

The background of the entire page is a dark, high-contrast photograph of an industrial facility, likely a refinery or chemical plant. It features a complex network of pipes, metal walkways, and large storage tanks. The lighting is dramatic, with bright highlights on some surfaces and deep shadows elsewhere, creating a sense of scale and complexity. The overall color palette is dominated by dark blues, greys, and metallic tones.

MakingIt

Industry for Development

Number 27

INDUSTRY 2030



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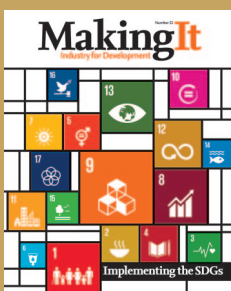
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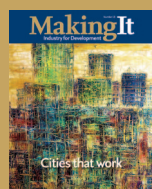


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discussion and exchange
about the intersection of
industry and development.



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Editorial

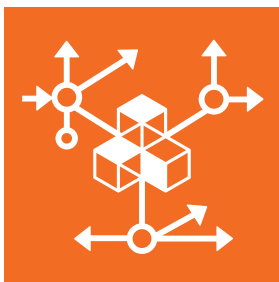
Industry 2030 points towards the world we want by the year 2030, with industries that are inclusive and sustainable, driving a low-carbon, climate-smart economy that provides decent jobs and shared prosperity and that empowers all people in all countries.

To get there, we are going to have to transform the way industrialization takes place. A transformation must come because greenhouse gas emissions from industrial processes are partly responsible for the impending climate breakdown – and we cannot allow that to happen. And a transformation is coming because advances in technology – what we call the fourth industrial revolution – will replace traditional production methods.

To ride and drive these transformations, we need to innovate and connect. We need to devise new approaches and embrace new concepts, and we need to do this in partnership. Industrialization is not about building one or two factories. It is a holistic movement that helps countries to rise from a lower level of development to a higher level. Industrialization is a set of processes that is beyond the capacity of any single institution to support fully, and requires strong partnerships with all related stakeholders, including bilateral and multilateral development agencies, international financial institutions, the private sector, academia and civil society.

All these stakeholders must come together to reconceive key manufacturing processes and flows of materials and products, and to ensure that the fourth industrial revolution delivers on its potential benefits rather than deepening existing inequalities.

Inclusive and sustainable industrialization can take us to the world we want by the year 2030 by producing more of the goods and services needed by an expanding world population, while using ever fewer resources and producing ever less waste and pollution.



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LI Yong, Director General of the United Nations Industrial Development Organization (UNIDO), on integrating the three dimensions of sustainable development



The 2030 Agenda for Sustainable Development is framed by 17 Sustainable Development Goals and their associated targets which, in a departure from previous global development frameworks, aim to balance and integrate the three dimensions of sustainable development – environmental, social and economic. At the United Nations Industrial Development Organization (UNIDO), we are convinced that inclusive and sustainable industrial development is the key to achieving the economic development that will make it possible to integrate all three dimensions.

Industrialization is central to achieving longer-lasting wealth creation and economic advancement, both in developing and in industrialized countries. Industry is the most dynamic driver of prosperity

and collective well-being. Industrial development is therefore a global objective that touches upon the economic, social and environmental aspirations of all and, as such, is intrinsically woven into the architecture of the 2030 Agenda.

A structural economic transformation associated with the development of a robust and diversified manufacturing sector and a strengthened agro-industry plays an important role in increasing the ability of countries to generate new and dynamic activities based on upgrading to higher levels of value addition, higher productivity, or higher returns to scale. The bottom line is that by unleashing the underutilized assets of the economy and enhancing their potential for productivity, countries can generate new income streams that can

OUR FUTURE



► underpin planned expenditure on social and environmental policies.

Job opportunities


Inclusive and sustainable industrial development also serves as an engine to create competitive job opportunities. At one level, the increased participation of women, youth and the rural poor in productive activities enables them to benefit from these activities in ways

that recognize the value of their contributions, respect their dignity and improve their ability to bring about positive change in society through improved access to economic resources and opportunities.

On another level, by increasing labour productivity, industry upgrades employment opportunities to higher skill-sets and higher-paid jobs, accompanied by increases in social protection and job security. So, industrialization does not just create

more jobs but jobs that are decent and better paid.

Inclusive industrialization means ensuring that no one is left behind, especially not women. Including women is critical, not only because gender equality is a fundamental human right, but also because report after report show a positive correlation between gender equality and gross domestic product, economic competitiveness and human development.



development of the necessary solutions to realize cleaner production, efficient resource management and reductions in waste and pollution. We have the technological capabilities for cleaner industrial production today, and green industries by themselves are a sustainable source for further structural diversification, jobs, income generation and shared prosperity.

Moreover, committing to sustainable production patterns makes business sense as it reduces wastage of costly resources, and contributes to increased competitiveness. The transformation in production processes and business models – going hand-in-hand with the right choice of technologies – will present the solutions to the daunting environmental challenges of our times.

Innovate

Inclusive and sustainable industrial development is the key to achieving the 2030 Agenda but, to make the drastic progress needed by the year 2030, we cannot proceed in a business-as-usual mode. There are two obvious reasons why not.

The first is the climate crisis. The years 2015 to 2019 were the five hottest years ever recorded. Young people around the world are taking to the streets to demand urgent action to stop climate change. As they say, there is no future on a dead planet!

According to the Intergovernmental Panel on Climate Change (IPCC), greenhouse gas emissions (GHG)

produced at industrial facilities and indirect emissions produced by industrial facilities' use of energy combine to represent a third of the global total of GHG emissions. Clearly, industry is a key sector where action must be taken to combat the causes of global warming and climate change.

Sustainable energy

We have to innovate and move as quickly as possible to a low-carbon and climate friendly mode of industrial production. To cut GHG emissions, we have to increase the use of renewable energy in industrial production. In developing countries across the world, UNIDO is implementing projects that reduce carbon emissions from industrial production. These include the development of policies and regulatory frameworks that facilitate renewable energy installations, generate technical innovation and foster the dissemination of technology and know-how.

The implementation of technological solutions requires funding. Thus, another innovation in our energy portfolio is the Private Financing Advisory Network (PFAN) which is designed to accelerate private investment into clean energy. PFAN has raised US\$1.5bn for 117 projects so far, representing an annual reduction of 3.2 million tonnes of CO₂ and ➤

Green industry

One side effect of industrialization is its considerable environmental footprint. There is no country that has yet fully resolved the issues of waste management, water purification and pollution. However, experience shows that environmentally sound interventions in manufacturing industries can be highly effective and significantly reduce environmental degradation. The core of any industrial upgrading effort is the

“To make the drastic progress needed by the year 2030, we cannot proceed in a business-as-usual mode.”

KEYNOTE

➤ over 975 megawatts of clean energy capacity installed.

Another major step to achieve the required reduction in industrial emissions is energy efficiency. The good news is that the adoption of energy efficiency measures could reduce industrial energy use by over 25%.

One of the main barriers to energy efficiency in the industrial sector has been that industrial companies focus on driving production, and most are not aware of the multiple benefits of implementing energy efficiency activities or of the array of available technologies. However, Energy Management Systems (EnMS) have emerged as a proven best practice methodology to ensure sustainable energy efficiency and continually improve industrial performance. (An Energy Management System is a series of processes that enables people of varied responsibilities across an organization to use data and information to maintain and improve energy performance, while improving operational efficiencies, decreasing energy intensity and reducing environmental impacts.)

Policies and market mechanisms that encourage the uptake of EnMS within industry can be highly effective for improving efficiency. This is because an energy management system establishes closer linkages between energy efficiency and core industry values, such as cost reduction,

increased productivity, environmental compliance and global competitiveness.

UNIDO has been supporting enterprises in developing countries and emerging economies with the implementation of EnMS, thereby helping them improve their energy performance, productivity and environmental sustainability. In Viet Nam, for example, more than 200 enterprises have adopted and implemented energy management and optimization solutions, achieving cumulative annual energy savings of 106,000 tonnes of CO₂-equivalent.

Fourth industrial revolution

The second reason why “business-as-usual” won’t take us to a successful Industry 2030 is the fourth industrial revolution. Different waves of technological progress have changed our lives in the course of history, including the invention of the steam engine, the advent of electricity and the assembly line, and the development of computers and robotic automation. The latest and fourth wave is based on the growing convergence of different technology domains, including the frontier technologies applied in industry, such as artificial intelligence, cloud computing, the Internet of Things and Big Data, advanced robotics and additive manufacturing.

In comparison to previous industrial revolutions, the fourth

industrial revolution represents the fastest period of innovation in history. Innovation is becoming more complex, multi-disciplinary, collaborative, and in some cases disruptive. It is developing at an exponential rather than linear pace and the international community must therefore prepare for these overwhelming changes or face a widening of the technology gap, leading to possible threats to global peace and security.

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As UNIDO's Industrial Development Report 2020 shows, it is through inclusive and sustainable industrialization that countries build the skills and capabilities needed to succeed in the new technological paradigm. When the right capabilities are in place, the new technologies offer a huge potential to advance economic growth and human well-being and to safeguard the environment. Without a sound industrial base, many countries face the prospect of being left behind

as the fourth industrial revolution plays out.

UNIDO supports its Member States in advancing inclusive and sustainable industrial development, so that they have the basis to make best use of the new technologies. Furthermore, UNIDO acts as a platform to facilitate exchange of knowledge, best practices and technologies between Member States, and to provide research-based policy advice in this area, with a view to levelling the playing field.

Connect

To enhance sustainability, mobilize public and private inputs, and achieve transformational impact across industry sectors in line with sustainable development priorities, UNIDO actively participates in multi-stakeholder platforms and networks, focusing on a specific issue, development challenge or geography.

The Programme for Country Partnership (PCP) is UNIDO's programmatic service to support ➤

“UNIDO acts as a platform to facilitate exchange of knowledge, best practices and technologies.”

► countries in accelerating inclusive and sustainable industrial development. It is founded on a multi-stakeholder partnership to ensure synergies between different interventions and maximize impact. Each programme is tailored to country needs, aligned with the national development agenda and owned by the host government.

UNIDO's important role here is to create the policy framework which enables the identification of and


agreement on priority industrial sectors and areas essential to the national development agenda. The game-changer is that UNIDO's advisory and normative services, technical assistance and convening functions are combined in a package that helps unlock public and private investment for the realization of large-scale industrial projects.

UNIDO currently runs 10 PCPs to mobilize the knowledge, expertise, technology and financial resources of

various actors to accelerate the development agendas of Cambodia, Côte d'Ivoire, Egypt, Ethiopia, Kyrgyzstan, Morocco, Peru, Rwanda, Senegal and Zambia.

Two of the established PCPs – those in Ethiopia and Senegal – have made significant contributions to the 2030 Agenda by creating policy frameworks that have brought partners together to create integrated agro-industrial parks in Ethiopia and industrial parks in Senegal.

“The path to 2030 will entail numerous innovations and dramatic transformations.”



industrial revolution, the path to Industry 2030 will entail numerous innovations and dramatic transformations.

For industry across the world, a major transformation from a linear to a circular economy appears to be the only way to cope with a looming scarcity of resources and an overwhelming production of waste. The world is eating into a finite supply of resources and the current pattern of resource use is having negative impacts on the environment and on human health. Ever-increasing amounts of used, broken or unwanted products present another seemingly insurmountable challenge. The take-make-use-dispose economic system cannot go on.

To create a thriving economy that can benefit everyone within the limits of our planet, we need to transform the way we manage resources, the way we make and use products, and the way we deal with products when they break or wear out. The circular economy is an industrial system that aims for the elimination of waste through the superior design of materials, products, systems and business models.

UNIDO is working to introduce circular practices into production processes, guided by the conviction that systems can be regenerative and underpinned by design principles that view final disposal as the very last option. These principles extend from

the extraction of raw materials to production, distribution, use and end of first life, which are transformed – to the greatest extent possible – into a continuous, cyclical process.

Conclusion

We are about to enter the year 2020, leaving us only ten years to achieve the vision of the 2030 Agenda. Across the globe over 70 million young people are unemployed, and many millions more live in working poverty, often lacking the opportunities for training or further education. With 40 million young people entering the workforce every year, creating opportunities for decent work for youth is vital for tackling poverty and ensuring future prosperity.

One avenue is industrialization, supported by governments and the private sector alike, driven by large, medium and small-sized enterprises, creating job opportunities at scale. Another is entrepreneurship. If supported by an enabling ecosystem and provided with the adequate tools and human and technical capacities, young entrepreneurs can greatly contribute to the transformation of communities, generate sustainable livelihoods, and strengthen social cohesion and economic resilience.

If we innovate and connect, we can help countries and their growing populations reach their full economic potential. We can transform our future.

Sustainable industrial parks help accelerate industrial development by addressing infrastructure constraints, attracting investment, stimulating innovation, improving production efficiency and fostering social inclusion and environmental protection.

Transform our future

In addition to meeting the challenges of climate change and realizing the opportunities presented by the fourth



■ The European Union is making it easier to fix your washing machine than throw it away, because replacing appliances that could be repaired is bad for the environment. Under a new right to repair law from 2021, fridges, dishwashers and washing machines must be repairable for up to 10 years and spare parts must be easy to get hold of. The law also requires appliances to be more energy efficient and use less water too.

The eco-design measures

could save every household 150 a year and save the same amount of energy that Denmark uses in a year, cutting CO2 emissions by 46 million tonnes. The new law comes after complaints that it's often cheaper to buy a new machine than repair an old one. The new law requires manufacturers to design with the circular economy in mind. ([World Economic Forum](#)) ●

■ Youth-led initiatives and creative spaces such as

makerspaces are one of the many programmes working to improve youth employment in Africa. They provide open-source access to the creation, testing and piloting of products and goods. These include fabrication labs (fablabs), hackerspaces and hubs. They are small but growing fast and have a strong network of members.

Makerspaces are often located in urban areas and within innovation labs or hubs that provide more support for

youth entrepreneurship, including business skills and linkages with financial and in-kind support. An example is Nairobi's [iHub](#) (which hosted the makerspace [Nailab](#) and [m:Lab](#)) – located in an area that also has other tech start-ups such as [Gearbox](#), [Ushahidi](#) and others, leading many to call it the [Silicon Savannah](#).

In Africa, where technical and vocational education training institutions lack adequate facilities or equipment to provide young people with practical knowledge, makerspaces can provide an avenue for increasing young people's employability. Skills are taught through organized classes, as

BUSINESS MATTERS

What are global value chains?

Global value chains (GVCs) refer to international production sharing, a phenomenon where production is broken into activities and tasks carried out in different countries. They can be thought of a large-scale extension of division of labour dating back to Adam Smith's time.

In the famed example attributed to Smith, the production of a pin was divided into a number of distinct operations inside a factory, each performed by a dedicated worker. In GVCs, the operations are spread across national borders (instead of being confined to the same location) and the products made are much

more complex than a pin.

Cross-border production has been made possible by the liberalization of trade and investment, lower transport costs, advances in information and communication technology, and innovations in logistics (e.g. containerization). While cross-border production itself may not be new, it has expanded rapidly in many industries in recent decades.

This development has largely been driven by transnational corporations (TNCs) in industrialized economies, which continuously restructure their businesses and reorganize/relocate their operations for reasons of competition. The manifest example of relocation is the offshoring of labour-intensive stages of production from industrialized economies to low-wage, labour-abundant developing countries.

In addition to activities being sliced up and dispersed

geographically, one feature that distinguishes GVCs from earlier waves of cross-border production is that production activities are also increasingly being undertaken by third parties with no equity links to the TNCs (in what is otherwise known as international outsourcing).

GVCs represent a relatively attractive and straightforward option for countries seeking to industrialize. Due to the international fragmentation of production and unbundling of operations, countries no longer need to create complete products or value chains. Instead, they can create targeted industries by "inserting" themselves into a particular stage of production along the value chain that suits their existing level of capability. ([UNIDO IAP](#))

See [What Are Global Value Chains and Why Do They Matter?](#)

Image: Zylfloss CC BY-SA 4.0 File: Kantanka-Otumfoj.jpg



well as collaborative peer-to-peer learning between makerspace users.

Studies have found that when young people get access to investors and broader entrepreneurship support, the 'survival rate' of start-ups increases. The [Kumasi Hive](#) houses over 25 start-ups and has provided training to over 1,066 young people between 18 and 30 years old.

The question for future initiatives must be how to scale up these creative spaces and innovations they produce in an inclusive and sustainable way, so they serve more young people and prepare them fully for the changing workplace. ([ODI](#)) ●

■ The *Financial Times* (FT) reports that the spread of 3D printing will challenge the traditional model of mass manufacturing. It refers to one study which notes that, in the future, having established manufacturing and supply chains will no longer give providers the edge. Instead, they will need to be more agile with ready access to customers and designers.

Nadav Goshen, chief executive of [MakerBot](#), which makes 3D printers, told the FT the technology will "lower the barriers to entry for manufacturing". The company is now marketing its latest devices to small and medium-sized enterprises.

Some mass manufacturers are embracing the opportunities that 3D printing offers to become more responsive to customer demands. Ikea, for example, has unveiled prototypes of bespoke ergonomic attachments for desks, mice and keyboards that it developed with partners including UNYQ, a company that prints 3D prosthetics. The line is set to launch in 2020, with computer gamers the main target. Customers will submit their measurements via an app and receive the accessories by post.

The attraction of 3D printing goes beyond customization. It also allows large companies to launch products more quickly. "In an ideal world, you could

look at an Instagram post and turn that into a design that can go out the next day," said Dávid Lakatos, chief product officer of Formlabs, which has printed personalized razor handles for Gillette.

The move from mass production also allows manufacturers to make their operations more local. "A lot of companies are looking for ways to shorten supply chains and to bring their factories closer to their customers," Lakatos added. This reduces the need to ship mass-produced products from jurisdictions with lower labour costs, which increases supply-chain security and reduces carbon emissions. ([Financial Times](#)) ●



Ghanaian company to produce electric vehicles

Ghana's car manufacturer, Kantanka Automobile Company, has announced its intention to start producing electric cars.

Kantanka intends to produce electric cars from its factory in Kumasi, southern Ghana. Kwadwo Safo Kantanka Junior, the general manager of the Ghanaian company, unveiled the new project during a broadcast on a local radio station. "Kantanka will build electric cars that could travel between Accra and Kumasi before they need to be recharged. We intend to start this business before the end of this year."

Responding to the news, Ghana's Minister of Environment, Science, Technology and Innovation, Professor Kwabena Frimpong-Boateng, said that the move

could significantly contribute towards improved air quality, energy efficiency and complement global efforts to reduce transport-related emissions and greenhouse gases.

The minister said, "With the rising growth in vehicle numbers and increasing energy demand, there is an increasing pressure on countries that rely heavily on fuel imports to make adequate budgetary provisions." He added that the global use of electric vehicles in the automobile mix would help reduce dependency on fossil fuels and improve public health.

Katanka, Ghana's first privately owned automotive manufacturing and assembling company, was established in 2015.



ELFI KLUMPP believes that digitalization and Industry 4.0 can create opportunities to narrow the gender gap and are particularly relevant in the context of tackling women's economic empowerment around the globe. If properly educated in STEM (science, technology, engineering, mathematics) and equipped with digital tools at an early age, girls and women may "leapfrog" gender gaps and secure the benefits of economic growth and social inclusion in the 21st century.

Empowering digitalization

Today's world is facing numerous, fundamental changes. It is transforming and accelerating under the impetus of greater urbanization and mobility, growing demand for energy, water and food, increasing production, and the need for new technologies to improve people's work and life. Digitalization and Industry 4.0, the Internet of Things and Big Data are driving globalization beyond borders and have a vast potential to boost economic growth and social inclusion.

Industry 4.0 means taking digitalization from the office place to the manufacturing area. It means that production processes get digitalized, and devices, objects and humans get connected in a holistic matter. Automated processes and robots are taking over labour-intensive and repetitive tasks, and safeguarding the more intelligent jobs for humans, which is obviously more convenient. In this context, there is a





girls and women in and Industry 4.0



tremendous window of opportunity for well-educated women in the field of technical and engineering disciplines. Industry 4.0 enables new customer values, e.g. through product customization as opposed to mass production. This increases data generation and thus the need for data analysts, a job profile that was non-existent a few years ago.

Opportunities for women

Digitalization and Industry 4.0 might be considered as a movement whether it is on the personal, professional or society level. A movement which creates opportunities for women faster than ever before. Looking at different income groups, countries or regions, the big question is to what degree and how quickly can digitalization and Industry 4.0 reach and effect the individual groups and leverage the potential of women's inclusion. ➤



► The use of digital platforms provides women with a greater access to markets, knowledge and more flexible working arrangements. In addition to this, there is strong and growing empirical evidence suggesting that higher levels of gender equality are associated with positive outcomes in terms of income, economic growth and competitiveness. Companies with a greater gender equality in their workforce and top management are better able to attract and retain female talent, motivate their female workers, understand and respond to the needs of female customers, and better address complex business problems by taking account of gender-informed viewpoints. Consequently, technical education and the economic empowerment of women can bring dramatic gains in human development and well-being for individuals, families and society.

Full inclusion in industry

Hence, there is a strong need for women's full inclusion in the industrial sector, and especially in

the advancing digital economy and new technological environment captured by the term, Industry 4.0. Industry 4.0 will have a profound impact on the content and nature of jobs and, as a result, the skills required to perform them.

Many analysts predict that Industry 4.0 will cause a polarization of the labour force, with an increasing share of employment in high- and low-wage jobs, and a decreasing share of employment in middle-wage jobs. In this scenario, as high-wage jobs will require increased digital skills, and as weak education systems often fail to provide basic technical skills, digitalization and Industry 4.0 are likely to be applied successfully by a STEM-trained workforce.

STEM education is the key

Thus it goes without saying that, in this context, STEM education is the key foundation for girls and women. Technical education and skills development at all levels, from primary school to academic education and life-long learning, are needed more



than ever before. Girls and women need to be given the opportunity to get well-educated and highly trained in new technologies during the entire learning path, but also, more importantly, in the values associated with using those technologies. Further, women should be encouraged to exploit their entrepreneurial capabilities and be granted better access to financial capital and markets.

Education systems must not only deliver the ability to develop new technologies, but also educate people from a very young age in STEM skills, so that they understand whether, when, and where to use and apply those new technologies. Equally, they must also be educated to understand the benefits and impact these technologies create.

STEM skills at all levels of the education and lifelong learning path are significantly and positively related to labour market return. Employment opportunities for women in manufacturing and digitally intensive sectors, and empowering girls and women in digitalization and Industry 4.0 are among the most promising opportunities for lifting millions

out of poverty and spurring economic growth and structural change in low- and middle-income countries.

To conclude, investments in girl's and women's lifelong STEM and technical education have a huge multiplier effect on women's employability, and their personal and economic well-being, and, finally, enhance their participation and relevance in the entirety of global economies and societies. ■

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the United Nations Industrial Development Organization (UNIDO) and is one of the founding members of UNIDO's **Learning and Knowledge Development Facility**.

AYA CHEBBI declares African youth to be

'A GENERATION OF CHANGE-MAKERS'

I got into activism in my country-Tunisia and my continent – Africa, because I refuse to accept that my age and my gender define me as the subject and not the driver of development.

I got into international diplomacy because I refuse to accept that others speak for us, as if we don't have voices, think for us, as if we don't have brains, experiences and history, and even decide for us, as if we do not have a will! We know exactly what we want as African youth and we have been driving social political change for the past decade.

Nearly 10 years have passed since the beginning of what we call "the Revolution of Dignity" in 2011. Many refer to it as the 'Arab spring', a western narrative. We were angry, eager for change and we wanted a future where we could fulfil our potential. To break the old entrenched structures limiting our potential, we – the millennials – realized that we had to stand up and be drivers of our own development. Even if the outcome and the progress of the protests vary from one country to another, there can be no doubt that our generation has changed the course of history.

With 65% of Africa's population under the age of 30, I am representing not only the most youthful population in the world, but the most innovative, resilient and coolest generation. We want to

be seen and we are – changing the landscape of Africa economically, politically, demographically and culturally. As a generation of change-makers, we want to "*Shake Things Up*" and shape a new model of leadership in Africa.

But, even when this is the youngest population, it is also the most marginalized, unemployed and insecure. This is why, during my last briefing to the United Nations Security Council, I highlighted the constant hustling of African youth, and I asked members of the Council for greater youth participation in conflict prevention through their empowerment, political leadership and employment, as well as financing for youth-led initiatives.

But to empower our youth, we have to start 'at home' and look into our instruments and frameworks. When I came into this role as the African Union Youth Envoy, I was positively surprised by the amount of progressive and

"We want to open up empowering spaces and avenues for African youth to be and to become."

futuristic policies the African Union already has in place. In one sense, maybe it's not about advocating for more policy papers and frameworks, to be placed on bookshelves, but making sure the existing policies that have been adopted are being implemented effectively.

That's why my work focuses on making sure that young people hold governments accountable on the implementation of the frameworks they signed up for, such as the African Continental Free Trade Area, the Free Movement of Persons Protocol and the African Youth Charter, and all flagship projects of [Agenda 2063](#).

And given the importance of industrial development as an engine for inclusive and sustainable development, the African Union has put industrialization at the front and centre of our Agenda 2063, especially by "radically transforming African agriculture to enable the continent to feed itself." The African Union has defined the immediate future around agriculture as the main force in social and economic transformation of the continent as Africa is still on average a 60% rural population. In fact, agriculture employs about 60% of the young people aged between 15 and 34. Therefore, this sector has huge

potential, and African agribusiness could be worth [\\$1 trillion by 2030](#). But we need to make agriculture cool for young people.

While developing our agriculture will prevent hunger crises on our continent, advancing our manufacturing sector can provide relatively well-paid jobs for large numbers of unskilled workers, particularly those who do not enjoy



job security or are trapped in the 'informal economy' without social security.

"Without industrializing, it is unlikely that Africa and LDCs can meet the Sustainable Development Goals by 2030" [according to UNIDO](#). But this industrialization must be inclusive and sustainable. Inclusive industrialization means ensuring that no one is left behind, and this includes women, as well as young people. Across Africa, women typically bear the brunt of unpaid care work and receive lower wages than men. [Some 86% of female workers in Africa's least developed countries are in vulnerable occupations – far above the developing country average for female workers of 35%](#). But inclusion is not just a question of involving women in the market economy or encouraging their participation in global value chains. It means equal opportunities for work with dignity, good wages and working conditions, and labour rights. Only in this way can the benefits of industrialization be shared.

Key requirements for eliminating poverty by 2030 include sustainable livelihoods, innovation, technology, skills development and food security. In addition, the small and medium sized enterprises (SMEs) that are the backbone of industrial development need educated and skilled workers in order to thrive. Standards of education on the continent are improving, and the share of the population completing a primary education has risen continuously over the past 40 years. But beyond that, it is important to

ask if African countries can do more to develop the human capital that is required to industrialize.

In order to tap the full potential of Africa's human capital, policymakers should adjust education curricula to bridge the education and market mismatch. Policymakers should also revisit curricula to focus on 21st century skills acquisition and support for entrepreneurship and self-employment by providing training at an early age and skills upgrading at a later one.

The challenge for our generation remains economic independence and ownership, owning our resources, owning the means of production, owning the technology we are using, decolonizing our knowledge, and really being the owners and drivers of our destiny and our continent.

For the African Continental Free Trade Area to be beneficial to our youthful population, our Sahara, the Sahel and all borders and regions must be safe open spaces to bridge us to achieve equality, education, health, technology and dignity for all. The future of work therefore needs to be about equality and dignity, because young people don't want just jobs but jobs with dignity. Africa has the wealth to invest, and the clearest path to reducing inequality is to invest in African youth, our most important asset.

● **AYA CHEBBI** is the first ever African Union Special Envoy on Youth. She was appointed in November 2018 with the mandate to serve as a representative of and advocate for the voices and interests of African youth to the relevant African Union decision-making bodies. She rose to prominence as a voice for democracy and shot to global fame as a political blogger during the 2010/2011 revolution in Tunisia.



A project implemented by **UNIDO's Investment and Technology Promotion Office in Italy** supports Pakistani small and medium enterprises and other entities involved in textile and fashion design sectors by exchanging experiences and promoting business and cooperation opportunities.

As part of this project, Stella Jean, the acclaimed Haitian-Italian fashion designer, spent two weeks visiting the Chitral district. Jean was impressed by the design elements and the embroidery style

employed by the Kalash women. In an effort to raise awareness of the Kalash culture and to provide their communities with income, Jean began a collaboration with the Chitral Women's Handicrafts Centre.



Making a connection, helping preserve traditional skills and cultural heritage

The Kalash are indigenous people residing in the remote mountainsides and valleys of the Chitral district of Khyber-Pakhtunkhwa province in north-western Pakistan. A centrepiece of their distinct culture are the embroidery techniques women use to adorn their clothes, a tradition that, much like the Kalash people themselves, is at risk of becoming extinct. Photographer and UNIDO Goodwill Ambassador, **ELISABETTA ILLY**, covers a remarkable story of creativity and partnership.



For several weeks, more than 40 women at the Chitral Women's Handicrafts Centre hand-embroidered over 400 metres of typical floral motifs in chain stitch. The Centre was founded by **Karishma Ali**, a woman from Chitral who has played for the Pakistan national women's football team.





The women used their creativity and skills to combine Italian design with their centuries-old traditions for the Stella Jean Spring/Summer 2020 collection. The photographer, Elisabetta Illy, and her [Picture of Change agency](#) joined UNIDO's team to document the project as it progressed.



At the prestigious Milan Fashion Week in September 2019, [Jean's collection was unveiled](#). On the catwalk in Milan's Palazzo Arengario, the Kalash women's colourful stitching wrapped around dresses, adorned belts, and decorated the hemlines of Jean's summer dresses. It was the first time the embroideries had been presented for use outside the Kalash community.





Pakistani models Mushk Kaleem (left) and Alicia Khan (right) joined other models in presenting the collection. Kaleem took to [her Instagram feed](#) to share the details of her exciting opportunity and why it matters to the Pakistani fashion industry. “I feel so immensely honoured and proud to represent Pakistan at the Milan Fashion 2019,” she wrote.



The partnership between UNIDO, Stella Jean and the Chitral Women’s Handicrafts Centre has created a positive awareness about the traditional methods and cultural heritage of this remote part of Pakistan. With Jean’s [Kalash collection on sale at Yoox](#), an Italian online fashion and e-commerce company that serves more than 180 countries worldwide, it is hoped that more business opportunities will come.



Africa's time is now: building the digital infrastructure of the future



The world of technology is changing rapidly and the African continent is changing with it. For the first time in history, more than half of the world's population is using the Internet. Of all regions, the strongest growth has been reported in Africa.

The roll-out of 5G and the Internet of Things (IoT) presents Africa with an opportunity to improve industrial processes, automate factories and enhance productivity. When deployed, 5G networks should deliver more speed and capacity to support massive machine to-machine (M2M) communications and provide low-latency (delay), high-reliability service for time-critical applications.

But core challenges remain, especially in developing regions like Africa. There is an urgent need to upgrade and develop Africa's ICT infrastructure, and make it more affordable to boost the continent's industrial capacity and digital economy.

5G challenges

One challenge for the deployment of 5G is the increased capacity and data rates promised by 5G require more spectrum and vastly more spectrally efficient technologies, beyond what is currently used in 3G and 4G networks.

Another challenge relates to 5G connection links between base stations and the core network (backhaul). ITU recently ➤

by **HOULIN ZHAO**,
Secretary-General,
the International
Telecommunication
Union



MakingIt 27

► published two important reports in this area: [Setting the Stage for 5G: Opportunities and challenges](#); and [All About Infrastructure Sharing](#). Base stations and the core network both rely on fibre and wireless technologies. Considerable work is required for implementing fibre services and ensuring the availability of wireless backhaul solutions with sufficient capacity, such as microwave and satellite links, and potentially with High-Altitude Platform Stations (HAPS) systems where they are deployed.

These technologies and many others are on the agenda of ITU's World Radiocommunication Conference 2019 (WRC-19), taking place from 28 October to 22 November 2019 in Sharm-El-Sheikh, Egypt.

Spotlight on Africa

Africa has been the fastest growing continent in the world over the last two decades, including in terms of ICT development. Indeed, over the last decade, Africa has seen strong growth in submarine cable capacity and landing points at major coastal towns and cities, reducing consumer and commercial prices and improving connectivity options.

It is a continent full of hope and innovation, in particular for ICT business. Africans have shown the world what they are capable of in areas such as mobile money and the elimination of roaming charges. However, while Africa has the potential to exceed expectations, appropriate policies must be put in place to achieve this extraordinary potential.

Tackling the ICT infrastructure issue

That is why we need to focus on what I call the “4 Is” – infrastructure, investment, innovation and inclusiveness.

We need to upgrade existing ICT infrastructure; I encourage you to read our latest report, ICT [Infrastructure Business Planning Toolkit – Business Planning for Infrastructure Deployment](#).

We need to ensure that ICT infrastructure is used to enhance Africa's manufacturing and industrial capacity. We need to encourage more investment, from both the public and private sectors, and we need to create a good environment to attract investment. We need both technology and business innovation. At the same time, regulators and governments need to consider next-generation policy issues and safeguards for e-commerce, data flows and data protection.

We need to ensure that no one is left behind in this digital revolution.

Regulatory challenges

But alongside these new technologies, national regulators face new regulatory challenges and new business and investment models.

From agriculture and transportation to banking and health, no sector of the economy is immune to digital transformation. As a result, ITU's key concepts of “collaborative regulation” and “fifth-generation regulation”



“We need to focus on what I call the “4 Is” – infrastructure, investment, innovation and inclusiveness.”



Illustration: www.istockphoto.com – skegbydave

have been gaining momentum to describe the need for inclusive, up-to-date, flexible and market-driven ICT policy and regulatory frameworks.

African nations' active participation in ITU's flagship Global Symposium for Regulators (GSR) and ITU Telecom World events highlight their commitment to achieving more open, collaborative and cross-sectoral regulation – not just for the benefit of consumers and businesses, but for all those who are still unconnected across the continent.

ITU is very active in this area. For example, we are implementing the ITU-EU project 'Increasing Wireless Broadband Penetration through Improved and Harmonized Spectrum Utilization and Regulation' for African countries.

Africa's time is now

This is a special moment in Africa's history.

The creation of the Continental Free Trade Area will have a big impact on the free movement of digital goods and services throughout the region. Crippling mobile roaming charges have been eliminated in most of East African and ECOWAS countries.

The [Smart Africa initiative](#) brings together over two-dozen African countries, with more on-track to join, to debate the latest issues in relation to ICT infrastructure and connectivity at the national, industrial and consumer level. I am proud to act as co-Chair of the Smart Africa Steering Committee.

Last March, ITU hosted a special meeting of ICT Ministers from across Africa at the ITU Headquarters in Geneva, Switzerland. The Ministers discussed how to boost ICT development, how to attract and encourage further ICT investment, and how to work together to facilitate new partnership opportunities so that Africa can reap the benefits of the digital economy.

ITU has been partnering closely with UNIDO on this issue, in particular through our Third Industrial Development Decade for Africa initiative. On 25 September 2019, on the margins of the 74th UN General Assembly in New York, we co-organized the high-level event on "Promoting innovation and infrastructure development: A pathway for boosting manufacturing in the Fourth Industrial Revolution", working closely with several countries such as South Africa, Kenya and Rwanda as they undergo their digital transformation.

But it is important to remember that Africans own their future; it is up to African public and private sector leaders to lead African development. We at ITU stand ready to help, and we will continue to work with our African partners to facilitate the emergence of digital economies and a single digital market for Africa.

This is a priority for me and I won't stop until everybody realizes how game-changing ICTs can be for African countries – and what African leaders are doing to make this vision a reality.

The circular economy solution to marine plastic litter

Can design and re-design help end the scourge of plastics in our oceans?

Marine plastic pollution, commonly referred to as marine plastic litter, is a major global environmental problem. Marine plastic litter harms marine species through ingestion and entanglement, violates the integrity of ecosystems, inhibits growth of marine plants, accumulates and transports pathogens that may cause disease and injuries to marine animals, plants and humans, and partly ends up in the food chain. Moreover, it causes economic losses due to reduced fishery yields, declining amenity for tourism, and damage to shipping and related infrastructure.

Some of the plastic in the oceans comes from fisheries, aquaculture,

nautical activities and illegal dumping in the sea, but around 80% of the total comes from the land. Land-based plastic pollution is caused primarily by inappropriate management of waste of plastic packaging and short-lived products originating from various consumer products in numerous sectors. These consist for example of plastic bags; single and multilayer food and beverage containers; cleaning and personal care product containers; food wrapping and trays; plastic foil; single-use cutlery; cups; synthetic textiles and clothing; plastic footwear; and so on. Wind and rain carry this litter into streams and rivers, and then into the oceans.

PLASTIC WASTE

floating on the
sea surface 0.5%



“Each year, more than eight million tonnes of plastic waste enter the world’s oceans. This figure is expected to double by 2030 to 16 million tonnes and then double again by 2050.”

Nowhere to throw it

Better management of plastic litter on land would clearly reduce the amount of plastic litter entering the oceans, but that doesn’t address the issue of what to do with the overwhelming amounts of plastic waste generated in the first place.

There is nowhere to throw it all away.

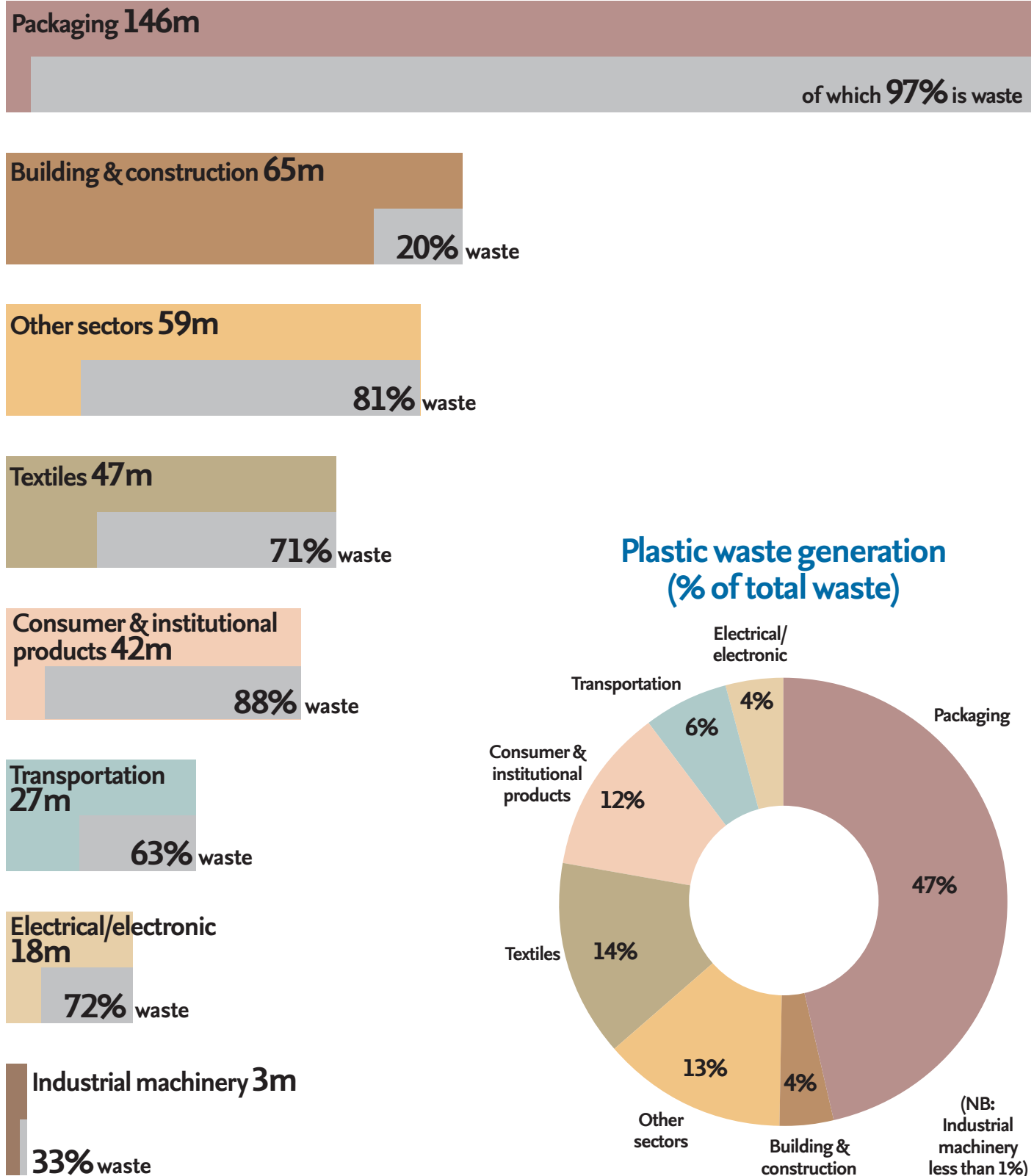
One way to approach the challenge is by transitioning to a circular economy, where the crucial concept is the designing out waste. The key to the success of the circular economy approach is to focus on the design stage, rather than trying to deal with waste at the end of the product’s life.

In the case of plastic, the idea is

change practices and encourage innovation so that we use less plastic; design plastic products in ways so that they can be reused; develop the technologies allow more effective and efficient reprocessing of used plastic; and devise and use safer alternatives to traditional plastics.

Plastic packaging, synthetic textiles and clothing, and short-lived, fast-moving consumer and institutional products made of plastics contribute significantly to the generation of marine plastic litter. There is hardly any global, regional, national report or research study on marine plastic litter that does not point out the contribution of packaging, single- ➤

Importance of plastics use sectors in production (millions of tonnes of plastic) and waste generation (%)



➤ use or short-lived consumer products, personal care products containing microbeads, synthetic clothing and microfibers, and fishing gear lost at sea.

At the design stage

The rapid, flowing nature of plastic packaging and short-lived plastic consumer products which become waste needs to be addressed by the consumers of plastic packaging, namely industries such as manufacturers of food and beverage producers, shoes, textiles and garments, as well as the manufacturers of short-lived consumer products. This is best done at the design phase within the value chain, through collaboration with the plastic producers and the converters, the companies which manufacture plastic products, ranging from toothbrushes to building pipes, from fruit boxes to car interiors.

In the product design stage, the following might be considered:

a) scrutinizing the necessity of packaging altogether, including of plastics, b) selection of renewable, bio-degradable and compostable materials and additives that are not toxic or that are less toxic than fossil-based plastics; c) designing for less material use in order to decrease waste; d) designing packaging and products that use a single or small number of polymers that are easy to separate during recycling.

Policy measures to incentivize circular economy practices in design could consist of supporting implementation of innovations in the re-design of existing products and the design of new products, and support for innovations and start-ups, in particular those related to new, biodegradable and compostable plastics.

What is the circular economy?

The circular economy is an industrial system that is restorative or regenerative by intention and design. It replaces the end-of-life concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, and aims for the elimination of waste through the superior design of materials, products, systems and business models.

The above draws on a working paper, 'Addressing the challenge of marine plastic litter using circular economy methods', published by the United Nations Industrial Development Organization (UNIDO) in April 2019.

“Now we need concrete steps, from expanding marine protected areas, to the management of fisheries; from reducing pollution, to cleaning up plastic waste. I call for a step change, from local and national initiatives to an urgent, coordinated international effort.”

António Guterres, United Nations Secretary-General, UN Ocean Conference, New York 2017.



Image: Industrial Energy Accelerator

The invisible climate solution

RANA GHONEIM calls on policymakers and the private sector to accelerate action to ignite change in energy-intensive industries.

Despite offering so many benefits, industrial energy efficiency is among the most underrated opportunities to reduce our emissions. Not only does it mitigate the impacts of climate change, it saves companies money, improves productivity and helps generate new jobs.

The industrial sector contributes around one-third of the world's greenhouse gas emissions, which primarily come from burning fossil fuels for energy. Even so, in many countries, the industrial sector is lagging behind in adopting energy efficient technology, processes and management systems, which can significantly reduce greenhouse gas emissions. In fact, the [IPCC notes that industrial greenhouse gas emissions could be reduced through energy efficiency by approximately 25%.](#)

The invisible solution

With so much to gain, why is industrial energy efficiency seemingly overlooked?

One explanation is that it's largely an invisible solution. It often comes down to changing people's behaviours and mindsets. And, the interventions are often technical – retrofitting the insulation level of pipes, or replacing an old inefficient boiler is not as appealing as installing solar powered panels or noticeable as saving forests.

There are also many barriers. In some countries, where sophisticated efficiency targets and regulations are already in place, a lack of financial incentives and market interventions such as fuel subsidies often stand in the way.

Perhaps, most frustratingly, is the lack of action and awareness around what is

A group of trainees conduct an audit of a company's energy management system as part of the Industrial Energy Accelerator's ISO 50001 training programme.

essentially a cost-effective win-win solution for everyone involved, especially for companies and industry. Unlike other efforts to mitigate climate change, industrial energy efficiency offers a relatively rapid return on investment. A large-scale shift toward such practices would enable businesses and industry to slash their power bills, in some cases by up to 30%.

The International Energy Agency calculates that with the right policies, the global economy **could double in size by 2040** while still maintaining broadly the same level of energy use as today. Those policies alone would enable the world to achieve more than 40% of the emissions cuts needed to reach international climate goals using cost-effective technologies already available.

To accelerate this 'invisible solution,' the United Nations Industrial Development Organization (UNIDO) has partnered with the **Global Environment Facility, Sustainable Energy For All** and the **Carbon Trust** to break down these barriers and rally government, industry and finance around efforts that ignite change in energy-intensive industries.

The **Industrial Energy Accelerator** currently works in five major industrial countries responsible for around a quarter of the world's energy consumption. Each of the partner countries – Indonesia, China, Mexico, Brazil and Morocco – are home to major industries with huge energy efficiency potential.

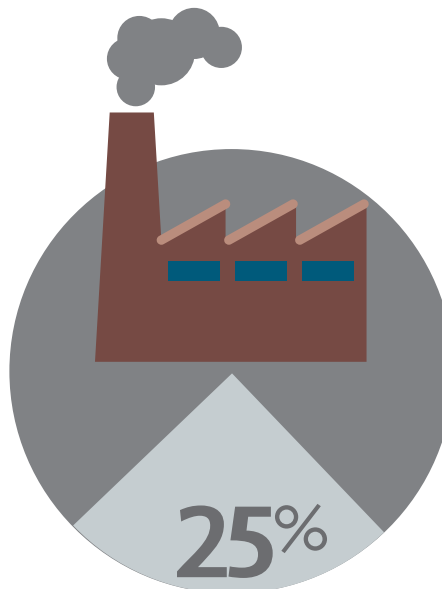
The opportunity for developing countries

In China, for example, where industry consumes a vast amount of the nation's power supply, the equivalent of France and Germany's energy use could be saved. A projected 41% of this 'saved energy' could come from the country's industrial sector.

In close partnership with the Government of China, the Accelerator is working to identify low-carbon financial incentives such as tax relief and concessional loans. These products are seen as the next strategic step to drive China's energy efficiency revolution further and could be a game changer for reducing emissions globally.

The Industrial Energy Accelerator approach often focuses on capacity building

Possible savings in power bills to business and industry where industrial energy efficiency practices are adopted



Industrial greenhouse gas emissions could be reduced through energy efficiency by approximately 25%

and low-cost solutions that depend on just a few early adopters and local champions who kick-start a national industrial energy efficiency revolution.

This year, in **Morocco**, a country that is almost wholly dependent on importing energy to power its economy, we trained the first cohort of certified **ISO 50001** energy managers and consultants. These trainees are now demonstrating the benefits of this globally regarded industrial energy efficiency standard. Participating companies, including electrical appliance maker, L'Usine Electrique, are already reporting a 7-10% decrease in monthly energy use. As awareness of the benefits continue to spread, so too are the country's champions for industrial energy efficiency.

Imagine if results like these were mainstreamed worldwide, particularly in developing countries where demand for energy is forecast to boom in the coming decades as they seek to reduce energy poverty and keep up with population growth.

For this industrial revolution to be achieved, we need leadership from across the divide. Governments need to support policy implementation, mandate efficiency standards, set targets and incentivize best practice. CEOs need to kick-start a cultural shift in their companies by prioritizing energy efficiency and empowering their teams to become part of the solution. Critically, those of us in the development community must move beyond discussing the potential and towards demonstrating this hugely compelling and uncontroversial climate solution.



● **RANA GHONEIM** is Chief of the Energy Systems and Infrastructure Division at the United Nations Industrial Development Organization (UNIDO)

Transforming into a diversified, knowledge-based economy

The United Arab Emirates is a federation of seven states that has grown from a quiet backwater to become one of the Middle East's most important economic centres. Until the discovery of oil in the 1950s, the UAE's economy was dependent on fishing and a declining pearl industry. Since oil exports began in 1962, the country's society and economy have been transformed.

Today, the UAE still produces around 3.8 million barrels of oil a day and is the world's eighth biggest oil producer, contributing 4% of the global total. But dependence on the hydrocarbons sector has been steadily reduced over recent decades, and the UAE has diversified to become a regional trading and tourism hub. The UAE's large and wide-ranging public investment has created a state-of-the-art infrastructure, attracted foreign talent, improved productivity and made the country one of the premier destinations for foreign investment.

A key part of the drive to develop a diversified and robust economy is [Vision 2021](#), a national agenda launched in 2010 with the goal of giving the UAE the status of one of the best countries in the world by 2021. Vision 2021 "focuses on the UAE becoming the economic, touristic and commercial capital for more than two billion people by the transitioning to a knowledge-based economy, promoting innovation and research and development, strengthening the regulatory framework for key sectors, and encouraging high value-adding sectors."

At both federal and emirate level, the UAE has been stepping up efforts to pioneer the use of new technologies and technology entrepreneurship as part of its broader economic development strategy. The economy is expected to receive a significant boost with Dubai's hosting of the [Expo 2020](#) event, due to start in October 2020 and run until the following April, and predicted to attract 25 million visitors.

Photo: www.istockphoto.com/gb/portfolio/mikada



At a glance

Capital:
Abu Dhabi city

The UAE was formed in 1971 as a federation of seven emirates: Abu Dhabi, Dubai, Sharjah, Ajman, Ras al-Khaimah, Umm al-Qaiwain and Fujairah

Abu Dhabi is the largest emirate, representing 86% of the land area of the UAE, most of its coastline and about one-third of the population

Population: total population (nationals and expatriate residents) was 9,304,277 in 2017. Non-nationals in the UAE as of 2010 (estimate): 7,316,073

Indians form the largest non-national community in the UAE, followed by Pakistanis, Bangladeshis, Egyptians and Filipinos.



Since 2010, Dubai and Abu Dhabi have been pioneering clean energy development in a region otherwise notorious for its consumption of fossil fuels. Both emirates completed their maiden utility-scale solar schemes in 2013, when Dubai brought into operation the **Mohammed bin Rashid al-Maktoum solar park** and Abu Dhabi commissioned a 100 MW concentrated solar power plant – at that time the world's largest using that technology. Abu Dhabi also created **Masdar**, a clean energy company that is now a well-established regional developer, to spearhead innovation and investment.

On the international level, in 2015 the UAE partnered with the United Nations Industrial Development Organization (UNIDO) to establish the **Global Manufacturing and Industrialisation Summit** (GMIS), an industry association that builds bridges between manufacturers, governments and non-governmental organizations, technologists and investors to harness the Fourth Industrial Revolution's transformation of manufacturing for the regeneration of the global economy. The third edition of the GMIS will take place alongside the Hannover Messe in April 2020, and will work to adopt uniform global standards for the application of Fourth Industrial Revolution technology in manufacturing.

According to demographic projections, more than two million young Ethiopians enter the labour market every year. The Government of Ethiopia recognizes that there is a need to create long-lasting and decent employment opportunities in urban areas and is focusing on economic priority sectors that add value and are export-oriented, generate high employment, have potential competitive and comparative advantages, and have multiplier effects on other sector-related industries.

Despite its impressive economic growth over the last 15 years, Ethiopia remains at a very early stage in its economic structural transformation. To expand its industrial sector, the Government of Ethiopia has developed a national industrial policy with a focus on the creation of industrial and agro-industrial parks.

Ethiopia's [Industrial Parks Development Corporation](#) (IPDC) was created in 2014 with a mission to "boost industrial park development with the highest

standards of professionalism". Specifically, the IPC works to develop state-owned industrial parks (there are also several private industrial parks in Ethiopia). It rents or sells pre-built factory sheds to industrial park enterprises, sub-leases developed land, and operates, manages and maintains the public parks.

The IPDC's CEO, Lelise Neme explains the rationale behind the focus on industrial parks: "Ethiopia sees the development of industrial parks as vital for economic and social development, for increasing the growth rate, and for improving the quality and productivity of the industrial sector. The manufacturing sector is a critical source of growth and development, and we aim to increase manufacturing's share of Gross Domestic Product from the current 5% to 20% by the year 2025."

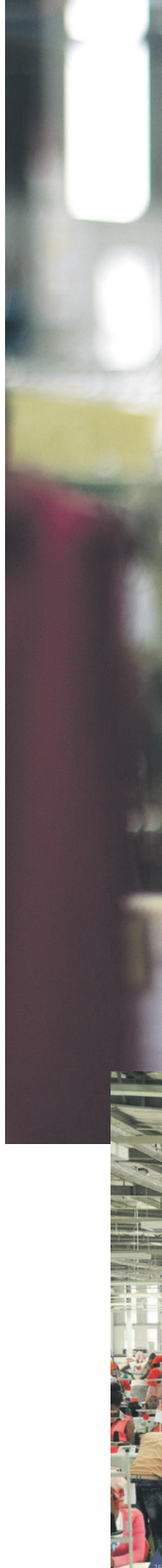
Neme states that industrial parks, if successfully developed, bring two main types of benefits. "'Static' economic benefits, such as employment generation, export growth, government

Ethiopia: developing inclusive and sustainable industrial parks

"Industrial parks bring 'static' and 'dynamic' economic benefits."



Making It magazine spoke to **LELISE NEME**, Chief Executive Office of Ethiopia's Industrial Parks Development Corporation.





revenues and foreign exchange earnings; and ‘dynamic’ economic benefits, such as skills upgrading, technology transfer and innovation, economic diversification, and the enhanced productivity of local firms.”

One of the first public industrial parks is in Hawassa, a city with around 300,000 inhabitants in southern Ethiopia. The [Hawassa Industrial Park](#), which opened in July 2016, has been described as the Ethiopian government’s “flagship”

industrial park. It is anchored by global textile firm, PVH (formerly Phillips Van Heusen), the owner of brands such as Calvin Klein and Tommy Hilfiger, but 20 other firms have invested as well. Production started at relatively small scale in late 2016, with the first exports in mid-2017. By September 2019, about 27,000 workers had been hired across the 52 factory sheds of the park. PVH alone expects to export US\$100m worth of clothing each year from Hawassa. ➤



➤ Other industrial parks established by the IPDC include Bole Lemi on the outskirts of the capital, Addis Ababa, Mekele in the north of the country, Kombolcha in the north-east, and Adama in the south-east.

Neme explains that Ethiopia has so far invested around US\$1.3bn in the construction of around a dozen industrial parks which have attracted anchor companies from the United States, China, India, Sri Lanka, Taiwan Province of China and South Korea. “At present, the IPDC, which has 657 professionals with a few support staff, has developed or is developing 12 industrial parks, with others under study. They have created 50,215 permanent jobs, of which more than 85% are taken by women.”

In terms of the sustainability of the industrial parks, Neme says that “a vision of sustainable

transformation underpins everything the IPDC does.” She continues, “The IPDC urbanized industrial parks with basic infrastructure – roads, water, electricity, telecommunications, public service facilities, and convenient investment services to create a conducive environment for industrial clusters. All this to expand employment, attract foreign direct investment, technologies and know-how, and to build up manufacturing bases for export.”

At the Hawassa Industrial Park, Neme explains that the aim has been to develop Africa’s first zero-emission textile industrial park, with state-of-the-art infrastructure and equipment. An Indian sewage treatment company, [Arvind Envisol](#), is [providing industrial waste water management solutions for the park](#), with the intention to replicate them in all the parks.

“Ethiopia has so far invested around US\$1.3bn in around a dozen parks.”

Neme reports that “Zero Liquid Discharge technology enables the Hawassa Industrial Park to recycle 85% of industrial effluent,” adding that “the IPDC is advancing an analytical framework which includes a strategic pillar to take the lead on developing eco-industrial parks.”

The IPDC CEO is confident that “the cultivation and activation of industrial parks in Ethiopia will nurture new economic growth points, accelerate the pace and process of industrialization and urbanization, and bring integrated industrial development.”

● **FURTHER READING:**

[Industrial Park Development in Ethiopia; Case Study Report A Study on Women in Manufacturing in Ethiopia Programme for Country Partnership Ethiopia](#)



HIROSHI KUNIYOSHI considers some of the issues raised by *Industrializing in the digital age*, UNIDO's Industrial Development Report 2020

The absorption of new technologies is a crucial driver of successful inclusive and sustainable industrial development. History shows the links connecting new technologies with the introduction of new goods and processes, the expansion of industrial sectors, the creation of job and income opportunities, and the promotion of environmental sustainability.

The *Industrial Development Report (IDR) 2020* edition, published by the United Nations Industrial Development Organization (UNIDO) in November this year, examines in detail the potential gains and challenges brought by the creation and diffusion of advanced digital production (ADP) technologies.

A clear message from the *IDR 2020* is that an emerging wave of breakthroughs in digital

production technologies – artificial intelligence (AI), big data analytics, cloud computing, internet of things (IoT), and advanced robotics among others – is transforming manufacturing production. It is also clear that these breakthroughs will advance manufacturing in terms of efficiency, productivity and safeguarding the environment.

But how far have we come in terms of this Fourth Industrial Revolution (4IR)? Research for the *IDR 2020* shows that the degree of engagement remains very concentrated globally. Just 10 countries – the frontrunners – account for 90% of all global patents and 70% of all exports directly associated with these technologies. Another 40 countries actively engage in these technologies, though with ➤

➤ much more modest intensity. The rest of the world – about half the world's countries – either shows very little activity or fails to take part in the global creation and use of these technologies. Even within the industrial sector of individual countries, in most countries different generations of digital technology applied to manufacturing production coexist, and those associated with the 4IR have permeated only a small part of the sector.

Creating jobs, not destroying them

Concerns have been raised on the potential effect that ADP technologies can have in the labour market, and it is important to evaluate the ultimate effect of a new technology (such as robots) on employment. The *IDR 2020* finds that increasing the stock of robots in one particular industry has a direct effect on the employment of that industry, but also indirect effects on the rest of the value chain. For example, an industry using more robots might produce intermediate products of better quality, sell at cheaper prices or both for its customer industries, which in turn could increase competitiveness and hire more workers to expand their businesses. That increase in the use of robots could also have an indirect impact on supplier industries because greater automation and changes in production processes could translate into greater demand for certain materials and components. Such a change in the demand emanating from a robotizing industry could have an impact on the employment of its supplier industries in either a positive or a negative way.

According to the *IDR 2020*, once all effects are considered, the contribution of annual growth in the stock of industrial robots to employment growth from 2000 to 2014 is positive, though very small. The main positive effects come from international supplier linkages and domestic customer linkages. Domestic supplier linkages, in contrast, show negative effects on employment. Interestingly, most of the jobs were created in emerging economies due to the increase in the stock of robots in industrialized economies.

Why women face a higher risk of losing jobs due to automation

Another area of concern is gender inequalities. The *IDR 2020* confirms that the extended adoption of ADP technologies might increase the gap between men and women in

“Just 10 countries – the frontrunners – account for 90% of all global patents and 70% of all exports directly associated with digital production technologies.”

manufacturing labour markets, especially in developing countries. Female workers in manufacturing are found to be more exposed to the risk of computerization than men are.

Considering the type of occupation currently performed, women are more likely to face a higher computerization risk than men if they are employed in food, beverages and tobacco, textiles and leather and chemicals. Interestingly, no statistically significant gender differences in computerization risk are observed in the computers, electronics and vehicles sector.

The gender differences in computerization risk can be explained by, among other reasons, differences in skill endowments. Women in manufacturing on average score significantly lower than male workers in all skills that are particularly valuable to operate with ADP technologies and that constitute the broad category “skills of the future.” These skills are supposed to thrive in the 4IR and protect workers from destructive digitalization because they are less likely to be replaced by new technologies but, instead, more likely to be complemented by them. Gender gaps are significantly negative in all the “skills of the future.”

On a more positive note for female workers, gender gaps in soft skills are less pronounced. Since recent empirical evidence supports the argument that social skills are increasingly important, an advantage in these skills can contribute to narrowing gender gaps in the future.

Developing countries face five broad challenges

The vast majority of developing countries are far from becoming established players in the field of advanced digital production (ADP) technologies because they face some specific challenges:

- The production capabilities required for absorbing, deploying and diffusing ADP technologies along the supply chains are scarce and unevenly distributed.
- Companies in developing countries that could make technology investments in this area have already committed resources to

older technology, and they need to learn how to retrofit and integrate the new digital production technologies into their existing production plants.

- These technologies demand substantial infrastructure for use in production. Some developing countries face significant challenges in providing affordable and high-quality electricity, as well as reliable connectivity.

- In many developing countries, companies engage with some ADP technologies, but many of these technologies remain contained within the company and, occasionally, a few close suppliers who have the basic production capabilities to use them. Around these 4IR islands, the vast majority of firms still use technologies typical of the 3IR or even 2IR. In this context, it is extremely difficult for the leading companies to link backwards and nurture their supply chains.

- These technologies tend to be controlled by a limited number of countries and their leading firms. Developing countries rely dramatically on importing these technologies and in many cases, even when they can mobilize the resources to access them, they remain dependent on providers for hardware and software components.

Taken together, these challenges point in one direction: the need to build basic industrial production capabilities as a prerequisite for entering the 4IR. ADP technologies open new opportunities for catching up, but exploiting them requires a minimum base of industrial capabilities.

One more key message for policymakers coming from the *IDR 2020* is that they should be wary of one-size-fits-all solutions. There is a diversity of approaches to smart manufacturing in both developed and developing countries, and it is still difficult to identify ready-made models. Generally, responses remain at the trial stage, and systematic evaluations to inform recommendations are still pending.

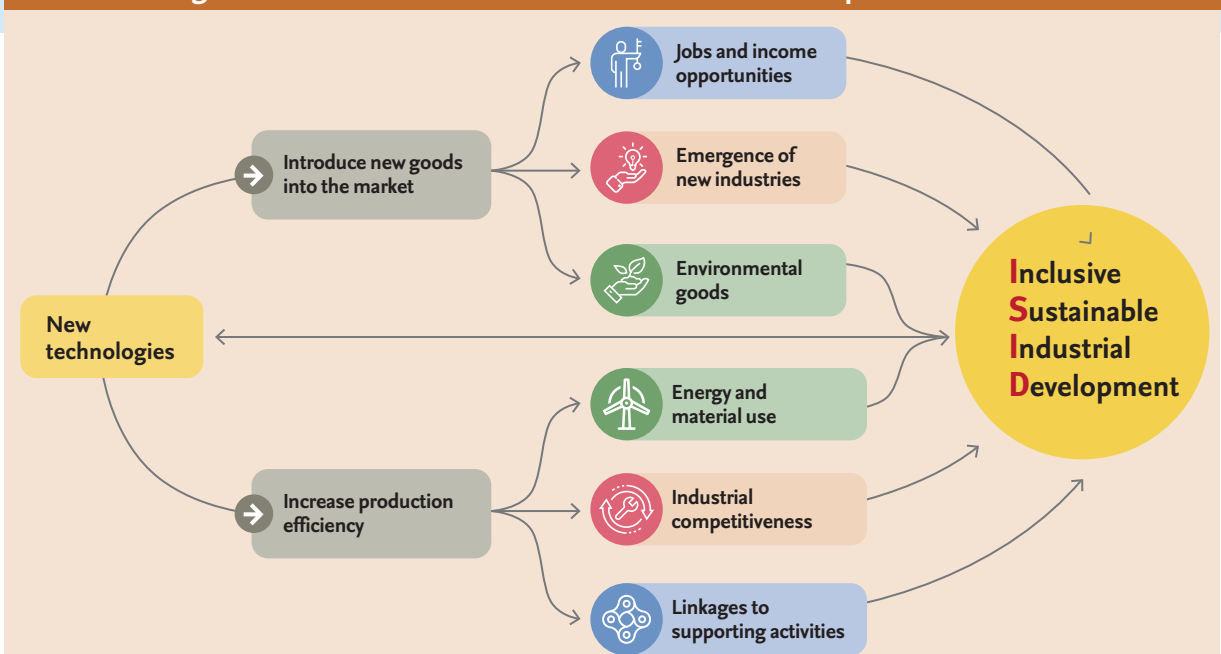
Policymakers, particularly in developing countries, should remember that it takes commitment and substantial resources to develop the capabilities required to take up new technologies and assimilate any associated productive transformations. Taking small but well-informed steps to test technological and policy options, according to the desired goals, is recommended before committing fully to implementation.

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Industrializing in the digital age,
UNIDO's
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Development
Report 2020

New technologies and inclusive and sustainable industrial development



Note: The upper part of the figure shows how new technologies drive inclusive and sustainable industrial development (ISID) by introducing new goods into the market. The lower part shows how new production technologies also contribute to ISID by increasing production efficiency. As industrialization evolves, the innovative potential of countries also increases. This is shown by the straight arrow going from right to left. Source: UNIDO elaboration.

European Union-United Nations confronting change in the world

by **PAULINE VERON**, European External Affairs Programme, [European Centre for Development Policy Management](#)

The multilateral system, with the United Nations (UN) at its core, is changing. The United States' policy under Donald Trump and a more assertive China are altering global power relations. Future multilateralism will likely be less stable and less uniform. The diffusion of power and influence means that the current system will need to evolve in order to stay relevant, and it is also compelling the European Union (EU), generally seen as one of the strongest defenders of the liberal global order, to evolve more quickly. While the EU maintains a stable presence within the UN, its role at the UN is only as strong as its own internal coherence, which is fragile and subject to divergence driven by domestic politics and interests within Europe.

The EU's and UN's approach to development cooperation, their

comprehensive approach to peace and security abroad, and the UN's human rights architecture are areas of clear and historical normative alignment between the two organizations. In these areas, both the EU and UN can and do benefit from increasing operational linkages through efforts of shared analysis, structural cooperation and pooled funding to avoid duplication.

UN reform

The EU's and its member states' trust in the UN system's ability to reform itself is often low, yet at the same time, they have high expectations for it to deliver change. There is broad EU support for the UN Secretary-General's reform agenda. One should be careful however not to overestimate the possible gains from the current wave of administrative reforms, which do not (yet) affect the wider power relations that underpin the UN system, nor the incentives for UN entities created by their funding environment and other structural challenges.

The prospect of improvements in the UN's in-country architecture can open doors for more effective collaboration on the ground. However, the UN reforms also reveal how funding patterns, including those of EU institutions and member states, help maintain the

fragmentation of the UN system.

There is a contradiction between the reform expectations from EU member states and the incentives they create for the UN.

Collectively, the EU and its member states are the single largest financial contributor to the UN system, yet this

The Secretary-General of the United Nations, António Guterres, told MEPs in 2017: "A strong and united Europe is an absolutely fundamental pillar of a strong and effective United Nations."



and Nations cooperation: the multilateral system

is far from a coherent funding relationship. The use of earmarked contributions for specific purposes, in particular, fosters fragmentation and competition between UN agencies, and has consequences for the coherence and the pursuit of common results.

European leadership on multilateralism

At the start of a new European political cycle, the EU faces critical choices in its external action. Before taking office in November 2019, the new European Commission led by Ursula von der Leyen has been presented as a “[geopolitical college](#)” and a “guardian of multilateralism”. The need for a [more strategic, more assertive and more united EU](#) in its external relations in a context of global disruption and power competition appears to be well understood by the new leadership. This desire for European leadership on multilateralism is apparent across a number of different policy areas; on trade, climate, humanitarian issues, and the Sustainable Development Goals (SDGs).

On a more technical level, the negotiations for the [next EU budget](#), known as the Multiannual Financial Framework for 2021-2027, which aim for a more strategic and political approach from the EU, will set the overall amount, as well as the geographic and thematic focus of the EU's external funding. The Commission's

budget proposal prioritizes geographic approaches over global thematic ones, and does not foresee any changes in the way the UN is funded. However, it introduces an innovative, unified financial architecture to crowd in private sector investment outside the EU, including the [European Fund for Sustainable Development-plus \(EFSD+\)](#).

The ‘direction of travel’ set by the new Commission, the EU budget negotiations and the strategic programming of these resources over the next twelve months will all have an impact on EU-UN relations. There are both risks and opportunities for the UN system associated with these processes.

Potential for improved partnership

In parallel, preliminary discussions are ongoing with some UN agencies on cooperating more closely at field level on delivering on the SDGs. This is where the greatest potential for improving the EU-UN partnerships lies. ‘SDG dialogues’ could be an opportunity to involve the UN in partner countries to identify shared agendas that could serve as a basis for programming choices. Yet, although both organizations have a joint interest in ‘localizing the multilateral agenda’, this will be difficult to put into practice.

At the operational level, the UN and its different entities are often seen as implementing partners, which in some

cases have a good working relationship with the EU, but are often also perceived as fragmented, costly and inefficient on the ground, with an uneven quality in senior and specialist staff. UN entities, in turn, tend to see and approach the EU as a funder first, and a strategic partner second. Going forward with joint dialogues and consultations at country level may be best done on a case-by-case basis to be as strategic and effective as possible.

Neither the EU nor the UN are prone to rapid change unless driven by crisis. On the one hand, the EU will need to increase its relative weight and influence in a changing UN environment by positioning itself and acting jointly on critical international challenges (the climate crisis, international trade, security, cybersecurity and hybrid threats). On the other hand, the EU and its member states need to strengthen the UN's ability to work independently and in an integrated manner for delivering the 2030 Agenda. There are opportunities presented by the UN reform agenda and these can be best realized by ensuring a coherent all-EU approach to the UN.

● This article is an extract of the study ‘[EU-UN cooperation: Confronting change in the multilateral system](#)’ published by the European Centre for Development Policy Management

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