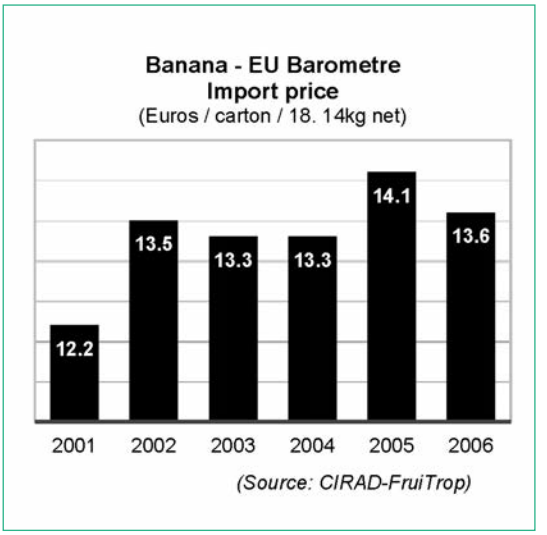
(Source: FruiTrop-Cirad journal)

under excellent conditions. In fact, South Africa ended its season with a deficit and therefore high prices. But the positive trend was quickly dispelled: some large volumes at the beginning of the season and some quality problems linked to the heavy rainfall in December 2016 (mainly in Spain) reversed the trend. In the case of small citrus fruit, the 2016-2017 season started badly in spite of a reduced supply. There has not really been any demand, due to a persistent Indian summer and a very average level in the quality of the fruit. A turnaround of the market intervened in December with a reduced supply and a second half of the season that seems favourable in price terms.

The second group of products with an export presence comprises grape, apple and strawberry, red fruits and other berries. In 2015, Africa exported these products to a value of $1.9 billion. Once again, the quasi-totality of the supply on international markets is focussed on South Africa, Egypt and to a lesser extent Morocco.

The African continent, a key player on the banana market in Europe

Then we have the dessert banana, with an export turnover of over $300 million in 2016 and a volume of almost 650,000 tonnes. Africa is a large player on the European banana market (around 10% share of the market). Only three countries export dessert bananas: Côte d'Ivoire and Cameroon (around 300,000 tonnes each in 2016) and Ghana (around 50,000 tonnes for 2016). Although some quantities are exported by road in the sub-region (countries adjacent to the North of Côte d'Ivoire and Chad from Cameroon) and by sea (stopover in Senegal and Morocco by ships bound for Europe), the immense majority of goods are intended for the European market. In fact, it benefits from preferential access due to the ACP-country status (Africa, Caribbean and Pacific Group) enjoyed by these three sources. Their position on the European market tends to strengthen year after year with a generalized development of production: by the expansion of land areas, as in Côte d'Ivoire and Ghana, or by an increase in productivity, as in Cameroon. The end of what the analysts have called the non-war in Côte d'Ivoire, an economic recovery and the numerous advantages (agronomic, relative proximity to the EU, ACP status, etc.) have attracted and continue to attract large numbers of foreign investors. This is also the case with Ghana, but it is much further behind. According to our estimates, the land area in Côte d'Ivoire given over to the banana for export could double in five years. These three countries, have signed Economic Partner Agreements (EPAs) with the EU, which



guarantees that they will continue to benefit from access to the European market without customs duties and quotas. This is not a negligible advantage for them, confronted as they are by their Latin-American competitors. But in the mid-term, there is a risk of this advantage being called in question.

The average European price at the import stage fell in 2016 by 7% (CIRAD-FruiTrop Barometer) to € 13.6/carton (18.5 kg net), or one half-euro less than in 2015. But 2015 was an exceptional year, and 2016 only represented a return to the average price recorded in 2013, 2014 and 2015. The economic situation actually deteriorated significantly in the last four months of 2016. This downward tendency was confirmed at the beginning of 2017. The global supply is at a very high level even though consumption is faltering everywhere, except in the EU. Given this situation, all commentators predict a very trying 2017.

The African mango market is growing, but…

The global mango market is growing significantly, and includes major players such as Brazil, Peru and Mexico. Africa exports to the European market and year-by-year claws back market shares to reach approximately 10% at present. This year, led by Côte d'Ivoire, the main exporter in the region, Mali and Burkina Faso have also reached their highest level of exports. The 2015 total for all three was almost 33,000 tonnes. Côte d'Ivoire remains the undisputed leader at 23, 000 t, but neighbouring countries (Burkina Faso and Mali) also share this momentum. A recurrent difficulty on export in recent years is a serious phytosanitary problem (the presence of fruit flies) that plague farmers in the network as much downstream as upstream.

The economic situation in 2016 proved more complex than 2015 for African sources. In April, there was a slow transition between the end of the Peru season and the start of fruit supplies from West-African sources. The market has been globally under-supplied, and sales prices have been high and sustained: between € 6 and € 9/carton Kent variety from Côte d'Ivoire (air freight), at over one euro compared with 2015. The season was a little shorter than usual (a late start and a precocious end) and lasted between seven and eight weeks. In price terms, the African season finished at disappointing price levels of € 4.5 to € 5/carton, contrasted with the beginning of the season.

Towards a new pineapple market for African origins?

The pineapple is the lost treasure of Africa, especially of Côte d'Ivoire. It was a flourishing production until the 1990s, before organizational problems, a merely approximative understanding of agronomics, and an inability to master the intricacies of the export business pushed the sector into crisis. The inexorable rise of Costa Rica assisted by a varietal change (MD-2), and a multinational takeover of the branch, eventually took the sector to vanishing-point. Ghana is now trying to retain its export capacity, while for some years now Cameroon has been concentrating on the air-freight pineapple (Cayenne lisse variety), which is a quality segment that is extremely limited in volume terms. Benin is devoting its efforts to the sugar-loaf variety and air-freight logistics. Finally,

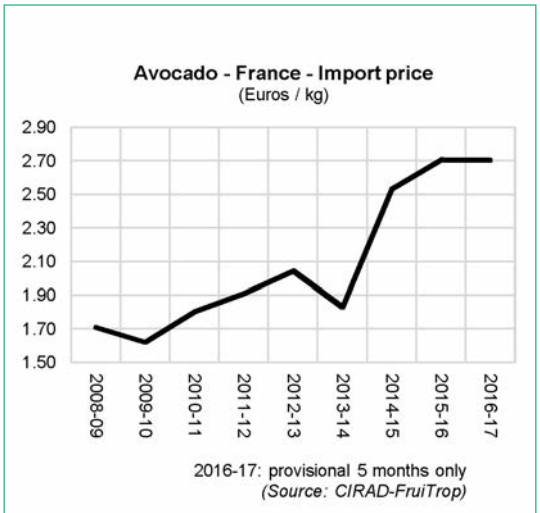
Reunion and Mauritius have confirmed their leadership in the Queen Victoria air-freight pineapple micro-market.

The value of the product at the import stage varies in inverse proportion to the increased volume. This perfect concomitance between price and volume is discernible both in time and on two major markets, the USA and the EU. After a low point reached in 2014 at € 6.6/carton (MD-2 variety EU import stage), the average import price in 2016 reached € 9 for certain brands, or a rise of almost 50%.

Avocado: a market with great potential

Two African origins feed the growth of the very flourishing avocado market: South Africa (50,000 tonnes) and Kenya (30,000 tonnes). Although the former is almost entirely orientated to the EU, the latter divides its supplies between the EU and some Arabian countries. They supply what is known as the summer avocado and cover some 27% between them, with Peru providing the remainder of the supply. Prices are increasing at the import stage, as they have done for at least three seasons. In France, the average import price for the 2015-2016 season (October to September) reached € 2.7/kg (all sources), compared with 2.5 during the previous season. The price has already risen € 0.20/kg during the first five months of the new season (October 2016 to February 2017), compared with the same period a year earlier.

Africa, with Tunisia, Algeria and (far behind) Egypt (the leading global producer) as its main representatives, is responsible for around 150,000 tonnes of the global date trade, a market estimated between 900,000 tonnes and one million tonnes. Tunisia is the leading supplier of the European market, mainly with the Deglet Nour variety (the queen of dates). It exports about 50% of its production, and supplies Europe primarily, but also Morocco whose consumption has exploded in recent years. African date sales to diversified markets such as Russia and the USA are also increasing, but the volumes are still limited.



This short overview of African fruit production concludes with a brief account of the fresh lychee sector. Admittedly, this is a small export market almost exclusively directed to the EU (about 20,000 tonnes), but it is of great importance for Madagascar, which is the uncontested leader on the end-of-year festive market (90% market share). Apart from the South African lychee, which comes by sea at the end of the Madagascar season, there are the Mauritius and Reunion lychees, which appear at the beginning of the season (at the end of the year and by air), yet disappear as soon as the first sea consignment from Madagascar arrives in Europe. With regard to the 2016-2017 season, which came to an end during February 2017, Madagascar has reduced the operation by 4% (around 17,400 tonnes). Although the volumes are flowing again, the economic balance-sheet is particularly satisfying again this year. Weekly import prices never fell below € 2/kg.

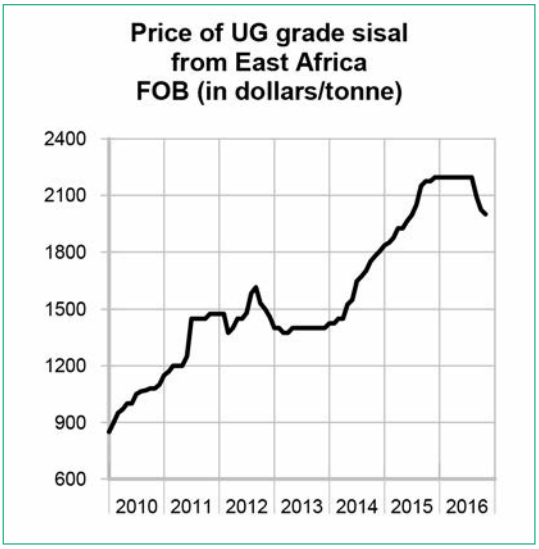
Sisal and Hard Fibres

The average annual price of African sisal, for all grades, increased compared to 2015: +8% for 3L sisal, +7% for UG sisal. This rise in average annual prices may nevertheless stop in 2017, in view of the fall in sisal prices in the last months of 2016: the price of sisal 3L in East Africa went from $2,350 / t in January 2016 to $2,155 per tonne in November 2016 (an intra-annual decrease of 8%). During the same period, the price of East African sisal UG decreased by 9%: a tonne of sisal of this grade and provenance was established at $2,195 per tonne in January 2016 and dropped to $2,000 per tonne in November 2016. In comparison, the average annual price of Brazilian sisal was $1,290 per tonne in 2016 (down 18% from 2015). Its price is now 55% to 60% below the price of East African sisal. Exports of sisal from Africa are dynamic, accounting for 38% of world exports in 2015 (fibres and manufactured goods combined), while African sisal fibre production accounted for 31% of world production. The different countries of the continent import little sisal, whether in fibre (11% of world imports) or processed products (7%).

Prices of sisal from East Africa remained in 2016 above their 2015 level

In 2016, the price of East African sisal in the UG grade was $2,153 per tonne on an annual average. After holding at its highest level ($2,195 per tonne) in the first eight months of the year, sisal of this grade experienced a price decline. It went from $2,095 per tonne in September to $2,025 per tonne in October before ending the year at $2,000 per tonne, decreasing by 9% during the year. 3L grade sisal experienced the same phenomenon: after stabilizing during the first eight months of the year at its highest level in December 2015 ($2,350 per tonne), its price has decreased: it went from $2,250 per tonne in September to $2,180 per tonne in October before reaching $2,155 per tonne at the end of the year (an 8% decrease in one year). On average, prices were $2,308 per tonne in 2016.

The biennial joint meeting of the Intergovernmental Group on Hard Fibres, the Intergovernmental Group on Jute, Kenaf and Allied Fibres and the Subgroup of Sisal and Henequen Producing Countries was held in November 2015 in Bogotá (Colombia). The parti-



cipating countries took stock of the market situation, discussed the projects of the producing countries and made price 'forecasts'. These forecasts, given in ranges, make it possible to guide producers and importers in their trade.

For East African sisal UG (FOB), a range of $1,900 to $2,150 per tonne was set at this meeting. It should be noted that average market prices reached the upper limit of this range in 2016 with an annual average of $2,153. As at previous meetings, no price forecast was made for 3L grade from East Africa. The prices of this product follow the same trends as those of UG sisal from the same source, while establishing at prices from 4% to 16% higher. New price forecasts will be determined for the East African UGs at the biennial joint meeting to be held at the end of 2017. These forecasts should take into account the start of a decline at the end of 2016 on all grades. The next group meeting is scheduled to take place at the end of 2017.

Lower production volumes in Kenya and Madagascar

By 2015, world sisal production amounted to 246,900 tonnes, down slightly (-2%) from 2014 (253,000 tonnes). Only volumes produced in Tanzania increased (+4%). Production in other producing countries fell by 8% in Kenya and 16% in Madagascar. For example, Brazil maintained its position as world leader with 37% of global volumes produced in 2015 (91,100 tonnes), followed by China (26%), Tanzania (16%), Kenya (10%) and Madagascar (3%), the ranking of world producers having experienced no upset this year.

In 2015, sisal production in Tanzania was 40,000 tonnes and nearly 43,000 tonnes in 2016. Regular planting, encouraged by world prices, has enabled plantations to be maintained and developed. Since 2011, Tanzania has increased production annually from 3% to 5% (4% in 2015), but has not fulfilled the target set by the country in the framework of the Ten-Year Culture Development Plan launched in 2012-2013 with the objective of achieving a production of 100,000 tonnes by 2021. Tanzania's efforts will have to intensify, particularly in the supply of electricity to factories because frequent power outages limit their efficiency.

Poor weather conditions have resulted in an 8% decline in Kenyan production compared to 2014, reaching 24,500 tonnes in 2015, as the country wants to increase production to meet the demand from importing countries. Sisal production in Kenya is mainly on large-scale farms but the country is also planning to develop sisal production on family farms.

In Madagascar, production fell by 16% in 2015 to reach 7,500 tonnes. As in Kenya, this decrease is due to unfavourable weather conditions and periods of drought in the growing areas. For example, in some plantations, cutting has been stopped so as not to penalize the quality of future crops, while drought, which prevents new crops from being planted or renewed, has threatened quantities.

South Africa has had a low but steady production of 1,400 tonnes, while in Mozambique, which is also a low volume country, local entrepreneurs are planning rehabilitation and exploitation of old sisal plantations. By 2015, the harvest remained at its 2014 level of 700 tonnes, as in Angola and Ethiopia. It will progress if the projects succeed.

Sisal and henequen

(in thousands of tonnes)

	2010	2011	2012	2013	2014	2015
World production	**233.2**	**252.0**	**222.9**	**226.5**	**253.0**	**246.9**
Brazil (sisal)	97.9	111.2	69.9	74.5	95.4	91.1
China (sisal)	46.3	48.9	62.7	59.0	63.0	63.0
Tanzania (sisal)	34.8	34.5	35.6	37.5	38.5	40.0
Kenya (sisal)	24.1	28.1	27.9	26.0	26.5	24.5
Mexico (henequen)	17.5	18.9	11.1	3.9	6.1	6.0
Madagascar (sisal)	9.1	8.0	8.2	8.8	8.9	7.5
World exports	**145.2**	**166.6**	**158.9**	**149.4**	**152.2**	**150.7**
of fibres	***69.9***	***83.6***	***83.1***	***79.2***	***88.6***	***83.8***
Brazil	30.5	39.1	36.1	30.9	40.6	34.3
Kenya	20.0	23.9	24.1	24.0	23.0	21.2
Tanzania	11.6	13.8	15.5	16.9	18.3	20.8
Madagascar	7.8	6.5	7.1	7.2	6.4	7.3
of products	***75.3***	***83.0***	***75.8***	***70.2***	***63.6***	***66.9***
Brazil	35.8	41.1	36.9	29.2	29.0	32.0
Europa	11.8	12.8	11.0	12.1	9.2	10.1
China	10.0	7.2	6.9	5.8	4.8	4.4
Tanzania	3.3	6.0	5.3	5.5	5.2	5.3

(Source: FAO)

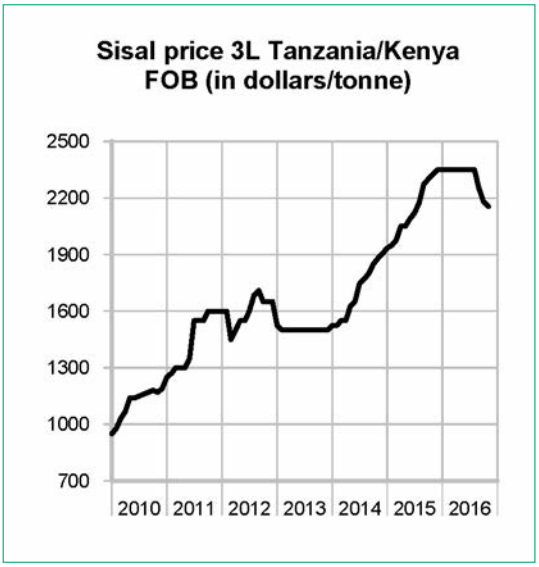
Other hard fibres

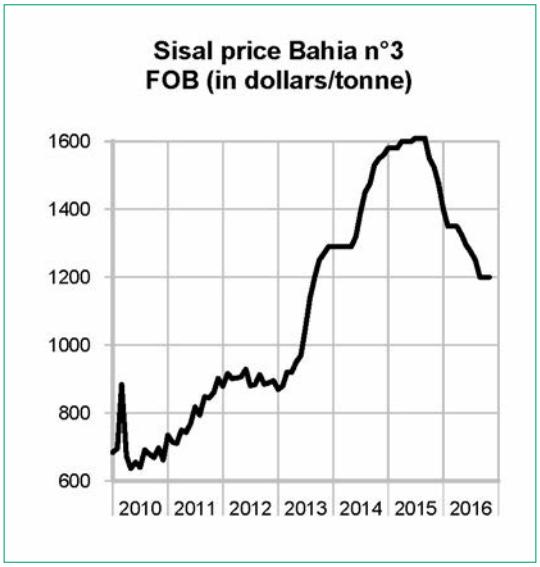
(in thousands of tonnes)

• Abaca						
Total production	**70.1**	**86.1**	**78.1**	**67.5**	**76.6**	**78.2**
Philippines	57.2	73.3	64.8	56.0	66.0	67.3
Ecuador	10.2	9.6	11.1	9.2	8.3	8.6
Others	2.7	3.2	2.2	2.3	2.3	2.3
· Coir Fibre						
Brown Fibre						
Total production	**798.5**	**789.5**	**825.2**	**832.9**	**920.1**	**877.1**
India*	415.5	425.0	431.5	455.8	458.8	460.6
Sri Lanka*	149.8	135.0	131.2	123.7	150.4	112.5
Vietnam	103.0	97.6	115.1	105.9	143.3	135.6
Thailand	63.7	49.9	61.7	64.8	68.1	80.5
Others	66.5	81.9	85.6	82.8	99.4	87.9
White Fibre						
India	100.0	100.5	100.0	80.4	81.0	81.4
• Coir yarn						
Total production	**305.9**	**308.8**	**330.5**	**332.8**	**338.2**	**337.7**
India	296.5	299.5	318.9	321.7	323.9	325.2
Sri Lanka	7.4	7.3	9.6	9.1	12.3	10.5
Thailand	2.0	2.0	2.0	2.0	2.0	2.0

(Source: FAO)

* Data from India and Sri Lanka excluding volumes of "coir pith"





The share of African fibre exports increased in 2015

Global exports of sisal were virtually unchanged between 2014 and 2015 (-1%). Fibre exports decreased by 5%, while exports of manufactured goods increased by 5% over this period. In the main African exporting countries (Kenya, Tanzania, Madagascar and Mozambique), fibre exports increased by 3% to 34,300 tonnes in 2015, while exports of manufactured goods fell slightly (-1 %) to 7,500 tonnes. For example, in 2015, Tanzania, Madagascar and Kenya shared almost all exports of sisal fibres with Brazil. Their respective market shares were 25% for Kenya (21,200 tonnes), 25% for Tanzania (20,700 tonnes) and 9% for Madagascar (7,300 tonnes). Brazil's market share was 41% (34,300 tonnes). Although exports from this country have decreased, it remains the market leader for fibres, as well as for manufactured goods (31,900 tonnes exported in 2015, i.e. 47.8% of world exports).

Tanzania maintained its position as the world's second largest exporter in 2015 for the full range of fibres and ropes. The increase in exports of Tanzanian fibres, which began in 2009, continued from 18,300 tonnes in 2014 to 20,800 tonnes in 2015 (+14%), while exports of manufactured goods changed little, from 5,200 tonnes in 2014 to 5,300 tonnes in 2015 (+2%).

Kenya, meanwhile, exported 21,200 tonnes in 2015, down 8% from 2014 (23,000 tonnes), mainly in the form of raw fibres. Export of ropes constitutes a very minor valuation (about 2% of the total volumes exported, depending on the year).

In Madagascar, exports of sisal increased by 14% in 2015 (7,800 tonnes exported as opposed to 6,900 tonnes in 2013). The export of raw fibres and ropes progressed similarly (+13% for fibres, +15% for ropes). However, export volumes of ropes were much lower than exported fibre volumes (640 tonnes and 7,200 tonnes, respectively). In 2016, progress in exports risked being thwarted by the difficulty of embarking at the port of Ehoala.

An increase in imports of manufactured goods that did not offset the decline in fibre imports

In 2015 and 2016, fibre demand remained strong globally but down from the peak in 2014

when imports reached 85,000 tonnes. In 2015, demand was 83,300 tonnes, down 2%, mainly due to the decline in Chinese demand. The main import areas for raw fibres were Asia with 51% of volumes in 2015, Europe with 27% of volumes and Africa with 11% of volumes, according to data provided by the FAO. Data for 2016 are not yet available for imports. However, as in 2015, volumes imported by China decreased as the country's fibre and manufactured goods inventories are large, while domestic demand is less dynamic.

By 2015, 65,100 tonnes of manufactured products from sisal have been imported globally. This is a slight increase (+2%) compared to 2014 when 63,600 tonnes were imported. However, it should be noted that imports of manufactured goods have been falling overall for several years. A slight rebound took place in 2011, however, not affecting this trend. The same appears to be the case in 2015 and the increase in imports of manufactured goods that year does not seem to suggest a long-term increase. The traditional uses of sisal (ropes mainly) have not seen new growth, while its use as reinforcement in the production of composite materials for transport, buildings and leisure is growing. Countries developing this type of use incorporate raw fibre into their manufacturing processes, explaining the upward trend in imports, but without changing the exports of processed sisal from these countries. In 2015, the United States remained the largest importer of sisal-based manufactured goods, with 30,500 tonnes imported, accounting for 47% of world imports, up from 2014 when 27,300 tonnes were imported (43% of world imports). Imports from the EU28 amounted to 12,700 tonnes (20% of world imports), down from 2014, when 22% of the world's imports came to Europe (13,800 tonnes). African countries imported 8,900 tonnes of fibre and 4,500 tonnes of manufactured goods in 2015, up by 3% and 5% respectively.

Haiti, future competitor of African producers?

Sisalco and other companies wish to support the development of a Haitian sisal production sector to enable the country to benefit from the increase in prices that have taken place in recent years. Although the 2016 price levels are less encouraging, the country may soon be ranked among the world producers, plantations taking three to five years to become productive.

Tropical Wood

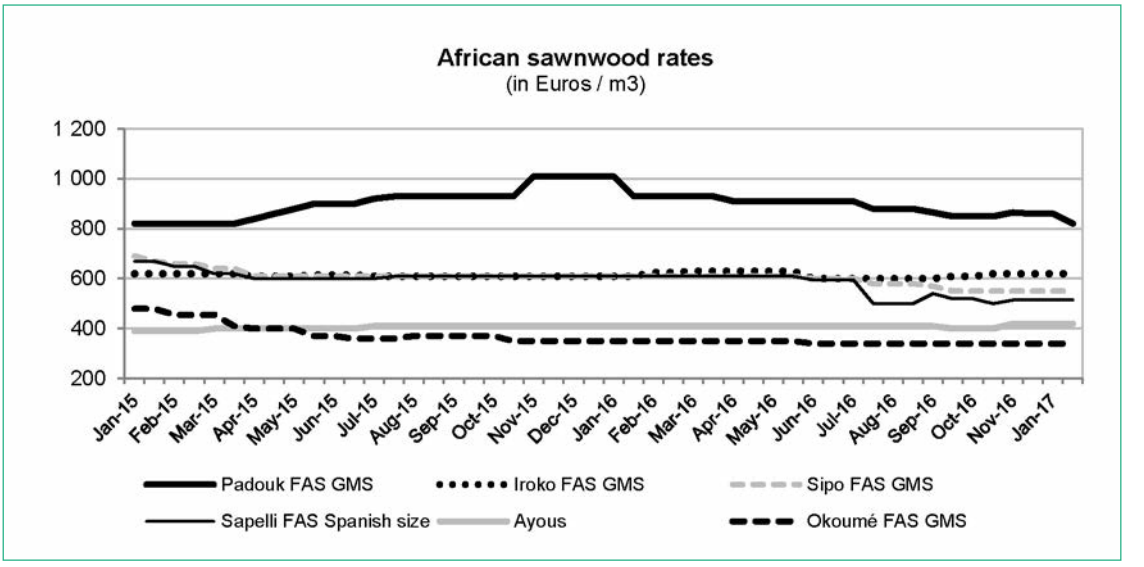
Few major events have marked the African timber market in 2016. The supply, limited by a depleted natural resource, and international demand have remained broadly balanced, but prices for some key species for Central Africa declined sharply in the middle of the year. Though the intra-African market is progressing, exports remain at the heart of the strategy of the African producer countries: in a context where competition from Indonesia could increase in the European market, their capacity to meet the standards set by the consumer countries to try to address the problem of exploitation and illegal timber trade will be decisive.

Relatively stable prices but a weak market

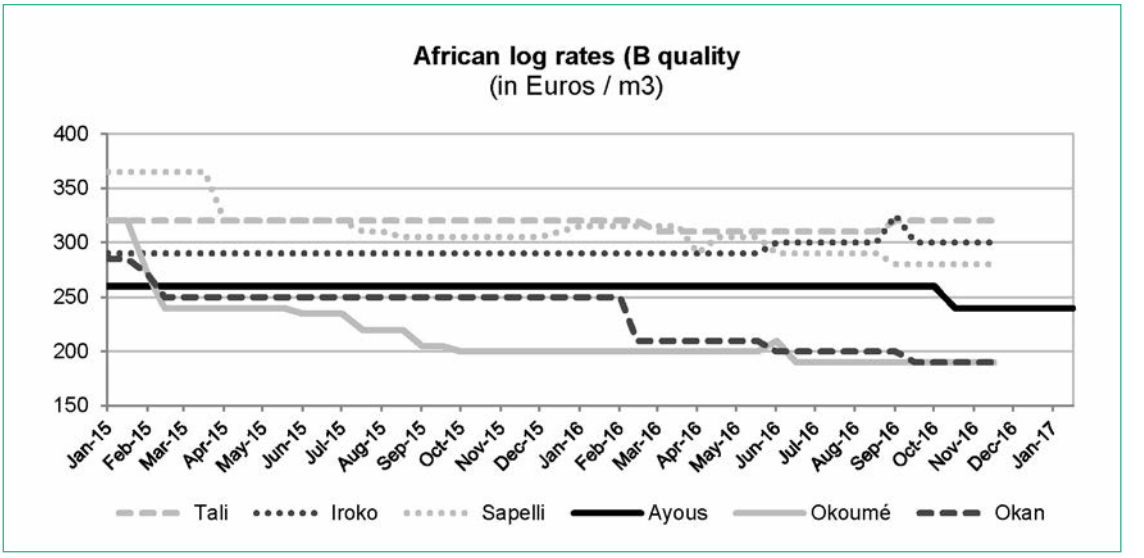
The prices of the main products have been remarkably stable between 2015 and mid-2016. Padouk sawn wood, which is in high demand in the Indian market, has nevertheless seen prices that have exceeded €1,000 FOB per m3 in 2015 decline in 2016. At the end of the year, the price of sawn sapelli and sipo dropped to around €600 per m3, which poses problems for Central African producers such as Congo, Central African Republic (CAR) and Cameroon, which are heavily dependent on this group of species. This drop in prices is rather unexpected given the weakness of the euro compared to the dollar in 2016, which should have improved the attraction for African woods from the CFA franc (CFAF) zone in many international markets. In addition, the moderate activity of Chinese buyers due to existing stocks, the very low prices for ocean freight in 2016 probably allowed Asian exporters of keruing and meranti, species directly competitive with several of the best known African woods, to propose attractive offers on various international markets. This has been seen in particular in the Netherlands and South Africa, where sellers of sapelli and okoumé have faced competition from meranti exporters offering more attractive prices. While log prices remained more stable overall, a decline in the prices of several species was significant at the end of 2016, suggesting 2017 will be difficult.

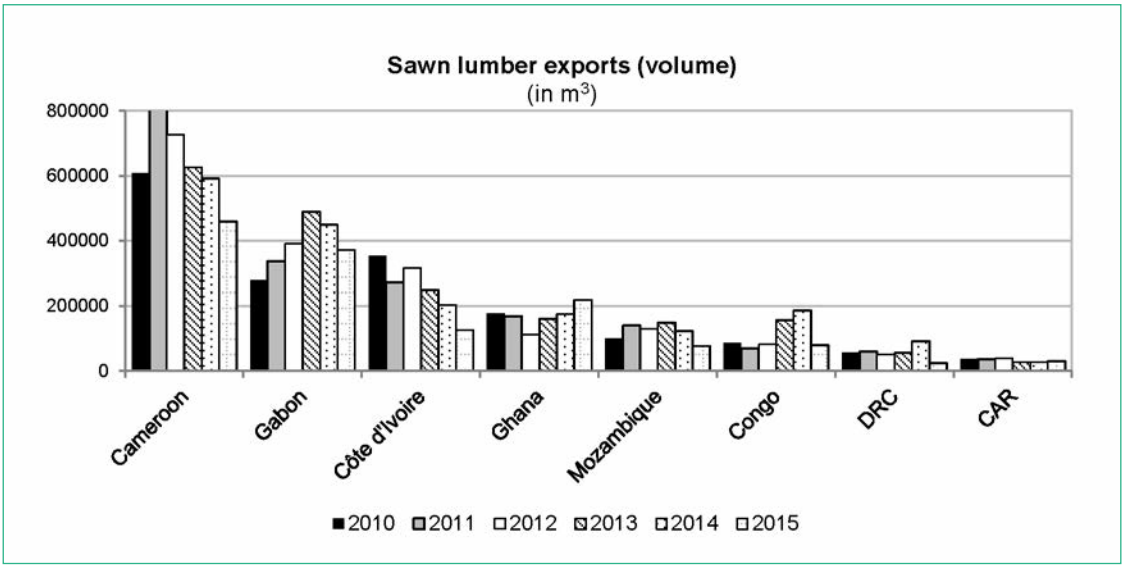
Sawn exports down, but an active log market

Sawmill exports are globally declining in the various African countries, with the exception of Ghana, which saw its exports to the European



Union (EU) and Asia slightly increase. Despite the decline in volumes sold, Cameroon is still in first place, and its exporters have, in particular, made good commercial breakthroughs in the United States and Canada since 2015. Gabon hoped that the steady increase in sawn wood exports initiated since 2011 following the decision to ban logs taken the previous year would continue. However, its hopes were disappointed with declines in 2014 and 2015 compared with the peak of 2013. Nevertheless, 2016 saw a slight upturn in sawmill exports and a significant increase in veneer sales. These mixed results cannot, however, be enough to convince the success of the 'industrialist' strategy initiated in 2010, with the combination of a ban on the export of raw wood and the creation of a vast special economic zone near Libreville, intended to attract transformers. Although this free zone has recently succeeded in convincing several Asian industrial-

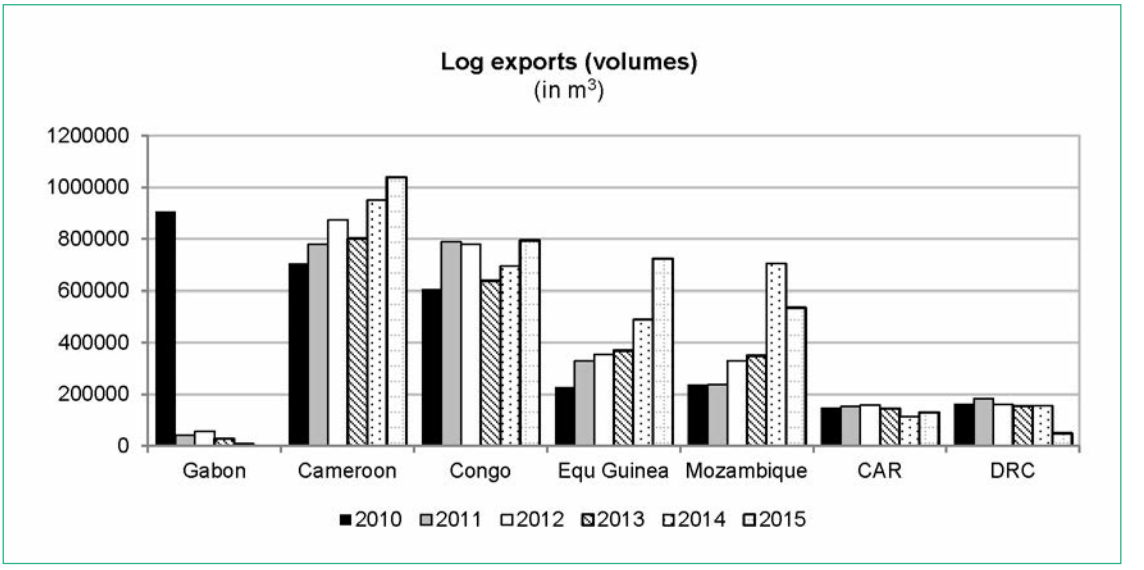




ists, particularly in India, the decline in production (harvests estimated at 2 million m3 annually compared to an average of 3.3 million m3 before 2010), the low net creation of jobs (more jobs in industry but less in operations and transport) and the collapse of tax revenues, throw the overall balance sheet into question. Rumours of a return to exporting logs to meet the budgetary needs undermined by oil downturns and an economic activity affected by post-election troubles, have been echoing in Libreville in 2016.

Other African countries have taken over from Gabon in the export of logs, which is still fairly profitable, offering advantages in terms of flexibility and requiring only a small investment. Cameroon's exports in 2015 exceeded one million m3, which is quite unprecedented since the 1990s. In 1999, Cameroon adopted a partial ban on the export of logs, which affected 'traditional' species such as sapelli, iroko and sipo. Nevertheless, ayous, the most harvested species in Cameroon, can still be exported despite increased taxation, as well as other so-called secondary species, which have found opportunities in the Chinese, Vietnamese and Indian markets. Every year there are rumours about the imminence of a total ban on the export of raw wood, but it seems that the priority given to tax revenues prevails. The Finance Bill for 2017 even plans to increase the log export tax from 17.5% to 20%, reflecting the government's objective to take advantage of the sustained demand for this product to fill the coffers of the State.

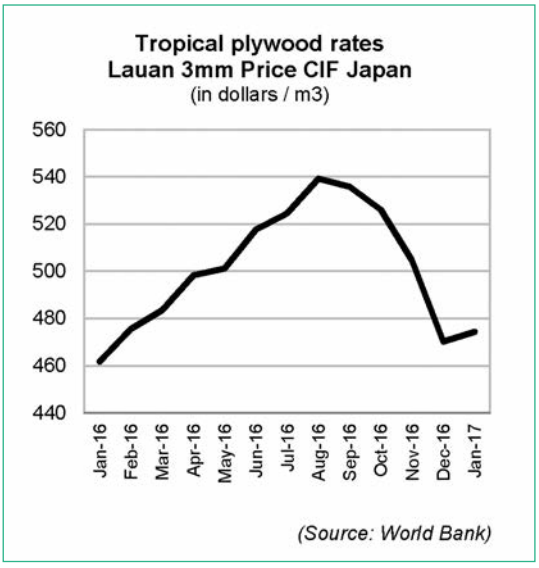
Equatorial Guinea, a producing country of okoumé, Gabon's emblematic essence, followed the same logic: while the government banned the export of logs in the late 2000s (a measure that was never really enforced), Gabon's decision convinced the Guinean authorities of the advantage they would have in proposing the okoumé round wood to Chinese buyers that their neighbour was no longer able to supply them. Exports of logs have increased steadily to over 700,000 m3, again a level unprecedented for the country since the 1990s. However, since the forest concessions in Equatorial Guinea are not managed with a long term view for sustainability, one might wonder about the sustainability of such a level of exports for this small country, albeit so rich in hydrocarbons. The same can be said of Mozambique, which experienced a sharp increase in its log exports (while its sawmills exports stagnated at a modest level), taking advantage of its privileged trade links with Asia. The case of the Democratic Republic of Congo (DRC) is still as singular as ever. The country which possesses the largest

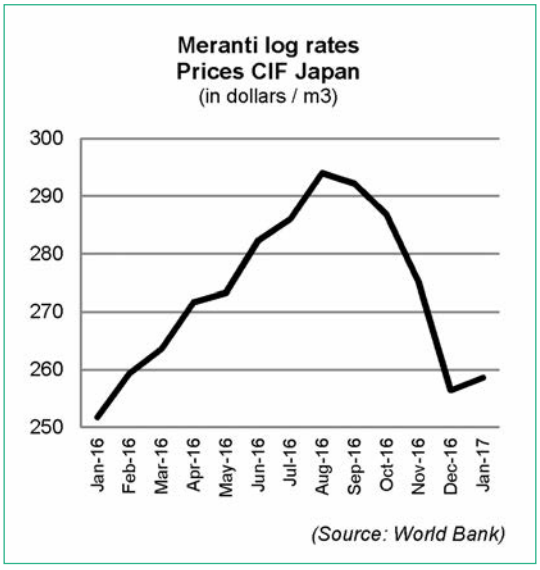


forests on the continent has such a little presence in the timber industry. The isolation, which affects transport costs, the lack of infrastructure, administrative complexities, but also a significant degradation of accessible wood resources, leads to very low industrial production on huge under-exploited concessions. Industrial production accounts for only a small fraction of the total annual harvest of timber produced by artisanal farmers ('pit sawyers' in particular) which feed the country's vast domestic market. The DRC is also the central African country with the highest deforestation figures, with more than 1.1 million ha of forests lost in 2014.

Limited deployment in domestic and regional markets

African exports, which were once largely oriented towards Europe, are now more diversified between Asia, the Middle East and the EU, which makes it possible to smooth out the economic fluctuations in these different regions. The intra-African market, which has long been unattractive to wood manufacturers, is developing towards specific products, such as plywood and veneers, and free of competition from artisanal producers. Ghana has thus managed to dispose of the vast majority of its plywood production to its neighbours: Niger, which absorbs more than half of Ghana's exports, Togo and Senegal. This success is undoubtedly facilitated by the exchange rate of the Ghanaian currency, which depreciated against the euro, to which the CFA franc is pegged. Other major exporting countries, such as Cameroon, Gabon, Côte d'Ivoire and the Congo, have not succeeded in such sub-regional diversification. The internal market of the Central African Economic Community (CEMAC) remains hampered by customs duties imposed on wood products, which hinders trade and prevents the development of a process of country specialization within the economic community space. The consequences of the accession of Cameroon and Ghana to EPAs with the EU remain uncertain. The lifting of tariffs for African products should favour exports to Europe, but the problem of demonstrating the legality of timber marketed within the EU is likely to be a greater obstacle than customs tariffs, which could be abolished by the EPAs. As for the outlets on the domestic markets of the different countries, industrialists are confronted, for sawn wood—the main product used for construction—with competition from informal sector actors who often mobilize as much wood as the formal producers.

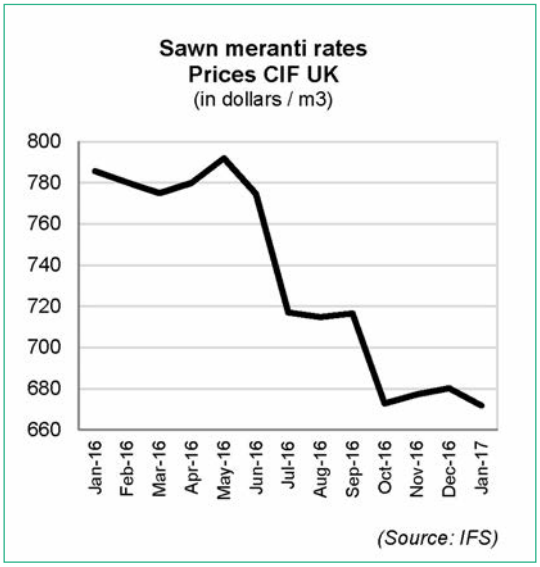




The issue of FLEGT permits: a peril for African exporters

The FLEGT (Forest Law Enforcement Governance and Trade) process is an attempt to respond to the problem of illegal logging and trade in timber. This arrangement is accompanied by proposals for partnerships (Voluntary Partnership Agreements, VPAs) with producer countries to help them set up national legality systems, which will enable them, once this process has been completed, to export wood with 'FLEGT permits' to the EU. The VPA involves the development of national measures of transparency, governance, forest sector reforms, etc. Since 2013, imports of illegally harvested timber have been banned in Europe and importers are held criminally liable in the event of infringement. They have 'due diligence' obligations when importing timber from 'at-risk' countries, and therefore mainly from tropical countries. If the wood certified by the Forest Stewardship Council (FSC, 'responsible' forest management) benefit from favourable 'a priori' in terms of risk reduction, they do not exempt the importer from performing this 'due diligence', which introduces costs and delays. Only woods with FLEGT permits are, in fact, legally binding in the eyes of the European authorities. Launched since the late 2000s, the VPA process, signed by five African countries (Ghana, Cameroon, Congo, CAR, Liberia), is progressing with difficulty. In particular, the mechanisms tested by the Legality Verification Systems in Cameroon and the Congo were not satisfactory.

However, in 2016, Indonesia, the only non-African country signing a VPA with the EU, was



authorized to issue FLEGT permits and the first deliveries of ready timber entered the European market at the end of the year. Even if several analysts are questioning the actual guarantees provided by these authorizations, in the case of Indonesia where the conditions of exploitation of the wood are difficult to control, this event has significant consequences for African exporters. Indonesian timber with these permits is in danger of rapidly gaining market share in Europe, to the detriment of other tropical timber, if the FLEGT authorisation processes do not rapidly reach the various exporting countries. Ghana, which began testing a timber traceability system at the end of 2016, appears to be in the best position to finalize this process in 2017, but appears to be the only African country in this case. If the European timber market is not as decisive for African exporters as it was a decade ago, it still represents, for countries such as Cameroon and Côte d'Ivoire, two-thirds of their sawmill exports, and nearly a quarter for Gabon.

Beyond this issue of European markets, it is clear that the question of the legality of timber entering international trade has taken on a major importance and all importing countries should consequently pay attention to it. In particular, China, which is the main outlet for African timber, could in the short-term, demand legal guarantees for timber from natural forests, which would jeopardize exports from Central African countries. The authorities, conscious of this problem, could at least provisionally consider that the private systems of legality (legal origin of wood, TLTV, VLC, but also FSC certification) proposed by different auditors comply with the national requirements of legality, while waiting for the public systems for verification of legality to become operational. The penalties imposed in Cameroon at the end of 2016 against some thirty dealers who did not comply with the development rules and who saw their concession contracts cancelled and their timber seized, testify to the mounting pressure on these legal issues.

The quarrel between ‘Intact Forest Landscapes’ and their possible commercial consequences

FSC certification, considered to be the most demanding to evaluate the environmental and social management of logging operations, has been adopted by several major dealers in Central Africa, leading to an FSC certified area of 5.47 million ha of natural forests in total, far more than southeast Asia and the Amazon basin. It is an important commercial asset for exporting to markets sensitive to environmental issues. However, within the FSC, several organizations (including Greenpeace) have raised the issue of industrial logging within ‘Intact Forest Landscapes’ (IFL), which are natural, non-fragmented forest with a surface area of 50,000 ha, with no sign of detectable activity by satellite.

A motion by the FSC 2014 General Assembly calls for specific management measures to be taken at a future general assembly in 2017 to protect the core of these areas (by convention, 80% of the surface of the area of the 'IFL): to leave them in reserve or in local community management, for example. The FSC Assembly will have to decide on these proposals. If none is deemed satisfactory, it is likely that the assembly will demand that FSC certification be withdrawn from operators exploiting the IFLs, which would affect several dealers in Central Africa. In this case, they are considering adopting a new certification of responsible management, the Pan-African Forest Certification (PAFC), which is sponsored by the FSC's major competitor, the Program for the Endorsement of Forest Certification schemes (PEFC) at the World level. The consequences of such a change may be important for African exporters in Western markets, as the abandonment of the FSC will be an argument for some environmental organizations against the timber industry in Central Africa. 2017 is indeed going to be perilous for some major African exporters.

– III –

Animal Products

- Sea Products
- Meats

World fish production by countries and regions
(in millions of tonnes)

	capture		aquaculture	
	2013	2014	2013	2014
ASIA	50.8	52.8	62.6	65.6
China	17.4	18.3	43.9	45.8
Hong Kong	0.2	0.2	0.0	0.0
Taiwan	0.9	1.1	0.3	0.3
India	4.6	4.7	4.6	4.9
Indonesia	6.0	6.4	4.0	4.3
Japan	3.7	3.7	0.6	0.7
Republic of Korea	1.6	1.7	0.4	0.5
Philippines	2.3	2.4	0.8	0.8
Thailand	1.8	1.8	1.0	0.9
Viet Nam	2.8	2.9	3.2	3.4
AFRICA	8.4	8.6	1.6	1.7
Ghana	0.4	0.3	1.1	1.1
Morocco	1.3	1.4	0.0	0.0
Namibia	0.5	0.4	0.0	0.0
Nigeria	0.7	0.8	0.3	0.3
Senegal	0.5	0.5	0.0	0.0
South Africa	0.4	0.6	0.0	0.0
CENTRAL AMERICA	2.2	2.2	0.4	0.4
Mexico	1.6	1.5	0.2	0.2
Panama	0.2	0.2	0.0	0.0
SOUTH AMERICA	10.3	8.6	2.1	2.4
Argentina	0.9	0.8	0.0	0.0
Brazil	0.8	0.8	0.5	0.6
Chile	1.8	2.2	1.0	1.2
Ecuador	0.5	0.7	0.3	0.4
Peru	5.9	3.6	0.1	0.1
NORTH AMERICA	6.3	6.1	0.6	0.6
Canada	0.9	0.9	0.2	0.1
United States	5.1	5.0	0.4	0.4
EUROPE	13.5	13.7	2.8	2.9
European Union	5.0	5.5	1.2	1.3
Iceland	1.4	1.1	0.0	0.0
Norway	2.1	2.3	1.2	1.3
Russia	4.3	4.2	0.2	0.2
OCEANIA	1.2	1.3	0.2	0.2
Australia	0.2	0.2	0.1	0.1
New Zealand	0.4	0.4	0.1	0.1
WORLD	92.7	93.4	70.3	73.8

(Source: FISHSTATJ 2017)

Sea Products

The African Potential

Drawing on its vast territory of 30.4 million km2 and the wealth of its fish-laden coasts, one is struck by the diversity of the African continent. African marine captures take place on 26,000 km of coastlines that extend along the Mediterranean and Red Seas and the Atlantic and Indian Oceans. In 2014, catches reached 5.8 Mt compared to 5.5 Mt in 2012. African fishery production is dependent on the basins of the major rivers as well: the Nile, Congo, Niger, and Zambezi, and the major lakes of Victoria, Chad, Tanganyika and Malawi. Freshwater catches reached 2.9 Mt in 2014, compared with 2.7 Mt two years earlier. Africa's total captures increased by more than 6% compared with 2012 climbing to 8.7 Mt in 2014. Africa's aquaculture production, largely dominated by Egypt, amounted to about 1.7 Mt in 2014, bringing the continent's total fish production to 10.3 Mt that same year.

Variable but increasing fish production

Fish production in Africa is highly concentrated: in 2014, the five largest producers (Egypt, Morocco, Nigeria, South Africa and Uganda) accounted for more than 49% of the continent's supply. For 2014 as for previous years, an analysis of production shows a strong variability between countries depending on the source of the resources under consideration. While second in the ranking for its total fish supply (catches and aquaculture production combined), Morocco is by far the main source of catches with a volume that stood at 1.365 Mt that same year. This represents 15.8% of the total catches on the continent. Morocco is followed by Nigeria, whose catches reached 760,000 tonnes in 2014 and by South Africa with 596,000 tonnes in the same year.

Main Fish Producers worldwide
(in millions of tonnes)

	2009	2010	2011	2012	2013	2014
China	48.8	51.1	53.4	56.2	58.7	61.5
Indonesia	6.8	7.7	8.3	8.7	10.0	10.6
India	7.9	8.5	8.0	9.1	9.2	9.6
Viet Nam	4.8	5.1	5.4	5.8	6.0	6.3
United States	4.7	4.9	5.5	5.5	5.6	5.4
Myanmar	3.5	3.9	4.1	4.5	4.7	5.0
Russian Federation	3.9	4.2	4.4	4.5	4.5	4.4
Japan	4.9	4.8	4.3	4.3	4.2	4.3
Peru	7.0	4.4	8.3	4.9	6.0	3.7
Norway	3.5	3.7	3.4	3.5	3.3	3.6
Bangladesh	2.9	3.0	3.1	3.3	3.4	3.5
Chile	4.2	3.3	4.0	3.6	2.8	3.4
Philippines	3.3	3.4	3.1	3.1	3.1	3.1
Others	38.4	39.0	38.8	39.5	39.9	41.2
Total	**144.6**	**146.8**	**154.2**	**156.4**	**161.5**	**165.7**

(Source: FISHSTATJ 2017)

African aquaculture, on the other hand, is taking its time developing. It was only in 1991 that aquaculture output crossed the bar of 100,000 tonnes. Since then, growth has been exponential, reaching 1.7 Mt in 2014. The evolution of the relative importance of African aquaculture is impressive: in 1951, it was equivalent to 0.2% of catches then 2% in 1991 and 17% in 2014. Egypt is by far the largest aquaculture producer on the continent with 1.1 Mt produced in 2014, allowing the country to not only take the lead among African producers but also become the sixth place in aquaculture production worldwide behind China, India, Indonesia, Vietnam and Bangladesh.

World fish production by economic groups
(in millions of tonnes)

	Capture		Aquaculture	
	2013	**2014**	**2013**	**2014**
Developing countries	68.4	68.9	66.1	69.4
Developed countries	24.3	24.5	4.2	4.4
Total	92.7	93.4	70.3	73.8

(Source: FISHSTATJ 2017)

The share of Egyptian aquaculture on the continent is highly significant as well: more than 66% of continental aquaculture was Egyptian in 2014. This concentration in the aquaculture supply appears clearly when total African national production is considered. Nigeria, the second African aquaculture producers is far behind at just 313,000 tonnes in 2014. Volumes for Uganda, the third African producer, reach just 111,000 tonnes.

Although Morocco, as mentioned above, is particularly well positioned in terms of captures, its aquaculture production is very much in decline if we keep to the 2014 FAO statistics that show output of just 1,169 tonnes. Oyster farming accounts for a significant part of output (65% in 2015) as does seabass. Mussel farming was only very marginal in 2010 and seems to have all but ceased thereafter. The Moroccan aquaculture supply, however, is hardly representative of the strategy that this country has had for several years. The ambitions of the sharifian kingdom are indeed important in the field of aquaculture—for shellfish and other species—as evidenced by the Halieutis plan launched in 2009. This plan led to the creation in 2011 of the National Agency for Aquaculture Development (l'Agence Nationale de Développement de l'Aquaculture, ANDA), whose fundamental vocation is to promote a scientific, logistical and economic ecosystem enabling the development of this activity for which Morocco has an undeniable comparative advantage, first and foremost due to its highly suitable littoral. In February 2016, a first integrated

World Aquaculture Production by major producers
(in millions of tonnes)

	2011	2012	2013	2014
China	37.6	40.0	42.4	44.3
India	3.7	4.2	4.6	4.9
Indonesia	2.2	2.6	3.4	3.7
Viet Nam	2.8	3.1	3.2	3.4
Bangladesh	1.5	1.7	1.9	2.0
Egypt	1.0	1.0	1.1	1.1
Myanmar	0.8	0.9	0.9	0.9
Thailand	1.2	1.2	1.0	0.9
Japan	0.5	0.6	0.6	0.6
Brazil	0.4	0.5	0.5	0.6
Korea, Republic of	0.5	0.5	0.4	0.5
Philippines	0.4	0.4	0.4	0.4
United States	0.4	0.4	0.4	0.4
Ecuador	0.3	0.3	0.3	0.4
Nigeria	0.2	0.3	0.3	0.3
Spain	0.3	0.2	0.2	0.3
Chile	0.3	0.3	0.3	0.3
Taiwan	0.2	0.2	0.2	0.3
Malaysia	0.3	0.3	0.2	0.2
Iran (Islamic Rep. of)	0.1	0.2	0.2	0.2
Others	2.2	2.3	2.4	2.6
Total	**57.0**	**61.1**	**64.7**	**68.0**

(Source: FISHSTATJ 2017)

Top 10 African producing countries in 2014 (tonnes)

	Catches	Aquaculture production	Total production
Egypt	344 791	1 137 091	1 481 882
Morocco	1 365 149	1 189	1 366 338
Nigeria	759 828	313 231	1 073 059
South Africa	596 302	4 160	600 462
Uganda	461 196	111 023	572 219
Senegal	458 713	1,009	459 722
Namibia	443 879	760	444 639
Mauritania	378 339	0	378 339
Tanzania	341 847	3 612	345 459
Ghana	292 989	38 545	331 534
43 other countries	3 190 258	100 289	3290 547
Total	**8 633 291**	**1 710 909**	**10 344 200**

Source: FAO Fishstat 2014

shellfish aquaculture site dedicated to the production of oysters, clams and abalone was inaugurated in Dakhla, in the south of the country, which should produce 970 tonnes of shellfish annually.

Low representation in world fish exports

As for all commodity markets, whether for renewable products or not, it is important to differentiate domestic supply and demand from international import and export markets. From this point of view, African countries considered as a whole are clearly importers of fishery products in terms of volume alone: in 2013 (the date for which the latest FAO statistics are available), 3.3 Mt were imported for 2 Mt of exports. On the other hand, a value-based analysis reveals that Africa was a net exporter of $0.6 billion in 2013: imports to the continent amounted to $5.2 billion and exports to $5.8 billion. The fact that Africa is a net importer of fish in quantity but a net exporter in value is of primary importance for the food security of the continent. At the root of this reality is the export of 'expensive' products such as shrimp and demersal fish (seabass, hake, cod, etc.) and imports of cheaper products such as small pelagics (sardines, herring, etc.) that come largely from Europe and Asia.

In Africa, as in the rest of the world, large exporters are naturally countries that benefit from abundant fishery resources depending on the bio-oceanographic conditions of their coasts. African exporters include Morocco and, in second place, Namibia. Large importers are the most populous countries in the continent, with Nigeria having consumption of 17.1 kg per capita per year and Egypt with consumption of 22.1 kg per capita per year. Ethiopia, the continent's second most populous nation, is the country that consumes the least fish products in the world, with 0.3 kg per capita according to the latest available statistics.

Markets for the major African seafood exporters are largely European. In 2016, two thirds of the $1.9 billion of Moroccan exports, for example, were delivered to the European market. However, year after year, sales are increasing towards Asia and other countries on the African continent, particularly Nigeria, Ghana and Angola.

Comparatively speaking, however, it must be recognised that the African continent still has little influence on export markets. World fish production was estimated at 174.1 Mt in 2016, of which 80 Mt is aquaculture, with the clear dominance of Asian countries: China is by far the world's largest producer with 61.5 Mt produced in 2014, followed by Indonesia (10.6 Mt) and India (9.6 Mt).

Main African importers and exporters of seafood

Main importers	Imports 2013: $	Main exporters	Exports 2013: $
Nigeria	1 215 095	Morocco	1 867 981
Egypt	600 332	Namibia	784 628
Mauritius	395 572	South Africa	518 898
Côte d'Ivoire	378 952	Mauritius	385 284
Ghana	373 200	Seychelles	379 447
South Africa	367 019	Mauritania	353 003
Angola	290 141	Senegal	288 817
Cameroon	220 415	Nigeria	283 839
Morocco	164 774	Tunisia	174 657
Seychelles	154 534	Madagascar	130 964
43 other countries	1 107 274	43 other countries	634 018
Total	**5 267 308**	**Total**	**5 801 536**

Source: FAO Fishstat 2013

The United States ranks fifth with 5.4 Mt, while Peru, the largest producer in South America, and Norway, the largest producer in Europe, occupy ninth and tenth places respectively. In terms of exports, China once again is at the top of the world rankings with revenues estimated at $22.3 billion in 2016, compared to $10.4 billion for Norway, the world's second largest exporter, and $8.1 billion for Vietnam. Morocco and Namibia are the two largest African exporters in terms of value with revenues estimated at $2 billion and $700 million respectively. In 2016, the African continent accounted for 4.2% of global fish exports and 4% of world imports.

A market with considerable potential

On average for the continent, consumption of fishery products, which was just under five kilograms per capita per year in 1960, exceeded ten kilograms per capita per year in 2013. This doubling of consumption per capita represents a multiplication by more than seven since the population of the African continent increased from 284 million to 1.07 billion during this period. Since it is estimated that 1.2 billion Africans consume an average of ten kilograms of fish per capita per year in 2016, and spend $5 per kilogram on average, the current African fishery consumption market can be very roughly estimated at $60 billion a year.

European countries already export large quantities of herring and mackerel to Africa. Asian countries are exporting increasing volumes of tilapia and pangasius as well. The presence of imported tilapia in Africa is therefore a major obstacle to the development of local aquaculture, since the majority of imported products are sold at lower prices than local products. Some Latin American countries also export a significant amount of seafood to the African continent. In 2016, 27% (by value) of Uruguayan fishery products (35% by volume) were exported to 21 African countries, mainly Benin, Nigeria, Gabon, Cameroon and the Democratic Republic of Congo. Uruguayan exports to Africa amounted to $24 billion, also in 2016. Argentina's exports to Africa, on the other hand, represent only 2% of its total exports of fishery products. Trade relations between Africa and Asia are also intensifying. It is nevertheless true that exports of Chinese fishery products to Africa declined in 2016. They amounted to 270,000 tonnes, or 7% of China's fish exports in volume. European trade with Africa remains dynamic. European fisheries'

exports to Africa totalled 340,000 tonnes in 2016, and were valued at $390 billion. Africa is the largest fishery market for the Netherlands, representing 30% of its exports in volume terms and 8% in value terms. Nigeria, Egypt and Morocco (raw shrimp for processing and re-export) are its main trading partners.

Beyond these figures, it is important to underline that the potential of African demand is also considerable. According to UN projections, the African population will exceed two billion in 2039, three billion in 2063 and four billion in 2088. From a commercial point of view, without a doubt, this represents a great opportunity for both African producers and exporters from other continents. A perspective linked not only to an increase in the number of potential consumers, but also to the expected strong growth in per capita consumption. It will be necessary to develop distribution channels including wholesalers, transporters, retailers and all related activities (refrigeration storage, sanitary inspection, etc.) ... and for illegal and unregulated fishing to be curtailed to allow the populations of African countries to derive the economic and social benefits to which they are entitled.

Meats

The international meat trade is unlike the trade in many other agricultural commodities, for it represents only a minute fraction of world production. Although meat consumption in Africa is one of the lowest worldwide, the continent is no less dependent on imports, especially since the growth of African production is much weaker than African demand. South Africa is the continent's leading meat producer, ahead of Egypt and Nigeria.

Africa is an expanding meat market that will slacken in 2016 and 2017

Africa has a strong tradition of pastoral and agro-pastoral, peasant and village, livestock breeding, but also of mixed cropping and breeding. Nevertheless, it is now experiencing the development of industrial breeding around the dense growth of expanding towns and cities. Stock-raising supplies not only milk and meat but animal traction as an alternative to human and/or motorized solutions, as well as energy. It is also a way of saving.

Africa is a vast continent of fifty-four countries ranging from the humidity of the West-African coast-line through the Sahel region to the Southern plains. Therefore, it features an enormously diverse expanse of pastureland and breeding facilities. Its meat consumption is one of the world's lowest together with that of South Asia: about 14 kg per year and per capita compared with 42 kg at a global level. North Africa, however, is an exception, with 27 kg per year and per capita. Nevertheless, this consumption is developing in conjunction with economic growth, especially over the last decade, a youthful population and rapid urbanization. After China and India, Africa will be the meat-growth continent of future decades. Since 2014, however, the falling prices of commodities, the key sector of many African economies, have reined in this trend. On a continental scale, Africa produces 16 Mt of meat, or 5% of world production, for a population representing 15% of humankind. South Africa is the leading country among African producers, followed by Egypt and Nigeria. The latter is now a demographic giant with over 180 million inhabitants, compared with only 90 million in 1986, and logically its meat consumption is growing

Meat in Africa 2016

Production (1000 t)	Beef & Buffalo	Sheep & Goat	Poultry	Pork	Total
World	**67 800**	**14 100**	**115 800**	**116 500**	**314 200**
Africa	**6 261**	**3 100**	**5 160**	**1 370**	**15 891**
Northern Africa					
Algeria	140	320	300	0.5	761
Egypt	877	140	920	4	1 941
Western Africa					
Nigeria	370	490	315	260	1 435
Eastern Africa					
Uganda	135	45	70	120	370
Sudan	350	480	50		880
Southern Africa					
Angola	104	25	31	90	250
South Africa	880	180	1 550	240	2 850
Madagascar	170	15	80	60	325
Exports (1000 t)					
World	**9 000**	**950**	**12 500**	**8 000**	**30 450**
Africa	**90**	**40**	**93**	**30**	**253**
Northern Africa					
Egypt	10				10
Eastern Africa					
Sudan		6			6
Southern Africa		1			1
Angola					
South Africa	50		83	24	157
Imports (1000 tonnes)					
World	**9 000**	**950**	**12 500**	**8 000**	**30 450**
Africa	**740**	**35**	**1 750**	**280**	**2 805**
Northern Africa					
Algeria	80	4	5		89
Egypt	370		10		380
Western Africa					
Nigeria	1	1	2	1	5
Eastern Africa					
Uganda				1	1
Southern Africa					
Angola	75		200		275
South Africa	25	11	590	30	656

(Sources: FAO, USDA)

intensely. Although Africa still occupies a minor place in the international meat trade in relation to its demographic size, it is set to become a more powerful presence in the near future. Accordingly, the forecasts of the Organization for Cooperation and Economic Development (OECD) and the UN Food and Agriculture Organization (FAO) predict that by 2025 there will be strong growth in poultrymeat buying throughout sub-Saharan Africa, which will make it one of the most dynamic importing areas in the world together with South-East Asia.

Beef is the traditional family meat and remains dominant (36% of the total). But poultrymeat is growing very rapidly (30%), ahead of sheepmeat and goatmeat (18%) and pigmeat (only 8%). Poultrymeat, however, as in the rest of the world, is experiencing the strongest growth. Its production depends on two types of poultry raising: traditional rural breeding based on local varieties, and peri-urban and industrial breeding based on imported varieties. This trend is especially evident in West Africa: Côte d'Ivoire, Senegal, Benin, Mali and Togo.

A continent heavily dependent on imports

In 2016, the world meat trade reached 31 Mt, or a small fraction (10%) of world production (320 Mt). Nevertheless, it advanced by 4% in 2016, although it had stagnated in previous years. This growth was also significantly higher than that of global trade, which was estimated at 1.7% by the World Trade Organization (WTO). Of course this dynamism relied on the demand of emerging countries. In general, the white meats (pigmeat and especially poultrymeat) increased most rapidly in 2016, because of their price-com-

South Africa: strong growth of poultrymeat imports in 2016

South Africa is the leading meat-producing country in Africa, ahead of Egypt and Nigeria. The poultry industry there counts for 17% of national agricultural production. It has developed intensively since 2000 (+60%), under the influence of a strong domestic demand stimulated by economic growth. Accordingly, per capita meat consumption has risen from 40 kg in 1995 to 67 kg in 2016, and from 22 kg to 40 kg respectively for poultrymeat, or an 80% rise. Nevertheless, national production is too low to satisfy demand, and imports represent 30% of consumption, or 590,000 tonnes. 50% of these imports come from Brazil, ahead of the Netherlands (20%), the UK (1%), Spain (7%) and the USA (7%). In 2000, South Africa imposed anti-dumping duties on poultry cuts from the USA, but has implemented a duty-free quota of 65,000 tonnes since 2015. The EU benefits from entirely duty-free access to the South-African market (apart from bone-in cuts). South Africa is now the EU's leading national outlet: 250,000 tonnes. European sales rose strongly once again in 2016: +30%. In December 2016, however, South Africa introduced an escape clause because of the flood of European meat, and imposed a customs duty of 13.9%. It also ordered a sanitary embargo on European countries affected by bird flu (avian influenza). Because of the embargo, its purchases from the EU look set to fall back to the advantage of the USA in 2017. South-African exports are estimated at 83,000 tonnes, most of which were sold to neighbouring countries (Mozambique, Namibia and Lesotho).

At the beginning of 2017, the profitability of the South-African poultry sector was reduced because of the surge in commodity prices (corn and soya) for animal feedstuffs after a severe drought.

petitiveness and relative ease of production (growing industrialization). Supported by an exceptional Chinese demand associated with the collapse of domestic production, pigmeat exports increased, especially by 10% in 2016, whereas there was a significant downturn in the international beef trade. The international meat trade represented $135 billion in 2016, with China as the leading global importer and Brazil returning in 2016 to its position as the leading world exporter, ahead of the USA.

Meat production has difficulty keeping up with growing urban demand on the scale of the African continent, so that imports represent 20% of total consumption, or twice the world average (about 10%). Imports are also facilitated by customs duties that are often low, even non-existent or even on the way out because of free-trade agreements. Poultrymeat is dominant (55%), especially when intended for South Africa (the sixth global importer) or Angola (the eighth importer). More surprisingly, pigmeat imports are in second place, especially to Angola and the Ivory Coast, and particularly when originating in Europe. Angola, for instance, is the ninth destination for EU pigmeat. As yet, however, Africa does not occupy a major place in the world meat trade. The four global poles are: North Africa (a major consumer and a significant importer); Egypt (a significant importer); West Africa (a producer); and Southern and Eastern Africa (producer).

Africa depends on imports, and is often subject to the development of world meat prices. Unlike many commodities whose prices recovered in 2016, meat prices fell back to a greater extent than those of all agricultural products. According to the FAO, they dropped by 7% on average in 2016 after the 15% downturn recorded in 2015. Although all prices have been heading downwards, beef especially has suffered most from this trend with a 12% downturn, although admittedly this has to be measured by the yardstick of the historic peaks reached in the USA in previous years. Nevertheless, this fall in the average annual price obscures a recovery that started in the second quarter, and could mean that 2017 turns out to be a favourable year for global producers. Between April and December 2016, meat prices rose by 5% because of a reduction in pigmeat production in Europe and in sheepmeat production in the South Pacific area, together with a strong Asian demand.

With this overview of the world meat market, it is important also to note the fact that the price of cereals, essential ingredients for animal raising, also went down in 2016, and notably by 5% in Europe. Nevertheless, they are still at relatively high levels because of the surge that they experienced in 2011 and 2012. This ‘scissors effect’ by which the prices of inputs drop less than those of meat in the agricultural and industrial stage has penalized producers located in production basins

Major cross-border flows of cattle in West Africa

The six Sahelian countries, with a strong breeding tradition, especially Mali and Burkina Faso, traditionally export live cattle to coastal countries (Nigeria, Ghana, Côte d’Ivoire, Senegal and Benin). This is advantageous for these countries, which are still very poor. But the export flows are still considerably hindered by an unintegrated regional market, and especially by many customs and administrative barriers. Statistics are difficult to come by, apart from those provided by the Club du Sahel, the Permanent Interstate Committee for the Drought Control in the Sahel (CILSS) and the Economic Community of West African States (Ecowas/CEDEAO). Accordingly, in 2015, these countries are said to have imported 40, 000 live cattle, 90,000 sheep and 10,000 goats, for a total value of $40 million.

Source : USAID 2016.

with poor grain provision, but, comparatively speaking, has also favoured breeders located in plentiful cereal areas, especially in North America, Brazil, Ukraine and Russia. The African continent has not avoided this fact, and this applied especially to the South-African poultry sector at the beginning of 2017.

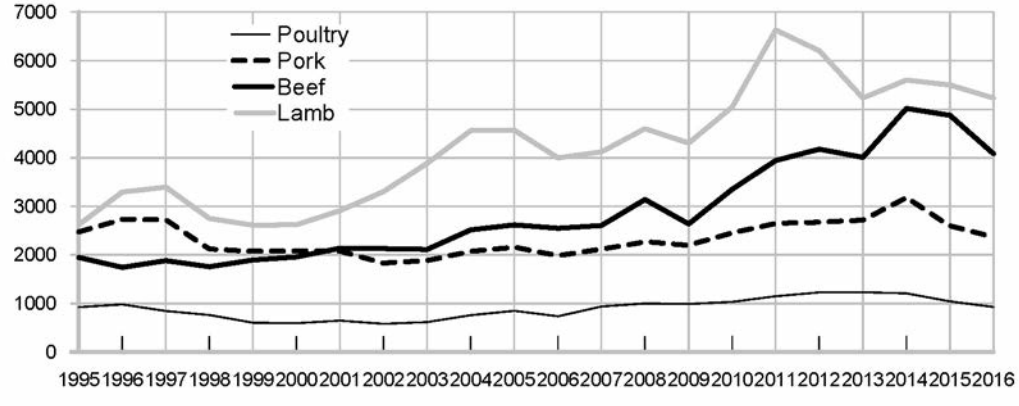
Heterogeneous African meat production in 2016

In 2016, African beef production was sustained by rainfall favourable to pastureland in several countries, and especially in East Africa (Burundi, Rwanda, Tanzania and Uganda), whereas South Africa was still handicapped by drought. Foot and mouth disease remains endemic in several countries, particularly in East and Southern Africa (Kenya, Uganda, Rwanda, Namibia and so on), which has restricted production. In this respect, it should be noted that Egypt has implemented a major sanitary programme to eradicate the disease. Beef imports are particularly extensive in North Africa (the Maghreb) and in Egypt. For the most part they come from Brazil and India, far more than from Europe, and resumed in 2016. Egypt is the leading African importer (about 450,000 tonnes). Since 2014, beef has been eligible for the government food-aid programme, together with bread, oil and sugar.

Algeria has reduced its meat buying, since it has suffered from the severe drop in oil prices and the devaluation of the dinar (-20%). The poultrymeat imports of South Africa, however, have increased, unlike those of Angola and Benin, which have fallen back. Bird flu (avian influenza) is developing to a dangerous extent in West Africa (Cameroon, Ghana and Nigeria) and in Egypt.

The sheepmeat production of Nigeria and Sudan, among its leading global producers, has risen because of weather conditions favourable to pastureland. In 2016 and still in 2017, the world economic slowdown and the inadequate recovery of, or even fall in, the price of certain African commodities limited their populations' incomes. Accordingly, meat consumption would seem to have advanced less rapidly, which has increased the downward pressure on prices.

Development of world meat prices (in US dollars/tonne)



(Source: FAO)

– IV –

Ores, Metals and Fertlizers

Steel industry and Major Non-Ferrous Metals

- Iron Ore
- Bauxite and aluminium
- Copper

Minor metals

- Caesium
- Chromium
- Cobalt
- Manganese
- Tantalum
- Vanadium
- Zirconium

Precious metals and diamonds

Fertilizers


Coe-Rexecode indices for commodities martkets in $
All Metals
January 1988 = 100
400
360
320
280
240
200
180
160
140
120
100
80
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Common Metals
Precious Metals
All Metal
1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
© Coe-Rexecode

Steel industry

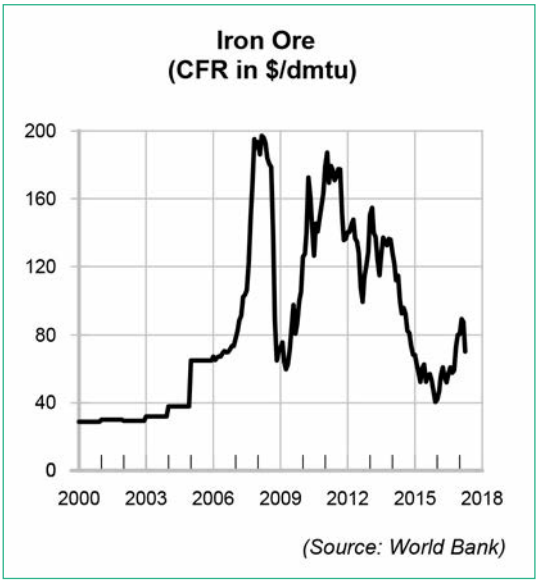
Iron Ore

Whereas the price of iron ore collapsed in 2015, it was particularly successful in 2016, when it rose by almost 85%. This strong recovery was due not only to more favourable market conditions for steel, for which iron ore is the main input in the casting plant, but to renewed speculative activity on (especially Chinese) iron-ore financial markets. This change has occurred in a difficult macroeconomic climate but is certainly good news for the main African countries producing iron ore: South Africa, Mauritania and Sierra Leone; in the short at the very least, since the future of iron ore depends more than ever on dynamic Chinese steel manufacturers and how their demand develops. From this viewpoint, an ore with high iron content, like that produced by Simandou in Guinea, may prove a forceful argument in competition with Australia and Brazil, the giants of the sector.

Strong price rises in 2016

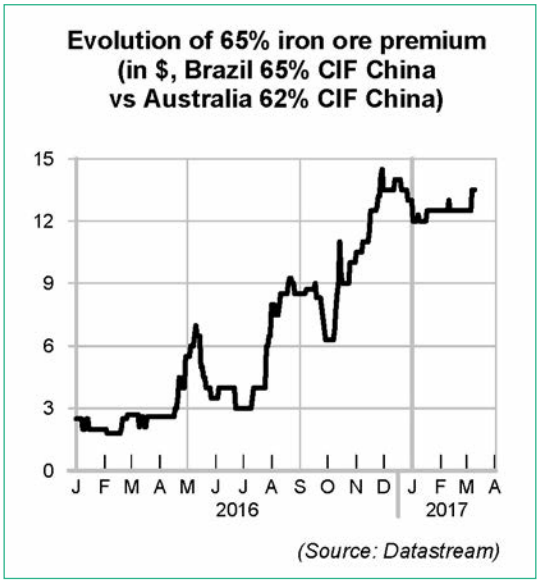
It would be an understatement to say that the price of iron ore soared in 2016. For instance, the price of Australian iron ore, whose 62% iron content makes it a CIF (cost, insurance, freight) reference in Chinese ports, rose by almost 85% in 2016, and by 110% between its low point of 13 January at $39.5/t and its highest point of the year on 13 December, at $83.5/t. This was clearly a considerable increase relatively speaking, and proved to be very good news for the mining groups present in this segment, and for producing countries. Nevertheless, it has to be seen in terms of iron ore's heavy downturns in 2014 and 2015, when it was worth over $150 in the Chinese port of Tianjin in February 2013; $68 at the end of December 2014; and less than $40 on 31 December 2015.

Though regular over the whole year, price progression developed in three steps. From the beginning of January to the end of April 2016, there was a strong increase in the price of iron ore (+64.3%



between 4 January and 22 April), leading to suspicions that a speculative bubble had formed on the basis of much better market fundamentals. Nevertheless, several elements would combine to stop this upward thrust (temporarily): the downturn in Chinese imports, with a 2.2% drop between April and May; a significant rise in stocks held in Chinese ports (amounting to almost 100 Mt according to the China Iron and Steel Association -CISA); the rising value of the US dollar; the intention of the China Securities and Regulatory Commission (CSRC), the Chinese financial-market regulatory authority, to reduce speculative pressures on the Dalian and Shanghai commodity exchanges; and reinforced international pressure on Chinese steel during the G7 summit in Ise-Shima (Japan). Subsequently, the price of iron ore fell sharply: from $71 on 22 April to $49.5 at the end of May. After that, from May to October, it developed between $50 and $62, without exhibiting any definite tendency. After a speculative peak that was soon contradicted in mid-October, iron ore resumed its upward path to end the year at $80.5, after falling slightly in the last days of December.

Unsurprisingly, the best-quality iron ore (65% iron content), from Brazil and consigned to Chinese ports, has followed a path similar to that taken by iron ore of Australian origin. It has been similar, though not identical, since the premium paid on Brazilian ore increased during the year. It rose from about $2 per tonne in January 2016 to over $14 the following November, which probably betrayed the nature of the possible demand from Chinese steel manufacturers in following



months. Within the casting sector (as opposed to the Electric Arc Furnace -EAF- steelmaking using steel scraps), an ore with a high iron content reduces the environmental impact of steel production. This could prove to be of special strategic importance for the industry of the world's leading producer, in view of the Chinese government's plan to cause less pollution in urban areas.

Clearly, the international steel markets' slight recovery of strength explains this good performance of iron ore in 2016. In fact, world crude-steel production rose by almost 0.8% in 2016, to reach 1,268.5 Mt compared with 1,615.4 Mt the year before. The background here was a very slight recovery of demand which, according to the forecasts of the producers' association Worldsteel, would reach 1,500 Mt in 2016. There was nothing truly fundamental about this, but any good news seemed propitious in a largely depressed context like that of 2015 and the beginning of 2016. The 'psychological' aspect of this upturn in the steel price and, in turn, that of iron ore, probably also played a part here. Accordingly, the announcement in January 2016 of a plan to reduce Chinese surplus production capacities in the 2016-2020 period was a major influence on the optimism of market operators. At the beginning of 2016, Beijing made a commitment to reduce those capacities by 150 Mt over five years, and by 45 Mt in 2016, especially by closing low-quality steel-production sites. This measure was favourably received, yet immediately raised certain doubts among observers and European and North-American steel manufacturers, for two reasons. 300, 400, 600 Mt: first, it seems difficult to discover the exact size of the production capacities of Chinese steelmakers that are ultra-dominant on crude-steel markets; second, reducing production capacities does not mean reducing production, and that is exactly what happened in China in 2016. Whereas the Commission for National Development and Reform announced that China had reached its capacity-reduction target for the year at the end of October, the available supply of Chinese crude steel continued to rise. It reached 808.4 Mt in 2016 compared with 798.8 Mt in 2015, or an upturn of 1.2% over the year. Encouraged by this dynamism, Chinese iron-ore imports increased by more than 9% during the first eleven months of the year. The surprise election of Donald Trump as US President also helps to explain the increased prices of a number of commodities (steel, copper and coal), and especially iron ore, which raised the price. During his campaign, Trump had made the

World Production of Iron Ore
(in millions of tonnes)

	2011	2012	2013	2014	2015
World Production	**1 873.5**	**1 848.7**	**1 982.1**	**2 048.0**	
Australia	477.3	519.9	610.0	724.0	811.2
Brazil	373.5	380.0	391.0	399.0	422.55
China	321.8	280.8	315.2	194.7	123.5
India	169.7	140.0	135.8	130.0	142.5
Russia	103.4	107.0	109.1	102.0	102.0
Ukraine	78.6	79.8	80.6	68.0	82.0
South Africa	52.9	56.8	57.9	67.0	61.4
United States	54.7	53.2	54.3	56.0	43.1

(Sources: World Steel Association, Government of Australia, United Nations)

Main African countries producing and exporting iron ore
(in thousands of tonnes)

	2012	2013	2014	2015
Exports				
South Africa	54 002	62 763	64 799	65 264
Liberia	2 038	4 295	5 034	5 438
Mauritania	1 226	1 308	14 599	12 132
Sierra Leone	3 961	1 200	19 190	2 585
Total Africa	**72 265**	**92 129**	**103 623**	**85 409**
Production				
South Africa	59 000	60 600	66 920	61 380
Egypt	3 930	1 422	1 500	1 500
Liberia	3 250	4 100	4 900	4 300
Mauritania	11 500	13 000	13 000	11 600
Sierra Leone	6 730	16 490	21 420	2 563
Total Africa	**86 087**	**96 453**	**109 265**	**82 343**

(Source: Worldsteel)

defence of the US steel industry and the revival of infrastructural expenditure priorities. Accordingly, it was logical that the prices of various minerals and metals should rise, if they might benefit as a result. But it was logical only in the short term, since Trump's project was wrapped in many uncertainties, ranging from its technical feasibility to its actual economic significance. From this viewpoint, in spite of a certain improvement in the fundamentals of the steel and iron-ore markets, it is not improbable that the strong price recovery is attributable more to speculative strategies than to sound economic thinking.

Whatever the force of the last point, the iron-ore giants Vale, BHP Billiton, Rio Tinto and Fortescue Metals Group (FMG) have largely profited from this recovery, in terms both of results and of indebtedness. Rio Tinto was able to announce a net result of $4.617 billion in 2016 as against $866 million for 2015, while its net debt was considerably reduced to $9.587 billion as against $13.783 billion the year before. The Brazilian company Vale, which is the leading world producer of iron ore, returned to profit in 2016 with a net result of $3.98 billion. Its net indebtedness nevertheless remained stable at $25.075 billion on 31 December 2016 compared with $25.234 billion one year before. For the most part, investors welcomed this turnaround in tendency, and enabled these different groups to reach a very high rise in equity values on the London, New York and Sydney stock exchanges.

The African continent, one of the challenges of the Chinese steel-making strategy

According to the most recent statistics available from Worldsteel, African countries actually have little weight on the global iron-ore market. With almost 82.343 Mt produced in 2015, the African continent represented hardly more than 4.1% of the world production of iron ore, whereas Brazilian and Australian productions, at 422.547 Mt and 811.239 Mt respectively in 2015, represented 21% and 40.4% of the available world supply. The picture of African exports is slightly more favourable, for they reached 85.409 Mt in 2015, or about 5.8% of world exports. South Africa is preponderant among the continent's producing countries and in 2015 was responsible for

over 76% of the exports and 74.5% of production in Africa. Mauritania is the second producer, followed by Sierra Leone and Liberia, whose quantities produced, and therefore exported, have varied considerably over the years.

Nevertheless, it would be wrong to minimize the part played (or to be played) by the African continent in the global iron-ore market: South Africa, Sierra Leone and Equatorial Guinea were to the fore in 2016, as were the Chinese mining groups which for the most part have repositioned themselves on the African continent as a result of the withdrawal of Western companies and, probably, a prior downturn in prices that has invited a hunt for lucrative business.

Sierra Leone was severely tested by the Ebola fever epidemic in 2014 and 2015, but was granted new consolations in 2016. The steel group Shandong Iron and Steel bought the remaining 75% interest in the Tonkolili mine still in other hands. Boosted by an investment of $700 million, the mine's annual production could rise from 20 Mt to 35 Mt, and make Sierra Leone the second biggest African iron-ore producer after South Africa and ahead of Mauritania.

The events of 2016 seem to have been less hectic for Mauritania and South Africa, the two major African producers of iron ore. South Africa has seen the Anglo American group reorganize its mine holdings in the country, whether in diamonds, platinum or iron ore. One of the group's real 'nuggets' is Kumba Iron Ore, its South-African subsidiary, which operates the Sishen, Kolomela and Thabazimbi iron mines. In 2016, Sishen produced 28.4 Mt of iron ore and Kolomela 12.7 Mt. In 2016, the company's share value began to soar. In fact, its quoted price on the Johannesburg stock exchange rose by more than 286% in 2016, and increased from 4,120 rand on 1 January to 15,900 rand on 30 December, while on the US market it rose from $0.78 to $3.83 in 2016, or a 391% upturn. Investors were very quick to react to the 'iron-ore price-effect', and also welcomed the South-African leader's acquisition of all the shares in the Sishen mine after several years of legal combat. According to certain commentators, this could lead Anglo American to sell it on, in order to contribute to deleveraging. In the mining sphere, however, the leading operations are not those that are currently most directly visible at the moment. Accordingly, the Indian billionaire Anil Argawal's plan to acquire a 12% holding in Anglo American's capital by way of his company Vedanta Resources could prefigure a reinforcement of the Indian position in African iron ore.

Rio Tinto leaves Simandou

Although it no longer appears in the panel of producer countries, Guinea-Conakry has once again been to the fore in the mining events of 2016 through the renowned Simandou project. To recap: this facility would make it possible to produce 100 Mt of high-quality iron ore (65.5% Fe), or more than the continent's entire present production, for a period of forty years. This outcome might introduce a radical change in the nature of the Guinean economy and probably, Africa's position on the global iron market, on the basis, however, of what has proved to be a vast economico-judicial saga played out over two decades. The last developments of 2016 included not only the withdrawal from the project of the International Finance Corporation, which exercised its option to sell its 4.6% interest in the project, but especially that of Rio Tinto, two decades after receiving the first exploration permits. In October, in fact, the Anglo-Australian group announced that it had reached an agreement for resale of its shares in the joint-venture Simfer, which is in charge of the project's development. Consequently, this means the sale of 46.6% of the partnership to the Chinese group China Aluminium co (Chinalco), which already owns 41.3% of the project's capital. Rio Tinto cited weak currency exchange rates as the reason for surrendering these holdings, but perhaps the group's desire to concentrate on high-potential metal ores such as copper should not be ruled out as an additional suasion. Whatever the motives, a transaction valued at a sum between $1.1 billion and $1.3 billion was definitely approved by the

Guinea government, which has its own 7.5% holding in Simandou, but remains shrouded in uncertainties. The first of these has to do with the actual finance that Chinalco must find to make this acquisition. In fact, this implies the development of major infrastructures, such as the primary requisites of a port and a 650-km railway line. This could make Beijing's financial support essential. The second uncertainty has to do with the long list of legal conflicts that have studded the project's history since its creation and mainly set Rio Tinto against Beny Steinmetz's group BSG Resources. In 2016, allegations of corruption dating back to 2011 were directed against the Rio Tinto group, which was suspected of having paid $10.5 million to a consultant to guarantee rights on Simandou. In February 2017, however, he denied the rumours, claiming that the transaction risked failing because of these recent legal developments.

Exploiting this African potential

Guinea is not the only African country anxious to develop its iron-extraction activity. Rival claimants for the market include Congo-Brazzaville, with a subsoil richly endowed with metal ores whose exploitation has nevertheless been hindered for some years by the difficulties of providing transport infrastructures. This is especially relevant to the situation in Sangha province, not far from the frontier with Gabon and Cameroon, where three projects are located: the Mount Avima scheme belonging to the Australian Core Mining group; the Badondo project of Equatorial Resources, for which the company announced a $1.2 billion investment plan in 2016; and, finally, the Nabeba-Nbalam venture located between the Congo and Cameroon and owned by Sundance Resources. In order to bypass the 1000 km between the Avima mine and the Congolese port of Pointe Noire, in February 2017 Core Mining's subsidiary Avima Iron Ore announced that it intended to transport the iron ore through Gabon and its ore port Owendo, which is 'only' 400 km from the mine. Then Iron Ridge Resources has a search permit for Tchibanga and for Belinga, in Gabon, and announced that it was ready to advance to the exploration stage. With regard to Nigeria, finally, at the beginning of March 2017 the Australian company Kogi Iron announced that it had obtained two mining exploitation contracts for its Agbaja iron-ore project. An advance feasibility study carried out in January 2014 had recorded a potential production of 5 Mt per year for twenty-one years. Nigeria has been hit hard by the downturn in oil prices and could see a reinforcement of the mining sector as a means of diversifying its economy. This would call for substantial investments in which the country's sovereign fund, the Nigerian Sovereign Investment Authority (NSIA), might participate.

Very uncertain prospects for 2017

In spite of the recovery recorded in 2016, the price war waged by the Big Four (Vale, Rio Tinto, BHP Billiton and Fortescue Metal Group) has not calmed down significantly. The quest for greater efficiency is pursued with even greater intensity, as shown by the recent SD11 mine developed by the Brazilian leader, which at full capacity will make it possible to produce 90 Mt per year at a cost of less than $10/t. With a global supply stimulated by the opening of new mines in Brazil, but also in Australia, the demand from steelmaking, especially from China, will have to remain very strong indeed if a new fall in prices is not to result. Nevertheless, it must be admitted that the regulatory conflicts about steel that gathered pace in 2016 between Europe, China and the USA do not augur well in this respect. This demand should also call on international markets to a considerable extent. The hypothesis is more than reasonable, yet we must remember the recovery of iron-ore prices could also reinvigorate mining activity in China. Of course the quality of Chinese ore is very relative, but even a marginal fraction of the national demand that would focus on it could influence world prices to a serious degree. A call for an inquiry into Brazilian and Australian dumping practices was also submitted recently by the Chinese Metallurgical Mines Association on behalf of twenty national mining firms. This would seem to show that the Chinese iron industry will bring its advantages into play in an attempt to

compete with the world giants of the sector. Nevertheless, Peter Poppinga, Executive Director of Vale, rejected this notion of a redeployment of the Chinese supply, and announced a floor price for iron ore that would not descend below $70/t in 2017.

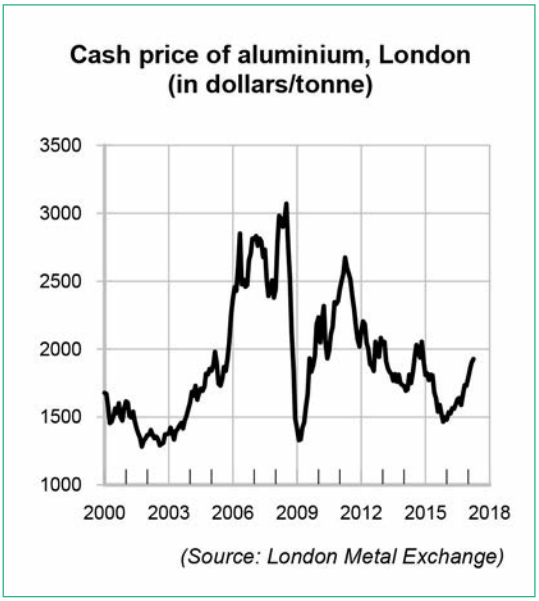
As with other metal ores, such as copper, in 2016 Chinese interests in African iron ore were reinforced, especially in Guinea and in Sierra Leone. Although there is a clear will to secure the resources essential for Chinese steelmaking activity, we cannot exclude the additional motive of capitalizing on a reduced level of project valuation. China is in question here, though not solely, since we must remember the strategic positioning of Australian mining companies in the Congo, Cameroon and Gabon. It is also important to note that the great uncertainty about future iron-ore price levels, and about international steel-market developments, scarcely favours investments in mining projects. Accordingly, it will be a few more years before certain African mines are actually put into production. Nevertheless, 2016 revealed the new strategic dimension of an increased demand for iron ore with a high iron content and enhanced environmental qualities. If this trend becomes permanent, the African countries with Guinea in the lead, will have a trump card to play…if their mining codes and conventions permit. Perhaps the reinforcement of Chinalco's position in Guinea is a harbinger of this outcome.

Bauxite and aluminium

Aluminium shared in the impressive rebound experienced by nearly all ores and metals at the beginning of 2016, with a considerable improvement in market conditions. As is often the case, China was at the origin of important news: in 2016 it was positive, with a rise in demand fuelled by healthy automobile and property sectors. This might also have stimulated imported bauxite demand, but such was not the case, with demand dropping by more than 7% in 2016 to 51.78 Mt. A fall in prices was thus a logical consequence. The year was still a decent one for Guinea, Africa's biggest bauxite producer. In December 2016, for the first time, the country became the biggest global exporter on the Chinese market ahead of Australia and Brazil. With the announced takeover of the Simandou deposit by Chinalco and the positioning of Hongqiao in the bauxite industry, it is clear that Guinea is becoming a vital strategic element in supplying the gigantic Chinese industrial sector, especially since medium- and long-term prospects appear favourable. A question that has remained unanswered for years arises yet again: will the country finally be able to take advantage of its strategic position in this sector and occupy a place further downstream, thus capturing more added value?

A virtually steady rise in prices: this would probably be the statement that best characterizes aluminium cash price trends on the benchmark London Metal Exchange (LME). Prices opened the year at $1,465/t on 4 January, 2016 and finished at $1,713/t on 31 December, marking an almost 17% increase. This upward trend showed no signs of flagging in the new year, with a more than 14% rise over the first quarter to stand at $1,946/t on 31 March.

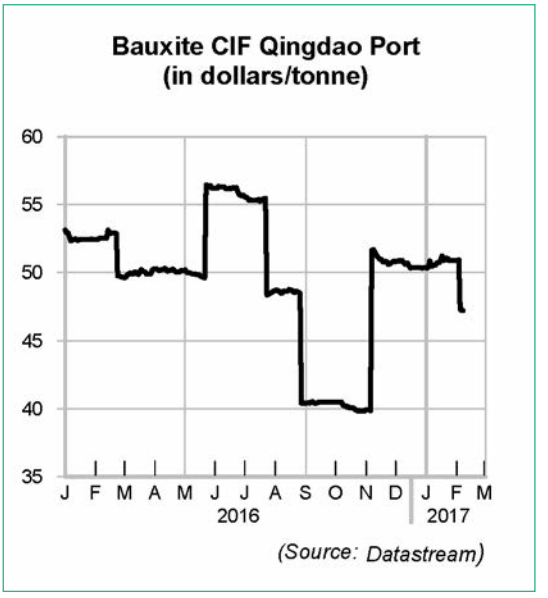
The performance is remarkable, but as with numerous other ores and metals it must be considered against the backdrop of considerable declines posted in 2014 and 2015. Only this allowed aluminium to regain its level of May 2015, a far cry from the heights attained at the peak of the famous commodities super-cycle. Stronger than expected demand, combined with slower growth in supply and declining stocks – such is the simple and definitive equation explaining the price's upward



momentum in 2016. According to the International Aluminium Institute, primary aluminium production came to 58.89 Mt in 2016, compared to 57.736 Mt in 2015 for a slightly less than 2% increase. China, the world's biggest producer, had only a mild increase in supply (one of its lowest in history) from 31.518 Mt in 2015 to 31.641 Mt in 2016, whereas from 2014 to 2015 the rise was nearly 15%. But in monthly terms Chinese production was 2.891 Mt in December compared to 2.518 Mt a year earlier. Meanwhile consumption increased by 4.4% compared to 2015 and amounted to 58.7 Mt, according to the Economist Intelligence Unit. The support Beijing provided for its economy in 2016 stimulated domestic demand for aluminium (+8.6%), especially in the automobile (+6.83%) and property sectors. Coupled with this was the decrease in official stocks in LME warehouses. Whereas they had stood at 2.85 Mt in mid-March 2016, by the end of the year they had fallen to 2.2 Mt, and by the beginning of April 2017 to nearly 1.85 Mt.

The political factor probably can't be excluded in understanding the developments on the aluminium market in 2016. The election of Donald Trump, who had campaigned on a platform of massive infrastructure investment, as President of the United States, doubtless played a role; but there were also regulatory battles between the US, Europe and China regarding the latter's alleged production overcapacities and unfair trade practices. The US International Trade Commission (USITC) launched an investigation in April 2016 into the reality of the competition American industry was up against. The goal was to measure the impact of the famous "fake semis", or Chinese semi-finished products, that were not hit with the export taxes normally applied to primary aluminium. Another bone of contention were Chinese aluminium exports that American industrialists suspected were passing through intermediate countries (notably Mexico) to escape the taxes they would normally have been subject to. The China Non-ferrous Metals Industry Association (CNIA) vigorously rejected these accusations.

The price of Australian alumina posted a strong increase during the fourth quarter of 2016 to finish the year at almost $350/t, probably due to higher stocking in Chinese smelters. But it must be noted that over the first months of 2016, the weakness of domestic alumina prices had dampened import demand, and thus international prices. Bauxite is naturally much less volatile than the metal whose production it enables, and was relatively stable over 2016. If the benchmark



Australian import cif Qingdao port is used, the price decreased from $53.14 on 1 January, 2016 to $50.36 at the end of December – a 5.2% drop. The trend was nonetheless not linear, with the annual peak occurring in May 2016 at nearly $56/t (370 yuan) and the low point in October at a little less than $40/t. Among the probable explanations for the significant drop in prices observed in the second half of the year was the sharp decline in Chinese bauxite imports: in July, they amounted to 3.63 Mt, compared to 5.11 Mt in March. It is important to point out that Chinese importers had built up considerable stocks at the beginning of 2016 to deal with the embargo Malaysia had imposed on its bauxite exports.

In spite of these price trends, the year was in all likelihood an excellent one for Guinea, the main bauxite producer in Africa and holder of more than a quarter of the world's reserves, according to the United States Geological Survey (USGS). In December 2016, while Chinese bauxite imports were down by nearly 34% compared to December 2015 and by 9.8% compared to November (4.66 Mt), the country's exports to China amounted to 1.82 Mt, compared to only 1.68 Mt for Australia. While the month of January 2017 re-established Australia as the world's largest bauxite supplier to the Chinese juggernaut after the withdrawal of Indonesia, the performance was nonetheless considerable. Over 2016, Guinean exports to China came to nearly 11.94 Mt. It cannot be overlooked, however, that international competition has been more subdued since Indonesia, and later Malaysia, discontinued exports of unprocessed ores. The ban on raw ores in Indonesia at the beginning of 2014 allowed Malaysia to substantially increase its exports to China. The environmental damages that this acceleration caused, however, quickly prompted Kuala Lumpur to suspend this activity. The moratorium on bauxite mines has been extended several times, most recently in March 2017 for an additional three-month period.

In Indonesia, by contrast, short-term economic rationality prompted the country to ease the rules of the export ban in January 2017, with bauxite among the ores in question. It is not clear, however, that this will be enough to again change the seaborne bauxite market. While Chinese aluminium producer Hongqiao habitually supplied itself with Indonesian bauxite, but following the embargo it has invested extensively in Guinea as part of a consortium through which it is partnered with the Société Minière de Boké (SMB). It is now highly unlikely that Hongqiao will modify its strategy, which is also the case with a number of Chinese importers who seem to have adopted a cautious approach in the face of regulatory inconsistency by Kuala Lumpur. It may be remembered that Indonesia exported no fewer than 32.1 Mt of bauxite in 2013. China, Guinea, Indonesia, and Malaysia are still the main players, but India's industrial position with steel and aluminium is expected to give it a steadily growing role on the ores and metals markets. Thus among the significant pieces of news in 2016 would doubtless figure the increase in bauxite production capacities by Nalco, India's national aluminium company, which rose from 6.825 Mt to 7.325 Mt.

Among the millions of tonnes exported from Guinea to China in 2016 were the substantial supplies to Hongqiao but also the first batch of 55,000 tonnes from Emirates Global Aluminium (EGA) and its Guinean subsidiary Guinea Aluminium Corporation (GAC). The ambition of the emirate group is to produce nearly 12 Mt of

Major world producers of alumina and bauxite
(in thousands of tonnes)

	Alumina		Bauxite	
	2015	2016e	2015	2016e
World Production	**119 000**	**118 000**	**293 000**	**262 000**
United States	4 540	2 500		
Australia	20 100	20 700	80 900	82 000
Indonesia	70	450	202	1 000
China	59 000	58 500	65 000	65 000
Brazil	10 500	10 800	33 900	34 500
Guinea			18 100	19 700
India	5 510	5 860	23 800	25 000
Jamaica	1 870	1 850	9 630	8 500
Kazakhstan	1 450	1 400	4 680	4 600
Russia	2 590	2 700	5 900	5 400

(Source: WBMS)

bauxite per year to satisfy the needs of Persian Gulf aluminium producers. This involves the development of the industrial port of Kamsar on the Atlantic coast to accommodate the capesize and newcastlemax classes of vessels. The positioning of EGA in Guinea is not unique and responds to the determination shown in July 2015 to raise bauxite exports to 40 Mt by 2024. The Guinean Minister of Mines and Geology, Abdoulaye Magassouba, even declared that his country envisaged ramping up production 60 Mt in 2020. A number of international partnerships have been formed for this purpose. In the summer of 2016 the International Finance Corporation (IFC), the financial wing of the World Bank, granted $200 million in funding to the Compagnie des Bauxites de Guinée (CBG). Halco, a joint-venture between Alcoa and Rio Tinto among others, has a 51% stake, while the other 49% is owned by the Guinean state. This is part of a vast $1 billion expansion plan involving a number of funding groups and meant to support the CBG in its strategy of boosting production capacities from 13.5 Mt/y to 18.5 Mt/y in 2018 and 27.5 Mt/y in 2022. In February 2017, Africa Finance Corporation (AFC) announced funding of $205 million for the development of the Bel Air mine, managed by Alufer Mining and whose annual production is projected to be 5.5 Mt. Meanwhile Gajah Investments Group, based in Dubai, announced intentions to raise some $8 billion to develop the Boffa Sud bauxite mine, acquired from authorities in Conakry in March 2016 and whose resources are estimated at 40 billion tonnes. It may also be remembered that the agreement in 1992 between Iran and Guinea was renewed in 2015. Iran owns 51% of the Société des Bauxites' Dabola-Tougue project and plans to triple its aluminium production by 2025 via an injection of $505 million from the Iranian Mines Industries Development and Renovation Organization (IMIDRO).

The medium-term prospects for the international bauxite market appear favourable. According to one of Alcoa's vice presidents, global demand could progress by 8% on average over the coming years and reach 130 Mt by 2026. The main reason is a steady increase in high-quality bauxite demand by China, whose high-grade reserves are drying up. Some consider that technology could alter the bauxite market in the coming years. China has abundant bauxite resources, but their alumina/silicon ratio makes

mining them more expensive. The efforts in research and development undertaken by the industrial groups to overcome this technical obstacle could, if successful, go a long way in reducing China's reliance on imports. Ultimately this wouldn't be new: China had developed technology allowing for the mining of laterite deposits and the production of nickel pig iron when nickel supplies became scarce. It also should be noted that if the considerable investments received by Guinea since 2015 are clearly cause for great satisfaction, they should not obscure two essential points regarding the economic development of the country: the maximization and redistribution of fiscal revenues derived from bauxite mining and a necessary integration further upstream in the aluminium chain. Since Rusal left the country in 2012, the projects announced for the development of local aluminium facilities have been late in getting off the ground.

Copper

For the copper industries in Zambia and the Democratic Republic of Congo, 2016 was a year of living dangerously. A strong rebound over the last two months of the year cancelled out the losses from 2015 and reinvigorated Africa's two largest exporters. While macroeconomic uncertainties in 2017 will doubtless influence copper prices (which tend to be volatile in any case), the medium-term outlook suggests there will be a structural supply deficit sufficient to bolster them. Certain challenges will need to be met in order for African producers to take advantage of the situation, and the key word yet again is "stability": stability in fiscal matters and the general business climate for international mining companies working on African soil, stability on the social and political fronts… not to mention stability of electrical supply, an essential criterion to the maintenance and development of mining and ore processing activities.

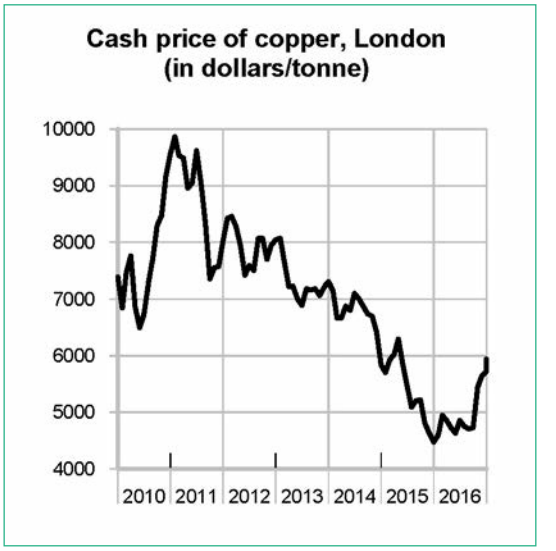
A healthy rebound

2016 was unquestionably a peculiar one for copper. Unlike nearly all other base metals, whose prices underwent a strong revival during the early months of the year, copper struggled to shake off the effects of a punishing 2015. From January to October, cash prices on the London Metal Exchange (LME) wandered listlessly between $4,500 and $5,000, with no clear trend emerging. Then a 28% increase occurred between 24 October and 28 November, with the price reaching a 21-month peak at $5,935. It was enough to invalidate most predictions from the beginning of 2016, which had anticipated no real improvement over the year due to lacklustre supply and demand. It might have been a healthy pause after a strong leap, or rather the basis of a strong corrective movement, but in any case December did not confirm the optimism of the preceding month: prices dropped by 4.7% to end the year at $5,500 – their level of January 2015. After declines of 14.5% in 2014 and 25% in 2015, it was, overall, quite an honourable performance for the year, with cash prices increasing by 18.4% on the benchmark London index. A renewed dis-

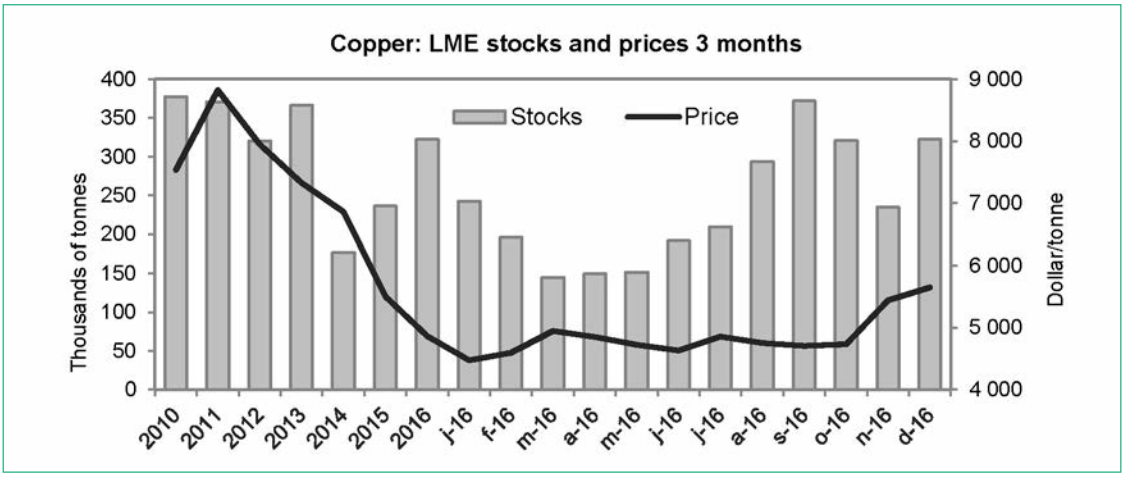
play of energy came in January as prices rose back up to $5,900. As a natural consequence of this trend, the Chilean company Codelco (the biggest copper producer in the world) posted better results in the third quarter and mitigated an estimated $97 million loss over the first half of the year. Anticipating a brighter future, and confronted with strong international competition, the Chilean leader launched an $18 billion development and modernization plan for its mines through 2020, notably a $975 million government injection after the $600 million granted in 2015.

Better fundamentals, or a speculative bubble?

The revival in copper prices, just like the results of the American presidential election, was clearly a surprise. In fact it was partially thanks to the economic programme announced by President-elect Trump that the markets perked up. The intention of investing $500 billion (or more!) in infrastructure, with its implication of higher copper demand, could only be welcomed favourably. Whether physical or financial, a speculative or at least anticipative mindset gave rise to a belated price increase as concrete actions by the new American government were awaited. But this is not the only explanatory factor behind the autumnal surge and overall favourable year. With consumption amounting to 1.810 Mt in 2015, and 1.58 Mt over the period of January to October 2016, the US actually accounts for less than 10% of the world's copper demand, and so the markets' optimism was based on the fundamentals.



And yet there were not many short-term factors favouring an increase in prices, whether from supply or demand, which may well explain the slump over the first 10 months in 2016. According to data from the International Copper Study Group (ICSG), demand for refined copper amounted to 17.53 Mt over the first three quarters (a 3.3% rise in annual terms), but supply also increased in more or less equal proportions. Global supply increased by 3% over the first nine



months to 17.445 Mt, whereas global mining production rose by 5.7% over the same period. There were variations by country, however: output from Chile, the biggest producer in the world, was down in November 2016 by 1.3% in annual terms, coming to nearly 480,000 tonnes. Africa also saw a decline, with output falling to 1.385 Mt over the first three quarters and marking a 4% drop from the same period in 2015. For the Democratic Republic of Congo (DRC) the fall was even more significant, with Congo's central bank announcing a 14% drop over the first six months to 0.46 Mt. This was notably due to Glencore's temporary closure of its mines, where production is not expected to start up again until the beginning of 2018. Over the year, however, the Chamber of Mines estimates this at only 1.7%, for a total of 978,414 tonnes. The situation was far different in Zambia, where output grew to 368,371 tonnes from 340,510 tonnes a year earlier. To the extent that trends in demand were matched by supply, traders had no choice but to focus on the third essential market variable to guide their predictions: inventory levels in LME and Shanghai Futures Exchange (SHFE) warehouses. The former were at an 18-month low at the beginning of April at 141,075 tonnes, which could have bolstered prices. As for the SHFE, by contrast, a peak of 394,777 tonnes was reached in March. Once again the signals were particularly ambiguous.

In this gloomy context wherein positive signals were often destroyed by disappointing news or statistics, it was hardly surprising that copper prices did not follow the upward trajectory taken by most of the other base metals. In the autumn, however, several factors added themselves to the American election to correct this trend and offer generally, a very honourable performance to the copper market. To start with, various production sites experienced a certain number of disruptions. Operations at the Olympic Dam mine in Australia, run by BHP Billiton, were suspended for nearly two weeks in October because of a power outage, triggering a 30% fall in copper production (78,000 tonnes) in the second half of the year compared to 2015. Chile, the world's largest exporter, was hit by several strikes, including one in September 2016 at the Los Bronces mines held by Anglo American. The second reason for the revival at the end of the year came from an increase in copper orders from China for the energy sectors, coupled with a healthy automobile market. Over 2016 China is estimated to have imported nearly 4.95 Mt of unprocessed and 3.63 Mt of refined copper, with a 30% rise between November and December. Imports of concentrates were also considerable at 19.63 Mt, or 28% more than in 2015. As China represents more than 40% of worldwide demand, these prospects are clearly connected to the optimism displayed by actors in the copper industry – not to mention investors. In fact the future looks bright for the upstream segment of the chain: ending 2016 with a surplus of 60,000 to 70,000 tonnes, the market could experience a deficit of 160,000 starting as soon as 2017.

The redeployment of Zambian mining strategy

"Overdependence": such was the word used by Finance Minister Felix Mutati to describe the relationship between copper prices and the Zambian economy, and to justify the implementation of a diversity plan. Zambia is the second-largest African producer after the DRC. With production having been forecast at 750,000 tonnes for 2016, and with a goal of 800,000 tonnes in 2017, copper is indeed central to the economy of the world's eighth-largest exporter in 2015, according to data from the ICSG. The holding company Zambia Consolidated Copper Mine Investment Holdings (ZCCM-IH), in which the government has a majority stake, occupies an essential role in this field through its stakes in the mines of Mopani (with Glencore and First Quantum), Kansanshi (with First Quantum Minerals) and Konkola (Vedanta Resources). The fall in copper prices in 2014 and 2015 was therefore a jolt for Zambia, given that 70% of the currency revenues of the country derive from copper exports. While output increased by 8% in the third quarter of 2016 with respect to 2015 (which was a surprise, given the prevalence of power supply problems, though they did not stop the opening of

Copper
(in thousands of tonnes)

	2011	2012	2013	2014	2015	2016
• Ore (in metal content)						
World Production*	**15 964**	**16 687**	**18 171**	**18 433**	**19 147**	**20 158**
Chile	5 263	5 434	5 776	5 750	5 764	5 545
China	1 295	1 577	1 715	1 781	1 706	1 896
Peru	1 235	1 299	1 376	1 380	1 701	2 354
United States	1 113	1 167	1 278	1 385	1 439	1 462
Australia	960	921	998	970	964	939
Zambia	663	695	760	707	717	763
Russia	622	637	660	683	698	664
Indonesia	543	399	509	379	579	727
Poland	427	427	429	421	426	425
Canada	566	579	632	696	698	708
Kazakhstan	405	418	448	439	444	486
• Blister Copper						
World Production	**15 311**	**15 955**	**16 626**	**18 048**	**18 553**	**19 031**
China	4 117	4 746	5 524	6 518	6 880	7 208
Japan	1 438	1 609	1 563	1 601	1 472	1 497
Chile	1 364	1 342	1 358	1 356	1 496	1 491
Russia	902	880	865	884	880	894
India	671	695	617	766	793	781
Germany	547	534	459	529	521	512
Poland	531	579	571	585	573	481
United States	538	485	517	522	527	563
Australia	442	422	446	469	433	451
Canada	330	310	283	321	310	334

(Source: ICSG)

the Sentinel mine in September 2015), copper revenues shrank by nearly 20% to $3.2 billion over the first nine months of 2016. With sizeable job losses in the mining sector, a stock exchange that posted the worst performance on the African continent, a substantially weaker currency (the kwacha), and ever-increasing inflation, Zambia went through a difficult period. These trials were not without repercussions in the political arena during the presidential election in August, which saw scattered incidents of violence between supporters of incumbent Edgar Lungu (who was ultimately re-elected) and those of Hakainde Hichilema, his main rival.

At the heart of the debates were the issues of mining taxation and the implementation of redistribution policies. With this in mind the government declared itself in favour of a 7.5% tariff on imports of copper concentrates, mainly from the DRC, in order to support local ore refining activities. This plan, however, was invalidated by the regulators. It must be said that while the plan may have been reasonable from a political point of view, it raised economic questions: Zambia is thought to have an "excess" of processing capacities for concentrates amounting to 1.2 Mt. More fundamentally, the issue at the heart of the debates was fiscal policy toward mining revenues, set against the lurking

idea that the country had not been able to take advantage of the rising prices observed until 2012 to harness the necessary funds for the diversification of the country's economy and its struggle against poverty. The 20% tax on open-pit mines passed in 2015 and applied from 1 January, 2016 did have the ambition of increasing fiscal revenue from the extractive sector, but in a context of low prices, it came up against resistance from mining groups worried about preserving their competitiveness. Barrick Gold threatened to close its mine if the measure was implemented. Social tranquillity is also an issue, with the beginning of 2017 marked by workers at Konkola going on strike and demanding higher salaries. In still-difficult market conditions, however, it must be acknowledged that this is not only a Zambian or even African problem: workers at the giant Escondida mine in Chile went on strike on 9 February, 2017, and blocked access to the port of Coloso in the bargain.

There was some good news nonetheless, notably the agreement in December between ZCCM-IH and Vedanta Resources to settle the dispute that had pitted one against the other since the privatization of Konkola. Arguing that the British company had not paid the entirety of the sum due for the acquisition of the mine, ZCCM-IH successfully brought the case to the British High Court. At the end of this agreement, Vedanta committed to paying $103 million to the public/private Zambian holding company. The latter was also engaged in a standoff with First Quantum Minerals, accusing it of fraud with respect to a loan granted by Kansanshi Mining to finance other mining operations. In February 2017, rumours indicated that ZCCM-IH might also go after Glencore.

The vicissitudes of international mining company strategies in the DRC

In the DRC, the world's sixth-largest exporter in 2015, macroeconomic problems arising from falling prices combined with major social and political instability, which continued until the very end of 2016: while presidential elections were supposed to take place in November 2016, representatives of the presidential majority came to an agreement that the term of Joseph Kabila, which was officially supposed to end on 19 December, 2016, be extended until 2017 provided that he did not run again or modify the constitution. The intense negotiations that enabled this agreement did not, however, prevent acts of violence leading to the deaths of more than 50 people in Kinshasa. Massive lay-offs in Katanga province also lead to high social tensions that quite naturally weighed on the business climate of the country.

Confronted with a particularly uncertain economic and social environment, the mining groups engaged more frequently in buyouts or selloffs. Freeport-McMoran sold off its 56% stake in the Tenke Fungurume mine to China Molybdenum (CMOC) through the sale of its 70% stake in the eponymous holding company TF Holdings. The deal was worth $2.65 billion and up to $120 million in additional funds depending on copper and cobalt price trends in 2018 in 2019. It must be said that the situation on the site has many times proven difficult: in addition to a strike followed by nearly a thousand employees, the site was invaded by illegal workers, leading to the deaths of 17 people when a pit collapsed. The decision of Freeport-McMoran is not reported to be specifically linked to the DRC environment but rather a response to the debt reduction strategy pursued for many months now by numerous mining groups – notably to the benefit of Chinese actors. The deal was not without hitches: Kinshasa was not involved, although the *Générale des Carrières et des Mines* (Gécamines), a Congolese state mining company, holds a 20% stake in Tenke Fungurume and could have exercised its pre-emptive rights during the sale of shares. Following a counter-offer made in September 2016, Gécamines resorted to arbitration through the International Chamber of Commerce. The process was not concluded, however, as Freeport-McMoran settled its dispute with Kinshasa by paying $33 million to Gécamines. The Canadian company Lundin, which like Freeport-McMoran indirectly held a 24% in the mine via its 30% ownership of TF Holdings, could also have come forward to buy the shares held by the American group. But this was not the case as Lundin also decided in

Refined copper
(in thousands of tonnes)

	2011	2012	2013	2014	2015	2016
World Production	**19 601**	**20 203**	**21 060**	**22 483**	**22 872**	**23 406**
China	5 163	5 879	6 667	7 649	7 969	8436.3
Chile	3 092	2 902	2 755	2 729	2 688	2613
Japan	1 328	1 516	1 468	1 554	1 483	1553
United States	1 030	1 001	1 040	1 095	1 140	122.5
Russia	912	890	875	894	876	867
Zambia	516	530	568	449	496	426.4
India	671	695	617	766	792	781.3
Germany	709	686	678	674	678	671.4
World consumption	**19 713**	**20 473**	**21 396**	**22 880**	**23 036**	**23461**
China	7 885	8 905	9 661	10 995	11 355	11676
United States	1 761	1 760	1 826	1 753	1 798	1762
Germany	1 252	1 114	1 151	1 163	1 221	1245
Japan	1 003	985	996	1 073	998	973
South Korea	755	724	719	743	725	743
Russia	713	645	665	611	320	337
Italy	602	563	552	575	580	585
Taiwan	457	433	438	460	472	495
India	466	456	455	440	458	472
France	230	215	197	178	185	180
Main exporters		**8 277**	**8 524**	**8 095**	**8 383**	**8275**
Chile	3 160	2 732	2 586	2 484	2 618	2426
Zambia	753		532	516	311	449
Japan	528	546	572	506	541	576
India	202	254	237	362	341	262
Australia	325	371	404	486	448	412
Peru	344	248	284	267	266	250
Poland	293	334	344	308	298	226
Kazakhstan	273	450	375	256	352	361
Russia	452	245	212	284	557	464
Canada	184	116	171	204	225	191
Main importers		**8 561**	**9 106**	**9 159**	**9 164**	**8873**
China	2 922	3 402	3 206	3 590	3 678	3269
Germany	744	706	700	665	686	687
United States	605	630	734	620	686	636
Italy	628	584	560	622	622	567
Taiwan	536	434	438	465	471	492
South Korea	413	302	298	347	383	376
France	227	218	230	222	193	201
LME Stock end of year	**371**	**320**	**366**	**177**	**236**	**322**

(Source: ICSG)

January 2017 to sell its stake in TF Holdings for an adjustable $1.14 billion to BHR Partners, an investment firm from… China! This sale is also thought to have been the subject of compensatory payments to Gécamines's benefit. The company is a genuine institution in the DRC and has undertaken a new modernization programme leading it to invest more than $700 million between now and 2020. In this framework, China Nonferrous Metal Mining (CNMC) could invest as much as $2 billion in the development of its Deziwa copper project in exchange for a 51% stake. According to the terms of the deal, which was announced in June (but the amount of which was not revealed), the Deziwa copper project will be conferred for a time on the CNMC, which will provide the financing, construction, and extraction. Gécamines will then have to pay back the amount invested through a (still unsigned) copper off-take agreement, which will allow it to become the outright owner. The agreement was described as a "new kind of partnership" meant to increase revenues for the government, but not all the details have been given.

Meanwhile Kamoa-Kakula, the biggest African copper project with a 30-year lifespan, saw Ivanhoe Mines and Zijin Mining, the main shareholders, transfer an additional 15% stake to Kinshasa, giving the government a total of 20% of the shares. The first surveys delivered by Ivanhoe assessed indicated mineral resources at 192 million tonnes of 3.45% grade copper and 115 tonnes at 4.80% grade. The Canadian group is particularly active in the DRC, and announced in May 2016 the implementation of a redevelopment plan for the Kipushi zinc/copper project southwest of Kamoa, with the goal of modernizing the site.

Still on the subject of mergers and acquisitions, but this time in Botswana, Alecto Minerals committed to buying Cradle Arc Investments, which owns 60% of the Mowana copper mine. It contains measured and indicated resources of 683,000 tonnes of copper, and inferred resources of 945,000 tonnes. The company hopes to bring the Mowana mine and processing facility back into production at a "relatively low cost". With a copper price of $2.5/lb, the company has estimated the net present value of the project at $245 million. The BCL mine situated in Selebi Phikw in northern Botswana was put in provisional liquidation because of prohibitive costs and dangers. In Uganda, the project to revive the Kilembe mine by the Chinese group Tibet Hima Mining ran into several obstacles, especially financial: the company and the government cannot agree on the amount of royalties and taxes due.

A medium-term copper shortage: good news for Africa?

After severely testing the markets for much of 2016, prospects in China seem favourable: in the

Refined copper - World Balance

(in thousands of tonnes)

	2011	2012	2013	2014	2015	2016
• Mine Production	15 964	16 687	18 171	18 433	19 147	20 157
• Primary Refined Production	16 133	16 606	17 256	18 568	18 927	19 547
• Secondary Refined Production	3 468	3 596	3 803	3 915	3 945	3 859
• Total Refined Production	**19 601**	**20 203**	**21 060**	**22 483**	**22 872**	**23 406**
• Refined Consumption	**19 713**	**20 473**	**21 396**	**22 880**	**23 036**	**23 461**
• Refined Balance	**-174**	**298**	**-583**	**-421**	**-267**	**-55**

(Source: ICSG)

first days of January 2017, a new railway project was announced that would involve substantial copper consumption, accounting for the robust prices on the Shanghai exchange. In the longer term the signals appear equally positive: the China Nonferrous Metals Industry Association (CNIA) estimated that refined copper demand in the electric car sector could reach 280,000 tonnes by 2025, compared to 38,000 today. Although it has suffered numerous jolts over the past two years, due not only to an imbalance in supply and demand but also to speculative tides, copper seems guaranteed a bright future, with a deficit forecast for 2020 and the risk of a shortage around 2030. With this outlook in mind, several Western mining groups are repositioning themselves financially in Africa. After announcing in its most recent annual report that it wanted to increase its underground exploration outlays by 27% in 2017, Glencore is asserting itself in the DRC. In February 2017, the group acquired 31% and 10.25% of the stakes that Fleurette Group still held in Mutanda and Katanga Mining. These deals totalled $960 million and gave the Swiss group 100% and 86.33% stakes in the respective projects.

Many conditions will have to be respected in order for the African countries to extract higher profits from these strains. Among them is the capability of providing an uninterrupted power supply, which is not without its challenges: in October 2016 Zesco, the Zambian national electric company, requested mining companies to reduce their electricity consumption because of particularly low levels of water in hydroelectric stations. This is one of the reasons Ivanhoe teamed up with the Société nationale d'électricité (Snel) in the DRC in order to renovate two hydroelectric plants necessary for the Kamoa project. Transportation infrastructures are also essential, which is why the Tanzania-Zambia Railway Authority (Tazara) and the Société nationale des chemins de fer du Congo (SNCC) entered negotiations in 2016. If successful, they will allow for an increase in freight capacity on the railway line connecting the Copper belt to the Tanzanian port Dar-es-Salaam.

Minor Metals

Africa, that vast continent measuring 30.3 million km2 and boasting 59 countries, is endowed with a considerably diversified geology at the source of its enormous mineral riches. This diversity, in broad terms, is reminiscent of Australia's (7.7 million km2) and Canada's (10 million km2); but Africa's mining assets are far less known and less explored than those contained in the other two countries. Charts 1 and 2 compare investment trends for mining exploration in Africa and other major regions of the world, plus the average annual investments, in constant dollars per km2, carried out over the period 1991-2016. It appears that while exploration investment in Africa followed the general trends in other regions (with a sharp drop since 2012), it is the region that received, on average, the fewest investments over the same period, with only $36 per km2 – a mere 33% of the $118 per km2 invested in Canada and 28% of the $129 per km2 invested in Australia. The two countries, however, are better known than Africa and have been prospected for much longer.

In 2016 Africa received 13% of global investments in mining exploration registered by SNL (the worldwide total was $6.9 billion). 31 African countries received identifiable investments, with those allocated to the ten largest recipients accounting for 78% of the total. Unsurprisingly, given their exceptional geological assets, the Democratic Republic of Congo (DRC) and South Africa received the most for mining exploration, with 16% and 11% of the total investments respectively. Burkina Faso, Mali, Tanzania, Ghana, Côte d'Ivoire, Zambia, and Senegal each received between 5% and 10% of the total. In reality, Africa has suffered more than any other region from the plunge in exploration expenses since 2012, the year in which global investments reached $21.1 billion in constant dollars. Compared to 2012 this decline amounted to 67% on a worldwide scale, with 63% in Latin America, 65% in Australia and 71% in Canada. In Africa, however, the figure was 75%.

In terms of value, and excluding resources for energy production, Africa's share in global mining production was 16.4% in 2014, or $145.7 billion

Table (opposite) illustrates the basic facts pertaining to the minor metals in this chapter

Column A

- The average annual production growth of the metals for the 10-year period between 2004-2013 (except for caesium and selenium, for which there are no available data regarding global production). Estimates for production in 2014, published by the USGS starting in February 2015, are still likely to undergo substantial revisions and have been excluded from this analysis. This analysis is based on the variation of the value between the beginning and the end of the time period, and is very sensitive to wide variations based on the economic fundamentals pertaining to these values. In order to reflect better the structural evolution, each limit has been calculated by using the average over three years, including the limit and the two previous years. These data are taken from the USGS. This rate, however, only gives a very approximate idea of demand, given the size of stocks, which are often very difficult to determine. The stocks on the Fanya Exchange in China, which specializes in minor metals, can reach several years' worth of annual production (as with bismuth and indium detailed below).

Column B

- Minor metal prices are often not continuously quoted. Only a few of these metals are listed on the London Metal Exchange (LME). The Fanya Exchange, however, provides continuous quotes for a series of minor metals. An empty slot on the table indicates that for this particular commodity only approximate prices are available, based on spot transactions whose volumes are unknown. These metals are often very rare, and traders and long-term supply contracts agreed between producers and their industrial clients dominate their markets.

Column C

- This column shows the country in which mining activity is largest for the commodity except for cobalt, for which the country with the largest metallurgical production is also indicated. Most cobalt is derived from copper and nickel, which are mined in an entirely different location.

Column D

- This column indicates (in tonnes) the total production for 2014 as estimated by the USGS, although the use of other sources is also mentioned in column H.

Column E

- This column shows whether the figure in Column E designates (a) the metal grade contained in the ore, (b) ore production, (c) strictly in the case of rare earths, the grade of total oxides contained in the ore, or (d) the tonnage of concentrates produced. In the case of chrome, it shows market concentrates at a grade of 45% to 54% Cr2 03 (chromite); in the case of zirconium, the grade generally falls within a range of 60% to 66% Zr(Hf)O2.

Column F

- This column indicates the world's biggest producer's output as a percentage of total global production.

Column G

- This indicates whether the metal is a by-product of another metal. A number of metals covered in this chapter are by-products that are only recovered during the metallurgical extraction of the base metals, whose own market evolutions thus impact the volumes of by-products.

Column H

- The USGS is unable to publish production data pertaining to the US, where there are only a handful of American producers (listed as **W** in these cases, for 'withheld'), and so other sources have been used to evaluate production. These include the 2012 World Ming Data guidebook (listed as **WMD**); in the case of magnesium, the World Mineral Production 2008-2012 guidebook from the British Geological Survey (listed as **BGS**); and in the case of refined cobalt, the Cobalt Market Review 2014-2015 from Darton Commodities.

- Caesium and selenium are not mentioned in this table since complete published data do not exist regarding their production.

Data related to minor metals

	A	C	D	D	E	E	F
Raw Material	Average annual rate of growth in production (period 2006-2015)	Number one world producer	2015 World production in tonnes	2016 World production (estimated) in tonnes	2015/2016 in %	Share of world production held by largest producer	By-product
Antimony	-0.90%	China	142 000	130 000	-8%	77%	in part, lead
Beryllium	7.06%	USA	230	220	-4%	86%	No
Bismuth	8.70%	China	10 300	10 200	-1%	73%	mostly lead and tungsten
Cadmium	1.80%	China	23 200	23 000	-1%	33%	zinc
Chrome	5.20%	South Africa	30 400 000	30 400 000	0%	46%	No
Cobalt (mine production)	7.20%	Dem. Rep Congo	126 000	123 000	-2%	50%	in part, copper and nickel
Gallium (2012 data)		China	470	375	-20%		aluminium
Germanium	7.10%	China	163	158	-3%	71%	zinc
Indium	2.50%	China	844	755	-11%	51%	zinc
Lithium	8.20%	Australia	32 370	35 970	11%	44%	No
Magnesium	5.40%	China	1 010 000	972 000	-4%	88%	No
Manganese	5.40%	South Africa	17 500 000	16 000 000	-9%	34%	No
Mercury	10.00%	China	3 270	4 500	38%	86%	Coal, rarely
Molybdenum	2.70%	China	235 000	227 000	-3%	35%	Copper, partly
Niobium	5.00%	Brazil	64 300	64 000	0%	90%	No
Rhenium	0.90%	Chile	45	46	3%	53%	Molybdenum
Selenium	3.80%	China	7 630 000	7 200 000	-6%	66%	rarely, zinc
Tantalum	*0.60%*	Rwanda	1 100	1 100	0%	37%	co-product of niobium
Rare Earths	0.70%	China	130 000	126 000	-3%	81%	No
Titanium	7.00%	China	178 700	181 400	2%	40%	No
Tungsten	4.40%	China	89 400	86 400	-3%	82%	No
Vanadium	5.00%	China	77 800	76 000	-2%	54%	in part, iron, lead hydrocarbon deposits
Zirconium	5.30%	Australia	1 520 000	1 460 000	-4%	37%	No

Metals and their uses in the energy sector

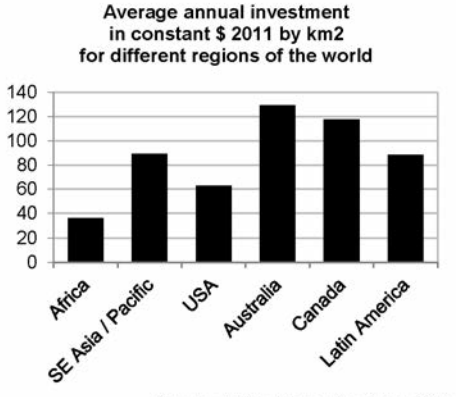
Column A: atomic number, Column B: chemical symbol, Column C: element name, Column D: principle uses in the energy domain

A	B	C	D	A	B	C	D
1	H	Hydrogen	Batteries, electric generation/ transmission	43	Tc	Technetium	
2	He	Helium	Electric generation/ transmission	44	Ru	Ruthenium	
3	Li	Lithium	Batteries, nuclear energy	45	Rh	Rhodium	Catalysis
4	Be	Beryllium	Connectors, nuclear energy	46	Pd	Palladium	Catalysis
5	B	Boron	Nuclear energy, magnets	47	Ag	Silver	Batteries, connectors
6	C	Carbon	Batteries, energy saving, catalysis, electricity generation/ transmission	48	Cd	Cadmium	Batteries, photovoltaic
7	N	Nitrogen	Photovoltaic, lighting	49	In	Indium	Electricity generation/ transmission
8	O	Oxygen		50	Sn	Tin	Electricity generation/ transmission
9	F	Fluorine		51	Sb	Antimony	Batteries
10	Ne	Neon	Catalysis, lighting	52	Te	Tellurium	Photovoltaic
11	Na	Sodium	Batteries, lighting	53	I	Iodine	Photovoltaic
12	Mg	Magnesium	Batteries, energy saving	54	Xe	Xenon	Lighting
13	Al	Aluminium	Energy saving, electricity generation/ transmission	55	Cs	Caesium	
14	Si	Silicon	Photovoltaic	56	Ba	Barium	Nuclear
15	P	Phosphorous	Electricity generation/ transmission	57	La	Lanthanum	Batteries, catalysis
16	S	Sulfur	Batteries	58	Ce	Cerium	Catalysis, magnets
17	Cl	Chlorine		59	Pr	Praseodymium	Magnets
18	Ar	Argon	Lighting	60	Nd	Neodymium	Magnets
19	K	Potassium		61	Pm	Promethium	
20	Ca	Calcium	Batteries	62	Sm	Samarium	Magnets
21	Sc	Scandium		63	Eu	Europium	Lighting
22	Ti	Titanium	Energy saving, superconductors	64	Gd	Gadolinium	Magnets
23	V	Vanadium	Batteries, energy saving, electricity generation/ transmission, photovoltaic	65	Tb	Terbium	Lighting
24	Cr	Chrome	Electricity generation/ transmission	66	Dy	Dysprosium	Magnets
25	Mn	Manganese	Batteries, electricity generation/ transmission	67	Ho	Holmium	
26	Fe	Iron	Batteries, electricity generation/ transmission	68	Er	Erbium	Lighting
27	Co	Cobalt	Batteries, electricity generation/ transmission, magnets	69	Tm	Thulium	
28	Ni	Nickel	Batteries, electricity generation/ transmission, nuclear energy, magnets	70	Yb	Ytterbium	
29	Cu	Copper	Connectors	71	Lu	Lutetium	
30	Zn	Zinc	Batteries	72	Hf	Hafnium	nuclear energy
31	Ga	Gallium	Photovoltaic, lighting	73	Ta	Tantalum	Energy saving, electricity generation/ transmission
32	Ge	Germanium		74	W	Tungsten	Lighting
33	As	Arsenic	Photovoltaic	75	Re	Rhenium	Energy saving, electricity generation/ transmission
34	Se	Selenium	Photovoltaic	76	Os	Osmium	
35	Br	Bromine	Lighting	77	Ir	Iridium	
36	Kr	Krypton	Lighting	78	Pt	Platinum	Catalysis
37	Rb	Rubidium		79	Au	Gold	Connectors
38	Sr	Strontium	Photovoltaic	80	Hg	Mercury	Lighting
39	Y	Yttrium	Lighting	81	Tl	Thallium	
40	Zr	Zirconium	Nuclear energy	82	Pb	Lead	Batteries, photovoltaic
41	Nb	Niobium	Energy saving, supraconducteurs	83	Bi	Bismuth	Photovoltaic
42	Mo	Molybdenum	Energy saving, electricity generation/ transmission, nuclear energy, lighting				

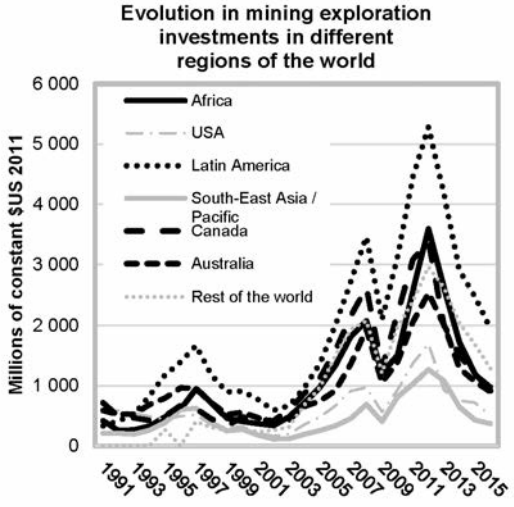
out of an estimated total of $888.5 billion, according to World Mining Data. It may be added that the continent represents 20% of land mass. Compared to 2013, however, the value of African mining output rose by 10.5%. In terms of value the biggest African producer is by far South Africa, which in 2014 produced 63% of the continent's mining output, compared to 61% in 2013.

In the field of minor metals, Africa is a major producer of caesium, chrome, cobalt, manganese, tantalum, vanadium and zirconium. This production is generally linked to particular geological formations that are very localized and plentiful. They include lithium, caesium, and tantalum pegmatites in Donkethoek, Namibia and in Bikita, Zimbabwe; chromite and vanadium associated with the Bushveld ultrabasic complex in South Africa (also the main source of the world's platinum); cobalt as a by-product of the stratiform copper deposits in the Copper Belt of the Democratic Republic of Congo (DRC) and Zambia; manganese from the Kalahari in South Africa; and zircon present in beach sands in various places around the continent (Mozambique, Senegal, Sierra Leone).

Africa's main minor metal production is shown in Table 1 below, which is followed by a brief presentation of the markets for these commodities (derived from the 2016 edition of the CyclOpe report, with a focus on Africa).



(Source: Metals Economics Group, SNL US Bureau of Labour Statistics)



(Source: Metals Economics Group, SNL US Bureau of Labour Statistics)

With only a few exceptions essentially located in South Africa and Gabon, Africa remains an exporter of metalliferous ore concentrates. South Africa has developed metallurgical capacities that produce ferrochrome, ferromanganese and vanadium. Gabon also began to exploit its manganese ore thanks to its Moanda (COMILOG) factory inaugurated in 2015, producing silicomanganese and manganese metal.

Caesium

Caesium is a rare metal in the alkaline family (Li, Na, K). It is produced from a mineral called pollucite, which is found in significant concentrations in a few pegmatites, along with minerals containing lithium (spodumene, lepidolite, petalite).

Caesium is expensive. At the beginning of March 2017, caesium from China was offered on the Internet for $50 per 100/kg (free on board/FOB) China. No relative statistics exist for this little-documented metal. The main derivative is caesium formate, an important additive in drilling mud for oil extraction. The American company Cabot has a monopoly on its production.

Production of minor metals in Africa (2015)

	Units	Main producer countries (2015 data)					Total Africa	Global Total	Share of Africa	Source
Caesium										
		Namibia	Zimbabwe							
	t	not avail.	not avail.				not avail.	not avail.	not avail.	USGS
Chrome										
	kt	14000					14 000	30400	46%	USGS
Cobalt (ore production)										
		South Africa	Madagascar	Morocco	Dem. Rep. Congo	Zambia				
	t	1250	3400	1900	69200	3000	78 750	108620	73%	Darton Commodities
Cobalt (metal production)										
		South Africa	Madagascar	Morocco	Dem. Rep. Congo	Zambia				
	t	640	2915	1391	2800	4317	12 063	91070	13%	Darton Commodities
Lithium										
		Zimbabwe								
	t	900					900	31500	3%	USGS
Manganese										
		South Africa	Gabon	Ghana						
	kt	5900	2020	416			8 336	17800	47%	USGS
Tantalum										
		Dem. Rep. Congo	Rwanda							
	t	350	410				760	1200	63%	USGS
Titanium ore										
		South Africa	Kenya	Madagascar	Mozambique	Senegal				
ILMENITE	kt	1280	267	140	460	257	2 404	6190	39%	USGS
RUTILE	kt	67	71	5	---	---	143	6940	2%	USGS
Vanadium										
		South Africa								
	t	14000					14 000	77800	18%	USGS
Zirconium										
		South Africa	Mozambique	Senegal						
CONCENTRATES	kt	380	52	45			477	1520	31%	USGS

The only natural stable isotope, 133Cs, is used in the form of caesium formate, or more rarely caesium acetate as an additive in certain deep-sea oil drilling. It allows for the creation of a denser mud that enables the exploitation of high-pressure, high-temperature (HPTP) fields. Caesium formate solutions are rented out by the only North American producer, Cabot, with 85% of the used caesium recovered and recycled. It is also indispensable for the workings of atomic clocks, which are ultraprecise and used in GPS-type systems.

Chromium
(in thousands of tonnes)

	2011	2012	2013	2014	2015	2016
World production of ore	20 400	20 600	28 800	26 400	30 400	30 400
South Africa	11 000	11 000	13 700	12 000	14 000	14 000
Kazakhstan	3 900	4 000	3 700	3 700	5 490	5 500
India	3 800	3 900	2 950	3 540	3 200	3 200
Turkey	1 700	1 700	3 300	2 600	3 500	3 500
Other countries			5 150	4 590	4 220	4 200

Aluminothermic chromium price (in dollars/ltonne)

According to the United States Geological Survey (USGS), the main producer of natural caesium is Canada with the Bernic Lake deposit (also known as Tanco Mine). It belongs to Cabot, which produces caesium formate from pollucite contained in the deposit. Production amounted to 5,630 tonnes in 2014, the equivalent of 3,890 tonnes of caesium or 17,300 tonnes of pollutice ore. The mine is currently closed due to stability issues in the eastern part of the underground site, which has the greatest mineral concentrations. Cabot has enough ore stock to continue activities. The start of production at the Taron polymetallic deposit in Argentina, which is under study by the Canadian junior company Cascadero Copper, could offset a potential shutdown of the Bernic mine if its mining feasibility is eventually proven. Caesium is also produced by China from Zimbabwean pollucite.

Chrome

With 48% of global output (14 Mt produced in 2016, according to estimates by the USGS), South Africa was the world's largest producer of chromite in 2016. 92% of globally produced chromite (30.4 Mt in 2016, unchanged from 2015) is metallurgical grade (> 46% Cr2O3, Cr/Fe > 1.5, SiO2 ≤3%) used in making stainless steel, alloy steel, and nonferrous alloys. This application occurs through the intermediate production of ferrochrome. China is the largest global producer, with South Africa a close second.

China's heavy dependence on chromite and ferrochrome imports is a point of strategic vulnerability for its economy, since it only produces around 1% of the world's chromite. For the moment Chinese stainless steel producers are weak in terms of vertical integration, which is limited to Sinosteel's 60% stake (via its wholly-owned subsidiary East Asia Metals Investment Co. Ltd.) in the South African company ASA Metal. This investment, made in 1996, is one of China's oldest in the mining sector abroad. Mired in debt, ASA Metals was put into receivership and has been looking for a buyer since August 2016.

For most of the year (January to the beginning of November), ferrochrome prices languished where they had finished in 2015 (i.e., very low), and even sank to $0.75/lb of grade chrome from March to May – a far cry from the peak of $2.95 in March 2008, before the global economy crashed. This downward trend begun in 2009 may have come to an end with the sharp rise in spot prices that have occurred since November 2016: the average price in December ($1.26/lb grade Cr)

was 62% higher than in June ($0.78), its lowest point of the year. This rebound is due to the restructuring of the South African chrome industry, hit by persistently weak chrome and ferrochrome prices since the financial crisis of 2008 and the country's recurring energy problems. Coupled with the fall in maritime freight prices for chrome exported to China, this explains why there is no competitive advantage in having a ferrochrome production factory close to the chromite mine that supplies it. Out of the seven ferrochrome smelters in the country, two were inactive at the end of 2016.

Chinese chrome demand remained steady in 2016, with the recycling percentage still relatively modest (a 22% rate of scrap use in 2015, compared to 48% in the United States). This demand accounts for the rebound in prices, with mining companies and ferrochrome producers having more price-fixing power compared to stainless steelmakers. Roskill estimates that global production of stainless steel could be significantly fuelled by growth in scrap availability and an increase in stainless steel recycling rates in China. By contrast, chrome demand is projected to rise by only 1.6% annually during this period. The rebound in ferrochrome prices, as a consequence, could only be temporary. In 2015, the usage rate of high-carbon grade ferrochrome production capacities in South Africa was a mere 79%. As for China, while its ferrochrome output grew by around 600,000 tonnes between 2012 and 2015, its production capacities increased by 4 Mt during the same period. In this context, restructuration is likely to continue in both South Africa and China.

Though only representing a small percentage of outlets, chrome-based chemicals have significant industrial applications, particularly in the fields of aeronautical and naval construction with respect to anticorrosion protection through aluminium passivation. Since the products used have a hexavalent chrome base (CrVI), they are included in Annex XIV of European REACH regulations, which set out a list of carcinogenic, mutagenic, and toxic substances harmful to reproduction.

Global chrome reserves are considerable, amounting to 500 Mt according to the USGS – around 16 years' worth at current production rates. Known resources are estimated at 12 billion tonnes. Kazakhstan holds 48% of these reserves, and South Africa 42%.

Cobalt

Cobalt is a highly strategic metal, given the prospects for the electric vehicles market. (It is a component of the Li-ion batteries required by these vehicles.) Cobalt has the particularity of essentially being a by-product of the copper production in the Democratic Republic of Congo (DRC) and Zambia (64% of global output), and also a by-product of nickel, which in Africa is extracted at the Ambatovy mine in Madagascar. All the events that affect copper production in this country and more generally the nickel industry have a direct impact on cobalt production. It may be noted that Morocco is the only cobalt producer with a cobalt deposit – the Bou Azzer mine in the Anti-Atlas. Its output, however, is minimal (a little more than 1% of global production).

Cobalt is used in the production of:

• Cathodes in three out of five Li-ion batteries currently produced on an industrial level. The use of cobalt allows for a higher energy density (between 150 and 260 Wh/kg) among the five types of battery currently available, which is a critical factor when choosing one for an electric car. It determines both the weight of the battery and its power from a single charge. Cobalt is a component of:

- lithium-cobalt oxide (LCO, LiCoO2, a cathode containing around 60% cobalt with an energy density of 150-200 Wh/kg and 600g of Co per kWh),

- lithium + nickel-manganese oxide and cobalt (NMC, LiNiMnCoO2, containing around 30% Co with an energy density of 150-220 Wh/kg and around 300g of Co per kWh),

- lithium oxide, nickel, cobalt et aluminium (NCA, LiNiCoAlO2, containing around 9% Co with an energy density of 200-260 Wh/kg and around 100g Co per kWh).

Cobalt demand linked to battery production can be estimated at around 39,300 tonnes (42% of

Cobalt
(in tonnes)

	2011	2012	2013	2014	2015	2016
Mine Production	109 000	103 000	110 000	123 000	126 000	123 000
South Africa				3 000	3 000	3 000
Australia	3 900	5 880	6 400	5 980	6 000	5 100
Brazil	3 500	3 900	3 000	2 600		
Canada	7 100	6 630	6 920	6 570	6 900	7 300
China	6 800	7 000	7 200	7 200	7 700	7 700
Cuba	4 000	4 900	4 200	3 700	4 300	4 200
United States				120	760	690
Madagascar				3 100	3 700	3 300
Morocco	2 200	1 800	2 100			
New Caledonia	3 200	2 620	3 190	4 040	3 680	3 300
Philippines			3 000	4 600	4 300	3 500
D. R. of Congo	60 000	51 000	54 000	63 000	63 000	66 000
Russia	6 300	6 300	6 300	6 300	6 200	6 200
Zambia	5 400	4 200	5 200	5 500	4 600	4 600
Other countries	6 700	8 820	8 000	7 080	11 600	8 300

Cobalt price
European free market
(in dollars/lb)

(Source: Mineral Commodity Summaries)

refined cobalt production in 2015) on the basis of tonnages produced in 2016 of the three types of cathodes (source: Avicenne Consulting) used for their production. Hypothesizing from existing technologies, and estimates for the battery markets' evolution through to 2025 forecast by this analyst, 91,920 tonnes of Co would be needed to meet lithium-ion battery needs – an average annual growth rate of 11% in cobalt demand, or the equivalent of the refined cobalt produced in 2015. If this scenario plays out, it will cause serious strains on the cobalt market, affected by the various problems described further on;

• various alloys and metallurgical applications: not only for superalloys used especially in the hot parts of jet engines and gas turbines for electricity production, but also as a veneer for protecting certain alloys vulnerable to corrosion, high temperatures, or erosion. It is also a component in alloys for the production of hip and knee prostheses, and an element of choice in magnets (samarium-cobalt magnets). It is also a component of cements in the adhesion of abrasive elements (tungsten carbide, diamonds, etc.) of tools used for cutting metal or rock. This segment represents around 33% of cobalt consumption.

• pigments and bleaches for the glass and ceramic industries (6% of the market);

• catalyst precursors (5%);

• dehydrating agents for paints and rubber binding agents in tire production (4%);

• various non-specific uses (10%).

Annual growth for uses other than cathode production for lithium batteries amounts to 1% (for pigments) to 4% per year (for metallurgical and alloy applications).

In 2015, according to USGS estimates, the DRC was the biggest producer of cobalt with 51% of global mining output, or an estimated 124,000 tonnes (up by 0.8% for the year). China, however, was the biggest producer of refined cobalt with 47% of global supply, which has been estimated at 92,877 tonnes (up by 2% compared to 2013) by Darton Commodities, a British firm specializing in the analysis of the cobalt market. Moreover, China's share in mining production is not inconsiderable, as its companies own several

deposits situated in the DRC. In 2015, Chinese cobalt imports, essentially in the form of intermediate products (concentrates, cobalt hydroxide) accounted for more than the global mining production of this metal, which proves the existence of stocks. In 2016, global mining production was estimated at 123,000 tonnes by the USGS (down by 5,321 tonnes, or 7.7% compared to 2015).

In 2016, the average annual price of cobalt decreased by 7.5% from 2015, coming to slightly more than $12.04/lb, compared to $13.01 in 2014. However, signs of a revival appeared toward the end of the year, boosted by anticipations of increased demand in Li-ion batteries for electromobility and worries related to the production of cobalt given the political situation in the DRC. This tendency is expected to continue in 2017, and while we might think, in the middle of the year, that the market would still be far from the $50.45 seen in March 2006, the London Metal Exchange (LME) seemed to suggest otherwise. Although it may not necessarily represent the market fundamentals, notably because of its low liquidity, the cobalt spot contract enjoyed a soaring revival at the beginning of 2017. The price rose from $32.7/kg in December 2016 to an astonishing $55.5/kg at the beginning of April 2017. It must be said that the high demand from the Li-ion battery sector has attracted the attention of investment firms who have been developing their activities with respect to this metal, including the Swiss firm Pala Investments. Cobalt and lithium could be the two rare star metals of 2017.

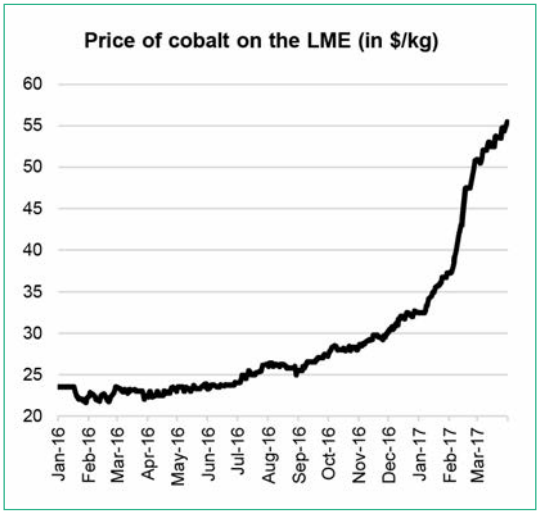
Concerning supply from Africa, the problems confronting the DRC brought about a 7.7% fall in cobalt production in 2016, or 5,321 fewer tonnes as demand skyrocketed. The prospects for 2017 are hardly better, with the mine of Katanga Mining (Glencore) staying idle until 2018. The evolution of the political situation has given rise to fears of renewed violence in the East of the country, which could affect cobalt and copper production. For its part, Freeport McMoran sold its Tenke-Fungureme mine in 2016 to China Molybdenum. Chinese companies now control nearly 50% of cobalt production in the DRC. The cobalt deficit could, on the other hand, become worse in the case of mine and/or factory closures in New Caledonia if nickel prices – of which cobalt is a byproduct – lead to suspensions or shutdowns.

Manganese

According to Roskill, 91% of the manganese produced on a worldwide scale is consumed by the steel industry, where it plays an essential role in desulphurization and deoxidation and also makes steel more resistant to oxidation and abrasion. The manganese market, closely affected by ore inventories, is strongly linked to trends in crude steel production – which are, in turn, correlated to the economic evolution of China, the world's largest producer.

Other uses for manganese are in batteries (3% of worldwide consumption); as an additive (0.8% to 1.5% of manganese) to aluminium to boost its corrosion resistance.

At the beginning of 2016, the manganese market was still in crisis and suffering from the fall in prices that had started in March 2011 (the spot price of manganese shavings, one of the contracts documenting the price of manganese, had plunged from $3,467/t in 2011 to $1,684/t – a 51% drop). In response, several mining operators closed or temporarily suspended production. Operations in Woodie and Bootu Creek



(Australia), Otjozundu (Namibia) and Chiatura Manganese (Georgia) were mothballed, and the exploitation of Moanda (Gabon) was halted for a month to stopgap losses. Operations at Tambao (Burkina Faso), with a production capacity of 3 Mt per year, were also stopped in the midst of litigation between Pan African Minerals and the Burkinabé government.

This supply buildup came at a moment when Chinese steelmaking was recovering a little growth. China, which has no high-grade manganese deposits, is forced to import the ores, notably from South Africa. Its companies have buffer stocks in Chinese ports. The revival in Chinese steel production in 2016 began by dipping into manganese stocks, whose level was estimated at 2 Mt at the end of 2015. By the end of March the ore stocks had shrunk to 0.8 Mt to 0.9 Mt, while at the same time, supply was reduced because of the halts mentioned above. This situation benefitted mining groups and ferromanganese producers, who raised their prices. Prices skyrocketed for manganese and its derivatives (ferromanganese, silicomanganese) between June and December, the spot price referencing cost, insurance and freight (CIF) China for 44% grade manganese increased threefold during this period. In December 2016, ferromanganese and silicomanganese prices rose above their 2011 levels. But it appears very uncertain that manganese prices can remain at this level: now that China has replenished its ore stocks at a premium, prices could decrease in 2017.

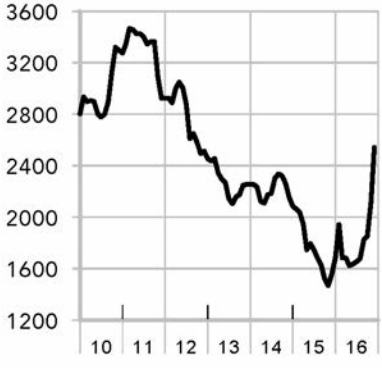
This highly volatile situation brought about a sharp drop (-8.5%) in annual manganese ore production. According to USGS estimates, output came to 16 Mt in grade manganese in 2016, down from 17.5 Mt in 2015. The decline particularly affected South Africa.

In 2016 manganese reserves pushed by the USGS were amounted to 690 Mt of grade manganese, or 43 years of production at current rates. Manganese used for steel production is not recyclable.

Manganese
(in thousands of tonnes)

	2011	2012	2013	2014	2015	2016
World metal production	**16 000**	**15 800**	**17 000**	**17 200**	**17 500**	**16 000**
South Africa	3 400	3 600	4 300	5 200	5 900	4 700
Australia	3 200	3 080	2 980	3 050	2 450	2 500
Burma	234	115	157	98		
Brazil	1 210	1 330	1 120	1 040	1 090	1 100
China	2 800	2 900	3 000	3 000	3 000	3 000
United States						
Gabon	1 860	1 650	1 970	1 860	2 020	2 000
Ghana				418	416	480
India	895	800	920	945	900	950
Kazakhstan	390	380	390	385	222	160
Malaysia	171	429	430	378	201	200
Mexico	171	188	212	236	220	220
Ukraine	330	416	300	422	410	320
Other countries	1 740	920	597	740	678	680

Manganese price
European free market
(in dollars/tonne)



(Source: Mineral Commodity Summaries)

Tantalum

The main outlet for tantalum is the production of capacitators used in the numerous electronic applications whose miniaturization they have made possible (around 49% of production in 2016), with each capacitator including a tantalum wire and tantalum powder in the anode.

According to Technavio, a consultancy specializing in the sector, this outlet could grow, on average, by 1.25% per year through 2021. Tantalum is also used in the production of:

• superalloys: 85% of their production is used for turbine blades in the hot parts of jet engines or gas turbines. This segment represented 19% of tantalum consumption in 2016, with average growth through 2021 estimated at 4.9% per year;

• extremely hard carbides, for the production of cutting tools and the steel mould coatings used in aluminium pressure die casting. This segment represented 10% of demand in 2016 with average growth through 2021 estimated at 4.5% per year.

Tantalum is also used in eyeglasses (in its oxide form), which it can make lighter, or in hip and knee prostheses.

Tantalum cannot be substituted in micro-capacitors without a significant loss of performance.

Superalloys can be recycled by specialist companies. Tantalum recycling also exists from new scrap produced during the manufacturing of electronic products and materials using tantalum.

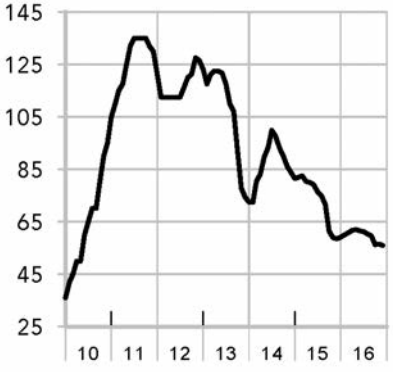
Tantalum prices continued their downward trend from 2015, with an average annual value in 2016 of $59.85/lb, marking a loss of 19.4% compared to a year earlier ($73.91/lb).

The USGS database estimates that production in 2016 will be stable (1,100 tonnes) compared to 2015. The main production zone is still the African Great Lakes (DRC: 41% of global output; Rwanda: 27%) with the mining of tantalum ore or "coltan" (colombite-tantalite), the source of around 80% of the primary tantalum produced, with the rest coming as a byproduct from tin ores. It is considered a "conflict mineral" with a role in human and humanitarian disasters, and has led to the implementation of strong initiatives such as verifying the supply chain as per the Dodd-Frank Act in the US (recently the subject of criticism by the new American administration). In 2015, Canada, China and the European Union also undertook the development of similar legislative provisions. According to a USGS report published in 2015, however, it cannot be excluded that some of Rwanda's output stamped "conflict free" actu-

Tantalum
(in tonnes)

	2011	2012	2013	2014	2015	2016
World Production	**765**	**670**	**786**	**1 200**	**1 100**	**1 100**
Australia				50		
Brazil	180	140	98	150	115	115
Burundi	13	33	20			
Canada		50	5			
China				60	60	60
Ethiopia	76	95	8			
Mozambique	260	39	115	85		
Nigeria	50	63	60	60		
Congo (Kinshasa)	95	100	170	200	350	450
Rwanda	90	150	250	*600*	410	300
Other countries				*140*	117	140

Tantalum price
European free market
(in dollars/lb TA2 05)



(Source: Mineral Commodity Summaries)

ally originates in smuggled coltan mined in the war-ravaged zones in the northeast of the DRC.

In response to this situation, industrial actors who use raw materials covered by the Dodd-Frank Act (gold, tin, tantalum and tungsten), and who include the biggest producers of semiconductors and, electronic telecommunications equipment, participate in the Conflict-free Sourcing Initiative (CFSI). This brings together around 350 companies and associations. The initiative has developed a mining and smelter certification process: today, 45 smelters benefit from this certification, which seeks to guarantee that the tantalum produced does not issue from conflict zones. 95% of global tantalum output are thought to come from certified smelters.

The breakdown of worldwide tantalum production between conventional and artisanal mines (central Africa) is tilted toward the latter because of substantially lower production cost than in the pegmatites mining operations in Australia, the traditional industrial source of tantalum. However, current lithium demand could result in a significant rise in tantalum production by industrial mines, since tantalum is a byproduct associated with lithium in several lithium mining projects under development, notably in Australia, Brazil and Canada.

Vanadium

The main use of vanadium (V) is in the production of micro-alloy high limit elastic (HLE) steels whose V grade is less than 0.15%. The addition of around 0.1% V to the steel, doubles its resistance. More general steel applications account for around 91% of global vanadium consumption, including around 46% for HME steels. The development of the latter has especially benefitted from the implementation of stricter construction standards in China.

Other applications include the making of titanium-aluminium alloys (4.5%), chemicals (3.5%) with the concoction of sulphuric acid, maleic anhydride and synthetic rubber, and finally batteries (1%). Recycling accounts for around 10% of consumption through the recovery of vanadium contained in high-speed steels, superalloys, and used catalysts.

With the development of carbon-free energies, the energy storage sector could drive future vanadium demand. Redox flow batteries, which use a vanadium-based electrolyte and work by oxidation reduction, display promising features for the storing and restoration of energy. They use around 7 kg of vanadium pentoxide per kWh and maximize the four different degrees of vanadium oxidation (+V, +IV, +III, +II). Vanadium is also used in certain lithium batteries.

Vanadium is principally a co-product of steel production and derived from the exploitation of phosphate rocks, titaniferous magnetite, or uraniferous sandstone, where it generally represents less than 2% of the ore. It has a strong affinity with carbon, which explains its concentration in certain oil deposits or in black shales rich in organic matter.

In 2016 the first estimate of global vanadium production by the USGS was 76,000 tonnes, a slight drop compared to 2015 (77,800 tonnes). It is derived from three sources: primary production, coproduction, and secondary production. Coproduction from steelmaking slags make up 65% of the world's output. Primary production, with a more than 1% to 1.5% grade in vanadium oxide, represents 25% of production, while the remaining 10% come from treating fly ash, oil residues, cast-iron scoria and used catalysts rich in vanadium. The main producer countries are, in descending order, China, South Africa and Russia, which account for 96% of global production. China produces 53%, but the biggest company is Evraz (Russia), which produces vanadium and ferrovanadium oxide in Russia, South Africa, the Czech Republic, and the US. In 2016, after the drop in prices in 2014 and 2015, Evraz closed its Mapochs iron ore and vanadium mine in South Africa as well as the factory associated with vanadium production; this removed 10% of the world's production from the market. In April 2017 it was acquired by Bushveld Minerals, giving hope of a rapid return to production. At the

Vanadium
(in tonnes)

	2011	2012	2013	2014	2015	2016
World mine production	61 800	74 000	74 000	82 700	77 800	76 000
South Africa	22 000	19 500	19 500	21 000	14 000	12 000
China	23 000	39 000	39 000	45 000	42 000	42 000
United States			272			
Russia	15 200	15 000	15 000	15 100	16 000	16 000
Other countries	1 600	600	600	580	5 800	6 000

Vanadium pentoxide price CIF Europe (in dollars/lb V2 05)

(Source: Mineral Commodity Summaries)

moment there is a progressive decoupling between vanadium and iron ore production, with a growing number of operations focusing exclusively on vanadium, notably in Brazil, South Africa, and Australia. Considering the identified resources, Australia, Peru, the US and Madagascar each have the potential to become major vanadium producers in the future.

Direct links between vanadium and steel production result in a close correlation between their prices. The price curve of vanadium underwent a rebound in 2016, analogous to the one seen for steel. In December 2016, the average spot price of vanadium pentoxide (V2O5) on the European market ($4.94/lb) was almost double the price compared to the same period of the previous year ($2.50/lb), a time in which the spot prix reached its new low. As an annual average, the spot price in 2016 ($3.71/lb) was virtually unchanged compared to that of 2015 ($3.76/lb).

Zirconium and hafnium

These two elements are closely linked as they both derive from the same ore – zirconium silicate (or zircon: ZrSiO4) – which is the principal ore from an economic standpoint. Zirconium is also found in oxidized form (zircon; ZrO2) in its natural state, with only one case of industrial exploitation in the world –Kovdorskiy, situated on the Kola Peninsula in Russia. Because of its high density (between 3.9 and 4.8g/cm3), zircon is concentrated in placer sand-type deposits, often associated with other heavy minerals like rutile and ilmenite (titanium ores), magnetite (iron ore) or monazite (rare earths). These placers correspondent to old fluviatile deposits that may have been remobilized by the wind to form occasionally thick dunes, like in the province of KwaZulu-Natal (KZN) in South Africa. The sands rich in Zr are purified by spiral concentrators in order to separate the light elements, while magnetite separators enabled the extraction of ilmenite and rutile.

Hafnium is associated with zirconium in ores in a 1:50 ratio. In general, hafnium is only separated from zirconium in the nuclear industry (see below) with the help of complex metallurgical processes: it is obtained by the reduction of the hafnium tetrachloride resulting from the purification of the zirconium tetrachloride, either by electrolysis or by vacuum heating with the help of magnesium liquid (the Kroll process).

The main uses of zircon are:

• Ceramics (around 47% of consumption in 2015). In its finely crushed form it is used as an opacifying agent in enamels, and also in the manufacturing of tiles and sanitary products;

• The chemical industry also uses zircon for various applications (deodorants, leather tanning, pigment production for paints in conjunction with titanium oxide). The French company ZirPro (Saint-Gobain group) is a major player in the sector, which at the moment is undergoing the strongest growth with an average annual rate of more than 10% from 1995 to 2013. This sector now represents 21% de la global consumption;

• Foundry sands (11%);

• 17% is used in refractory materials for metallurgy. In these two kinds of uses, zircon offers good thermal stability and high corrosion resistance. It is not dampened by metal fusion;

• The nuclear industry (around 3% to 4%), where the zircon is processed into zirconium alloy (Zircalloy). Since it is transparent to neutrons, holds up in high temperatures, and is corrosion resistance, it is used for the cladding in fuel rods containing enriched uranium in nuclear reactors. To achieve this, the zirconium must be purified by removing the hafnium that is naturally present in the ore. In France, Areva's zirconium division integrates all stages of zirconium metallurgy, from the raw ore through the completion of components in zirconium alloys. Zirconium is the standard material for fuel assemblies in pressurized and boiling water nuclear reactors.

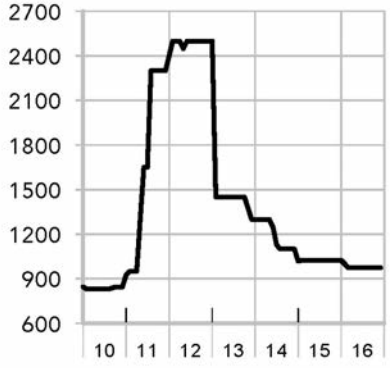
The main use of hafnium is in superalloys (around 50%) for aeronautics (rotating parts and blades) and gas turbines. Next come applications for plasma flashlights (20%), optic coatings (12%), etc. Hafnium use for control bars (neutron screens) in nuclear reactors only accounts for 2% to 3%.

According to the USGS, worldwide zirconium output was 1.46 Mt in 2016, a slight drop (-4%) compared to 2015 (1.52 Mt). More than a third of zircon concentrates come from Australia (550,000 tonnes in 2016) followed by South Africa (400,000 tonnes) and China (140,000 tonnes). Zircon consumption reached its lowest level in 2014 at around 1 Mt, marking a decline of almost 30% compared to the peak of 2011. This fall was notably linked to the substitution of zirconium in certain key markets like ceramics and smelting, mainly for cost reasons. Recent offtake contracts between producers and major ceramics industry players (like the one signed in 2016 between Alkane Resources and Minchem Ltd.) suggest that the zirconium market in ceramic applications could once again take off.

Zirconium
(in thousands of tonnes of concentrate)

	2011	2012	2013	2014	2015	2016
World metal production	**1 780**	**1 550**	**1 510**	**1 420**	**1 520**	**1 460**
South Africa	383	380	170	387	380	400
Australia	762	605	850	551	567	550
Brazil	18					
China	150	140	150	150	140	140
United States	105	85	N.C.	N.C.	80	N.C.
India	39	40	41	40	40	40
Indonesia	130	120	110	110	110	110
Mozambique	44	47	47	51	52	55
Ukraine	35					
Other countries	110	130	140	130	150	160

Zirconium price
FOB Australia
(in Australian dollars/tonne)



(Source: Mineral Commodity Summaries)

Hafnium production amounts to 70 to 80 tonnes per year (though the figure is difficult to verify), with two main producers: France and the US. Hafnium production depends entirely on the nuclear industry. In France, Areva produces this metal.

In 2016 the annual average spot price of standard zircon concentrate (graded at least 65.5% ZrO2), FOB bulk Australia, was A$981.25/t – a 4.2% drop compared to the 2015 average of A$1,024.48/t. The average spot price curve showed a distinct peak in 2011 and continued in 2012 to reach A$2,500/t. This was followed by a severe drop in 2013 and then a steadying beginning in 2015. This peak was at least in part due to weaker supply compared to demand, with the downstream users having recovered more quickly than expected from the effects of the financial crisis of 2007-2010. A number of zircon consumers, especially the traditional ceramics markets, proved unable to absorb the additional costs: demand fell, bringing about a nosedive in 2013 and prices that ultimately reached A$1,100/t at the end of 2014. Since the beginning of 2015, prices have revolved in relatively stable fashion around A$1 000/t.

Meanwhile the price of hafnium experienced a sharp rise, going from around $561/kg in 2014 to $607/kg in 2015 and then down to $600/kg in 2017. Hafnium demand is essentially driven by the aeronautical industry, which needs it for the superalloys used in jet engines. Boeing alone is forecasting more than 36,000 new passenger and freight aircrafts between now and 2033. This suggests an outlook with higher hafnium prices. Strains on the market could arise in case of higher demand from the aeronautical industry and the absence of development in the nuclear industry, with hafnium project remaining flat.

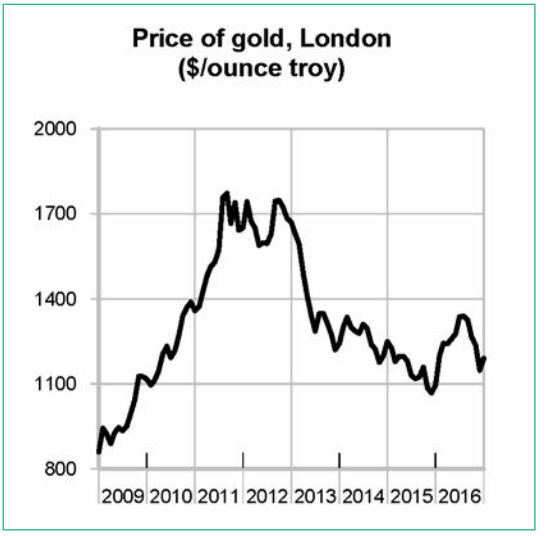
All zircon and hafnium uses are dispersive: there is no recycling. Zircon use in the most radioactive parts of nuclear reactors prohibits any recovery for possible reuse.

Precious metals and diamonds

The African continent is rich in mineral resources of all kinds, and occupies a central place on the markets for precious metals and diamonds. South Africa is the world's largest producer of platinoids (which include platinum, palladium and rhodium), while the Democratic Republic of Congo (DRC) and Botswana are absolutely pivotal players on the industrial diamonds and jewellery markets. But this scenario is not the case for gold, and even less so for silver, with the latter quite scarce in Africa except for Morocco. Their rich endowment in platinoids and diamonds naturally makes African countries vulnerable to those resources' price variations, and it cannot be denied that from this perspective 2016 was a lacklustre year: while rhodium and palladium prices rose by 16% and 20% respectively, platinum remained hopelessly flat, finishing 2016 at a few dollars above its price at the beginning of the year. Gold, meanwhile, increased by nearly 8% over the year.

Africa dominant in platinum and diamonds

While the notion of precious metals seems to have broadened in recent years to include 'rare' metals, it remains nonetheless true that the metals that serve as reserve assets—namely gold, silver and platinum—are the main representatives. Africa reigns supreme for platinoids but is virtually absent on the silver front, and its position with respect to these very particular resources is contrasting to say the least. Out of the 3,158 tonnes of gold officially produced on the six continents in 2015, at least 15% came from Africa – especially South Africa, Ghana and Tanzania. Though significant compared to production elsewhere (China, Australia, Russia and the United States), this percentage actually marked a decrease: Africa accounted for nearly 30% of global supply 20 years earlier, with South Africa clearly leading the pack. A new participant could nonetheless eventually join the African gold-producing elite – the DRC, where two major players have invested heavily in lodes in the east. Platinum, for its part, is distinctly African, and in all likelihood will remain so for the duration of its existence. In 2016, South Africa produced 4.2 million ounces of platinum – more than 70% of the raw supply on the global market, and 53% of the total supply (stocks and recycling included). South Africa's market share



was 95% in 1995, with consumption rising by 66% over the period.

Silver, which has the broadest range of uses among the non-ferrous metals, has only a marginal place among African resources, and exists mostly in Morocco (1.5% of global production). Output from this country proved to be stable over the years, on a global market that grew by 95% over the period of 1995-2015. What's more, while gold and platinum are found in clearly identified deposits, silver is essentially a coproduct of other non-ferrous metals (gold, copper, zinc, etc.). The resulting mining potential is relatively unknown, especially on an Africa-wide scale where new deposits of principal metals were still being discovered at the end of the last decade.

The issue of African diamonds is of an even greater dimension than for precious metals. Russia may well be the world's biggest producer of diamonds for jewellery, with 21.5 million carats in 2016 according to the United States Geological Survey (USGS); but Botswana, South Africa, Namibia, the DRC, Zimbabwe and Angola also have a substantial presence on the market. These six countries alone accounted for more than 44% of the global production value of diamonds for jewellery in 2016, with 31.1 million carats originating from their soil. By adding industrial diamonds to the equation, supply from these countries amounted to 54 million carats in 2016, or 42% of the worldwide total. Unlike many producer regions of diamonds and precious metals,

Gold
(in tonnes)

	2011	2012	2013	2014	2015	2016e
World mine production	**2 583**	**2 586**	**2 690**	**2 990**	**3 100**	**3 100**
China	341	361	403	450	490	490
Australia	260	258	250	274	450	455
Russia	201	185	218	247	252	250
United States	231	234	235	210	214	209
Peru	164	164	161	140	145	150
Canada	91	100	104	152	153	170
South Africa	191	187	160	152	145	140
Uzbekistan	73	73	93	100	102	100
Ghana	93	88	87	91	88	90
Indonesia	127	74	59	69	97	100

(Source: Mineral Commodity Summaries)

Gold – World balance
(in tonnes)

	2011	2012	2013	2014	2015	2016
· **Supply**						
Mine Production	2 846	2 917	3 076	3 155	3 233	3 236
Recycling	1 667	1 684	1 263	1 191	1 117	1 309
Total Supply	**4 536**	**4 556**	**4 311**	**4 451**	**4 363**	**4 571**
· **Demand**						
Total Fabrication	**2 513**	**2 503**	**3 057**	**2 848**	**2 761**	**2 304**
Jewellery	2 085	2 121	2 701	2 499	2 429	1 982
Industrial Application	429	381	356	349	332	322
Coins and ingots	1 496	1 300	1 707	1 040	1 047	1 029
Other investments	239	307	-916	-184	-128	532
Total Demand	**4 728**	**4 679**	**4 473**	**4 288**	**4 256**	**4 249**

(Source: World Gold Council, February 2017)

Africa as a whole exploits the potential of its resources with private contractors, with Anglo American foremost among them. This multinational is in fact the main producer of platinum and diamonds (in terms of value) through its subsidiary De Beers. When it comes to processing and commercialization, however, the continent is overshadowed on the world stage. The metals generally depart for and are processed in consumer countries, while diamonds embark for Anvers or Surat to be cut and polished. This downstream segment of the value chain is largely beyond the sphere of African revenues; but the situation has evolved in recent years, with De Beers setting up polishing and sales branches in Gaborone (Botswana), which has temporarily limited diamond sales in London. In this panorama of global diamond supply, it is important to point out that while African diamond production has largely prospered over the past two centuries, the current era has seen the accelerated development of competition from the Northern Hemisphere. De Beers accordingly diversified its investments in 2015, notably in Canada via the highly promising Gahcho Kué mine in the Northwest Territories. But new mines did open in Africa in 2016, especially in Lesotho: Liqhobong, Mothae, Kolo and Lemphane.

Prices for diamonds and precious metals evolving in dispersed order

Gold experienced what could be described as a peculiar 2016. After a constant decline dating back to August 2012, when an ounce was worth around $1,660 on the London fixing, the price hit bottom in December of 2015. The first months of 2016 marked a steep upward trend, going from $1,072 on 4 January to $1,344 at the beginning of July, and representing a more than 25% rise in only half a year. While gold was not the only metal to enjoy such good fortune, its performance was nonetheless remarkable. But this favourable assessment was significantly altered in the succeeding months, and in August prices headed downward again. The descent gained momentum between November 2016 and mid-December, with prices falling from $1,293 on 3 November to $1,134 on 16 December. Gold finished the year at $1,159, marking a rise of slightly more than 8% in 2016.

Many factors conspired to explain this two-act performance. Over the early months, considerable demand for exchange traded funds (ETFs) can explain, a posteriori, the upward trajectory of gold prices. Political and geopolitical uncertainties undoubtedly played a role, prompting the need to

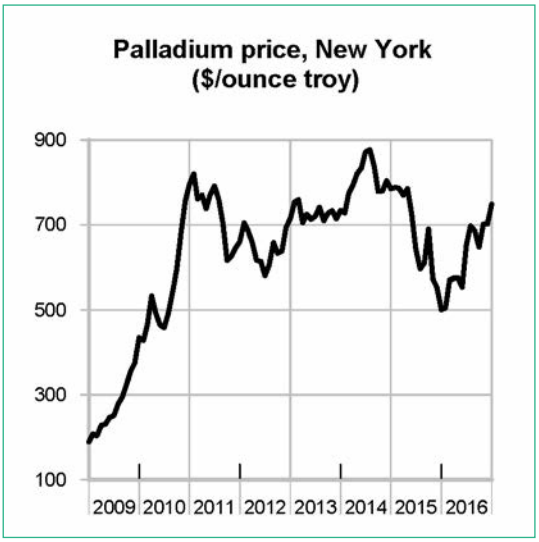
invest in a 'safe' asset that also happened to be 'cheap'. The result of the Brexit referendum in the United Kingdom ended up validating this strategy. On 24 June, 2016—the day after the vote—gold prices soared by 8% as the markets opened, which was a first since July 2014. On 6 July, gold reached its annual peak of $1,370 on the London fixing. During the weeks that followed, the markets regained their senses, as it were, and prices trended sharply downward as the fundamentals once again took priority. After years of a particularly accommodative monetary policy, the prospect of a rates hike by the Federal Reserve (Fed) in the US created an environment for a stronger dollar. This automatically meant that non-American buyers had to spend more to acquire gold, thus weighing on demand and prices. The rise in prices observed over the first six months also moderated the appetites of China

Platinum

(in thousands of ounces)

	2011	2012	2013	2014	2015	2016e
• **Supply**						
South Africa	4 860	4 110	4 205	3 547	4 571	4 347
Russia	835	801	725	709	670	652
North America	350	306	318	339	318	369
Zimbabwe	340	337	410	401	401	486
Other Countries	100	126	143	156	149	153
Recycling	*2 060*	*2 037*	*2 019*	*2 071*	*1 730*	*1 902*
Total Supply	**8 545**	**7 717**	**7 820**	**7 223**	**7 839**	**7 909**
• **Demand**						
China	1 980	2 292	2 633	2 520	2 338	2 146
Europe	2 225	1 956	1 796	1 955	2 095	2 332
Japan	1 315	1 140	958	874	1 588	1 354
North America	930	1 156	975	955	997	1 103
Rest of the World	1 645	1 358	2 303	1 764	1 278	1 396
Total Demand	**8 095**	**8 070**	**8 665**	**8 068**	**8 296**	**8 331**
Change in Stock	**430**	**30**	**-706**	**-856**	**-457**	**-422**
- Demand by branches:						
Automobiles			3 160	3 290	3 267	3 318
Jewellery			2 945	3 000	2 829	2 572
Industry			1 776	1 250	1 749	1 954
Investment			935	150	451	487

(Source: Johnson Matthey)



and India, traditionally the major gold consumers. In India, the scheme to monetize gold implemented in 2016, and the withdrawal of 500- and 1,000-rupee notes from circulation, contributed to a nearly 30% drop in gold demand. The surprise election of Donald Trump as President of the United States might have significantly boosted prices for the ounce and the ingot due to the high political uncertainty that the event cast around the world. This proved to be the case immediately after the results came in – but only for an hour or so. Indeed contrary to what most analysts had anticipated, the price of gold did not, on the whole, reverse its downward march in the days following the election. Only in the last days of December did prices rebound slightly.

Unlike gold and diamonds, platinum has the role of satisfying three types of distinctly different demand: investment (6% of demand in 2016), jewellery (31%), and industrial – especially from the automotive sector (41%), but also from the oil industry as a refinement catalyst (3%), chemicals (7%), glass (2%), electronics (2%), and so on. More specifically, platinum helps to limit the environmental impact of hydrocarbon combustion, and to optimize the oxygen/hydrogen mix in Toyota's new line of cars. According to data from the World Platinum Investment Council, total platinum demand dropped very slightly in 2016 and came to 8.235 million ounces, compared to 8.24 million in 2015. Automotive demand amounted to 3.405 million ounces, thanks especially to the health of the sector in Europe. The same held true for other industrial sectors, particularly oil. Jewellery demand, by contrast, was down significantly to

Palladium

(in thousands of ounces)

	2013	2014	2015	2016e
• Supply	**8 904**	**8 831**	**8 978**	**9 034**
South Africa	2 464	2 127	2 684	2 571
Russia	2 610	2 589	2 434	2 487
Others	1 300	1 363	1 300	1 427
Recycled Metal	2 530	2 752	2 560	2 549
• Demand	**9 500**	**10 750**	**9 278**	**9 685**
Autocatalyst	7 026	7 500	7 655	7 840
Jewellery	355	274	225	215
Other industry	2 127	2 033	2 057	1 987
Investment	-8	943	-659	-357
Stock Movements	**-596**	**-1 919**	**-356**	**-651**

(Source: Johnson Matthey)

2.565 million ounces in 2016, compared to 2.88 million in 2015 – a drop of nearly 11%. This was once again due to sagging demand from India and China, and apparently to a preference for gold, which had become cheaper and more accessible. As a reserve asset, platinum benefitted not only from higher demand for coins and ingots, but also from greater favour on the part of ETFs. Lastly, supply rose slightly in 2016 to 7.965 million ounces from 7.905 million in 2015, marking a 0.7% increase. Supply from recycling grew between 2015 and 2016, while destocking helped satisfy demand, but mining supply fell to 6.03 million ounces, compared to 6.150 in 2015 for a drop of a little less than 2%. A greater decrease in mining supply than this one, almost imperceptible from total demand: nothing more was needed, during a slump like the one at the beginning of 2016, for platinum prices to revive somewhat. On the African front, refined metal supply from South Africa amounted to 4.240 million ounces in 2016, down by 5% from 2015. On the other hand, output from Zimbabwe rose substantially (more than 18%) and came to 480,000 ounces in 2016, compared to 405,000 ounces the previous year.

On the subject of diamonds for jewellery, figures released by De Beers in 2017 regarding production in 2016 revealed an average carat worth $177, down from $206 a year earlier. Rough diamonds from Alrosa, meanwhile, were worth $151.21 on average in 2016, compared to $169.5 in 2015. The weekly price index for rough diamonds offered by Paul Zinmisky, however, indicates a clear rebound during the second half of 2016 (+17.8%). These contrasting price movements may be explained by slightly revived demand in the US, notably at the end of the year. In China, the second-largest diamond market in the world, anti-corruption policies hindered demand for luxury products. The Year of the Rooster, however (i.e. 2017), appears to show early signs of stabilization. In India, the world's third-largest market for precious stones, Prime Minister Modi's decision to 'demonetize' the economy to fight against tax evasion led to lower diamond sales; but as in China, 2017 seems to be giving favourable signs of a revival of local demand.

The macroeconomic stakes of price volatility

Since prices began falling in 2014, issuing reminders about the macroeconomic costs of volatile commodity prices for exporting countries may seem almost redundant. This reality is true for African oil-producing countries like Nigeria, but also for those involved in solid mineral resources like diamonds. This separate market is impacted by the dollar, but probably even more by consumer confidence in the future and the "impulse-buy" effect among enthusiasts on both sides of the Pacific. This can create a lot of instability in prices. As such, it seems important to point out that the budgets in southern African countries (where most of the current reserves and deposits are located) have often been based around an expected average resource price higher than was actually the case, or at least whose variability had been largely underestimated. In the diamond sector, Botswana may share the podium of the world's top producers, in carats and value, with the Northern Hemisphere (Russia and Canada), and be far ahead of its African neighbours – South Africa, Namibia, the DRC and Angola; but when prices fall, the consequences are proportional. Botswana is probably the continent's second-most dependent country on its precious metal and diamond resources, and its macroeconomic evolution has been very closely tied to precious minerals and the dollar. Over a decade, 11.4% of per capita GDP vanished with this decline in prices, and nearly 15% between 2011 (the peak year) and 2015.

In reality there are almost countless examples of macroeconomic dependence among African countries on solid mineral resource prices. While the Congolese 'state continent' is not too impacted by what happens with platinum and diamonds, now that industry has started buying cheaper synthetics, the eastern region depends heavily on gold mining. A large number of mines are still artisanal, but it should not be overlooked that major actors like Randgold and Banro generated a total of around 800,000 ounces in 2016, equating to more than a billion dollars in revenues. However,

gold is one of the products whose price trends producer countries control the least. Gold is not, after all, essential for industry, and its value derives from jewellery or its status as a reserve asset. Its price thus remains essentially linked to the level of demand rather than supply, and in a much more subjective way on the level of anxiety on the global markets. Moreover, African countries make very little in exploiting this resource. In such a context, attracting international investment – both Western and Chinese – is vital.

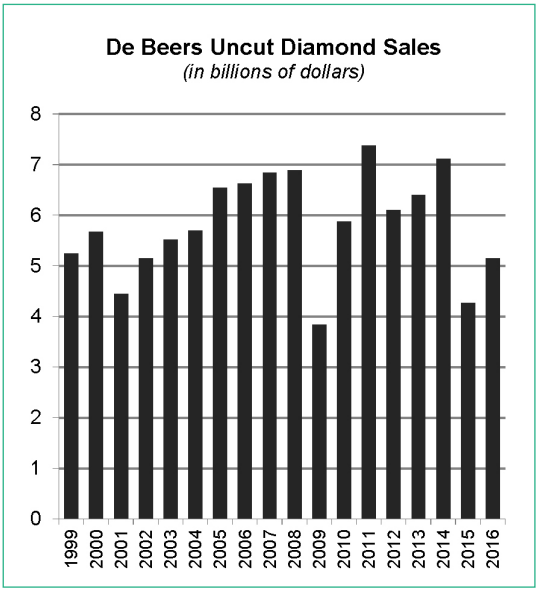
Among the numerous determinative criteria in this regard, production cost is still the cornerstone for investors or contractors in the mining sector, especially as it pertains to precious metals and other rare products. The fee that must be paid to the host country is one of the pivotal variables in a project's feasibility study. A patent example can be found in the 2014 reform of the South African mining code. Only precious metals and diamonds are subjected to export quotas and mandatory duties, unlike other metals or hydrocarbons extracted from South African soil. While South Africa makes no distinction between local and foreign investors, neighbouring Botswana recognizes a degree of nationality in the residents (or those considered as such) when it comes to mining the earth. A legal entity seeking to invest in the extractive sector must thus become 'nationalized' in the manner of Debswana – a subsidiary of De Beers and the government – to carry out mining activities. However, no export quotas are applied, whether on precious stones or other mined resources. On a legal level the two countries also diverge on a number of points. The legal framework in Botswana is extremely clear for an investor. From the start-up of operations to the end of a mine's lifespan (or the end of extraction), all of the legal and regulatory criteria are painstakingly detailed, thus providing a stronger degree of

Rhodium

(in thousands of ounces)

	2013	2014	2015e	2015e
• Supply	**972**	**930**	**1 027**	**1 026**
South Africa	551	467	611	593
Russia	80	91	82	80
Others	63	65	61	70
Recycled Metal	278	307	273	283
• Demand	**999**	**970**	**926**	**964**
Autocatalyst	786	791	763	778
Other	213	179	163	186
Stock Movements	**-27**	**-58**	**93**	**62**

(Source: Johnson Matthey)



stability and trust. Nationalizations, expropriations, and other misadventures that might befall an operator no longer occur in the country. Clearly this 'serenity' allows for the development of long-term projects on a social level and thus bolsters structural employment. Lastly, it is important to recall that while the mining code is one thing, the way in which it is applied is another. Without doubt, an investment in the world of precious metals (besides platinum) and diamonds rests on a consideration of price volatility. The elasticity of gold prices remains very high with respect to the ups and downs of the economy. For diamonds, the phenomenon is less evident, but both require an investor to have a clear and stable vision of the rules of the game over the long run.

The future of precious metals and diamonds clearly poses no mystery, especially in Africa – quite the contrary. Africa enjoys a dominant position for platinoids and a large part of the diamond market, giving rise to a certain long-term serenity. The issue of gold is probably different. While the value of this metal is subjective, it remains nonetheless supported by a growing rarity, at its current price, whose pulse is regulated by the vitality of the Chinese, Indian and American markets. For this segment African countries are also faced with competition from Latin America and China. The notion of production cost is thus essential, and beyond the well-known issue concerning the development of, and access to infrastructures, it's very much the legal and fiscal frameworks that may have a genuine impact on the continent's attractiveness. Certain recent actors like the DRC have grasped this point and are attempting, little by little, to create their market share in this extremely fluid and competitive sector.

World Mine Production
(in millions of carats)

	2011	2012	2013	2014	2015	2016e
Botswana	22.9	14.4	16.2	17.3	14.5	15.0
Russia	17.8	20.7	21.2	21.5	23.5	23.5
Canada	10.8	10.5	10.6	12.0	11.7	13.0
Angola	7.5	7.5	8.4	7.1	8.1	8.1
DR Congo			3.1	3.1	3.2	2.8
South Africa	1.8	2.8	6.5	6.0	5.8	2.8
Namibia		1.6	1.7	1.9	2.0	2.0
Zimbawe			1.0	0.5	0.5	0.4
Rest of Africa	2.6	1.1	0.4	1.6	1.7	1.6
Others	1.6	0.6	1.4	1.3	1.0	1.0
Total	**65.0**	**59.2**	**70.6**	**72.2**	**71.9**	**70.2**

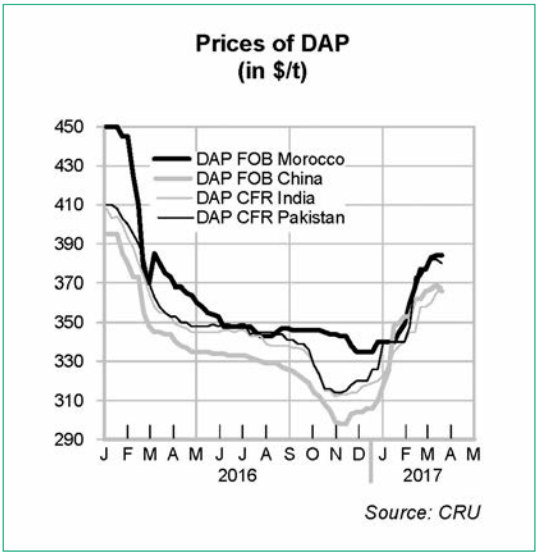
(Source: USGS Mineral Yearbook)

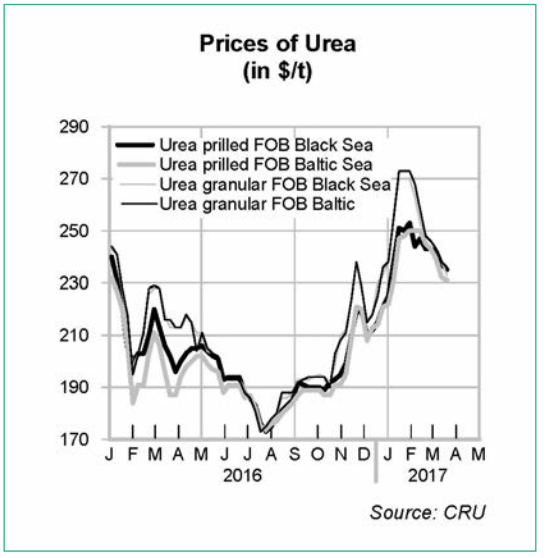
Fertilizers

Unlike the outlook for many other minerals, 2016 proved difficult for fertilizers. Demand has certainly increased, but in a smaller proportion than supply, which is particularly abundant. As a result, fertilizer prices declined for the nitrogen, potash and phosphate industries. According to indicator data from the CRU Group, the price of Moroccan diammonium phosphate dropped by more than 24% in 2016, while those of urea and potash decreased by about 3% and 20%, respectively. The reason for this significant drop in prices is explained by the recent development of new production capacities, which have weighed on the seaborne markets and, on the demand side, by a decline in farmer's purchasing power tied to a drop in the price of cereals and oilseeds in 2016. Nevertheless, the first quarter of 2017 showed an important rebound. For Africa, however, the key is probably not in the market dynamics, but in the long-term prospects. From this point of view, 2016 was marked by an important development in mining projects (potash, phosphate) and industrial fertilizer production on the continent, with resounding successes achieved by Morocco.

Prices down despite a rebound at the end of the year

Fertilizer prices fell sharply in 2016. Phosphate rock, referenced 'free on board' (FOB) origin Morocco at 68-72% BPL, went from $115/t in January 2016 to $103/t in December, while the price of diammonium phosphate (DAP), the flagship product of phosphate fertilizers, declined by almost 24% in 2016 from $450/t in December 2015 and January 2016 to $340/t end of December 2016, according to the same Moroccan reference (source CRU). With reference to 'cost and freight' (cfr) India, it was displayed at $320 at the end of December 2016 against $403 in January of the same year, a decrease of just over 20%. According to the World Bank's monthly indicator prices, the DAP averaged $315 in December 2016 against $385/t in January of the same year. A difficult year, but unlike rock, the DAP price rebounded

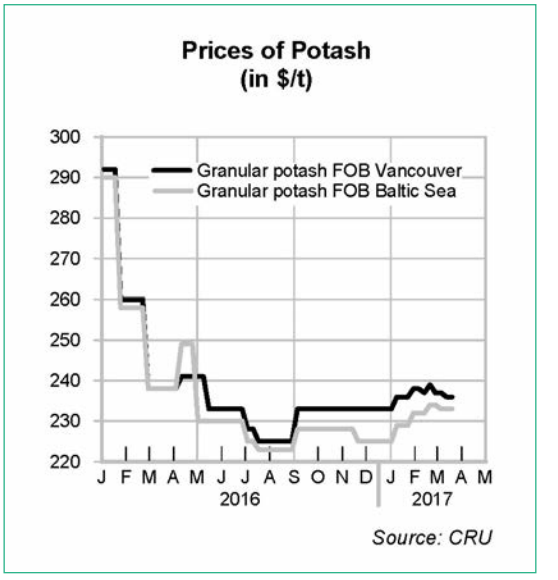




strongly in the first quarter of 2017, reflecting strong demand from Latin America and India, the largest fertilizer importer in the world. For the Moroccan reference, it was displayed at $384/t in mid-March 2017, regaining thereby its level of February 2016.

Urea from Egypt, the Black Sea and the Baltic Sea also declined in 2016, but to a lesser degree than that of phosphate products. Its price ranged from $221/t to $336/t in December 2016, depending on its origins and format (beaded urea vs granulated urea) compared to levels ranging from $231 to $241 in January (source - CRU) or a drop varying from 2% to 4.5%. However, this smaller variation masks a fall in prices between January and July and a marked recovery in the second half of 2016. After a substantial increase during the first days of January 2017, which allowed them to rise to more than $270/t, prices of urea nonetheless engaged in a further decline in February and March 2017. As stocks increased and US, European and Indian buyers were inactive, it seems sellers in the Gulf, Egypt and China agreed to reduce their prices, down to $225 / t for the beginning of April on an FOB basis for West Africa. Since the beginning of 2017, gas prices have been low, and gas is a major input for urea, which helped producers, including Egypt, accept lower prices. Lower prices nevertheless left hope that India would return to the market in April 2017.

Finally, for potash, the situation is even more severe, with not only prices 20% on average lower in 2016 but also the absence of a real rebound in the second half of 2016 or in the first months of 2017. This is due to an abundance of stocks among producers that they were willing to sell at a reduced price.



Fertilizers

	2010	2011	2012	2013	2014	2015
Nitrogenous fertilizers ('000 t N)						
• Ammonium						
World production	129 391	133 969	136 932	143 546	141 637	149 062
World trade	16 041	15 964	15 452	15 026	15 149	15 069
• Urea						
World production	68 821	71 119	74 452	77 613	76 388	80 690
World trade	18 610	18 057	19 812	20 640	21 860	22 838
• Ammonium nitrate						
World production	14 528	15 314	16 004	16 400	16 576	16 211
World trade	3 362	3 439	3 450	3 282	3 354	3 115
• Ammonium Sulphate						
World production	4 404	4 496	4 730	4 831	5 028	5 157
World trade	2 080	2 161	2 247	2 331	2 445	2 578
Phosphatic fertilizers ('000 t P2O5)						
• Diammonium phosphate (DAP)						
World production	15 087	15 323	16 078	15 723	15 123	16 381
World trade	7 421	6 605	6 657	6 297	6 587	7 987
• Mono-ammonium phosphate (MAP)						
World production	10 938	12 479	12 386	11 853	11 828	11 974
World trade	2 763	3 583	3 142	3 597	4 543	4 427
• Triple superphosphate (TSP) World production	2 981	3 076	2 747	2 509	2 838	2 428
World trade	1 765	1 806	1 466	1 552	1 640	1 413
• Potash fertilizers ('000 t K2O) World production	31 767	34 372	32 048	33 759	38 732	39 013
World trade	25 997	27 377	23 277	25 373	30 564	28 814

(Source: International Fertilizer Association)

Growth in supply exceeds demand in world markets

The equation explaining the dynamics of fertilizer prices in 2016 is a simple a priori: an increase in supply that is much higher than demand is able to absorb, with an increase in stocks, a farmer purchasing power limited by low cereal and oilseed prices, but also a weakness of certain currencies, particularly the ruble and the yuan, allowing producers in these countries to accept lower prices given in foreign currencies. For the record, one US dollar traded against 6.5 yuan in January 2016 and against nearly 7 yuan at the beginning of January 2017.

For nitrogen fertilizers, new production capacities arrived on the market in 2016 and have resulted in a situation of global overproduction. The total volume of nitrogen fertilizers produced in the world for the period 2015-2016 was accordingly close to 165 Mt. The resulting low prices, however, gradually led to the halting of the least profitable units and ushered in a relative rebalancing of the market in the second half of 2016. Unsurprisingly, natural gas and coal price trajectories have also proved to be important variables in understanding the behaviour of fertilizer supply during 2016, especially in China, which is highly dependent on coal. As a result of the first half of the year, coal prices enabled the country's producers to accept lower prices on the seaborne market. However, they recovered markedly in the last quarter, hence weighing on excess supply. Another factor to consider is the fight against pollution in this country, which has forced some urea producers to suspend production and others to

close down permanently. The fertilizer giant PotashCorp thus suggested that the share of active Chinese capacities was 52% at the beginning of 2017, against 62% a year earlier. Estimated at 8.9 Mt in 2016 (compared with 13.8 Mt in 2015), China's urea exports are expected to decline again in 2017 to 7.5 Mt or even 5 Mt.

The finding is not fundamentally different for the phosphates market, which was over-supplied in 2016. Though world consumption increased, production also rose and consumer countries were more inclined to use previously established stocks than import in 2016. India, which had ample reserves of DAP, had little need to import, while its demand grew by only 1%. However, it is expected to double in 2017. Brazil, for its part, imported 2.9 Mt of monoammonium phosphate (MAP, +26% in annual data) and Argentina 1.2 Mt (+74%). According to the US Geological Survey (USGS), overall phosphate consumption is projected to increase from 43.7 Mt at present to 48.1 Mt in 2018. Among the highlights (outside Africa) of 2016 in the phosphate sector, was the takeover by the American company Mosaic of the fertilizer sector of its Brazilian competitor Vale for $2.5 billion, in the form of a payment of $1,25 billion and a grant of new shares for the remaining amount.

The world market for potash, on the other hand, remained dull due to delays in concluding contracts with China and India. It was only in July that China signed an annual potash delivery contract with Belarusian Potash Company (BPC), the trading division of Belaruskali, for $219/t. This is 30% less than what it had paid in 2015. While India has traditionally concluded its annual contracts after China, this was not the case in 2016: in June, it signed a $227/t with BPC. These ‘delays’ in the signing of contracts, which are considered references for the global market, have led other buyers to prefer the consumption of their stocks over import strategies. A situation of surplus, and hence of low prices, has resulted. This pushed producers in Belarus, Canada and Russia to reduce production in an effort to restore a bit of vitality to prices. Demand has also slightly recovered at the beginning of the third quarter for large volumes. By 2016, nearly thirty mining projects were under development around the world. They are expected to be completed by 2020, with the majority in Belarus, Canada, China, Russia and Turkmenistan. At 59 Mt in 2016, the total potash supply is expected to reach 60-62 Mt in 2017. Of this total, the major Canadian producer PotashCorp hopes to sell between 8.7 Mt and 9.4 Mt, compared with 8.6 Mt in 2016. Among the events that marked the sector in 2016-2017, was the signing in January 2017 of a 20-year definitive supply agreement between Canadian producer Encanto PotashCorp and an Indian farmers' cooperative for the direct sale of a minimum of 5 Mt / year of potash fertilizers. A double win for the Canadian company which, two months later, signed another two-decade agreement allowing it to deliver 2 Mt / year of potash to Metal Mineral Trading Co. of India, an important Indian merchant.

The decline in fertilizer prices clearly had an impact on the financial results of the producer groups. As a result, Potash Corp announced net income for the fiscal year 2016 of $336 million, compared with $1.3 billion in 2015 and $4.5 billion in revenue, down 29% from 2015. A key element of the potash market was the September 2016 merger of Canadian companies Agrium and PotashCorp to form the world's largest potash producer. PotashCorp now owns 52% of the new company and Agrium holds the remaining 48%.

Morocco’s shining influence on the African continent

The essence of commodity markets can sometimes be found elsewhere than in short-term price developments, but rather in the long-term strategies of industrial groups. In this respect, the achievements of the OCP Group are substantial. While the Group's ambitions are certainly global, its willingness to address the extraordinary potential of the fertilizer market in Africa and to develop ‘South-South’ cooperation winning strategies has been clear for several years. For this reason, an OCP Africa subsidiary was set up in 2016 with the aim of developing complex fertilizers adapted to the specific characteristics of African soils. In addition, they are developing fer-

tilizer production near agricultural basins and improving transport through the development of storage and blending capacities in port areas, but also the development of ecosystems around agricultural activity.

It is clear that these different ambitions quickly found an operational scope. In March 2016, the group's board of directors authorized the creation of subsidiaries in no fewer than 14 African countries. OCP therefore committed to the creation of a blending plant and the development of fertilizer distribution channels in Rwanda in October of that year. Still under the sign of this 'South-South' cooperation, the OCP and the Nigerian Dangote Group agreed during the official visit of King Mohammed VI to Abuja in December 2016, to develop a fertilizer production platform using Nigerian gas on the one hand, and Moroccan phosphate on the other. Satisfying the fertilizer requirements of this country, as well as of many others in Africa, has also led to the signing of an agreement under which more than 2 Mt of fertilizer adapted to Nigerian soils will be imported from Morocco over the next three years. Contracts have been signed with Nigeria, but also Ethiopia, with which Morocco signed an agreement on November 19 for the construction of another fertilizer production platform, the Dire Dawa fertilizer complex, representing an initial investment of more than $$2.2 billion over five years. The ambition, to produce 2.5 Mt of fertilizer per year by 2022 and thus make the country self-sufficient in fertilizers, is worth the amount invested. By 2025, an additional investment of $1.3 billion will bring production capacity to 3.8 million tonnes per year.

At the end of December, OCP was also able to meet 70% of the demand for fertilizers required by the Ethiopian Corporation of Agricultural Enterprises (EABC), about 650,000 tonnes out of a total of more than 900,000 tonnes. And the Moroccan group did not stop there: in March 2017, an agreement was signed with Guinea-Conakry to improve the country's supply of phosphate fertilizers adapted to local soil and agricultural practices. This resulted in a gift from OCP of 20,000 tonnes of fertilizer and scheduled delivery of 100,000 tonnes to cover all of the country's requirements in this area. The development of activities in Africa, however, did not lead the group to abandon other international markets, foremost among them India. On October 21, 2016, the OCP signed an agreement with the Indian cooperative group Kribhco (Krishak Bharati Cooperative Limited), which in particular, manufactures nitrogen fertilizers. The challenge: to create a joint venture to develop a ternary fertilizer plant (capacity: 1.2 Mt / year) in the Indian state of Andhra Pradesh. Cost of the operation: $230 million. Clearly an international strategy, but one that does not preclude attention to the Moroccan ecosystem, notably with the implementation of a project to develop an integrated industrial complex of fertilizer production at the Phosboucraâ site in the province of Laayoune in southern Morocco. In addition, at the beginning of 2016, the Africa Fertilizer Complex, a fertilizer production plant dedicated to African soils, was also launched at Jorf Lasfar, as well as a desalination plant for seawater, while several storage units were built.

Africa: a new challenge for global competition

OCP is clearly not the only group interested in the African market. In Uganda, China's Guangzhou Dongsong Energy Group Co. (GDEG) has committed to constructing a phosphate fertilizer plant with a production capacity of 300,000 tonnes combined with a sulfuric acid production capacity of 200,000 tonnes per year. Ethiopia has also authorized Britain's Circum Minerals to operate a potash mine in the Danakil Depression in the East of the country for 20 years. This low-cost mine is expected to produce 2 Mt per year of potassium muriate and 750,000 tonnes of potassium sulphate. In nearby Eritrea, the Australian company Danakali is considering raising A$6.7 million for its Colluli potash project developed as part of a joint venture with the Eritrean National Mining Company (ENAMCO). Production will be 425,000 t /year for the first five years of operation and then 850,000 t /year at full capacity.

In the phosphates sector, it is also an Australian company, Avenira, announcing that it

will raise A$2.5 million for the development of the Baobab phosphate project in Senegal, 80% of which it owns. The first deliveries were made in October. In Algeria, three joint venture agreements involving domestic companies and the Indonesian Indorama group were confirmed in July 2016 for an investment of $4.5 billion. The ambition is to develop and operate the new Bled El-Hadba phosphate mine, to produce phosphoric acid and DAP, and to use the country's natural gas to produce ammonia. Given the considerable potential of the fertilizer market in general and of phosphates in particular, but also the need for many economies to diversify, the development of mining and fertilizer production units is on the agenda of many countries.

– V –

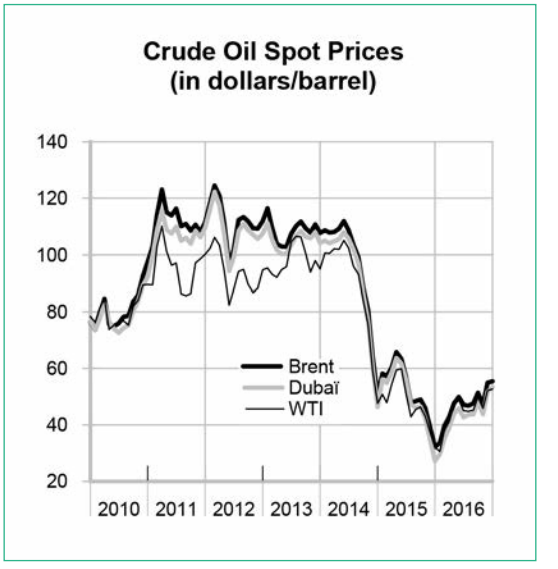
Energy

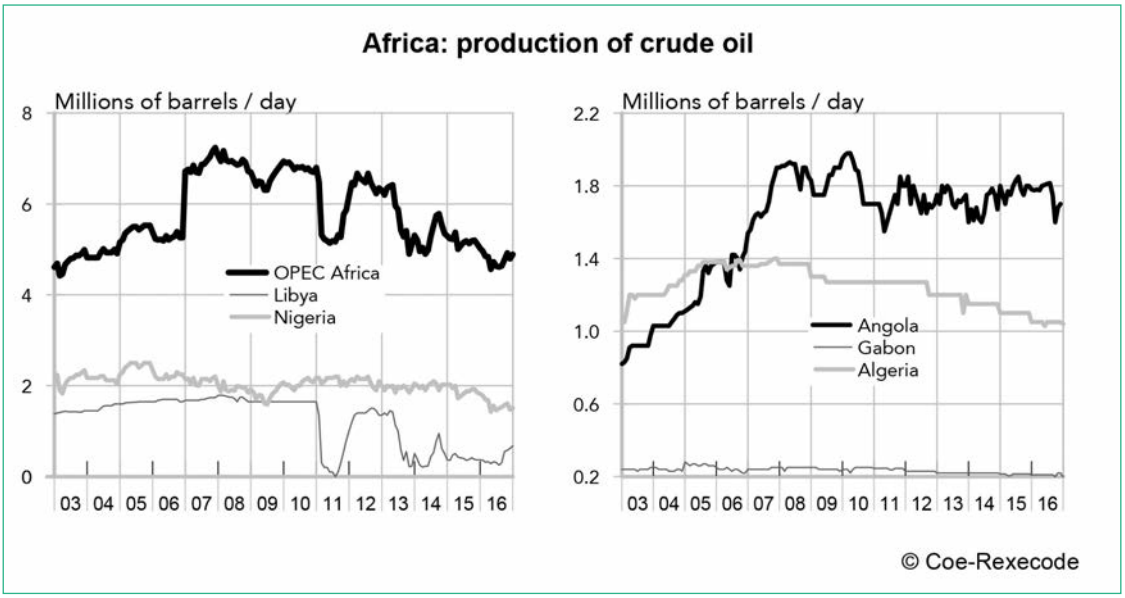
- Oil
- Natural gas and LNG
- Coal

Oil

Both supply and demand increased, but exports contracted on the American continent because of the powerful upswing of locally-produced unconventional crudes, and African benchmarks (Nigeria, Angola) that were globally in line with world dynamics experienced a market recovery at the end of the year. Those were the main features of the economic situation for African oil markets in 2016. From a structural viewpoint, Africa's appeal for oil and gas exploration and production was also confirmed in 2016, even though significant differences between nations could not be ignored. Last but not least, Gabon returned to membership of the OPEC and an African Secretary-General was appointed to the organization.

After stagnating between 2013 and 2014 at 3.8 million barrels per day (Mb/d), Africa's oil demand rose over the next two years to reach 4.2 Mb/d in 2016 or a 10.5% rise over this period according to the International Energy Agency (AIE/IEA). The IEA forecast for 2017 is 4.3 Mb/d. In spite of this advance, Africa represented no more than 4.3% of the world oil demand last year. The actual supply situation is different: five of the African oil-producing countries are members of the Organization of Petroleum Exporting Countries (OPEC). The crude oil production originating in these countries was estimated at 4.9 Mb/d in 2016, compared with 5.3 Mb/d in 2015. The available oil supply from African countries that were not members of OPEC was 1.9 Mb/d and 2.1 Mb/d respectively. The total for Africa was therefore 7.4 Mb/d in 2015 and 6.8 Mb/d in 2016.





Producers of light African crude oils are struggling

In recent years, exports of light crude oils from West Africa to the American continent, and especially to the USA, have dropped considerably because of the rise in the quantity of unconventional crudes produced in this country, most of which are light oils. According to the IEA's *Oil Market Report* (OMR), exports to the American continent of light- and medium-density crudes produced in Libya remained insignificant at the end of 2016. Those of Nigerian Light to the same area came to a total of only 210,000 b/day over three months between September and November 2016. Only the European companies among the members of the Organization for Economic Cooperation and Development (OECD) actually imported significant quantities of these crude oils at the end of 2016: 760,000 b/day for the light and medium Libyan crudes and 890,000 b/day for the light oils of Nigeria during September-November 2016.

Unsurprisingly, the prices of West-African crudes have followed the general tendency of the markets, with a major rise in prices since November, mainly because of the decisions to reduce production adopted by OPEC and by several non-OPEC countries in November and December 2016. But the increases were lower for the Nigerian than for the Angolan crudes. The reason for this difference is attributable to two key factors: the abundant supply of light crudes on world markets because of US production and the uncertainties around oil exports from Nigeria, which have been affected negatively by several armed groups attacking oil installations and infrastructures in the Niger-delta area. The differentials between Angolan crudes and North Sea Brent have also been very low in the recent period (October 2016 to January 2017), with variations between -50 cents and parity for Girassol crude, and between -$1 and -25 cents for Cabinda.

Africa is an attractive continent for oil companies

Africa is still an attractive area for oil exploration and production because of its potential in terms of oil and natural-gas resources, the probability of significant new discoveries on land or offshore, but also very encouraging legislative and contractual frameworks. Therefore, it is only logical that the continent should regularly attract new investors in this sector. This was the case last year with Qatar Petroleum, which continues to forge international connections and to create links

with leading oil companies. Accordingly, Qatar Petroleum has entered the sphere of exploration off Morocco in partnership with the US Chevron Corporation and the Moroccan National Oil and Mines Office (Onhym). Before Chevron, Qatar Petroleum signed agreements with Total for projects in Mauritania and the Republic of the Congo.

Chevron has 75% participations in three deep-sea blocks: Cap Rhir Deep, Cap Cantin Deep and Cap Walidia Deep, with a total area of 21,913 km². By the terms of the farm-out agreement with Qatar Petroleum, Chevron has surrendered a 30% holding to the Qatar national company. Chevron nevertheless remains the operator with a 45% participation, and Onhym controls the remaining 25%. The US company assesses the potential of these licences as 'exciting', since they concern 'subsalt' exploration, that is, of rock formations lying beneath horizontal salt layers.

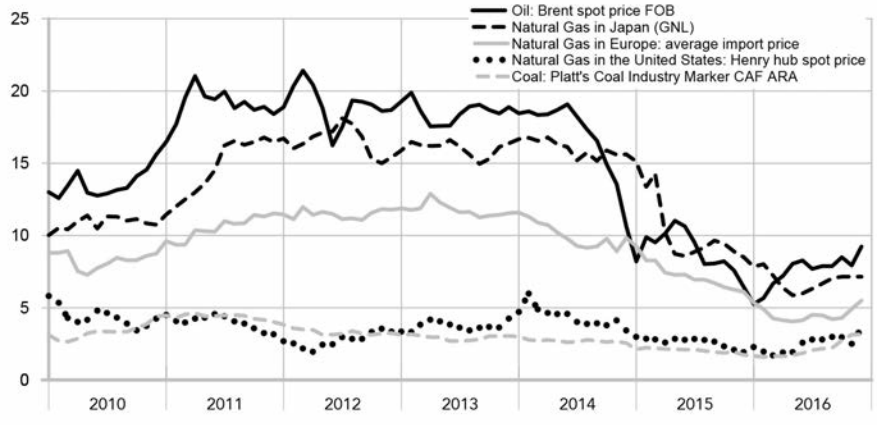
Woodside Energy Ltd is not a new investor in Africa, but the Australian company has decided to increase its presence in the area. Woodside has exploration licences in Morocco, Cameroon and Gabon, and has concluded a farm-out agreement with Impact Oil & Gas in order to acquire a 65% holding in an AGC Profond offshore permit, and become its operator. AGC Profond has an area of 6,700 km², and is an offshore permit for depths between 1,400 and 3,700 metres. It is located in the joint development zone of Senegal and Guinea-Bissau and is subject to a shared-production contract. Woodside's partners are Impact Oil & Gas (20%) and AGC Entreprise (15%). AGC Entreprise is controlled by Senegal and Guinea-Bissau.

Many discoveries of oil deposits in Africa

Africa has an immense oil and gas potential which is largely under-exploited. It is no wonder then that exploration has beneficial surprises in store for oil companies. This has been the case for minimally explored countries but also for countries where oil and gas operations have been underway for decades.

Accordingly, in Algeria, Sonatrach made twenty-eight discoveries in the first nine months of 2016, compared with twenty-three for the whole of 2015. Sixteen of the twenty-eight discoveries were made in the Berkine basin. The largest number of discoveries were in the areas of Oued Mya and Amguid Messaoud. The three remaining discoveries were between the Illizi, Béchar and Reggane basins. As has been the case

Comparison of Oil, Natural Gas and Coal Prices (in dollars/millions of BTU)



(Source: World Bank, USDOE, quandl.com)

for several years, Sonatrach was behind the great majority of them. From this viewpoint, although the national company's continuous high rate success in this field is certainly a positive point, this is offset by the fact that foreign firms no longer carry out much exploration in Algeria.

The volumes revealed by this method were mainly that of oil. The 2P estimates (of proven and probable reserves) show that oil represents 55.2% of the volumes of oil, gas and condensates discovered (97.91 million tonnes of oil equivalent - Mtoe), as against 37.6% for natural gas (66.7 Mtoe) and 7.2% (12.86 Mtoe) for condensates. Sonatrach evaluates the total volumes discovered at 177.47 Mtoe on a 2P basis. The estimate is 401.37 Mtoe on a 3P basis (proven, probable and possible reserves).

Over the next few years several African countries will become oil producers and exporters

Several African countries will become oil and gas producers and exporters over the next few years, especially Uganda and Kenya for oil, Mozambique and Tanzania for natural gas, and Senegal for oil and gas. Tullow Oil has estimated the oil resources in the Lake Albert region in Uganda to be 1.7 billion barrels. Its estimate for Kenya is in the order of 750 million barrels. In this context, Uganda could produce between 200,000 and 230,000 b/day of crude oil, and Kenya between 80,000 and 100,000 b/day.

Uganda has selected the Hoima connection (Uganda)-Tanga (Tanzania), on the Indian Ocean, for its future exports of the oil found. This route was in competition with two others via Kenya, one with its outlet at Mombasa, the other at Lamu (the Northern route). The latter was favoured by the Kenyan government in the framework of an extremely ambitious regional development project. Tullow Oil, with an 11.76% participation in the consortium in charge of research and oil exploitation in Uganda in partnership with Total (54.9%), and CNOOC (33.33%), also made oil discoveries in Kenya and quite logically favoured a route via this country in order to ensure an outcome from them. Nevertheless, the choice of a route to the port of Tanga carried the day for three main reasons: the cost, considered to be the least expensive of the three options envisaged (according to Tullow, the cost of developing Ugandan oil resources would be $8-12 billion); very real advantages in terms of route and site (a fairly flat road and an operational port protected from winds); and safety and security. With regard to the last-mentioned point, the advantage is judged to be considerable in respect of the route to Lamu, which is sometimes quite close to Somalia, raising suspicions that there might be future attacks by the Shebabs, who have already struck in Kenya in the past. Kenya has reacted by indicating that in spite of everything it intended to build an oil pipeline on its territory to serve its own oil fields, and also to convey the crude oil, or part of it, from South Sudan, another landlocked country, and perhaps from Ethiopia.

The SNE oil field in Senegal meets expectations

In 2014, a consortium directed by Cairn Energy, which has three blocks off Senegal (Sangomar Offshore, Sangomar Deep Offshore and Rufisque Offshore) discovered two oil fields: FAN and SNE. The latter is characterized as a 'world class' deposit. Cairn had a 40% holding in these blocks in association with ConocoPhillips (35%), FAR Limited (15%) and the national company of Senegal, Petrosen (10%). At the end of October 2016, however, ConocoPhillips signed a farm-out agreement with Woodside Petroleum on the terms that the US firm surrendered its participation to the Australian company.

FAR has estimated that SNE could start production in 2022. SNE's future production plateau would be 140,000 b/day. At the end of 2016, the consortium began the third phase of its exploration and evaluation drilling. Two appraisal wells were forecast on SNE especially, in order to get better idea of future development and confirm quantities, as well as the connectivity and productivity of reservoirs and wells. Previously, six exploration and evaluation wells had been drilled successfully. According to FAR, development

costs could be in the order of $13-15 per barrel and exploitation costs (including the FPSO: a vessel converted to serve for floating production, storage and offloading) $12-14 per barrel.

New production start-ups in 2016

Oil-field developments resulted in several production start-ups in 2016. Among the most impressive was that of the TEN project (Tweneboa, Enyenra and Ntomme) in Ghana, last August. It will allow the exploitation of oil and gas reserves estimated at 300 million barrels of oil equivalent (Mboe), including 240 million barrels of oil and 60 Mboe of natural gas. TEN is operated by Tullow Oil (47.175%) and its partners are Anadarko Petroleum Corporation (17%), Kosmos Energy (17%), the Ghana National Petroleum Corporation (15%) and PetroSA (3.825%), the South Africa's national company. This is an important project not only for the consortium, but also for Ghana, since the country is now producing from two projects: Jubilee, in production since the end of 2010, and TEN. Tullow Oil is also the operator of Jubilee, which was discovered in 2007. TEN's production is processed on an FPSO, with a maximum capacity of 80,000 b/day of crude oil.

Another major production start-up was that of Mafumeira Sul, in Angola, at the end of October 2016. This project is located on block 0 (zero), in not very deep sea (about 60 metres) off Cabinda. This block is owned by the national oil company Sonangol EP, Cabinda Gulf Oil Company (CABGOC, Chevron), Total and Eni. Mafumeira Sul is a very big project. It is the second phase of development of Mafumeira and its production capacity in the plateau phase will be 150,000 b/day of liquids and 350 million cubic feet per day of natural gas. Chevron predicts that this plateau could be reached from 2018 onwards. The associated gas will be transported to the Angola LNG liquefaction facility.

Lobito refinery (Angola) in question

In August 2016, Sonangol EP announced that it had suspended the construction of Lobito refinery in Benguela province, and the Barra do Dande terminal. The national company immediately added that these two projects were of prime importance for them and the State, but that they had to be re-examined in the light of the country's new economic situation, and especially that of its oil sector. This situation, with the price of oil falling since summer 2014 is a factor that impels as a major aspect, implies a revision of these projects, especially in terms of size, timetable and finance.

Angola has only one small refinery at present. Therefore, the national capacity is quite insufficient for the country's needs, which means considerable purchases of petroleum products from abroad. One of the reasons for building the Lobito refinery was to bring these imports of refined products to an eventual end. The capacity envisaged was 200,000 b/day, and this refinery was to be responsible for a high level of conversion. It was hoped that it would start operating in 2015, but this date has already been postponed. Essentially, the Lobito refinery was intended to supply the national market, as well as exports of petroleum products to other African countries, to Europe and the United States.

Nigeria plans to become an eventual exporter of petroleum products

The Nigerian National Petroleum Corporation (NNPC) has particularly ambitious aims. One is that Nigeria, which has had to cope with an inadequate supply of petroleum products for several years, should become a net export¬er of these products as in the nineteen-seventies. Before reaching this future goal, the NNPC must first satisfy Nigeria's requirement for refined products, which is already a challenge. In the short term, a certain number of measures have been taken: outstanding debts to dis¬tributors have been considerably reduced; price subsidies for petroleum products have been 'eliminated'; consignments of refined products to States of the Federation have been increased, and the monitoring of distributors' practices has been reinforced to ensure that approved prices are respected. The NNPC has

World Oil Supply and Demand

(in millions of barrels/day)

	2014	2015	2016	2017 (p)
OECD Demand	**45.8**	**46.4**	**46.6**	**46.6**
World Demand	**93.0**	**95.0**	**96.5**	**97.8**
Total Non-OPEC Supply	57.0	58.4	57.6	58.0
Total OPEC (a)	36.8	38.2	39.3	
World Supply	**93.7**	**96.6**	**96.9**	

(p) forecasts.

(a) Comprises crude oil, condensates, NGLs

(Source: International Energy Agency - Oil Market Report, February 2017)

also appealed to the public to report illegal behaviour to the authorities, of any distributors unwilling to put on the market the full amount of petroleum products that they have available, and not to give way to panic buying, which would only make the situation worse. Cooperation is finally underway with the Central Bank to resolve problems related to insufficient currency.

In the mid-term, the NNPC intends to concentrate on the country's refining facilities, which comprise four refineries with a (extremely) theoretical total capacity of 445,000 b/day. The NNPC is focussing on three goals: carrying out the renovation of four State refineries in order to increase their overall capacity of operation to at least 70%; the construction of modular mini-refineries close to the existing refineries that will make it possible to raise the country's refining capacity to 650,000 b/day ; and the third objective, setting up partnerships with investors able to ensure effective management of petroleum-product transport and storage installations with access to third parties. Some of these infrastructures will be classed as strategic storage facilities to be held by the NNPC. Therefore, there is a clear, global plan of action in place. Once again, the means available will have to be appropriate to the plan, since the population and economic circles alike have very high expectations. Their patience though considerable, is not inexhaustible.

Endgame for SAMIR in Morocco

Twenty years after the privatization of SAMIR (the Moroccan Refining Industry Company), the company is in difficulty. SAMIR had suspended its produc¬tion in August 2015. On 21 March 2016, the Casablanca commercial court put the company into judicial liquidation. The matter is obviously devastating for SAMIR, but also for Morocco, because the company controls 100% of the country's refining capacity. In 1999, in fact, the company had merged with the SCP, which had enabled it to take control of the Mohammedia and Sidi Kacem refineries, with a refining capacity of 10 million tonnes per year.

If the Mohammedia refinery were to close down definitively, Morocco would be 100% dependent on im¬ports of petroleum products. SAMIR was a 67.27% holding of Corral Petroleum Holdings, a group owned by the Saudi businessman Sheikh Mohamed Hussein al-Amoudi. Holmarcom (Morocco) is a 5.78% shareholder, and the public controls the remaining 26.95%. On 8 February 2017, the receiver for the judicial liquidation of SAMIR announced the surrender of all the

OPEC Oil Production

(in millions of barrels/day)

	2012	2013	2014	2015	2016
Saudi Arabia	9.51	9.40	9.53	10.12	10.42
Iran	3.00	2.68	2.81	2.85	3.54
Iraq	2.95	3.08	3.33	4.00	4.41
United Arab Emirates	2.65	2.76	2.76	2.93	3.03
Venezuela	2.50	2.50	2.46	2.46	2.24
Nigeria	2.10	1.95	1.90	1.77	1.46
Kuwait	2.46	2.55	2.61	2.75	2.88
Angola	1.78	1.72	1.66	1.76	1.71
Libya	1.39	0.90	0.46	0.40	0.39
Algeria	1.17	1.15	1.12	1.11	1.11
Qatar	0.74	0.73	0.71	0.65	0.65
Ecuador	0.49	0.52	0.55	0.54	0.55
Total Crude Oil	31.30	30.45	30.98	31.65	32.62
Total NGLs	6.28	6.26	6.50	6.51	6.71
Total OPEC	**37.58**	**36.72**	**37.48**	**38.16**	**39.33**

(Source: AIE)

company's shares. Relevant offers were to be submitted within 30 days of that date.

OPEC and Africa: the return of Gabon

At the Ministerial Conference meeting in Vienna, Austria, on 2 June 2016, OPEC made two decisions concerning Africa: one allowing the admission of Gabon, and the other the appointment of a new Secretary General.

The organization's Conference, which is the decision-making body of OPEC and brings together the oil or energy ministers of the member-States, accepted Gabon's application for admission and the country rejoined OPEC on 1 July 2016. Admittedly, Gabon is a minor oil producer with an output in the order of only 200,000 b/day. It will also be the smallest producer in the organization after Ecuador. But its admission is not of negligible importance for several reasons. First and foremost, for the first time in its history OPEC had fourteen members as of July 2016. In the past, the maximum was thirteen. But this situation did not last long since Indonesia, another member-State, left the organization at the end of November 2016. At a time when many observers correctly refer to the weakness of the organization and, incorrectly, to its looming collapse, OPEC can, secondly, demonstrate on sound evidence that it still has a certain attraction for developing countries. Thirdly, three countries have left the organization in the course of its history: Ecuador (in December 1992), Gabon (in January 1995), and Indonesia (in January 2009). Several years later the three rejoined OPEC. The difference is that Gabon formally retired from OPEC, whereas the other two States had suspended their membership. With Gabon's return, OPEC now has five African

member countries, the other four being Algeria, Angola, Libya and Nigeria.

The new Secretary General of OPEC is an African once again

Another news item that is important for Africa is the appointment of Mohammed Sanusi Barkindo (Nigeria) as Secretary General of OPEC on 1 August 2016. He succeeded Abdalla Salem el-Badri (Libya), who was Secretary General from 2007 to 2015, and interim Secretary General from 1 January 2016. According to OPEC's constitution, the Secretary General is appointed by the Conference for a period of three years, which can be renewed once for the same length of time. But this is not the first time that a Nigerian has been made Secretary General of OPEC. Rilwanu Lukman (who died in July 2014) occupied the post between 1995 and 2000, and had also been President of the organization's Conference on several occasions at the end of the nineteen-eighties and in 1992. Mohammed Sanusi Barkindo was also very close to Rilwanu Lukman.

This Nigerian appointment has been well received at OPEC for at least four reasons, one of which is related to Mohammed Barkindo's nationality, whereas the other three have to do with his career and personal abilities:

- Several countries put candidates forward, including Saudi Arabia and Iran, which were mutually eliminated. In the case of certain other candidates, the supporting countries did not count sufficiently within OPEC. Nigeria had the advantage of neutrality with regard to the disputes between Riyadh and Teheran, and also counts as a leading country within the organization.

- Mohammed Barkindo was well acquainted with OPEC since he had represented Nigeria within the organization's economic commission for fifteen years, and was the interim Secretary General of OPEC in 2006.

- The new Secretary General has also sound experience in the oil sector. In fact, he worked for the Nigerian National Petroleum Corporation (NNPC) for over twenty years and was the General Director from 2009 to 2010.

- Last but not least, Mohammed Barkindo has long been interested in the key question of climate change. He was in charge of the Nigerian delegation during the negotiations that dealt with the UN framework agreement on the issue. It is a subject of obvious prime importance for the long-term future of the oil industry in which OPEP and its constituent States are closely involved. Since the Secretary General is OPEC's main spokesperson and principal strategic adviser, a proficient knowledge of climatic concerns is certainly of enormous benefit to the organization.

Natural gas and LNG

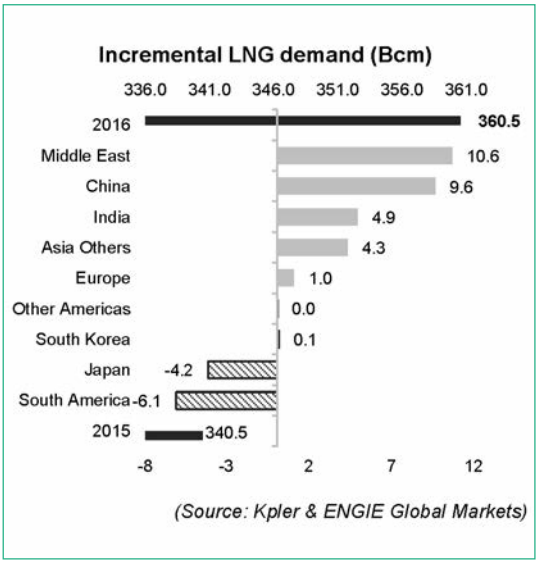
Progress towards better exploitation of the continent's gas resources

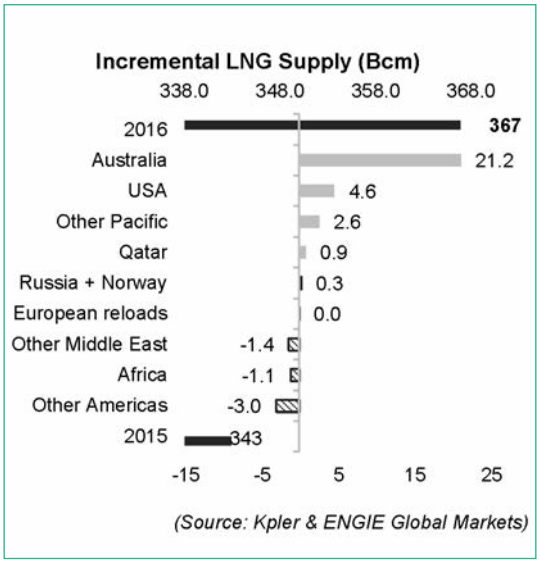
Africa occupies a very modest position in the international gas industry. With about 14 trillion cubic metres at the end of 2015, according to the BP Statistical Review of World Energy, its proven reserves amounted to 7.5% of the world total. Moreover, this potential is still little exploited, since Africa's share (212 billion cubic metres) in world gas production was no more than 6% in 2015, according to the same source. But since the region's gas consumption accounted for only 3.9% of the world total, the continent had an exportable surplus.
Such exports, by pipeline and/or as liquefied natural gas (LNG), were mainly supplied by Algeria, Nigeria, Libya and Equatorial Guinea in 2015. Angola joined the club in 2016. Due to the political problems related to the Arab Spring and its aftermath, Egypt is no longer an exporter but is instead an importer of natural gas. The reversal of its situation has been dramatic since the beginning of this decade. Yet recent discoveries and major development projects should enable Egypt, which is currently facing energy shortages, to become a gas exporter within a few years.

The question of indexing gas prices to oil prices

The fall in crude oil prices between the summer of 2014 and 2016 resulted in a sharp decline in natural gas prices, which are often indexed to oil and/or petroleum products. The practice has a very strong negative impact on developing oil and gas exporting countries, such as Algeria, for which liquid and gaseous hydrocarbons account for 96% of its exports.

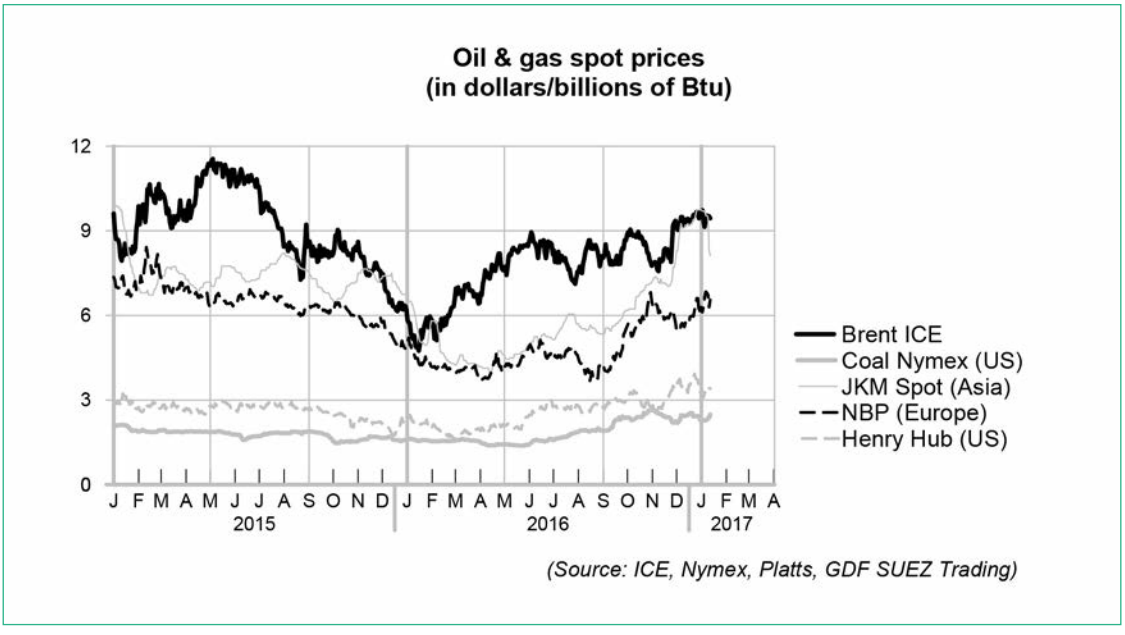
In this difficult context, Algeria has reaffirmed its commitment to indexing gas prices on oil. At a symposium organized by the Algerian Association of the Gas Industry (AIG) in 2016, the then Energy Minister Salah Khebri stressed that the downturn in prices should not call into question the usefulness of long-term contracts, let alone the indexing of gas prices to those of petroleum products. Algeria remains "firmly attached", he said, to the institutional architecture that for more than three decades has allowed it to develop stable gas supply systems with its partners.





Long-term contracts and indexation: the producers stand together

The Algerian minister's argument was that the costs associated with the gas industry will be increasingly high, and producers and buyers must continue to share the risks in order to promote the "harmonious development" of the sector. Risk-sharing is indeed a key issue, because the cost of large international gas projects is very high and their implementation is in the common interest of exporters and importers. On the other hand, indexation on oil and petroleum products is a separate issue and should probably be dealt with separately.



Natural gas producers in Africa
(billions of cubic metres)

	2013	2014	2015
Algeria	82.4	83.3	83.0
Nigeria	36.2	45.0	50.1
Egypt	56.1	48.8	45.6
Libya	10.4	11.8	12.8
Other countries	20.8	19.0	20.4
Total Africa	**205.9**	**208.0**	**211.8**

(Sources: BP Statistical Review of World Energy, Cedigaz)

The traditional attachment of gas exporting countries to this type of indexation is well known. At its summit in Moscow in early July 2013, the Gas Exporting Countries Forum (GECF) had stated in the declaration adopted by heads of state and government that the role of long-term contracts was fundamental and that it supported the setting of gas prices based on indexation on oil and petroleum products to ensure not only fair prices but also the stable development of gas resources. At the previous GECF summit, in Doha, Qatar, in November 2011, member countries had gone even further by calling for a "convergence" in oil and gas prices. Among the member countries were Russia, Qatar, Algeria, Iran and Nigeria. Apart from Algeria and Nigeria, the other African member states of the forum are Egypt, Equatorial Guinea and Libya. GECF member states are so accustomed to defending indexation on oil and petroleum products that they no longer argue in its favour, as if the matter were settled. It is understandable, of course, that oil and gas producing countries are in favour of a link between the two, but it is not certain whether it is really in their interest either now or in the future. Moreover, the oil and gas markets are much more divergent than in the past, with the former increasingly used only for the transport sector and the latter mainly devoted to the generation of electricity and to heating.

New gas discoveries in Africa

Africa is a region where oil companies continue to discover large quantities of oil and natural gas. In Angola, Sonangol EP and Cobalt International Energy (Houston) in 2016 described as "commercial" the gas discovery with the Zaloplus-1 well on Block 20/11, a deep-sea license in the Kwanza basin. The well has revealed a net producing zone of 44 metres in a pre-salt section. According to the national company, the original resources are estimated at 313 million barrels of condensate and 2,800 billion cubic feet of natural gas, or 813 million barrels of oil equivalent in total. Following this declaration of commerciality, various options for development, exploitation and production will be examined.

Cobalt International Energy operates three blocks – 9, 20 and 21 – with a 40% holding. Its partners are Sonangol P&P (30%) and BP (30%). Sonangol EP is the concessionary. Several discoveries have been made on Blocks 20 and 21, including Lontra (oil and gas) and Orca (oil) on Block 20. To date, Orca is the largest of these discoveries.

BP points out that the basins of southern Angola, particularly Kwanza and Benguela, replicate the geological characteristics of the Brazilian

margin (the Santos and Campos basins), in which numerous and very large discoveries of hydrocarbons have been made. In December 2011, the British group signed production sharing agreements for Blocks 19, 20, 24 and 25. Previously, BP had joined Block 26. In total, the company holds shares in five licenses in the Kwanza and Benguela basins. The area of this portfolio is 24,240 square kilometres.

Senegal and Mauritania: BP joins the field

After an exploration and appraisal programme covering five wells off Senegal and Mauritania, Kosmos Energy (United States) estimated the potential resources at 50 trillion cubic feet (50 TCF) of gas in the marine channel between the Marsouin-1 well in Mauritania and the Teranga-1 well in Senegal. The gas resources discovered through this drilling programme amounted to 25 TCF (median estimate). According to the American company, the gas channel is two hundred kilometres in length and would connect the sites of the Marsouin-1 and Teranga-1 wells, passing through the Grande Tortue zone.

These discoveries have not gone unnoticed in the industry and have attracted great interest from some oil majors. In December 2016, BP signed an agreement with Kosmos Energy whereby the British group acquires a 62% stake in four blocks off Mauritania and 32.49% on two licenses off Senegal. Previously, Kosmos Energy and the national companies of the two countries concerned – Petrosen (Senegal) and the Mauritanian Hydrocarbon and Mining Heritage Company (SMHPM) – had signed a protocol agreement which determines the principles of intergovernmental cooperation with a view to developing Grande Tortue. The objective is to try to speed up the development of the project. The gas is expected be distributed through an LNG export project.

Gas reserves discovered in Mozambique are estimated at 4.8 trillion cubic metres

The chairman of the Board of Directors of Empresa Nacional de Hidrocarbonetos (ENH) – Mozambique's national company – has estimated the gas reserves discovered in the Rovuma basin, off Mozambique, in the last five to six years, to be 170 trillion cubic feet (4.8 trillion cubic metres). These reserves will be exploited through LNG export projects. The gas fields concerned are concentrated on two licenses, Offshore Zones 1 and 4. The first is operated by the American firm Anadarko Petroleum Corporation and the second by the Italian group ENI.

In March 2017, ExxonMobil entered into a lease agreement with ENI, which will allow the

Exports of gas producers in Africa in 2015
(billions of cubic metres)

	By pipeline	LNG
Algeria	25.0	16.2
Nigeria		27.5
Libya	6.5	
Equatorial Guinea		5.0
Other countries	4.6	
Total Africa	**36.1**	**48.7**

(Sources: BP Statistical Review of World Energy)

US group to acquire an indirect 25% interest in Zone 4 at a cost of $2.8 billion. In December 2015, Anadarko and ENI concluded a unitisation agreement to allow the development of the Prosperidade and Mamba gas reservoirs, which are shared between the two permits they operate. The agreement provides for separate but coordinated development of these reservoirs until 24 trillion cubic feet of gas is developed, with 12 trillion cubic feet for each licence. The other developments of shared resources will be carried out by a joint operator (see below).

Shell drills new exploration wells on Blocks 1 and 4 in Tanzania

London-based Ophir Energy has reported that Royal Dutch Shell, the operator of Blocks 1 and 4 off Tanzania, will be drilling new exploration wells at the end of 2016 and early 2017. The role of operator on these licences stemmed from the acquisition of BG by the Anglo-Dutch group in 2016. BG had made several gas discoveries on these licences and the British company was intending to develop an LNG export project to exploit the resources. The government has already chosen a site for a future LNG plant. On another offshore license, Block 2, Statoil (65%) and ExxonMobil (35%) have made eight gas discoveries. Existing volumes are estimated at 22,000 billion cubic feet. Tanzania is therefore a future producer and exporter of natural gas.

South Africa eager to exploit its shale gas

South Africa is viewed by the U.S. Energy Information Administration (EIA), part of the US Department of Energy, as a country with one of the largest reserves of shale gas in the world. In a study published in June 2013 by the EIA, the estimate of technically recoverable shale gas resources for South Africa was put at 390 trillion cubic feet. But technical recoverability does not necessarily mean it is economically viable to do so.

According to these EIA estimates, South Africa ranks eighth in the world in terms of shale gas potential after, in descending order, China, Argentina, Algeria, the United States, Canada, Mexico and Australia. The EIA thus puts South Africa ahead of Russia and Brazil. The Karoo Basin contains the country's largest reserves. This region, however, is very arid, whereas the exploration and exploitation of shale gas involves hydraulic fracturing, and costs may be high due to the lack of infrastructure.

South Africa is seeking to diversify its electric mix, now heavily dominated by coal. Natural gas could play an important role in this strategy, along with nuclear energy, which the government intends reviving with the construction of new power stations. In this context, the authorities are therefore seeking to develop the country's shale gas resources.

Gas developments

The Zohr field in Egypt is expected to come on-stream by late 2017

ENI discovered the giant Zohr gas field only very recently, announcing it on 30 August 2015. Given the stakes for both ENI and Egypt, everything is being done to begin production as soon as possible. The start date is scheduled for late 2017 and development of the field will continue thereafter. By 2019, production from the Zohr field will reach its plateau of 75 million cubic metres a day, or about 500,000 barrels of oil equivalent, ENI has said. The potential of the deposit is estimated at up to 850 billion cubic metres of gas. Zohr is the largest gas field in the Mediterranean, a region where a number of discoveries have been made recently, particularly in its eastern section (variously off Africa, the Middle East and Israel, and Cyprus in the EU). A very important point for Egypt and ENI is, the company says, that Zohr would be entirely situated within Egypt and on the Shorouk Block, which will mean that (sometimes difficult) negotiations with other operators and/or with another country would not be necessary. This is clearly a definite asset in terms of timing and future revenue. Here too, BP is involved and has entered into an agreement with ENI to acquire a

10% stake in the Shorouk license at a cost of $375 million. The Russian oil company Rosneft is also expected to acquire a 30% stake in the same block.

Go-ahead for the first development phase of the Coral gas field, Mozambique, involving 5 trillion cubic feet of gas

Mozambique's offshore gas development projects are progressing. After the conclusion of a unitisation agreement between the operators of Offshore Zone 1 (Anadarko) and Offshore Zone 4 (ENI – see above) in early December 2015, another step was taken in 2016 with the approval by the government of the development plan for the Coral field in Zone 4. This plan involves the development of 5 trillion cubic feet (TCF) of gas in the first phase. Discovered in 2012, the Coral field contains some 16 TCF of gas, ENI says. The Italian group emphasizes that this is the first development plan approved by the authorities in the Rovuma basin, where ENI and Anadarko have made a number of large-scale gas field discoveries.

For the first development phase of Coral, six subsea wells will be drilled and a FLNG (Floating Liquid Natural Gas) installation will be built. Its capacity will be 3.4 million tonnes of LNG per year. BP has signed a contract to purchase 100% of future output for more than twenty years. ENH (Empresa Nacional de Hidrocarbonetos) estimates that the cost of LNG export projects for these two blocks to be $40 billion. In addition, a Memorandum of Understanding specifies that Zone 1 will initially provide 100 million cubic feet per day of gas for internal consumption in Mozambique. These volumes will be reviewed at a later date.

Angola LNG starts production

Good news for Chevron Corporation: exports of liquid natural gas from Angola LNG started in 2016. At the beginning of June, the first cargo of LNG left the Soyo site, in Zaire province in the north of the country, Sonangol announced. Chevron owns a 36.4% stake in Angola LNG, which has a production capacity of 5.2 million tonnes a year. This is the first LNG project supplied with associated gas, Chevron says.

Algeria: In Salah Southern Fields in operation

In Salah Gas, a joint venture between Sonatrach (35%), BP (33.15%) and Statoil (Norway, 31.85%), began operating the In Salah Southern Fields (ISSF) project in 2016, involving the commissioning of four gas fields in the In Salah area. These start-ups will enable ISG to maintain production from the In Salah gas project at 9 billion cubic metres a year. The final investment decision for ISSF was made in 2011.

BP is one of the largest foreign investors in Algeria. Besides In Salah, the British group is also involved in the In Amenas gas project, with the same partners Sonatrach and Statoil. The two projects have a similar production capacity, at 9 billion cubic metres per year, but In Salah produces dry gas and In Amenas wet gas (more liquid gas). In Salah has been in operation since July 2004 and In Amenas since 2006. In January 2013 In Amenas was targeted by a terrorist attack, resulting in the death of forty people.

The In Salah project consists of seven gas fields. Three of them, in the northern part of the area – Krechba, Teguentour and Reg – have been in production since 2004. The ISSF project concerns four deposits to the south of these fields: Gour Mahmoud, In Salah, Garet el-Befinat and Hassi Moumene. For the development of these southern fields, twenty-six wells need to be drilled. The work began in 2014 and will continue until 2018. In Salah's recoverable resources are estimated at 159 billion cubic metres. The exported gas is sold to the Italian company ENEL.

Nigeria LNG intends to build a new LNG train

Formed in 1989, Nigeria LNG Limited (NLNG) is planning to build a seventh natural gas liquefaction train at its Finima plant on Bonny Island, Rivers State. The project is not new, since

it has been under discussion for several years, but the company intends to speed up the process with a view to a final investment decision in the not too distant future. Tony Attah, NLNG's Managing Director, has emphasized that although the global gas and energy environment is very complex, the company had no choice. He considers it vital to advance and win in the face of competition and, for this, the seventh train is necessary. NLNG made the final investment decision for the Finima plant in November 1995. The first train, which is in fact number 2, entered production in September 1999. Another train, number 1, followed in February 2000. The last train to date, number 6, has been operational since December 2007.

The current production capacity of the NLNG liquefaction plant is 22 million tonnes (Mt) of LNG a year and 5 Mt a year of natural gas liquids from 3.5 billion cubic feet a day of natural gas. The addition of the seventh train will allow NLNG to produce and market 30 Mt of LNG a year. NLNG shareholders are the Nigerian National Petroleum Corporation (49%), Royal Dutch Shell (25.6%), Total (15%) and ENI (10.4%).

Coal

2016: signs of a revival of coal projects in Africa

Could 2016 be a turning point for Africa's coal sector? It cannot be ruled out. While Africa accounts for only just over 3% of the world's steam coal production, South Africa is a major player in export markets and, thanks to the upturn in market prices seen in 2016, could benefit from investments that would allow it to strengthen its strategic role, particularly in Asia. The large potential for electricity demand in Africa and the consequent development of coal-fired power plants also justify the growth of coal projects, together with the large reserves of steam coal and coking coal, particularly in Mozambique. In this regard 2017 should be favourable to the African coal sector, but this will depend in part on China's ability to fully implement its structural policy of reducing excess production capacity.

Although global demand for coal is declining, the price of steam coal for export doubled between January and November 2016, and the price of coking coal almost quadrupled. After five years of steadily falling prices and global demand in the doldrums, these massive increases may seem paradoxical. Prices match the balance between supply and demand on the international market. In this market, China plays a key role. After two years of declining imports, China greatly increased its imports in 2016 contrary to expectations and has again become the world's largest importer of coal. This increase is not due to a rise in China's coal consumption, which was down for the third consecutive year, but to the structural reform of supply adopted by the Chinese government in order to eliminate the country's excess production capacity and to halt the falling price of domestic coal. To speed up the rebalancing of the market, in April 2016, the government imposed a reduction in the number of working days in mines from 330 to 276 days a year. This restriction resulted in a sharp decline in domestic coal production and forced Chinese companies to source coal from the international market. The sudden increase in Chinese imports had the effect of returning the international market from a position of surplus to a tight market and of rising international prices.

For example, the price of Australian steam coal (FOB Newcastle, the benchmark price in the world market) rose from $50/t in January 2016 to $100 in November 2016 before falling to $87 in December, after the government China relaxed its

International trade in steam coal

(in millions of tonnes)

	2014	2015	2016 (e)	2016 /2015 (%)
World	**1117**	**1048**	**1057**	**0.9**
Exports				**0.0**
Australia	195	205	203	**-1.0**
Indonesia	407	366	370	**1.1**
South Africa	68	76	72	**-5.3**
Colombia	80	81	89	**9.9**
United States	34	25.4	15.604	**-38.6**
Russia	132	133	140	**5.3**
Imports				**0.0**
Japan	137	141	140	**-0.7**
EU	185	165	144	**-12.7**
China	229	156	196.3	**25.8**
South Korea	98	98	97	**-1.0**
India	185	171	151	**-11.7**
Taiwan	59	59	60	**1.7**
South-East Asia	62.06	74.3	86.2	**16.0**

Sources: Australian Department of Industry, IEA, USDOE, Chinese customs, 2016: estimated

policy of restricting supply. On an annual average, it increased by 15% from $57.5/t in 2015 to $66 in 2016. The South African coal export price (FOB Richards Bay) followed the same trend, rising from under $50/t in mid-January 2016 to $99.7/t on 9 November 2016. In the coking coal market, the increase was even greater: the FOB spot price of hard coking coal rose from $75/t in early 2016 to a peak of $310/t in November 2016 before falling again to less than $200/t in mid-January 2017. The high level of coal prices (even after the recent decline) is boosting coal export projects in Africa. In 2016 there was a revival of coking coal export projects in Mozambique and an increase in the final months of the year in exports of South African steam coal.

African production is dominated by South Africa

Africa accounts for only 3.3% of world production, with production of 266 Mt in 2015 and a similar level in 2016, of which 95% is produced in South Africa. Despite its relatively modest production, Africa is a major player in the international market: indeed South Africa is one of the world's five main exporters of steam coal, especially to India and Europe. Moreover, Mozambique's huge coking coal reserves could make it a major player in this market.

Lack of investment in the South African coal sector limits production

In South Africa, coal is vital for the national economy, the energy sector and employment. Domestic production, about 260 Mt/year, provides almost 70% of the primary energy supply and 90% of electricity production, and is used as a raw material for the manufacture of fuels. In addition, South Africa is the world's fifth largest supplier of steam coal and exports about a third of its production. While South Africa was a traditional supplier to Europe, its exports are increasingly oriented towards Asian markets, India in particular, but also, as from 2016, towards South Korea. Rising domestic demand and lower production reduced exports in 2016, down 4% to 72.5 Mt. The increase in exports during the last quarter of the year was not sufficient to offset the sharp decline in the first six months. Most of the exports are shipped from Richards Bay CoalTerminal (RBCT), and with a capacity of 91 Mt/year, it is one of the largest terminals in the world. But the inadequacy of transport capacity, especially by rail, limits exports, which have also suffered from lack of investment in the mining sector and operational difficulties in a highly politicized industry where strikes are frequent.

New investment is planned, which would enable South Africa to serve both its domestic market and is export needs. Following the depletion of reserves in traditional Highveld production areas, exploration and development efforts are focused on the Waterberg mines and the Limpopo province mines. In particular, Exxaro, the biggest BEE (black economic empowerment, introduced in 2003) mining company will be increasing its output at the Grootegeluk mine from 18 Mt/year to 33 Mt/year to supply Medupi power station and

also plans on developing the Thabametsi mine to supply a new power plant developed by Marubeni and KEPCO, as well as the external market.

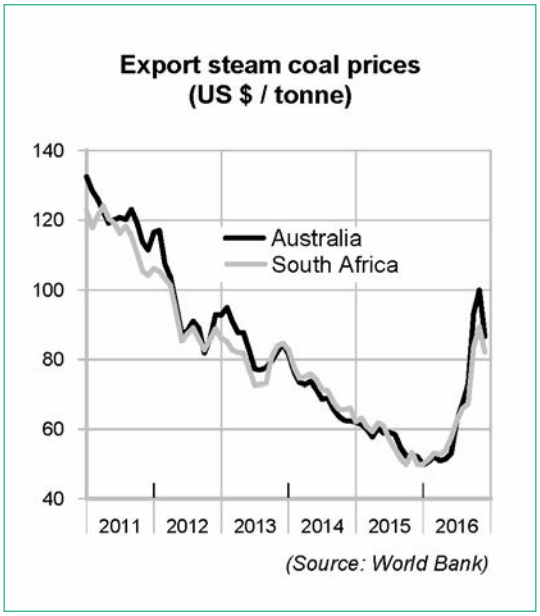
The withdrawal of multinational mining companies from the South African coal sector is continuing. Anglo American, present in South Africa since 1917, announced its intention to disengage from its coal assets and from iron ore production in South Africa and to focus its business there on rare and precious metals. In January 2017, the company pre-selected five groups to take over three of the seven coal mines that it operates locally. In April 2016, Glencore Xstrata sold its Optimum mine to Tegeta Exploration & Resources Ltd and, in 2014, Total sold its coal assets in South Africa to Exxaro.

Despite the current challenges, South African mining companies enjoy a strategic position that allows them to serve both the European and Asian markets. The higher level of coal prices is expected to lead to a recovery in mining investment and an increase in production and exports.

The rising price of coking coal is revitalizing the Mozambique coal sector

Mozambique's coal resources are estimated to be more than 20 Gt, including large reserves of high-quality coking coal (6.7 Gt) in the province of Tete. Despite this potential and the interest shown by foreign investors, the transport infrastructure has so far limited the country's development of coal production and exports. The rise in coking coal prices in 2016, however, suggests that development currently under way in Mozambique will accelerate.

The Brazilian mining giant Vale is the main investor in the sector. It is developing the Moatize mine in the Tete region (2.4 Gt of coking coal resources), as well as the associated transport infrastructure. Vale is involved in these developments alongside the Japanese company Mitsui, to which it sold part of its mining and transport assets in Mozambique in 2014 and 2016. Following the fall in coking coal prices, Vale was obliged to divest its local assets by $2.4 billion at the end of 2015, but the price rise in 2016 changes the situation. The Moatize mine has a production capacity of 11 Mt/year, but produced only 6 Mt in 2016, due to problems of transport to ports for exportation. In particular, the railway line from Sena to Beira was closed in June, following repeated attacks on trains. The second phase of Moatize's development will bring production capacity to 22 Mt/year. Vale hopes to produce 17 Mt in 2017 and to export 13 Mt. To solve logistical problems, Vale has developed the Corredor Logístico de Nacala (CLN), which includes a new railway and a deep water terminal at the port of Nacala, at a cost of $4.4 billion. The new railway line came into service in 2015. Eventually it will be able to export 18 Mt of coal a year.



Jindal Africa, a subsidiary of the private Indian group Jindal Steel & Power, operates the Chirodzi mine, with a capacity of 10 Mt/year of coking coal, with a possible extension to 20 Mt/year. High transport costs and the low price of coking coal up until 2016, however, forced Jindal to close the mine. But the recent rise in prices led to its reopening in October 2016. The third investor in Tete province, International Coal Ventures Private Limited (ICVL), is a company created by the Indian government to develop coal assets abroad (mainly the metallurgical coal that India lacks).

ICVL operates the Benga mine, acquired in 2014 from Rio Tinto for $50 million, against the nearly $4 billion that Rio Tinto had paid for it three years earlier. It has a current capacity of 5.3 Mt/year, but logistical problems, resulting in higher costs, also forced ICVL to halt production at the end of 2015. Thanks to rising prices, it is expected to start up again in early 2017.

Other producers are turning to the domestic market and power generation. The country's demand for electricity is growing rapidly, by 15% a year. This provides an opportunity that Ncondezi Energy is aiming to exploit. Unlike other mining companies, Ncondezi Energy, allied to Shanghai Electric Power (SEP), focuses on steam coal for domestic use. The company plans to build an 1800 MW integrated mine-power plant, to be developed in stages, in the Tete province. The electricity will be sold to the national electric company Electricidade de Moçambique (EdM). Funding for the project could be finalized in 2017 – $1 billion for mine development and the first 300 MW unit).

Thus, after a difficult start, Mozambique's coal sector is expected to see a new boom, both with the rise in exports of coking coal and the use of steam coal for domestic electricity generation.

2017 is set to be a year bringing projects to fruition

Due to the price increases in the second half of 2016, African coal production and exports were up in the final months of the year. This increase is expected to continue in 2017, with higher price levels than in 2016. The price of steam coal is likely to decline from its November 2016 level but on average it could increase by 14% in 2017 to $75/t. The price of coking coal, although down from the peak reached in November 2016, is expected to average $186/t in 2017, an increase of 63% from the 2016 average of $114. Because of China's importance with regard to international trade and the difficulty of implementing the structural reform of its coal supply, there is, however, likely to be high price volatility in the short term.

Proliferation of projects for new coal-fired power plants

At just under 200 Mt, Africa accounts for only 3% of global demand for coal. Coal, however, provided 22% of the continent's energy consumption in 2015. While this share is high, it is almost entirely due to coal consumption in southern Africa. Coal is also used in other African countries – Morocco, Egypt, Ethiopia, Mauritania, Senegal and Zimbabwe –, but South Africa alone accounts for 90% of total African demand. Growing environmental concerns are likely to lead to a decreasing share of coal in the African energy mix, although in absolute terms its consumption is expected to grow. In recent years, many coal-fired power plant projects have emerged, mostly financed by Chinese and Japanese public and private companies.

Coal supplies 33% of the electricity produced in Africa, but the proportion in South Africa is greater than 90%. Installed capacity of coal-fired power plants in Africa was 43 GW in 2016, dominated by South Africa. Projects currently under construction (10 GW) or planned (39 GW) could double this capacity. Outside southern Africa, these projects are based on imported coal. The decline in international demand for coal has made it an inexpensive solution for power generation, even though prices have recovered. The International Energy Agency (IEA) expects coal-fired capacity to increase to 80 GW by 2040 and provide 18% of electricity generation.

In South Africa, the state-owned company, Eskom, accounts for almost 95% of the country's electricity generation. Eskom is building two coal-fired power stations in the north of the country: Medupi (the first unit of which was inaugurated in September 2015) and Kusile (whose first unit will start operating in 2017). New power stations are also planned in Mozambique and Botswana, the two southern African countries with large coal reserves. In Mozambique, in addition to Ncondezi Energy, other investors plan to exploit the steam coal they produce as a by-product of coking coal. The government has approved the construction of a 600 MW power plant at Moatize by ACWA Power Moatize Termoelectrica – a consortium comprising Saudi Arabia's ACWA Power, Vale and Mitsui – which will use steam coal from the Vale mine. Similarly, Jindal plans to build a coal-fired power plant to provide electricity for its Chirodzi mine and the EdM network. ICVL also plans to build a 300 MW coal-fired power plant to supply its Benga mine. In Botswana, following the discovery of substantial coal resources, estimated at 21 Gt, the government is actively supporting the development of the coal sector so as to diversify the country's economy and reduce its dependence on diamond exports. Botswana aims to become a net exporter of electricity from coal and to solve the recurrent electricity supply problems in the region. At present its coal production is small (2.3 Mt in 2016) and supplies the Morupule power station, which is experiencing technical problems. Other projects, however, are under way, including Shumba Energy (formerly Shumba Coal), which intends developing two coal-fired power plants: the independent power stations of Mabesekwa (600 MW for export) and Sechaba (300 MW). Africa Energy, for its part, is developing an integrated project in the Mmamabula region and First Quantum Minerals (FQM) is developing a 300 MW power plant project in Sese. Zimbabwe is also expected to

Coal-fired thermal capacities in Africa in 2016 (MW)

	Existing	Under construction	Authorized	Pre-authorized	Advertised
South Africa	39719	8734	2580	855	2315
Botswana	600	132	1500	600	1204
Côte d'Ivoire			700		
Egypt					17240
Ghana				2100	
Kenya			130	1050	
Malawi			420		700
Morocco	2585	1386	318		
Mozambique			600	800	1320
Namibia	120				
Nigeria			1700		1500
Senegal	30		125	600	
Swaziland					200
Zimbabwe			600		
TOTAL	**43054**	**10252**	**8673**	**6005**	**24479**

(Source: Global Coal Plant Tracker)

build a 600 MW coal-fired power plant at a cost of $1.2 billion, the construction of which is likely to begin in the first quarter of 2017. The plant will be built by China State Construction Engineering Corporation and financed by Chinese capital.

A 1.2 GW project is planned by Zuma Energy in Okobo, Nigeria and a 2 GW power plant will be developed on the Ghana coast by the Chinese company Shenzhen Energy Corporation and Ghana's Volta River Authority. More recently, Power China and two Kenyan companies, Gulf Energy and Centrum, announced a 1,050 MW coal-fired power plant project in Lamu on the Kenyan coast, in the heart of a new port and industrial complex. A $1.2 billion loan was agreed with the Industrial and Commercial Bank of China (ICBC). However, in this instance, the Kenya Energy Regulatory Authority rejected the project's licence application. In Côte d'Ivoire, the government has approved the construction of the 700 MW coal-fired power plant proposed by S.ENERGIES at San Pedro. Construction is expected to begin in 2017 for commissioning in 2020-21.

In North Africa, Morocco, which imported 7.5 Mt of coal in 2016, is building two new ultra supercritical thermal power stations in Safi, scheduled to start operating in 2018. Egypt, for its part, plans on significantly expanding its coal-fired power generation capacity over the next 15 years. Although Egypt currently has no coal-fired power plants, projects are under way to raise the contribution of coal to 15% of electricity production by 2030, behind natural gas and diesel (49%) and renewables (29%). Gas and diesel, which Egypt is trying to replace, currently account for 70% of its electricity production. Agreements for the construction of coal-fired power plants with a capacity of approximately 19 GW were signed in 2015. By 2022, contracts are expected to be signed for the construction of 12.5 GW of coal-fired thermal capacity. It should be noted, however, that recent discoveries of large gas fields off the Egyptian coast may jeopardise a number of these projects.
While Africa currently consumes only 200 Mt/year, its demand could increase to 300 Mt/year by 2040, according to the IEA. This situation, contrary to the trend in the major coal-consuming countries, is explained by the availability of coal in the region and its low price, even after the recent rise, in a region where a third of the population has no access to electricity. Note that in South Africa, Eskom is supplied with local coal at a price of about $40/t.

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ARCADIA
Annual Report on Commodity Analytics and Dynamics in Africa

In 2016, the countenance of Africa emerged slightly reassured. While global growth has remained fairly dull, with sluggish international trade and economic packages on the continent continuing to fail, the rebound of prices for many commodities along with a sustained investment dynamics have somewhat dispersed the threatening clouds that had obscured its economic horizon in 2015. A slight improvement therefore, but which should not make us forget that the macroeconomic performance of Africa has been disappointing and that the heterogeneity of the continent remains so, both in terms of the economic performance of the countries it comprises and the conjuncture of the various commodities markets (agricultural, mineral, energy) to which it is exposed. 2016 has also been marked by major political and geopolitical events whose consequences cannot be neglected. *Africa and the Global Commodity Markets* is a means of grasping the reality of the cocoa and coffee markets, iron ore, oil, gas, copper and phosphates in the same light, while keenly observing the structural changes of the continent. It means being able to appreciate the economic development of many African countries without forgetting the importance of the economic, logistic or human challenges that the continent as a whole still has to face. It also means being able to multiply and cross-reference analyses, whether they are economic, legal, financial, or geopolitical: the very approach that the Arcadia report is trying to develop.

The Annual Report on Commodity Analytics and Dynamics in Africa (Arcadia) is written by some thirty international experts under the supervision of Philippe Chalmin, Professor at Paris Dauphine University (France) and Yves Jégourel, Associate Professor at the University Bordeaux (France) and Senior Fellow at the OCP Policy Center (Morocco). The Arcadia report is part of a collaboration between CyclOpe and the OCP Policy Center.

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