Number 23

MakingIt

Industry for Development

INDUSTRIALIZING AFRICA

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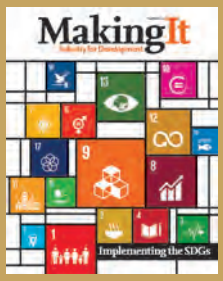

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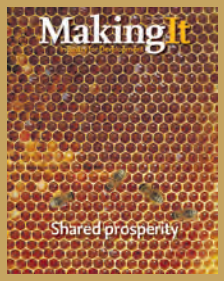

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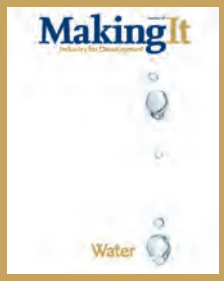

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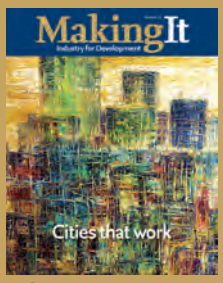

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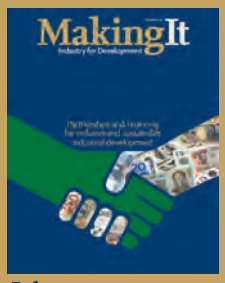

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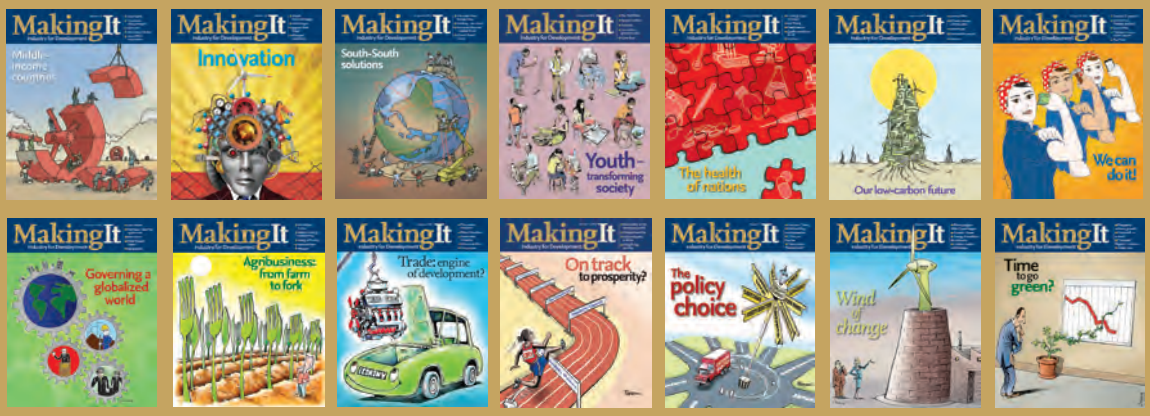

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Editorial

In today's interdependent global economy, Africa remains a weak link. If the world is to achieve the Sustainable Development Goals, thereby completing the United Nations 2030 Agenda for Sustainable Development, it must help Africa accelerate its development by promoting rapid and responsible industrialization.

To fulfill its economic potential, Africa must industrialize. The importance of this has been stressed repeatedly at recent international forums, including the Sixth Tokyo International Conference on African Development (TICAD VI), and the G20 summit in Hangzhou, China. For the first time, the G20 placed industrialization in Africa – and all of the Least Developed Countries (LDCs) – on its agenda. The African Union's Agenda 2063 also supports this drive.

The recent UN General Assembly resolution declaring 2016-2025 the Third Industrial Development Decade for Africa is yet another push in this direction.

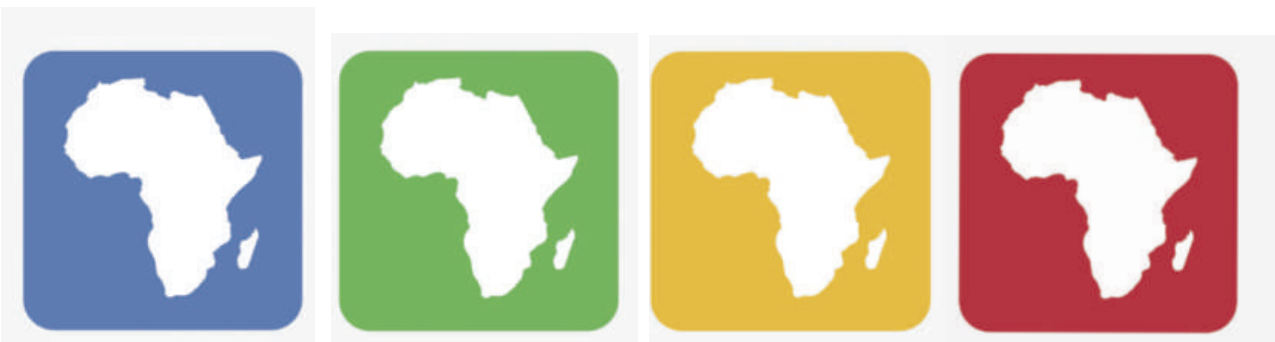
All of these declarations and commitments are an important first step. But they will mean little unless they are translated into concrete and effective action that advances African industrialization, creates jobs, and fosters inclusive and sustainable economic development. The question is how.

The short answer is money and action. The international community and development agencies must back their words with real financial commitments. Partnerships must be built to operationalize programmes that will enable Africa to become the world's next main engine of economic growth.

Africa's economies must move beyond producing raw materials to build dynamic and competitive manufacturing sectors with higher value added. Here, African countries must draw on the opportunities presented by participation in global and regional value chains. New and innovative industrial-development strategies, as well as carefully tailored measures to attract foreign direct investment, must be introduced.

To develop such strategies and participate effectively in industrial value chains, knowledge is needed. Investment in education and skills training is imperative to facilitate successful and lasting industrialization. By understanding and drawing on proven innovations from around the world, African countries could leapfrog more developed ones, building the capacity to produce more sophisticated, higher-value goods.

Knowledge of other countries' experiences will also help Africa to avoid the pitfalls of unbridled industrialization – particularly environmental damage. African countries must ensure that their industrial development strategy includes effective environmental safeguards.



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MakingIt
Industry for Development

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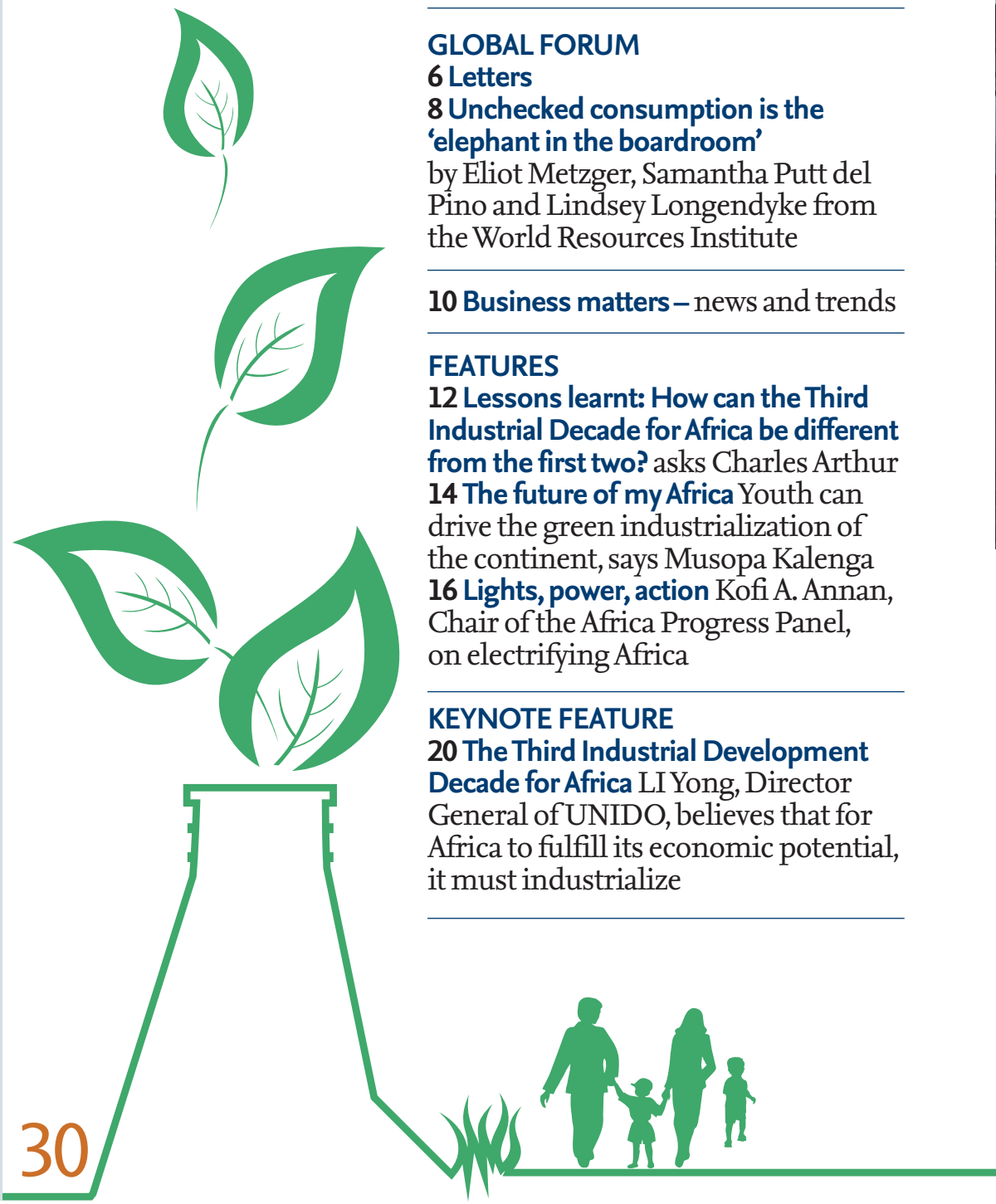

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GLOBAL FORUM

The Global Forum section of *Making It* is a space for interaction and discussion, and we welcome reactions and responses from readers about any of the issues raised in the magazine. Letters for publication in *Making It* should be marked 'For publication', and sent either by email to: editor@makingitmagazine.net or by post to: The Editor, *Making It*, Room D2142, UNIDO, PO Box 300, 1400 Vienna, Austria. (Letters/emails may be edited for reasons of space).

LETTERS

Slash-and-burn

It was reassuring to read the Director General's keynote in *Making It* 22, 'looking back' over 50 years of UNIDO and 'moving forward'. Particularly when he reiterated that the solution to the challenges the world faces lies in 'inclusive and sustainable industrial development strategies' including 'creating value while not harming the environment'.

It goes without saying that I'm sure all UNIDO member countries are extremely concerned about the United States' policy shift on climate change.

It has been encouraging to see that emissions from fossil fuels seem to have levelled off in the last three years, but the recent executive order from President Trump undoing Barack Obama's Clean Power Plan, alongside other policy changes, may stop the progress we have made, especially as the US is the second biggest emitter (with 14% of global carbon dioxide).

However, I don't see how Mr Trump's plans to revive the coal industry can be delivered. Around the world coal is in freefall, as energy investments have moved towards low-carbon. Many US states and cities see clean energy as the future, whatever Washington thinks, especially as the costs of solar and wind power have plummeted.

Hopefully it will at least concentrate minds amongst the overwhelming majority of countries to get on with the fight against global warming.

● **Joan Chiedozie, Cape Town, South Africa, website comment**


KEYNOTE

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Looking back, moving forward

by Li Yong, the Director General of the United Nations Industrial Development Organization (UNIDO)

Low-carbon nuclear?

It was good to see in your editorial (*Making It* number 22) that UNIDO favours "the imperative transition to a resource-efficient, low-carbon global economy" and backs the Sustainable Energy For all initiative.

Please can you clarify whether you think that strategy should include nuclear power?

It is often put forward as a low-carbon source of electricity (as opposed to fossil fuels) but what about the construction and decommissioning of the plants, the sourcing of fuel and processing of the waste – these all generate huge greenhouse emissions.

I'd like to see debate in the pages of *Making It* where we hear the cases from both pro- and anti-nuclear supporters.

● **Roberta Bliss, Lyon, France, by email**

Plastic people

Good work from Nils Simon in *Making It* magazine (Number 22) – "Let's get serious about plastics". As he said, plastics have boosted the economy because they are versatile, cheap and durable, but they have also caused problems as well. Twelve million tonnes of the stuff is ending up in our oceans every year, where it harms marine life, spreads toxic chemicals and can take centuries to break down.

After putting down your magazine I found a report online from Greenpeace. It conducted a survey of the footprints in plastic and the policies of the top six global soft drinks brands. Of the six companies surveyed – Coca-Cola, PepsiCo, Suntory, Danone, Dr Pepper Snapple and Nestlé – five sell a combined total of over two million tonnes of plastic bottles each year – that's the same weight as over 10,000 blue whales. The largest brand (Coca-Cola) refused to disclose the size of its plastic footprint, so the actual total figure is much higher.

What astounded me was that the six companies use a combined average of just 6.6% recycled plastic in their bottles and four out of the top six companies surveyed do not consider the impact of plastic bottles on oceans in their product design and development processes.

Amazingly, over the last ten years, the soft drinks industry has been consistently decreasing their use of refillable bottles, instead switching to yet more single-use plastic. Two-thirds of the soft drinks companies surveyed have a global policy opposing the introduction of deposit return schemes on drinks containers. Yet this policy has boosted recycling and collection rates to over 80% across the world and more than 98% in Germany.

Nils' article clearly shows that plastic waste has to be tackled. Why are these companies not doing it? As he points out treaties and

For further discussion of the issues raised in *Making It*, please visit the magazine website at *www.makingitmagazine.net* and our Twitter page, *@makingitmag*. Readers are encouraged to surf on over to these sites to join in the online discussion and debate about industry for development.

initiatives to clamp down on this practice are already in place but "many actors have a stake in the game and no clear-cut remedy exists". The soft drinks giants must phase out single-use plastic, embrace reusable packaging and make sure the remainder is made from 100% recycled content.

● **Duncan John, London, website comment**

Are robots working?

Wim Naudé and Paula Nagler's article (*Making It*, number 21) on the tension between technological innovation and inclusive industrialization raises lots of interesting arguments. But I think they are wrong to pay any credence to the prediction that "increasingly [it will] be the case that human labour almost exclusively exists to complement robots and machines."

Evidence published in 2015 by Guy Michaels and Georg Graetz suggests that, while productivity increases with robotic innovation and some semi-skilled and lower skilled jobs are abandoned, "there is some evidence of diminishing marginal returns to robot use – 'congestion effects' – so they are not a panacea for growth."

The fact is that tasks that robots do remain limited. For more complex tasks, robots have to be minded by humans lest they break down or miscalculate precision movements, which reduces their potential contribution to productivity enhancement. Mercedes-Benz, for example, has now begun replacing its robots with humans as they are more flexible.

Indeed, part of the reason for the limitation of robots in advanced technical processes is their lack of flexibility. Sabine Pfeiffer's study of German automotive factories (*Robots, Industry 4.0 and Humans, or Why Assembly Work Is More than Routine Work*) last year found that instead of providing a panacea for productivity enhancement, the use of robots meant that humans performed extra work which involved constant monitoring of the robots. "During a normal and otherwise smooth shift, a worker responsible for the ballet of eight welding and handling robots intervenes 20 to 30 times per shift – not because of technical incidents but in order to prevent them. Although human work declined quantitatively over the years, its qualitative role increased with automation".

The truth is that robots will only ever exist to complement humans.

● **Victoria Buckingham, Berlin, Germany, website comment**

Unchecked consumption is the 'elephant in the boardroom'

Eliot Metzger, Samantha Putt del Pino and **Lindsey Longendyke** from the World Resources Institute believe we need new business models that are not predicated on selling more stuff to more people

Many businesses measure growth by selling more stuff to more people, and consumer markets are expected to expand in the decades ahead. The world is on pace to exceed 9.5 billion people by 2050, with far fewer living in poverty than today.

Thanks to the rapid industrialization of developing countries like China, Brazil and India, three billion people are projected to join the global middle class in the next 15 years alone (the term middle class for the purposes of this article refers to individuals whose incomes allow for some discretionary spending beyond basic necessities). These demographic shifts represent both a human development victory and an enormous business opportunity for those companies positioning to meet the needs of added consumers.

But there's a catch: current consumption patterns, even assuming efficiency improvements, put the global economy on an impossible trajectory. We would use three times as many natural resources by 2050 compared to what we used in 2000 – and what we are using today has already exceeded planetary boundaries.

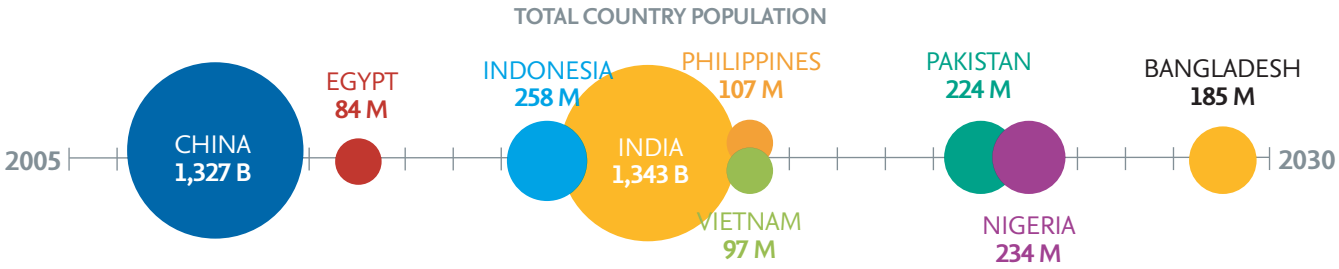
Yet few, if any, companies are fundamentally rethinking the models by which they meet customer needs. This is the elephant in the boardroom – uncomfortable and unmentioned because the solution requires radical change.

Business leaders at the crossroads

Companies will not thrive if their growth strategies assume infinite supplies of finite resources. Likewise, without progress on global environmental challenges like climate change, economic and social instability will undermine development around the world. Meanwhile, those businesses that remain stagnant will face more direct threats from the innovative business models that will emerge to deliver more value with the resources available.

While some companies are already investing in cleaner and more efficient operations and goods – such as fuel-efficient cars – these steps fall short if core business models remain predicated on selling more things to more people, requiring more and more resources. Even with a significantly more resource-efficient economy, natural resource extraction would still increase by 40% by 2050, undermining global climate change

Nine countries have or are expected to achieve the 'middle-class effect' between 2005 and 2030...



'Middle-class effect' occurs when average per capita income reaches US$6,000 per year. At this point, consumption (real household expenditures) accelerates and contributes to further growth of the middle class.

and sustainable development goals and posing other environmental risks.

That means that to meet consumer demand in 2050 – and grow earnings – companies must embrace changes to their core business models. Companies will need to rethink how they provide basic necessities, comforts and conveniences to billions more customers – without exceeding planetary boundaries.

Emerging models for a resource-strained world

Meeting the demands of a growing global middle class will mean innovating new products and services that deliver shareholder value and meet consumers' needs in different ways.

For example, Gwynnie Bee and Rent the Runway are two clothing services that allow customers to rent rather than buy clothing, which can curb the wastefulness of fast fashion. Discarded clothing represented nearly 8% of all municipal solid waste in the United States in 2013. Scaling sharing models would dramatically reduce environmental damages caused by the apparel industry, which is responsible for 10% of the world's greenhouse gas emissions and 20% of global industrial water pollution.

Moving away from unchecked resource consumption may be the defining sustainability challenge of our time, but even companies with laudable sustainability agendas stop short of addressing today's unsustainable consumption patterns. A review of 40,000 corporate sustainability reports between 2000 and 2014 found that only about 5% of companies mention some type of ecological limits. Of those, most did not provide detail on current or planned changes to address the issue.

Normalizing the conversation will set the groundwork for pursuing new business models that allow growth within the planet's limits and generate value in new and exciting ways.

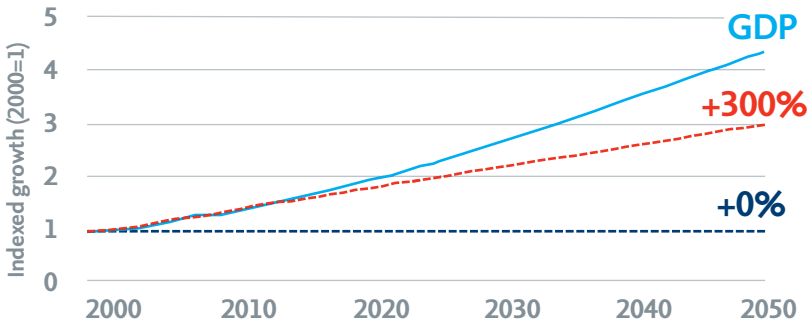
The choices that business leaders make today will define the future for generations to come.

● See the working paper from the World Resources Institute (WRI), *The Elephant in the Boardroom: Why Unchecked Consumption Is Not an Option in Tomorrow's Markets* www.wri.org/publication/elephant-in-the-boardroom

The apparel industry is responsible for 10% of the world's greenhouse gas emissions and 20% of its industrial water pollution.

Photo: www.istockphoto.com/luanateutzi

This will lead to unprecedented demand for goods and services



We are on track to triple our use of natural resources by 2050, posing a severe threat to economic and human security.

We must decouple use of natural resources and economic growth to contain our current overuse of water and land and drastically reduce our carbon emissions.

■ The new report, *Resource Efficiency: Potential and Economic Implications*, commissioned by the Group of Seven (G7) countries, analyzes four paths that countries could take over the next three decades, ranging from business as usual to a scenario where countries adopt both ambitious climate policies and improve resource efficiency. It finds that smarter use of resources can add US$2trn annually to the global economy.

The four scenarios: Existing Trends, Resource Efficiency (which does not include climate action), Ambitious Climate, and Efficiency Plus (which combines the Resource Efficiency and the Ambitious Climate scenarios). It looks at the opportunities for a number of key sectors, and makes these key findings:

- Increased resource efficiency is attainable practically;
- There are substantial areas of opportunity for greater resource efficiency;
- Resource efficiency can contribute to economic growth and job creation;
- Improving resource efficiency is indispensable for meeting the costs of climate targets.

The report is published by the International Resource Panel, consisting of eminent scientists, highly skilled in resource management issues. The Panel's goal is to steer the world away from overconsumption, waste and ecological harm to a more prosperous and sustainable future. (The International Resource Panel)

■ New research by McKinsey (*The case for digital reinvention*) shows that the forces of digital have yet to become fully mainstream. On average, industries are less than 40%

BUSINESS MATTERS

Delivering the Sustainable Development Goals

The arrival of the new industrial revolution – or Industry 4.0 – promises considerable opportunities for inclusive and sustainable development for both manufacturers and governments, according to a new report: *Delivering the Sustainable Development Goals – seizing the opportunity in global manufacturing*. Greater sustainability can help manufacturing and industrial businesses unlock trillions in growth opportunities. At the same time, governments will turn to business to help them shape and implement policy measures that advance sustainable economic growth and inclusive prosperity.

The report, developed jointly by PwC, the United Nations Industrial Development Organization (UNIDO) and Global Manufacturing and Industrialization Summit (GMIS), explores the relevance for manufacturing businesses of achieving the United Nations Sustainable Development Goals (SDGs) – also called the Global Goals – and examines how global manufacturing organizations can align their strategy with SDGs. The report states that SDGs offer tremendous economic opportunities for global manufacturing players and

digitized, despite the relatively deep penetration of these technologies in media, retail, and high tech.

As digitization penetrates more fully, it will dampen revenue and profit growth for some, particularly the bottom quartile of companies, while the top quartile captures disproportionate gains. Bold, tightly integrated digital strategies will be the biggest differentiator between companies that win and companies that don't, and the biggest payouts will go to those that initiate digital disruptions. Fast-followers with operational excellence and superior organizational health won't be far behind. (McKinsey)

■ Closing gender gaps requires more than non-discrimination policies. Some governments are now turning to gender budgeting.

Gender budgeting is a way for governments to promote equality through fiscal policy. It involves analyzing a budget's differing impacts on men and women and allocating money accordingly, as well as setting targets – such as equal school enrolment for girls – and directing funds to meet them. While feminist advocates have tended to concentrate on laws and social policy, gender budgeting focuses on the national purse-strings. Finance ministries have traditionally treated gender as irrelevant to their work. But they are eager to target gender gaps when they understand the economic losses they carry.

For example, cutting welfare affects women disproportionately because they earn less to begin with and are more likely than men to be single parents. Similarly, slashing funding for public services such as child care, which is a common way to reduce public deficits, requires women to provide more unpaid labour at home, which in turn constrains their ability to participate in the labour force. In poorer countries, reduced funding for clean water or electricity can force girls and women to spend their days fetching water instead of going to school or work. (*The Economist*)

businesses at large, if captured and applied as part of long-term and inclusive growth strategies.

Businesses cannot achieve the SDGs by themselves. But individual businesses – including global manufacturers – can help (or hinder) governments in achieving them.

Governments will also turn to business to help them achieve the SDGs, not primarily through donations or philanthropic activity, but by reviewing and seeking inputs that help shape government policies and procedures impacting businesses.

The report concludes that, for global manufacturing players, this means (a) recognizing the relevance of the SDGs to their business activities, and then (b) moving away from "business-as-usual" in the way they deliver and create products and services. Manufacturers should look closely at the targets that underpin Goals 7, 8, 9, 12 and 13 in particular, as these may well be where their greatest opportunities (and their biggest contribution) lie.

Online tool to drive women's empowerment

In March 2017, the United Nations Global Compact launched the Women's Empowerment Principles (WEPs) "Gender Gap Analysis Tool". This online platform helps global business leaders identify strengths, gaps and opportunities to improve gender equality and women's empowerment in the workplace and within the markets and communities they serve. More than 170 companies worldwide participated in designing the tool which can be accessed online at www.weps-gapanalysis.org

It offers an assessment of a company's progress in advancing gender equality, profiling companies as "Beginner", "Improver," "Achiever" or "Leader".

The tool is a joint project of the UN Global Compact, UN Women, the Multilateral Investment Fund of the Inter-American Development Bank, and the Inter-American Investment Corporation.

Photo: UNIDO

In an interview with *Forbes*, Lise Kingo, CEO and Executive Director of the UN Global Compact, said, "We have piloted the tool in 20 companies. So, it's still quite a small sample. But I can tell you that what we can already see now from the pilot is the area that stands out as weak is the gender balance in the supply chain, and companies have not been focused on this in the past. Thinking about how many of your suppliers are actually owned by a female is a new thing. But it's important because it indicates the opportunities for women to establish themselves as entrepreneurs and actually become suppliers to larger companies. What we know already now is that only 1% of companies in big supply chains are owned or led by a woman."

Asked how the data collected will be used, Kingo replied, "In a year from now we plan to produce a trend report where we look at the results that the tool has produced in the recent year. And we plan to publish such a trend report every year as of now. But from the tool and the database that all the responses will go into, we will be able to create a very interesting trend report."

Lessons learnt: How can the Third Industrial Decade for Africa be different from the first two?

Making It editor, **Charles Arthur**, looks for lessons to be learnt from the First (1980-1989) and Second Industrial Development Decades for Africa (1993-2002)

On 5 March 2003, the United Nations General Assembly adopted a resolution expressing disappointment that, "despite the first Industrial Development Decade for Africa in the 1980s and the Second Industrial Development Decade for Africa (1993–2002), limited progress has been made in the industrialization of Africa".

The then UN Secretary-General's report on the "Implementation of the Programme for the Second Industrial Development Decade for Africa (1993-2002)" provides a good description of the vast challenges that the industrialization of Africa was faced with: widespread poverty, overall shortage of human and financial resources and investment, obsolescence of technical capabilities, lack of information and communication technologies, inadequacy of physical and institutional infrastructure, and above all the devastating impact of conflicts.

However, beyond these challenges – many of which still exist today – what lessons can be learnt from the experience of the first two Industrial Development Decades for Africa (IDDA I and IDDA II)?

Perhaps the primary factor contributing to results that the UN Secretary- General described as "far below expectations" was the shortage of funds.

In relation to IDDA I, in 1984, the United Nations Industrial Development Organization (UNIDO) presented a proposed programme of assistance to Africa, costing an estimated US$210m. The programme was based firstly on requests from African countries and intergovernmental organizations, secondly on the initial integrated industrial promotion programme, developed at four sub-regional meetings, and thirdly, on proposals prepared by UNIDO on the basis of its experience in carrying out technical cooperation and support in developing countries in general and African countries in particular. In response to appeals for the funding necessary to finance the programme, the UN General Assembly made an allocation of US$5m. Further funding was hard to come by. UNIDO and its partners drew the world's attention to the problems of Africa, and offered a solution, but the price tag was beyond donors' budgets for international aid.

In relation to the Second Decade, a mid-term evaluation by the Organization of African Unity (OAU), the Economic Commission for Africa (ECA), and UNIDO, reported that "biennial allocations of around US$10m to UNIDO were grossly inadequate to support the Programme". The evaluation also noted that not only did dependence on external sources of financing for the Decade persist, but "slackening of ODA and FDI" imposed additional strain on implementation and the "mobilization of domestic financial resources has not been enhanced".

As to why the necessary funds could not be mobilized, the evaluation points out that both Decades were expressions of intentions and the desire for Africa's industrialization but that these intentions were not translated into concrete and practical programmes and projects for which funds could be mobilized for implementation. Specifically, it was noted that the recommended special implementation mechanisms at the country level were not established, and the existing national machinery, for example, the Ministries of Industry and Trade or Planning, were unable to take on this

responsibility as part of their normal activities.

Additional problems were that although IDDA II was recommended by African governments and endorsed by the UNIDO General Conference and the United Nations General Assembly, the Programme itself did not involve the donor community and other UN agencies in its design. Consequently, there was no endorsement and commitment on their part for implementation. On the part of the donor community, the impression given was that until statements of intentions were translated into specific action programmes and specific implementable projects, it could not provide any financial support.

Furthermore, some donor country representatives were of the view that while industrialization was essential for Africa's overall development, it must be based on specific prerequisites such as manpower and skills development, infrastructural (physical and institutional) development, stable political conditions induced by good governance, etc. Mere statements of intentions with broad, unwieldy and unfocused programmes of industrialization would not materialize.

More generally, the IDDA Programmes took place in the context of mostly unpropitious circumstances. In the 1980s, many countries of the region were adopting economic reforms and policy approaches to cope with a number of crises. These crises could be attributed principally to heavy external debt and the servicing burden, the collapse of world commodity prices and accompanying deterioration of terms of trade, unfavourable climatic conditions resulting in food shortages, poor physical and institutional infrastructure for lack of maintenance and of new investments, and the application of inappropriate policy measures which often created instability in the main macro-economic variables.

The first order of business for African governments was to seek survival. To most African countries, the answer lay in the adoption of Structural Adjustment Programmes (SAPs) with strict adherence to macro-economic policies which were accepted by a few with conviction and by many with reluctance. The SAPs were introduced across Africa in the 1980s and continued to operate throughout the 1990s. Thirty-seven sub-Saharan Africa countries undertook such adjustment policies.

Governments of these countries became more and more preoccupied with policies and programmes that were backed with ready financing and which could produce visible results in a short period of time. On the other hand, the IDDA II Programme had no financing backup and could therefore wait until the immediate crisis had abated.

Today, the context is very different but there are, nonetheless, still stiff challenges to overcome. The history of the first two IDDA can help point the way forward for the IDDA III to succeed.

As the UN General Assembly resolution proclaiming the IDDA III states, the African continent needs "to take urgent action to advance sustainable industrialization as a key element of furthering economic diversification and value addition, creating jobs and thus reducing poverty and contributing to the implementation of the 2030 Agenda".

Image: UNIDO

The future of my Africa

Musopa Kalenga believes that youth can drive the green industrialization of the continent

Africa has a great potential to flourish and play a significant role on the global market. It has an enormous amount of untapped resources that can be transformed into valuable and marketable products to boost economies, eradicate poverty and create employment.

This potential lies in one of the most neglected but creative and innovative groups of society that I happen to belong to: the youth.

I believe that for African economies to experience much-awaited structural change there is great need for industrialization. In a large part of today's world, industrialization is a pathway to economic growth and human development.

Industrialization should bring about sustainability. In Africa, industrialization would mean shifting away from subsistence farming to agri-business and manufacturing – to develop industries that process farm products to add value to them, provide quality packaging and sell them on local and international markets. It would also mean investing heavily in diverse clean and sustainable energy sources since Africa boasts abundant sun, rain and wind.

Image: UNIDO

Industrialization would mean promoting trade and agro-industry, especially now that minerals are proving unsustainable and fossil fuels are finite in quantity.

However, before Africa dives into the industrialization ocean, it has to ask itself some important questions that would serve as life guards. Do we have sufficient sources of clean energy? Do we have the infrastructure to support industrialization? Who will benefit from industrialization? Is industrialization inclusive and sustainable? What impact does industrialization have on the environment? Do we have good governance? Answering these questions is critical for Africa's industrialization. The highly-spoken-of industrialization needs tailoring to a specific region, if it is to thrive.

Over decades, Africa has overly relied on minerals and fossil fuels exported as primary products. It is time for us to diversify our economies.

Africa's source of wealth is not only its mineral resources, but also its vast fertile lands suitable for agribusiness. Still, Africa remains the poorest continent. It continues to face critical challenges – high youth unemployment, poverty and hunger.

In the African set-up, green industrialization is the perfect fit. Africa needs to promote and support green and technology-intensive initiatives. It needs to accelerate its industrialization to experience robust development and enjoy economic prosperity like many other parts of the world.

Industrialization has the power to create youth employment, eradicate poverty and hunger, boost intra-Africa and international trade and investments, diversify the economy and maintain sustainability of resources by means of sensible environmental management.

"Around 40% of the population of Africa is under the age of 15. Governments need to change their policies to help young people to realize their potential."

Photo: Rwanda Information and Communication Solutions

Remarkably, industrialization can be a viable means of empowering the youth, women and people living with disabilities. Through industrialization, the 2030 Agenda for Sustainable Development and the Sustainable Development Goals can be achieved.

Africa is largely populated with young people. Around 40% of the population is under the age of 15. High population growth rates compared with the rest of the world contribute to an expanding labour force, which McKinsey estimates will number 1.1 billion people by 2020. In my country, Zambia, young people under the age of 25 make up 70% of the population. These high percentages show that there is so much hope for Africa's future, but only if…

Image: www.istockphoto.com/JohnnyGreig

Governments need to change their policies to help young people to realize their potential. With such a striking number of young people, they still lack support. The people, who have to believe in them, do not. Young people are still being ignored and left in the background.

Young Africans need to realize their potential; and to do so, we need an environment that will allow us to thrive.

We urgently need empowerment! Hence, every policy adopted by decision-makers must ensure that young people benefit from it. In fact, young people need to sit around the table when decisions are made, especially the decisions that concern them.

We need accessible programmes to support us in science and technology studies and research. Governments need to start providing more scholarships for young people wishing to pursue such programmes. Education remains the principal form of youth empowerment. Therefore, governments need to invest in higher-learning institutions to make quality education affordable for an average African youth.

In addition, entrepreneurship in high value-added sectors must be promoted. Young people are limited in setting up businesses that will spearhead industrialization, mostly by financial constraints.

There is need to promote domestic manufacturing in high-added-value and technology-intensive sectors. Governments must support young people financially. Loans and other financial services should be made cheaper and accessible. Affordable loans can support youth entrepreneurship and help us to establish small-scale enterprises.

Africa can industrialize through trade, clean energy and technology-intensive agriculture. And it is young people who will be the driving force of its economic development.

MUSOPA KALENGA is a women's rights activist in Zambia. She was one of the winners of the UNIDO 50th Anniversary Time Capsule Competition launched to engage creative young people interested in addressing the issue of sustainability for a more inclusive future.

Lights, power, action

Kofi A. Annan, Chair of the Africa Progress Panel, on electrifying Africa

Image: www.istockphoto.com/stevecoleimages

Africa's energy needs are massive. They are also urgent. The traditional way of expanding energy access – increasing electricity generation capacity and extending the grid – is still vital. But it is slow. We have to electrify Africa faster.

To bring modern energy to all their citizens as soon as possible, African countries are exploring every available means. There are two promising options – off-grid solar power and mini-grids – while also outlining the steps to put Africa's grids back on track.

The cost of not taking action is clear. Economic growth, industrialization, jobs, business, sustainable agriculture and social development all depend on governments making energy a top priority. And our ability to limit global warming depends crucially on making the transition to renewable energy.

Meeting the double energy imperative – to increase both the scale and the pace of electrification – is a huge task. But it's also an exceptional opportunity.

It's an opportunity for countries to kick-start the social and economic transformation they need. It's an opportunity for entrepreneurs and investors, African and non-African. It's an opportunity for the continent to show what it can do by combining the latest technology with African ingenuity.

Africa can lead the world in low-carbon power development, by embracing the revolution in clean energy and using the latest tools to manage energy demand and increase efficiency. Africa can lead in creating markets for renewable energy, fostering the growth of mini-grids, building diversified modern grids and interconnecting them across the continent.

It's a huge task, but we know it can be done – because it's happening already.

Many countries have set ambitious targets for increasing energy access or for advancing other elements of the energy transition. At the core of Africa's electricity system, the utilities that manage national grids are following an international path towards greater efficiency and accountability, by separating generation, transmission and distribution. Governments are amending electricity laws and improving regulatory frameworks, clearing a path for investors. Independent power producers are increasing the involvement of the private sector and showing how to scale up renewable power generation capacity.

620 million Africans can't wait

Building and extending grid infrastructure can be slow, however. Even before the work can start, legal, financial and technical frameworks have to be adjusted or created from scratch. The 620 million Africans who lack electricity can't wait – and shouldn't have to wait. Luckily, mini-grid and off-grid energy solutions are plentiful. Africans are rapidly adopting and adapting them, particularly to meet the needs of areas that are remote or neglected by the grid. ➤

➤ Off-grid and mini-grid power by renewable sources of energy has a crucial role to play in meeting the three great energy challenges that African governments face: providing all their citizens with access to secure and affordable energy services; building the energy infrastructure needed to drive inclusive growth and create jobs; and limiting carbon emissions.

To meet these challenges, governments must also look beyond their own borders and think on a continental scale. Africa is rich in energy resources but they are not all evenly distributed, so cross-border power trade is essential.

Governments must cooperate

Here, too, we know what to do, and much is being done already. Major interconnection projects are under way. Five regional power pools have been created that cover the continent. But so far, only 8% of electricity is traded across borders – and those power pools are not connected to one another. To unlock Africa's energy potential for all Africans, governments must cooperate to ensure regional power trade thrives.

Fortunately, the future looks promising for African energy cooperation, with several new frameworks emerging. In 2015, the New Partnership for Africa's Development (NEPAD) established the Africa Power Vision, and the African Development Bank launched its New Deal on Energy for Africa. Both reflect the increased commitment to ensuring universal access to modern energy, and adequate power to enable economic growth and prosperity. The African Development Bank has made energy one of its five top priorities.

Africa's energy and climate needs are rising up the global development agenda. In September 2015, the world's governments adopted the Sustainable Development Goals, which include a goal to ensure access to affordable, reliable, sustainable and modern energy for all. This energy goal includes objectives advocated by the Sustainable Energy for All (SE4All) initiative and endorsed by Africa's energy ministers at their conference in 2012.

Making its voice heard

Africa made its voice heard at the 21st Conference of Parties to the UN Framework Convention on Climate Change (COP21) in Paris, where governments came together to agree a far-reaching, legally binding deal aimed at keeping global warming below 2°C.

> **"Africans have a right to expect more and better international support for low-carbon energy."**

New measures were agreed to support international cooperation and build the resilience of communities affected by climate change.

The Paris agreement was a triumph of multilateralism in an era marked by a worrying trend towards unilateralism and away from international cooperation. That trend has since continued and deepened, restoring some of the pessimism that preceded the Paris accord. But the agreement remains a strong, indispensable, global commitment. African governments must now play their full part in delivering on their Paris pledges. They made their commitment clear in Paris by launching the Africa Renewable Energy Initiative, an unprecedented effort to give all Africans access to energy that is based on renewable sources by 2030.

In return, Africans have a right to expect more and better international support for low-carbon energy. After all, they have contributed least to the underlying problem. That support should include technical and financial assistance for developing renewable power, on-grid and off-grid.

Africa's energy imperative is urgent

Bilateral and multilateral donors have pledged billions of dollars to Africa's energy transition, but little of that money is moving yet. If funds don't start arriving in 2017, countries may lose heart, and leaders who fought for the Paris agreement may face attack at home and be undermined. Donors need to realize that Africa's energy imperative is urgent – not just for Africa but for the world. Investing in the continent's clean energy is a key way to put the planet on a low-carbon growth path.

At home, African governments have a vital task to do, one that goes to the heart of the continent's energy problems: fixing national energy grids that are unreliable and financially fragile. Many energy utilities suffer from mismanagement and inefficiency, reflected in failures to set tariffs, collect revenue, support private partnerships and investments in energy and stem major energy losses in transmission and distribution. A lack of accountability and transparency nurtures corruption. No finding brings this home more forcefully than the fact that some electricity theft – a problem across the continent – is carried out by a few government organizations, including the armed forces in some countries.

At the same time, renewable sources of energy because of their flexibility, modularity, and adaptability are the basis of Africa's new modern electricity systems. Africa's electricity future is emerging today where consumers are becoming producers and the monopoly and centrality of electricity is being challenged.

It's time for African leaders to act

There are serious and persistent problems, yet they are solvable. The will exists to solve them, as many countries are demonstrating. Governments are showing leadership. But they need support to put in place the necessary integrated plans and policies, to overcome market barriers, and provide incentives for the business models and finance that can scale up Africa's energy transition.

Across the continent, there is a general acceptance that modern energy is an indispensable ingredient of the growth and progress that Africa needs to bring prosperity to every citizen – women and men, rural and urban, of every ethnicity and every origin. Africa stands at a crossroads. There is global attention and support for fixing Africa's energy problems, interest from investors, and demand from Africans for rapid expansion of reliable and carbon-friendly power. There are successes to build on. It's time for African leaders to act.

We know what to do. Every generation to come depends on us getting it right.

Image: Ricardo Stuckert/ABr

The Africa Progress Panel consists of ten distinguished individuals from the private and public sectors who advocate for equitable and sustainable development for Africa. KOFI ANNAN, former Secretary-General of the United Nations and Nobel laureate, chairs the Africa Progress Panel and is closely involved in its day-to-day work.

Technicians installing panels in one of East Africa's largest solar farms, Rwamagana District, Rwanda.

Image: Nature Picture Library / Alamy Stock Photo

THE THIRD INDUSTRIAL DEVELOPMENT DECADE FOR AFRICA

LI Yong, Director General of the United Nations Industrial Development Organization (UNIDO), believes that Africa must industrialize to fulfill its economic potential

Africa remains the poorest and most vulnerable region in the world. The slow pace of progress in poverty reduction is mirrored in low industrialization levels across the continent. Advancing inclusive and sustainable industrialization can help to increase economic diversification and value addition, create jobs, and hence reduce poverty in Africa. Or in other words: in order to fully benefit from its rich natural resources and fulfill its economic potential, Africa must industrialize.

I am therefore pleased that, last July, the United Nations General Assembly adopted a resolution, which reaffirms the importance of industrialization in supporting Africa's own efforts towards sustained, inclusive and sustainable economic growth and accelerated development, and which proclaimed the period of 2016-2025 as the Third Industrial Development Decade for Africa.

Achieving the 2030 Agenda

The adoption of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs), as well as of the Addis Ababa Action Agenda, signal a transition to a new universal development paradigm in the international community. They attest to a renewed commitment to strengthen the economic dimension of sustainable development, in balance with the social and environmental dimensions, and ➤

thereby place industrialization at the centre of the global development agenda. In particular, Goal 9 confirms the importance of industrialization in achieving the much needed structural transformation for long-term inclusive and sustainable development in developing countries.

Africa has successfully consolidated its common regional vision for prosperity and calls for action to "transform, grow and industrialize our economies through beneficiation and value addition of natural resources", led by structural transformation, technological change and innovation.

Furthermore, it has successfully transcribed this regional long-term development plan in the global development agenda. The New Partnership for Africa's Development (NEPAD), the African Mining Vision, the Accelerated Industrial Development of Africa (AIDA), Agenda 2063 and the First 10-Year Implementation Plan of Agenda 2063 all underscore the importance of manufacturing and industry in establishing transformed economies, high standards of living (income, jobs, health, and education, etc.), inclusive economic growth and enforcing environmental sustainability and climate resilience, among others.

In this context, I strongly believe that the time is ripe for a Third Industrial Development Decade for Africa. Africa is well-placed to industrialize. Beyond its massive natural-resource endowments, the continent has a favorable demographic profile (its rapidly growing population means that it will soon have the world's largest workforce) and high urbanization rates. It also benefits from a highly educated diaspora.

But industrialization is never automatic. Governments must step up to drive investment and innovation and address market failures, while planning, implementing, and enforcing industrial policies that address the shortcomings of previous ineffective versions. They must then institutionalize these new policies in national and regional development strategies.

To succeed, governments will need adequate capacity, competence, and legitimacy to mobilize and interact with all stakeholders, thereby creating an attractive investment climate. The necessary reforms will open the way for public-private partnerships, which can provide investment for infrastructure development and maintenance. They will also facilitate cooperation with international organizations and development finance institutions, which can provide additional funds, while helping countries to upgrade their productive capacity.

A report, prepared last year by the United Nations Industrial Development Organization (UNIDO) for the Hangzhou G20 Summit, features a number of recommendations for Africa. It suggests support for agriculture and agribusiness development and linking them with other sectors, as well as measures to boost resilience to price shocks. Furthermore, the report emphasizes the need to deepen, broaden, and update the local knowledge

base, invest in energy and material resource efficiency, and promote green technologies and industries. Other recommendations relate to trade and regional integration, leveraging domestic and external finance, and promoting what it calls the "New Industrial Revolution."

UNIDO to the fore

The UN General Assembly resolution calls on the African Union Commission, the New Partnership for Africa's Development, the Economic Commission for Africa and specifically UNIDO to develop, operationalize and lead the implementation of the programme for the Third Industrial Development Decade for Africa.

It invites UNIDO, as the United Nations' specialized agency for industrialization, in close collaboration with the African Union, to scale up its technical assistance to African countries in accordance with its mandate to promote inclusive and sustainable industrial development.

It further invites UNIDO to foster partnerships with other relevant entities in the United Nations development system, and to promote the necessary linkages to develop joint initiatives in favor of industrialization, including technology transfer, access to information and communications technology, productive diversification, agribusiness value chain development, trade, capacity-building, renewable energy and energy efficiency, industrial policy, special economic zones and industrial parks, action on climate change and human capital development, while also strengthening public-private ➤

"To succeed, governments will need adequate capacity, competence, and legitimacy to mobilize and interact with all stakeholders, thereby creating an attractive investment climate."

"UNIDO has strengthened its partnership approach by introducing a new model of multi-stakeholder partnership, called the Programme for Country Partnership."

partnerships with a range of stakeholders, including those in the public and the private sectors, civil society organizations and academia.

Partnership and resource mobilization will be one of the key pillars of UNIDO's strategy. In this respect, cooperation with the African Union (AU) and the Regional Economic Communities will be an important aspect. Key components of this cooperation will be a programme to support the AU in the organization of industry-related forums and a programme to support implementation of the Plan of Action of the Accelerated Industrial Development of Africa

Programme for Country Partnership approach

UNIDO has strengthened its partnership approach by introducing a new model of multi-stakeholder partnership, called the Programme for Country Partnership (PCP). With this approach, UNIDO's well-established technical assistance is complemented by its convening and policy advisory role to support the design and implementation of industrialization strategies and instruments that can make a sizeable impact on a country's development.

The PCP is aligned with the national development agenda and is a multi-stakeholder partnership model that supports countries in achieving inclusive and sustainable industrial development. It is designed to build synergies with ongoing government and partner interventions, while mobilizing funds and leveraging additional investment towards

sectors with high growth potential. The PCP focuses on a select number of priority sectors or areas essential to the government's industrial development agenda. Priority sectors are typically selected based on job creation potential, availability of raw materials, export potential and ability to attract investment. This focused approach enables UNIDO to concentrate its diverse, in-house expertise, and maximize impact in areas key to the country's industrial development.

The PCP is designed to create synergy with partner programmes/projects relevant for industrial development in order to maximize impact. One particular area of focus is strategic partnerships with financial institutions and the business sector in order to leverage additional resources for infrastructure, industry and innovation, as well as knowledge, expertise and technology.

Launched in 2014, the model is being implemented in three countries: Ethiopia, Peru and Senegal.

The PCP for Ethiopia brings together development partners, UN agencies, financial institutions and the business sector – under the ownership of the national Government – to help achieve the goals of the country's Growth and Transformation Plan II and transform Ethiopia into a middle-income country by 2025. The programme focuses on three light manufacturing sectors: agro-food processing; textiles and apparel; and leather and leather products. These sectors were chosen due to their prospects for job creation, strong linkages to the agricultural sector, high export potential and capacities to attract private sector investment. They will act as a springboard for the transformation of Ethiopia's economy, from one based on agriculture to one driven primarily by light industries, particularly through the establishment of industrial parks.

The PCP for Senegal is mobilizing development partners to advance inclusive and sustainable industrial development, within the framework of the government's national development strategy, entitled the Plan Sénégal Emergent. The PCP focuses on three main areas: industrial policy development; the establishment of agro-poles for agricultural value chains; and the operationalization of existing industrial parks and the development of new ones. All this is in line with the government's aim to transform Senegal into a regional industrial hub. One of the flagship industrial projects is the Diamniadio industrial park, a major industrial public-private partnership project currently under development.

Mainstreaming of the PCP approach to other African countries could contribute to the implementation of the Third Industrial Development Decade for Africa.

Industrial policy

A second pillar of UNIDO's strategy is the provision of policy advice. Industrial policy has played a critical role in real-world economic success stories, but recent changes in the global economic environment have made it impossible ➤

➤ for today's poor countries, including the African ones, to draw lessons from the experiences of the more economically advanced countries in the past.

However, while these changes have affected which industrial policy measures can be used and which are the most effective, they have not invalidated all types of industrial policy. There are still effective industrial policy measures that can be used. If anything, these changes have made it even more necessary for developing country industrial policymakers to be 'smart' about devising development strategy and designing industrial policy measures.

Together with the United Nations Economic Commission for Africa, UNIDO will implement a programme to support the development and management of industrial policy mechanisms by African countries. Together with the African Union Commission, UNIDO will strengthen the capacities of relevant institutions to collect, analyze and manage industrial data.

Dialogue and coordination

The third pillar is knowledge transfer, networking and industrial cooperation. It is vital to increase the visibility of Africa's industrialization drive and to foster dialogue and coordination between all relevant stakeholders. UNIDO will leverage its internationally recognized convening role to increase the momentum at high-level events such as the African Union Specialized Technical Committee Meeting on Industry Meeting in Addis Ababa in April/May 2017, the Vienna Energy Forum in May 2017, and the UNIDO Least Developed Countries Ministerial Conference in Vienna in November 2017.

The fourth pillar is technical cooperation and will focus on a number of essential programmes. One will promote industrial clusters, and design and operationalize a selected number of special economic zones and regional industrial zones. A second programme will support the implementation of the 3ADI programme to accelerate the development of the agribusiness and agro-industries sectors in Africa. A third will scale up the development of renewable energy, in particular mini and small hydropower.

Other areas of focus include the scaling up of regional quality infrastructure projects in conjunction with the Regional Economic Communities (ECOWAS, EAC and SADC); the operationalization of the Pharmaceutical Manufacturing Plan for Africa; support for investment and technology promotion; resource efficient and cleaner production, and support for national compliance with multilateral environmental agreements.

Leave no one behind

Overarching this architecture is a clear recognition that inclusive industrialization means ensuring that no one is left behind, especially not women or young people. Including women in the industrialization process is critical because it enables faster economic growth, shared prosperity and

"Including women in the industrialization process is critical because it enables faster economic growth, shared prosperity and sustainable development."

sustainable development. Many studies show that there is a positive correlation between gender equality and per capita gross domestic product, the level of competitiveness, and human development indicators.

Opportunities for youth

The continent's young people need the tools and skills to take their lives into their own hands. They are full of enthusiasm and positive energy to achieve success. UNIDO will advocate for national industrialization policies that include vocational and skills training, as well as business education to nurture the entrepreneurial spirit of the new generation. Investment and rewards for innovation that our Organization will continue to promote will help young people to build viable businesses.

Many of Africa's most ambitious and entrepreneurially minded young people feel compelled to join migration flows to the North, which no country can afford. Migration remains a complex issue but UNIDO is energetically tackling its root causes by promoting industrial job creation, rural development and access to energy across Africa.

In 2014, women in Africa represented half the population but only 38% of the manufacturing workforce. At the same time, women constitute an estimated 70% of the informal economy in several countries. Despite their socio-economic contributions, women face discrimination in both formal and informal sectors. Gender inequalities persist partially due to weak enforcement of laws protecting women, and partially due to underinvestment in women's education and health. Enduring prejudice and traditional gender roles are holding African economies back.

We must ensure action

How can Africa's position at the top of the international community's agenda be translated into actions that advance inclusive industrialization on that continent? We need the international community and development partners to back their words with financial commitments. To ensure that women's economic potential is realized, we must promote equal opportunities for women and men.

Investing more in the training and education of women and youth is also indispensable. In order to achieve inclusive and sustainable industrialization, we must embark on a skills revolution particularly in the areas of science, technology and engineering.

As part of Africa's transformation from informal to formal businesses, we must strengthen women's entrepreneurial and technical skills, access to technologies, business support services, advocacy, and self-help networks.

Africa is by no means destined to lag behind the rest of the world economy. On the contrary, it could become a global economic powerhouse soon. But to fulfill its economic potential, Africa must industrialize. UNIDO will draw on its unique expertise and extensive experience to lead the international efforts to achieve this ambitious goal.

Andrea Illy, Chairman of illycaffè, on the critical importance of responsible sourcing

Wake up and smell the coffee

Everything in illy begins with the quality of coffee. The company purchases its coffee directly from the farmers, in an economic, social and environmental sustainability process that goes all the way down the supply chain, from the bean to the cup.

The exclusive and unique approach of illycaffè to sustainability rests on three main pillars: selection and direct working relations with the best producers of Arabica coffee; know-how transfer – and training to quality production, while always respecting the environment; and remuneration for the top quality and the pledge to provide coffee growers with a profit, in order to make their production sustainable. Thanks to this process, illycaffè became the first company in the world to obtain the DNV-GL Responsible Supply Chain Process Certification, recognizing sustainability in every aspect of its coffee sourcing, from the coffee estate to the café espresso. The foci of this innovative standard are the quality of the produced coffee and the creation of value for all its stakeholders.

The strategic orientation at the basis of this certification is based on principles of traceability, reciprocity and quality. Ethiopia, the cradle of Arabica coffee, is the only exception to this process, because local regulations prevent direct access to growers and traceability.

Supporting Ethiopia's coffee producers

To confirm its interest and commitment to the Ethiopian coffee community, illycaffè, together with Fondazione Ernesto Illy, has signed an agreement with the United Nations Industrial Development Organization (UNIDO), under the aegis of the Ethiopian Minister of Industry and the Head of the General Administrative Office of the Italian Ministry for Foreign Affairs and International Cooperation. The objective is to increase Ethiopia's coffee quality and production capability, and to permit small farmers to boost their earnings, thereby obtaining international recognition and fostering local economic growth.

A UNIDO project, "Improving the Sustainability and Inclusiveness of the Ethiopian Coffee Value Chain through Private and Public Partnership", is running in partnership with illycaffè and the Fondazione Ernesto Illy, and in close synergy with Ethiopian institutions, including the recently established Ethiopian Coffee and Tea Development and Marketing Authority. The project will be implemented in Addis Ababa, and in two regional states, Oromia and Southern Nations, Nationalities, and Peoples' (SNNP) Region, over three years. It aims to achieve its development and business objectives in a sustainable manner, using the best technologies to produce and market Ethiopian coffee throughout the world.

Small Ethiopian farmers and cooperatives will be offered the possibility to adopt the "best agronomical practices" to improve their technical competence and production. Moreover, it will introduce efficient models of sustainable development, including the "Illy Responsible Supply Chain Process Certification," which will be used as a reference point to reinforce Ethiopian suppliers. This project represents a good example of how a partnership based on the aim to create value for all the stakeholders involved in the chain could help to improve the coffee industry, not only in Ethiopia or in the sub-Saharan Africa area, but in the entire world.

Today, coffee is one of the cultivations which is most influenced by atmospheric

conditions. Climate change has been identified as the main factor of epidemics. To deal with these emergencies and similar scenarios in the future, I believe that significant resources are needed (human, knowledge and financial).

Coffee and climate change

Several private organizations and institutions are already addressing the issue of coffee and climate change – including illycaffè, which conducted a study on the impact of climate change in coffee growing countries (together with the Earth Institute and colleagues from Lavazza) and is currently working with Università del Caffè to study ways to improve farming practices. Every year, our team of experts organizes about one hundred visits to plantations to analyze the specific situation. However, to reach the necessary critical mass, we need to develop a holistic approach to private-public partnership. In the past, the coffee sector has been successful in addressing other relevant precompetitive issues through collaboration, cooperation and coordination.

To face the issue of coffee and climate change, I have presented, and will present in the next few months to several international bodies, the idea of a Global Arabica Plan, with the aim to organize three critical activities which can accelerate the process: fund-raising, knowledge transfer and coordination.

ANDREA ILLY is the Chairman of illycaffè, an Italian coffee roasting company that specializes in the production of espresso. The company was founded in Trieste in 1933. Today it is a large international company, selling its coffee-related products in approximately 140 countries worldwide.

The Global Arabica Plan approach should be multi-stakeholder, involving the private sector as well as institutions from consuming and growing countries. A dedicated legal entity should be appointed for the Global Arabica Plan governance, whereas projects should continue to be managed by a network of existing and possible future organizations.

Besides global warming, in the future coffee farmers will have to deal with other challenges which must be faced with increasingly sustainable solutions, such as farming practices and methods which are less and less dependent on water and, at the same time, allow for an increase in yield, while avoiding deforestation.

To invest in the production chain, in knowledge and in quality means to invest in innovation, even in terms of new production sites: according to estimates, in the next 50 years the planet will lose up to 50% of land that can be cultivated with coffee, while the global demand is growing quite consistently year after year. Over the past 20 years, the average growth rate in coffee consumption has risen 1.6% and it is predicted that production will have to double to respond to the market demand – but with only half the amount of cultivatable land. The increase in production costs for the positive growth of the economy in producing countries and the resulting revaluation of local currencies, calls for increasingly well-organized companies.

For all these reasons, illycaffe considers it not only a necessity but a true strategic mission to promote a modern coffee culture, based on the principles of integrated agriculture and dedicated to transforming agricultural producers into modern entrepreneurs.

Photo: illycaffè

Greening Africa's industrialization

Structural transformation in Africa's economies remains the highest priority, and industrialization is the top strategy for achieving it in practice.

The big opportunity for Africa, as a latecomer to industrialization, is in adopting alternative economic pathways to industrialization. This requires governments to take on-board the drivers, challenges, and trade-offs in pushing for a greening of industrialization – and to build them into the vision and route-map for action. Seizing the momentum of the Paris Climate Agreement and the SDGs provides the ideal timing for such a shift in economic strategy.

Dispelling the myths currently surrounding green growth will promote the re-shaping of Africa's economic growth in favour of sustainable development. Investing in environmental standards should be seen not as an obstacle to competitive manufacturing, but as underpinning competitiveness, making more efficient use of energy, and de-coupling resource use from output growth.

While some individual countries have taken the lead, there would be far greater benefits from a regional approach to greening the essential infrastructure, industrial structures, and major trade flows that span each region.

Natural resources and low productivity

Africa's growth has been characterized by heavy reliance on natural resources and low productivity across most sectors. It has been accompanied by high energy and material intensities, as well as waste generation. These factors drive the resource scarcity and contribute to the high production costs that undermine the global competitiveness of Africa's industrial sector.

Greening industrialization is an opportunity for Africa to achieve the type of structural transformation that yields sustainable and inclusive growth, creating jobs while safeguarding the productivity of natural resource assets. Growth in the region has been largely jobless and associated with the degradation of Africa's valuable natural capital.

Structural transformation through industrialization will inevitably and justifiably increase the uptake of resources. But a strategy for greening this process, in its many dimensions, will deliver a more competitive and resource-efficient industrial sector – one that provides employment, is climate resilient and is decoupled from environmental degradation. There is now a growing commitment among African countries to pursue inclusive green development. A collective commitment from across the African Union would strengthen the speed and effectiveness of such a strategic shift.

The United Nations Economic Commission for Africa wants the continent to opt for a new, cleaner and more efficient growth formula that will result in shared prosperity for its people.

Mapping out the pathway

Governments are central in mapping out the pathway to green industrialization. Long-term, consistent, and clear directions are required of policymakers to provide the institutional design and credible incentives at the heart of this structural transformation. Such a shift in economic strategy requires not a marginal tweaking of current policy tools, but a step-change in direction.

Leadership at the highest level of government is needed to confirm this step-change. In addition to the adoption of effective inclusive green economy policies and strategies, greening industrialization will need relevant measures to create a policy environment characterized by good governance and institutions, available financial resources and technologies, and high quality human capacities.

But this is not just a task for government. Indeed, it will be achieved only by a partnership between government, business, civil society, producer groups, neighbourhood organizations, municipal authorities, researchers and technical experts.

Greening industrialization provides the impetus for turning current supply chains linking natural resources to markets, into value chains that diversify Africa's economies and ensure greater value added.

"There is now a growing commitment among African countries to pursue inclusive green development."

In an era of growing scarcity, resource-rich Africa must shift away from being a marginal supplier of raw commodities, to harness the full potential of natural resources by diversification into greater value addition, through processing and marketing. The Africa Mining Vision offers a good example for making this step-change.

Four critical dimensions

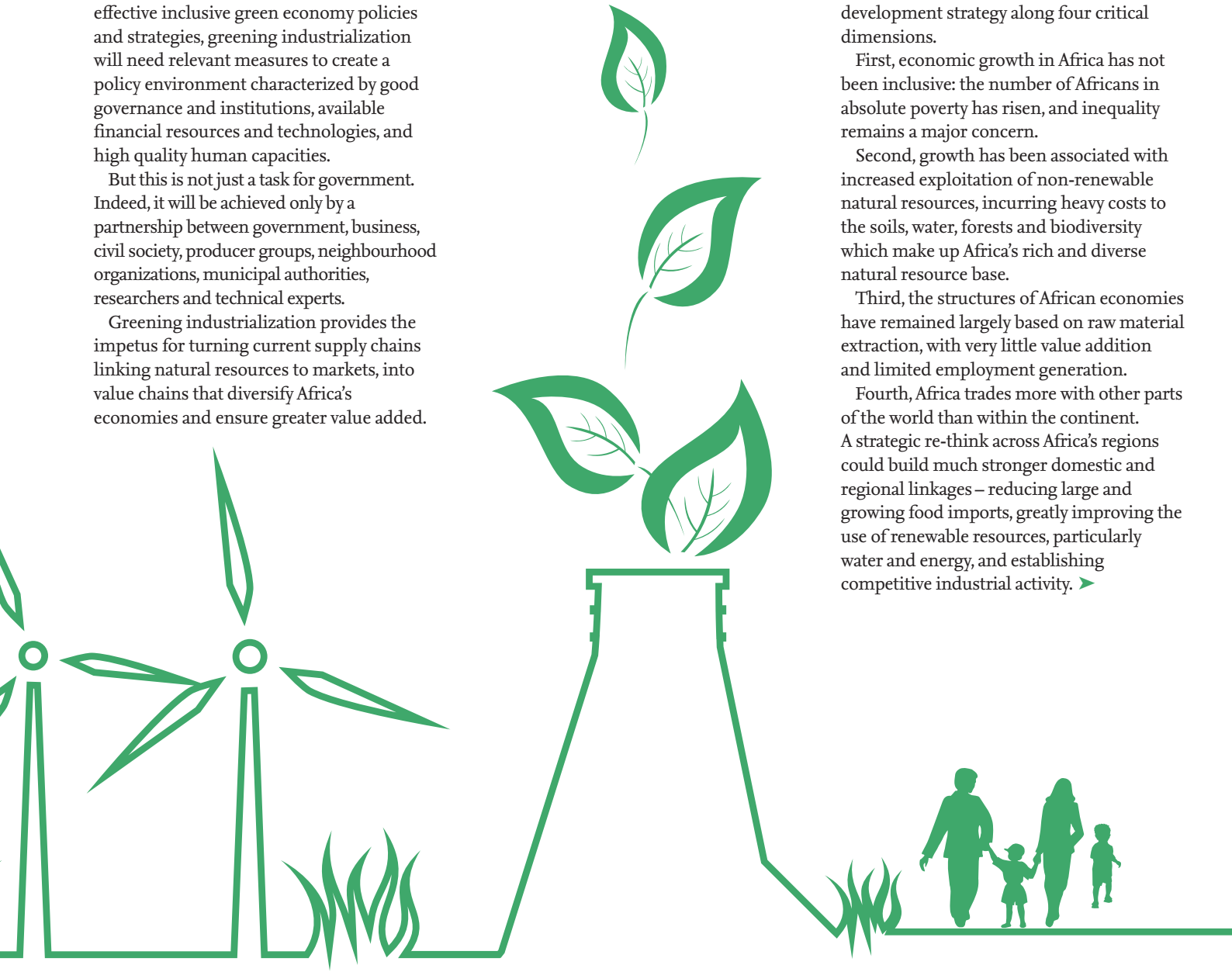
Africa's vulnerability to external shocks calls for a rethink of its growth and broader development strategy along four critical dimensions.

First, economic growth in Africa has not been inclusive: the number of Africans in absolute poverty has risen, and inequality remains a major concern.

Second, growth has been associated with increased exploitation of non-renewable natural resources, incurring heavy costs to the soils, water, forests and biodiversity which make up Africa's rich and diverse natural resource base.

Third, the structures of African economies have remained largely based on raw material extraction, with very little value addition and limited employment generation.

Fourth, Africa trades more with other parts of the world than within the continent. A strategic re-think across Africa's regions could build much stronger domestic and regional linkages – reducing large and growing food imports, greatly improving the use of renewable resources, particularly water and energy, and establishing competitive industrial activity. ➤



The challenge facing African leaders is to transform their patterns of production, and to build system-wide infrastructure in order to ensure secure supplies of water, food and energy. Green and inclusive industrialization provides a pathway to attain such goals. And since most African countries share common environmental challenges, greening Africa's development would promote regional integration, cooperation and the growth of continent-wide innovation capabilities, putting Africa's development on a more robust, technologically smart and sustainable foundation.

Africa is blessed with abundant land, water and energy sources and with a young and increasingly better educated population. Such abundance, when combined with capital investment, can generate the prosperity, employment and sustainability needed to achieve the promise laid out in the African Union's Vision 2063. Some African countries are making good progress, with a focus on water, energy and agriculture, systematically building low-carbon development and climate resilience into their plans and decision-making.

But many countries have yet to focus on how best to harness the post-2015 momentum in climate and sustainability and use it to accelerate their own plans for growth, structural transformation and sustainable industrialization.

Leapfrogging the process

African countries can stand back and watch others take the lead in building a green economy – or they can benefit from their current low-carbon position and leapfrog the process. Following the latter strategy means that many African economies can get it right the first time; infrastructure does not have to be retrofitted to make it climate resilient, and high dependence on volatile fossil fuels can be avoided, bringing significant co-benefits for health and energy security.

Africa's move to greener industrialization is not just a step towards meeting global carbon emission targets – it is a precondition for sustainable and inclusive growth. The Intended Nationally Determined Contributions, prepared by each country in advance of COP21, offer the ideal framework for practical steps over the next five to 10 years, aligning with long-term goals of de-carbonizing, building climate resilience and delivering sustainable development.

Africa can explore many ways to achieve green industrialization – starting with existing enterprises. Because of current high levels of waste and inefficiency at the plant level, supporting business to become more resource-efficient provides multiple opportunities for win-wins. And working at the systems level offers big opportunities for greening supply chains, infrastructure and, above all, energy generation.

Government has the central role in taking the long view – out to 2030 and beyond. Policy stability, effective pubic institutions and consistent implementation make all the difference in creating credible incentives to unlock private investment by small, medium and large enterprises. And while government must take the lead, it cannot hope to design, fund and achieve a green and inclusive economy on its own. Strong, long-term partnerships are needed with business, civil society organizations, community groups, municipal government, finance and research sectors. Each one brings its own skills, networks and interests to construct a shared vision for an inclusive green economy.

A bright future

Africa has a bright future that is within reach. The continent is a 'gold mine,' a world region with very significant natural resource assets, and significant growth and industrialization opportunities. How best to stimulate growth and ensure it is both inclusive and environmentally sustainable?

Africa cannot continue on a business-as-usual trajectory if it truly wishes to industrialize and scale up broad-based development. Looking forward to 2050, and using a set of green agenda policy tools, many of the supply-demand gaps in energy close considerably if major investments tap into Africa's vast renewable energy resources. Even water scarcity becomes manageable, largely as a result of improved governance, regional integration and green infrastructure. Critically, urban populations generate big dividends where investment is made in green infrastructure, and enhanced skills and innovation.

African governments have clear policy options to follow.

1) They need leadership at the highest level to achieve this structural change. This leadership needs to translate a broad vision into strategy and policies. A credible and long-term plan is vital, which is shared and communicated clearly.

2) While current capacity may be limited, steps should be taken to build the ability to deliver. This means investing in domestic resources and learning lessons on greening industrialization from elsewhere. Many other governments are pursuing similar challenges – so there is much to be learned.

3) If governments really seek a step-change in economic strategy, some interests are bound to block progress. Inevitably, such a shift in strategy will not please everyone, and government needs to be ready for this.

4) The enormous size of the informal sector means it cannot be wished away. Instead, government needs to find ways of engaging and bringing its energy and innovative capacity on board.

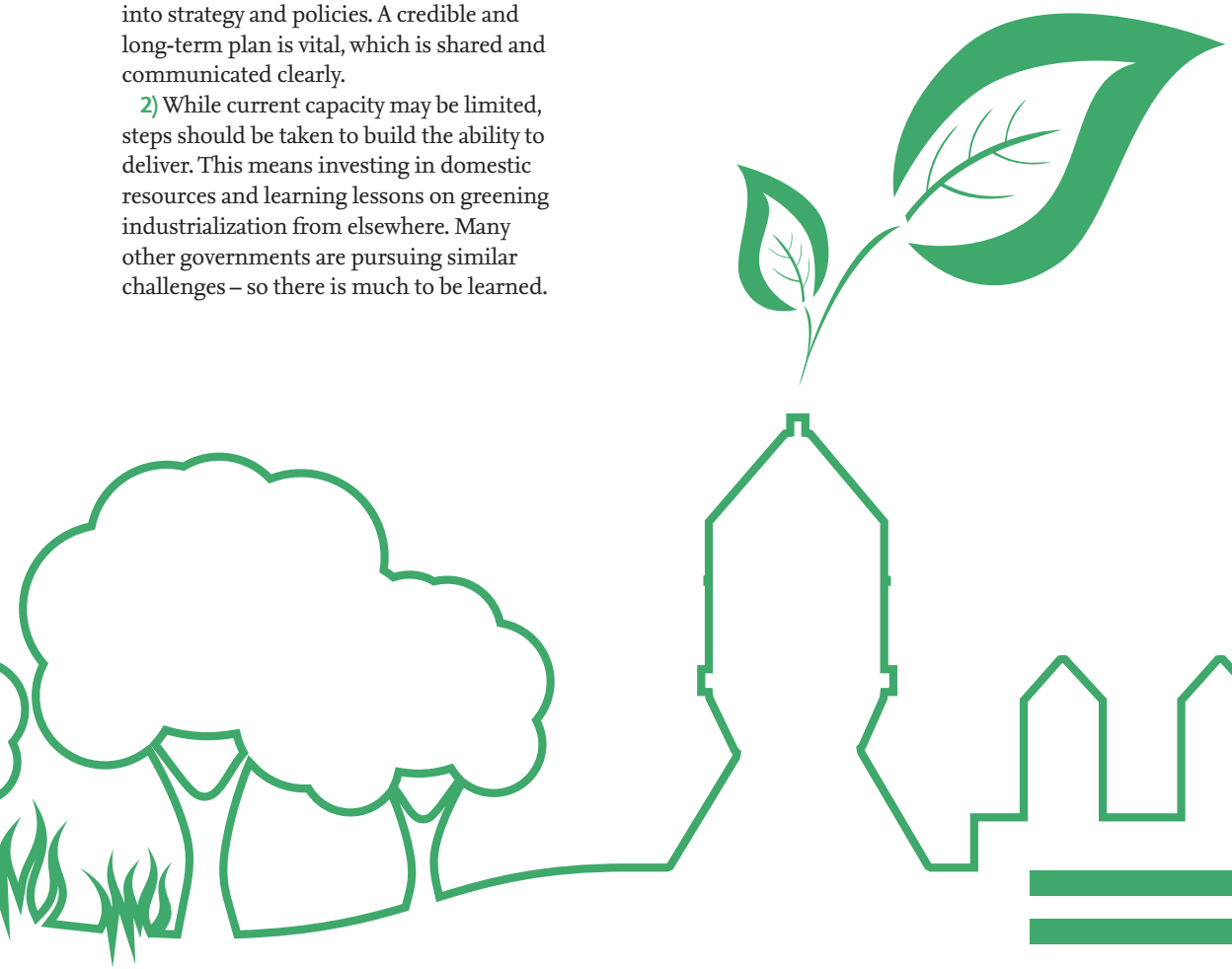
5) It can sometimes be tempting to consider large-scale initiatives as the only ones that really count. But in practice, lots of small initiatives add up to a big impact. A decentralized pattern of economic innovation can also be more resilient to shocks than a small number of large enterprises.

6) If government policy is to be credible, some fundamental institutions have to be strengthened – among them, local government administration, land and property rights, and access to law.

7) It is important to decentralize economic activity across the country to avoid having everything happen in the capital city. In practice, much of the innovation is likely to be at the local level, since this is the arena where people, enterprise and the government administration have the closest connection.

8) If policy is to adjust to circumstance, there must be means to assess progress through regular data collection, review and adjustment to the strategy.

● *The above is extracted from the executive summary of the* 2016 Economic Report on Africa *published by the United Nations Economic Commission for Africa (UNECA). One of the UN's five regional commissions, its mandate is to promote the economic and social development of its 54 member states, foster intra-regional integration, and promote international cooperation for Africa's development.*



Changing gears for the 4IR

Kamau Gachigi on how makerspaces can catch the Fourth Industrial Revolution wave

In November 2016, I attended a two-day series of meetings of the World Economic Forum's Global Council on the Future of Production, held in Dubai. At the meeting, Vishal Sikka, the CEO of global giant, Infosys Corporation, said, "Things have never changed so fast in world history and, conversely, will likely never be this slow again". The changes he was referring to constitute what is described by the World Economic Forum as the Fourth Industrial Revolution (4IR).

Just what exactly is the 4IR? It is characterized by the convergence of the physical, biological and cyber worlds through massive connectivity and massive automation. The previous revolutions brought us steam, electricity and ICT respectively, over a period of about 300 years.

So what does this mean for Africa? At first glance, the broad signs are not good. Africa's economy is still

somewhere amidst the first three industrial revolutions, often closer to the first. Our portion of global trade is said to have dropped to 2% in 2013, from about 3% in the 1970s. There are low levels of skills amongst the working population, and poverty remains widespread. Globalization means that we will be sucked into the effects of the 4IR whether we like it or not, and indeed this is already happening. Jim Yong Kim, the President of the World Bank, gave a speech last year in which he said that the Bank anticipates the loss of up to 85% jobs in countries like Kenya due to automation and the effects of the 4IR.

What averaged statistics about Africa's economic status don't tell you is about the specific activities at the far right of the bell curve, only observable at a more granular level, that portend better things.

Gearbox is a space around which a supportive ecosystem for hardware entrepreneurs has been successfully piloted, creating a pipeline of innovators and invention-based businesses by removing the key constraints to developing innovative hardware products in Kenya.

The main constraint from our perspective is the difficulty that most innovators in African countries face in creating high-quality prototypes with which to demonstrate the market value of the hardware innovation through a pilot. Removal of this constraint by providing access to modern fabrication tools on a shared basis can lead to investment opportunities, thereby addressing another significant impediment. A further constraint is the dearth of contract manufacturing facilities. This means that every innovator needs to establish his/her own manufacturing facility in order to meet market demand, which often results in lower competitiveness.

There are also significant constraints found further upstream in the production value network. These begin with the creative process itself, with many would-be innovators not having much of an understanding of human-centred design. Even assuming one has mastered that, there are other barriers to competitiveness, such as poor product design that doesn't lend itself to available manufacturing processes.

At centres like Gearbox, often called makerspaces, innovators are taught all such methodologies. What's additionally exciting about makerspaces is that they make modern methods and technologies available not only to engineers, but also to the class of people called makers.

We in Africa are very familiar with people who have engineering in their blood, making all manner of things out of recycled bits and pieces. Many such people can be converted into makers, and this happens when they are taught to use a range of tools that are highly empowering because the engineering capacity is designed into them. Tools such as Arduino and Raspberry Pi enable amateurs, without electronics training or understanding, to make sophisticated prototypes without needing to understand in depth how the innards work. This includes coding, which pervades the electronics underlying much of what makes the 4IR work. Makers only need to understand coding peripherally in order to make powerful and marketable products, such as those used in internet-of-things devices.

I have been really thrilled as I have watched engineers and makers transcend the gaps between a variety of types of productive impotence to produce very presentable working prototypes. A couple of them are enjoying significant revenues from their products already, though mass production in each case still takes place in China.

We have people designing and prototyping speed governor and car-tracking devices, point-of-sale devices, all manner of control systems, and even computer numerical controlled (CNC) machines, such as 3D printers, plasma cutters and routers. The latter machines epitomize digital fabrication in which computer-generated designs are sent to the machine which rapidly and precisely converts them into products. Indeed, we are on the verge of launching our very own made-in-Kenya CNC plasma cutters and wood router into the jua-kali (informal) sector. Imagine that, untrained craftsmen, currently producing crude products, raising their productivity by orders of magnitude through digital fabrication.

Centres such as Gearbox and the FabLabs, disruptive centres of all the types of learning I mention above, should be replicated across Africa. They should be seen by governments as having as much importance as building roads, laying power lines, and building information infrastructure.

We shouldn't wait for tech transfer via foreign direct investment (FDI), which I see as an unreliable form of trickle-down industrialization (unless very carefully embedded win-win terms are employed). We shouldn't wait for the few engineers that our funds-constrained governments can educate to translate their knowledge into factories making what we need. Instead, it makes more sense to transform significant swathes of our populations into makers through flexible and abbreviated instruction at makerspaces, which then feed centres of high-level prototyping and eventual contract manufacture.

KAMAU GACHIGI is the Executive Director of Gearbox, a hardware incubator or maker space in Nairobi that provides innovators with access to world-class prototyping and low-volume production. Previously, he founded FabLabs (small-scale workshops offering personal digital fabrication) at the University of Nairobi and at the Riruta Satellite in an impoverished neighbourhood in the city, and served as head of the University of Nairobi's Science and Technology Park.

Image: www.istock.com/FrankRamspott

GOOD BUSINESS

Making It looks at a voluntary programme called VinylPlus, created to act as a framework for sustainable development in the polyvinyl chloride (PVC) industry across Europe

vinyl plus

COMMITTED TO SUSTAINABLE DEVELOPMENT

Since it was first commercially produced in the late 1920s, polyvinyl chloride, or PVC, has become one of the most widely used polymers. It is used virtually everywhere: from window frames and pipes to credit cards and blood bags.

Due to its light weight, durability and stability, PVC can offer energy, cost and material efficiency gains for sectors such as building and construction, water distribution, health and transportation.

PVC is intrinsically a low-carbon plastic. Fifty-seven percent of its molecular weight is chlorine (derived from common salt), 5% is hydrogen and 38% is carbon – compared to more than 80% carbon in most other thermoplastics. PVC also consumes less primary energy in the manufacturing phase than other commonly used plastics.

PVC products contribute significantly to energy efficiency through low thermal conductivity. For example, PVC window frames have three times the heat insulation efficiency of aluminium profiles, increasing the energy efficiency of homes and workplaces while maintaining our comfort.

There are several intrinsic benefits that the use of PVC brings, but of course, as with any material and human activity, it has a carbon footprint and an impact on the environment.

VinylPlus is the voluntary sustainable development programme of the European PVC industry. It aims to create a long-term sustainability framework for the entire PVC value chain in the 28 European Union states, plus Norway and Switzerland.

Through VinylPlus, manufacturers progressively reduce greenhouse gas (GHG) emissions along the production chain. VinylPlus identifies and measures the GHG footprint of PVC goods and production

VINYLPLUS' ENABLING CONDITIONS AND KEY ELEMENTS FOR SUCCESS:

Involvement of the entire value chain

Concrete and measurable targets and deadlines

Research and innovation

Strong governance and accountability

Stakeholder engagement, transparency and dialogue

"The private sector can play an important role in moving away from the business-as-usual model to a circular economy that underpins sustainability and creates green industry…"

processes. It then adopts targets to increase the use of green energy and technologies to enhance the efficiency of materials used. As the next step, it engages businesses who work to meet the targets together.

One of the targets set by VinylPlus members is to reduce the energy consumption for PVC resin production by 20% by 2020.

Brigitte Dero, general manager of VinylPlus, told *Making It*, "European Council of Vinyl Manufacturers members' energy consumption data for 2012-2013 showed that the energy needed to produce a tonne of PVC had decreased by an average of 10.2% compared to the agreed 2007-2008 baseline."

"This improvement came from a combination of factors, such as improvements in eco-efficiency, operations and equipment. VinylPlus is confident it is on track to achieve the targeted improvement by 2020."

Another focus for VinylPlus is recycling. This is PVC's greatest green potential. Using recycled PVC helps meet resource-efficiency targets and allows the preservation of natural resources.

For example, manufacturing window frames with 70% recycled PVC, rather than all new PVC, delivers savings of up to 50% in energy, over 60% in air emissions, and more than 60% in water emissions.

Through the VinylPlus initiative, the European PVC industry aims to recycle 800,000 tonnes of PVC per year by 2020. In 2016, the amount recycled with the support of VinylPlus was around 540,000 tonnes (22% of the total recyclable waste in Europe). This represents a significant increase on previous years: 444,000 tonnes recycled in 2013 (18% of recyclable waste) and 257,000 tonnes in 2011 (11%).

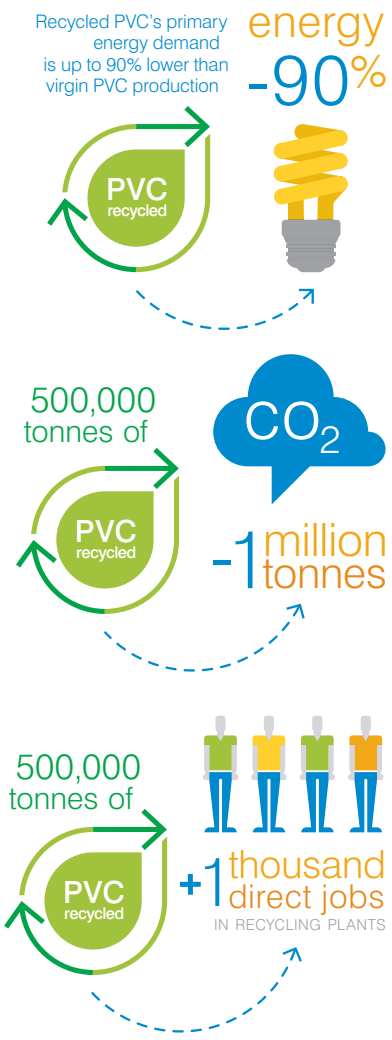
According to one conservative estimate, each kilogram of PVC that is recycled results in two kilograms of CO2 being saved. On this basis, PVC recycling in Europe now represents more than one million tonnes of CO2 saved per year. In addition, according to a study by Tauw, an independent European consulting and engineering company, on average one employee is needed to recycle 500 tonnes of PVC per year. Therefore, the PVC recycled in Europe in 2016 contributed to the creation of more than 1,000 direct jobs in recycling plants.

Stephan Sicars, Director of the Department of Environment at the United Nations Industrial Development Organization (UNIDO), explained how VinylPlus, with its voluntary commitment to green industry and technologies, helps producers of PVC and plastic goods to approach the Sustainable Development Goals (SDGs), "VinylPlus allows industries to come together and discuss the main characteristics of sustainability and their relevant contribution – and VinylPlus can make this visible for governments and civil society."

Sicars continued, "VinylPlus is a link between industry, society and governments; a forum that features the industries' capabilities, innovations and fascinating new products, and promotes their acceptance and mainstreaming, resulting in policy initiatives by civil society."

The European Union's Circular Economy Action Plan 2015 reaffirmed the need to increase plastics recycling as part of the overall transition to a circular economy. In this context, VinylPlus's Brigitte Dero says, "the private sector can play an important role in moving away from the business-as-usual model to a circular economy that underpins sustainability and creates green industry…We are moving the European PVC industry towards a circular economy and have already demonstrated significant progress and achievements towards our sustainability goals."

Using recycled PVC helps meet resource-efficiency targets and allows the preservation of natural resources.



Making the economy work for women

Francesca Rhodes sees that women's economic empowerment is an issue gaining an increased amount of attention, yet one that still seems to be an increasingly distant goal

Writing in the *Policy & Practice* blog, Rhodes states that, on average, women are less likely to be in paid work, and when they are, earn less, in more insecure roles. "The implications are huge – women in developing countries could be US$9trn better off a year if their pay and access to paid work were the same as men's."

Although many donors and governments have championed 'women's economic empowerment' – an agenda that aims to increase the amount and quality of opportunities for women to thrive, progress slowed down last year. It will now take 170 years for women to be employed at the same rates as men and have equal pay and seniority. This is 52 years longer than previous estimates.

On the other hand, writes Rhodes, another global trend has been accelerating at an extremely fast pace – extreme economic inequality. Eight men now own as much wealth as the poorest 3.6bn people on the planet, and wealth is accumulating at the top whilst the incomes of the poorest are staying the same or falling. So whilst the global economy is failing to support gender equality, it has proved very good at increasing the wealth of the richest, the majority of whom are men.

"It will now take 170 years for women to be employed at the same rates as men and have equal pay and seniority."

For Rhodes, this is no coincidence "since traditional economic theory has always ignored gender as a factor which shapes people's opportunities, and the current economic model – neoliberalism – has pursued policies based on women's low paid and unpaid work, increasing profits for others".

Oxfam is calling for three changes that can start to fix this broken economic model, and make the economy work for women.

1) The creation of decent work, with fair wages needs to be prioritized in policymaking and by businesses. Women's economic empowerment requires the creation of decent, quality work opportunities with fair pay, and an increase in women's decision-making power. Setting and enforcing minimum wage levels to ensure workers are lifted above the poverty line, improving regulations and social protection measures such as parental leave, and addressing violence against women in the workplace, are all measures which can improve the quality of work that women do.

2) Unpaid care work needs to be recognized for its value, and policies must reduce and redistribute responsibility for it. Governments and international institutions must include unpaid care work as a key component of their economic development strategies, and ensure that there is increased investment in the infrastructure, services and changes to social norms

Image: www.Dreamstime.com/Anastasia Sukhonosova

that will reduce and redistribute women's unequal share.

3) Women's voices and priorities must be heard in decisions made about the economy. In order to be equal in the economy, women need to be able to shape their own interests, and for policies to be shaped in line with their priorities. Women's rights organizations and movements are essential to challenging deep-seated discrimination across society. However they have seen their share of donor funding fall by over half in the past five years. Providing increased and accessible funding for these organizations should be a key part of the women's economic empowerment agenda. Governments should also implement gender budgeting, to analyze tax and spending policies for their effect on gender equality. Supporting women's political leadership, and making government policy as accountable to the poorest as to the richest in society, will also lead to fairer policies.

See the Oxfam report, *An Economy that Works for Women: Achieving women's economic empowerment in an increasingly unequal world*.

● **FRANCESCA RHODES** is Gender Policy Adviser for the non-governmental organization, Oxfam.

The return of good policies for bad reasons

Amanda Janoo considers the role of industrial policy in the time of resurgent populism

The world is at a unique moment. People are disillusioned with the status quo. We are on the brink of a paradigm shift that could transform our political and economic realities. Industrial policy has a unique opportunity to re-assert itself as an alternative way of managing an economy that is responsive to the desires and aspirations of society. Industrial policy experts must be careful, however, not to pander to the right wing currents that are building as this could spell demise for the discipline and the world.

For decades, countries have operated under the assumption that there is no alternative to market fundamentalism.

Described by many as "neoliberalism," market fundamentalism calls for a one-size-fits-all approach to economic policy. All countries, but particularly developing ones, were told to abide by the three sacred tenants: liberalize, privatize and deregulate. In this context, industrial policy was actively discouraged, if not straight-up prohibited. However, the tide seems to be changing.

We have recently seen populist upsurges in the two countries that were the chief architects of neoliberalism, the United States and the United Kingdom, with people and politicians actively disavowing the free market consensus of the proceeding decades. This explicit flirtation with economic protectionism by these ideological giants presents an opportunity for developing countries to openly question free trade and experiment with alternative economic policy approaches that are more in line with their societal priorities and objectives. The danger is however, that the world will emulate the scapegoating, separatist and authoritarian rhetoric being articulated by political party leaders in the United States and France to legitimize the use of more interventionist economic policies.

We are witnessing a yearning for social and political instruments to temper the inequality, instability and degradation wrought by decades of market fundamentalist policies. It is reminiscent of Karl Polanyi's description of the "double-movement" in the period between the First and Second World Wars. Industrial policy experts, having a deep understanding of the failings of an unruly free market system, are in an ideal position to advise governments disillusioned with "Chicago school" policy prescriptions. As space opens for new economic approaches, industrial policy can position itself as a more hands-on and socially-responsive form of economic management. The danger is that industrial policy inherently implies a more powerful role of government in economic affairs, and therefore can just as easily be used to support authoritarian ambitions.

Polanyi saw the "double-movement" manifesting in post-war Europe in two extreme forms: fascism and socialism. In looking at the recent US elections, we could easily see how the two populist candidates, Donald Trump and Bernie Sanders, fit into these polar categorizations. Both appealed to economic protectionism but for very different reasons.

Trump criticized free trade in order to further an aggressive foreign policy agenda and assert US dominance, while Sanders called for protectionist measures to help reduce social inequality and re-industrialize the economy. The clear danger here is that the same protectionist policies could be employed for either political agenda.

At this pivotal junction in history, industrial policy experts must not become drunk with the prospect of re-legitimation and bolster political movements that propagate messages of division, scapegoating and cultural superiority.

We must use industrial policy to support our global community to stand together as it critically reflects on the failures of market fundamentalism. It is time to creatively envision new forms of economic organization that can deliver on societies' desire for greater dignity and security. The old economic consensus is out. The question is whether industrial policy can articulate a persuasive alternative that re-empowers governments to mold and direct their economies without instigating a trade war that will bring more harm than good.

"We must use industrial policy to support our global community to stand together as it critically reflects on the failures of market fundamentalism."

● **AMANDA JANOO** works for The Industrial Policy Organization. She was previously an industrial policy analyst in UNIDO's Industrial Policy Advice Unit. Prior to joining UNIDO, she worked in India and Indonesia on issues relating to economic development, employment generation and enterprise development.

Taking a moment to celebrate Africa

by **JEAN-CLAUDE BASTOS DE MORAIS**

In a world dominated by dramatic headlines about President Trump, Brexit, the Chinese slowdown and oil prices, I'd like to pause and take a moment to do something unusual – celebrate the incredible Africa that is flourishing around us.

Of course, it's not all great and we can't pretend that many African countries don't still struggle with widespread poverty and poor living conditions. We know that. The world knows that. But let's, for a few moments at least, not dwell on the negatives that seem to always hog the headlines. Let's indulge and take a look at the positives – and imagine the Africa that lies ahead of us.

For me, having grown up in Angola, I know the challenges only too well. But, I know how incredibly dynamic and entrepreneurial the African spirit is. I see an exciting, dynamic and breathtakingly modern continent around the corner. We deserve to celebrate the journey made so far.

And it's not through rose-coloured spectacles that we view the new narrative of Africa's incredible future. It's already happening. Let's remember that as the world's fastest-growing, and youngest population, Africa has unparalleled human capital. There is a 2016 article on the World Economic Forum's website. It's titled, *The world's 10 youngest populations are all in Africa*. Take a look. The article states that if sub-Saharan Africa provides adequate education and jobs, US$500 billion a year could be added to the region's economies for 30 years.

And this is the central challenge – jobs! Jobs cannot realistically (or sustainably) be created by the state. In most major African economies, governments know this and accept it. So we know that job creation has to come from private enterprise. And that's why the new African buzzword – innovation – is top of the agenda.

Africa has more entrepreneurs and more young people who want to own their own business than anywhere else on Earth. The appetite for success is there in huge quantities, right across the continent. The energy of youth is there too. But what is missing? Money, facilities, and encouragement. Of these, money is perhaps the biggest issue. The annual Innovation Prize for Africa (IPA) competition rewards incredible innovations with hundreds of thousands of dollars every year. And there are other competitions that do the same. It's incredibly important to use cash as an incentive to bring unknown, commercially unskilled innovators out of the woodwork. And, for those that win, the money helps them get cracking and build a viable business. But competitions aren't nearly enough.

Education is critical if we are to point young people towards enterprise and innovation and to equip them with basic business skills. This needs to be at the core of the national curricula of every African country. National governments would do well to put business studies on their national curricula. We also need to see more and more collaboration between the public and private sectors. Many governments have created new platforms for innovators and entrepreneurs (such as state-backed venture capital funds or innovation hubs), and private businesses stand to gain a lot by getting in on the action and investing in small- and medium-sized enterprises.

Of course, we need to see the region's financial markets mature. Yes, there have been great strides in terms of anti-money laundering strategies in some countries.

"If sub-Saharan Africa provides adequate education and jobs, US$500 billion a year could be added to the region's economies for 30 years."

JEAN-CLAUDE BASTOS DE MORAIS is a Swiss-Angolan entrepreneur and innovation influencer, and is the founder and chair of Quantum Global Group, an investment firm focusing on Africa.

"Africa has more entrepreneurs and more young people who want to own their own business than anywhere else on Earth."

Image: www.istock.com/AfricaImages

But we need governments to help banks overcome their fear of lending to small- and medium-sized enterprises, and we need to see global private investment continue to rise. Private equity is now the major driver of economic growth and we need to welcome African and foreign private equity with open arms.

African innovators, entrepreneurs, and business leaders have the capacity to utterly transform this wonderful continent and to disrupt the status quo that will build the Africa we have all been dreaming of. We have the people, the energy, the technology and the political will. For those of us who are emotionally, and financially invested in Africa's future, it is absolutely right and fair that we should take this moment to smile and cherish the progress made so far. As Africans, we deserve the incredible future that awaits us.

MakingIt
Industry for Development

FURTHER READING

African Union Commission – Agenda 2063. The Africa We Want
Asch, Helmut Grimm and Michael Grimm – Industrialisation in Africa – Challenges and Opportunities
Bhorat, Haroon and Tarp, Finn – Africa's Lions. Growth Traps and Opportunities for Six African Economies
Economist, The – Industrialization in Africa. More a marathon than a sprint
Ellen MacArthur Foundation – The New Plastics Economy: Rethinking the future of plastics
Li, Yong – Africa's Decade of Industrialization
Li, Yong – The Return of Industrial Policy in Africa
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Lopes, Carlos – Africa's no-regret route to industrialization
Newman, Carol, Page, John, Shimelese, Abebe, and Söderbom, Måns – Made in Africa. Learning to Compete in Industry
Olopade, Dayo – The Bright Continent. Breaking Rules and Making Change in Modern Africa
Steenkamp, François – Can Africa grow its manufacturing sector and create jobs?
UNECA – Economic Report on Africa 2017. Urbanization and Industrialization for Africa's Transformation
UNIDO – Industrialization in Africa and Least Developed Countries. Boosting growth, creating jobs, promoting inclusiveness and sustainability

FURTHER SURFING

www.africapolicyreview.com – Africa Policy Review is a print and digital information resource dedicated to sub-Saharan Africa's development agenda
www.africaresearchinstitute.org – The Africa Research Institute encourages debate, questions orthodoxy and challenges "received wisdom" in and about Africa
www.afdb.org/en – The African Development Bank Group aims to spur sustainable economic development and social progress in its regional member countries
www.au.int – The African Union was established to accelerate the process of integration in the continent
www.lionessesofafrica.com – The digital home for Africa's women entrepreneurs
www.makerfaireafrica.com- Maker Faire Africa is both a yearly pan-African maker faire and a community of makers
www.makerspaces.com – A website built to help schools and libraries start and run their own makerspaces
www.nepad.org – The New Partnership for Africa's Development is the technical body of the African Union
www.newafricanmagazine.com – Insight into African affairs, from an African perspective.
www.uneca.org – The United Nations Economic Commission for Africa's mandate is to promote the economic and social development of its member states
www.un.org/en/africa/osaa – Office of the Special Adviser on Africa

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A quarterly magazine to stimulate debate about global industrial development issues

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