



“Fostering innovation for inclusive and sustainable industrial development:  
the role of international cooperation”

Keynote Address by Mr. LI Yong

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at the

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## **The Lima Declaration: the need for ISID**

Excellencies,  
Ladies and Gentlemen,

It is a pleasure to be with you this morning at this very timely High-level conference under the theme of “The diffusion of innovation in low income countries”. This is a topic very close to my heart but also central to the work of the organization I am leading, namely the United Nations Industrial Development Organization – or UNIDO for short. This is because, as I will explain over the next thirty minutes, I strongly believe that increasing the innovation capacity in low-income countries is a fundamental pre-requisite for the achievement of higher living standards for hundreds of millions of people. First of all, however, let me share with you why I believe that we must look at innovation with a new set of lenses, if we want innovation to be not only the engine of economic development, but also of social inclusiveness and environmental sustainability.

In December 2013, at the 15th session of the General Conference of UNIDO held in Lima, Peru, the Member States of UNIDO unanimously endorsed the concept of Inclusive and sustainable industrial development (ISID).

In no uncertain terms, the declaration calls for a new form of industrialization that should be able to balance all three dimensions of sustainable development – economic, social and environmental – through a process of structural transformation of the economies engaged in the development process.

An economy that shares such a structural transformation is an economy that encourages industrialization, economic growth and the creation of jobs, that enhances productivity and development, that is capable of developing or absorbing technology on the basis of mutually agreed terms, that advances the integration of small and medium-sized enterprises in trade flows, and that promotes the sustainable use, management and protection of natural resources.

I think we can all agree that the large majority of countries in the world that have reached a high stage of economic and social development have not done so without having developed an advanced industrial sector. Yet I think we can equally agree that prosperity is still very far from being achieved throughout the world and that remarkable differences remain - unacceptable differences I would say - between and within regions, countries and societies. This is because too many times in the past, economic growth has occurred without providing the opportunity of participation and reward to significant segments of the population, and women and youth in particular.

And we cannot be blind to the fact that for many countries a discomfoting side-effect of industrialization has been its considerable environmental footprint. Wherever we turn, hardly any country in the world has fully resolved such challenges as waste management, or air and water pollution. In the past, and still today, people had to choose between industrial growth and safeguarding the environment. I am of the opinion that only a profound transformation in production processes and business models – going hand-in-hand with the right choice of technologies – will offer lasting solutions to the daunting environmental challenges of our times.

Excellencies,  
Ladies and gentlemen,

The challenges we face may seem formidable but we should take heart from what we have already been able to achieve, bearing in mind that these achievements appeared equally daunting only a few decades ago. In the relatively short span of twenty years, the proportion of people living in extreme poverty has declined by half at the global level. In developing regions, the proportion of people living on less than 1.25 dollars a day fell from nearly 50 per cent in 1990 to a little over 20 per cent in 2010, five years earlier than the deadline set by the international community under the Millennium Development Goals.

Over the same period, the proportion of undernourished people across the globe fell from 23 per cent to 15 per cent.

Given the right decisions and with the right mix of financing and innovative technologies, we have proved ourselves able to tackle challenges that had appeared intractable for centuries. This is not to say that our journey has finished, nor should we be blind to the challenges that lie ahead of us. Despite these great achievements more than a billion people worldwide still live in extreme poverty, and many more experience hunger and are vulnerable to environmental or price shocks. Undernutrition remains one of the world's most serious but least addressed public health challenges. Nearly one-third of children in developing countries are underweight or stunted (in terms of low height for age), and undernutrition contributes to one-third of all child deaths.

It is for this reason that, as Director-General of UNIDO, I travel the world to strongly promote the notion of Inclusive and Sustainable Industrial Development, or ISID in short, because I am firmly believe that it is only through ISID that the central challenges of our world can be reconciled, namely the eradication of poverty within the next generation and the safeguarding of the world's natural resources for the coming generations. Nowhere are such challenges more closely interlinked nowadays than in Africa, and I am therefore very much looking forward to hearing the contribution of Professor Lundvall right after mine.

We base our effort to promote ISID on our conviction that mistakes made in the past may be corrected through a strong and concerted effort to promote structural transformation and the application of the most modern and suitable technologies in the present and future.

As you may already know, UNIDO is responding to several of these development challenges through two main channels: technical cooperation projects and our global forum function. Throughout my speech today I will try to provide concrete examples of how we deploy the collective technical expertise of UNIDO that we accumulated over five decades in support of industrialization. We do this through traditional technical assistance projects and, importantly, through new and innovative approaches such as the Programme for Country Partnership, PCPs, which we launched about a year ago on a pilot basis in Ethiopia and Senegal, and which are already achieving significant results.

### **Agenda 2030 and Sustainable Development Goal 9: manufacturing and innovation**

Excellencies,  
Ladies and gentlemen,

We at UNIDO are surely not alone in undertaking this journey.

As you are aware, after the positive experience of the Millennium Development Goals, the world community has recently embarked on a new and even more ambitious endeavour under the heading of the 2030 Agenda for Sustainable Development, which aims at a comprehensive transformation of our world. This new 2030 Agenda is inspired by both the ambition and the

realism to tackle the world's development challenges in a new, holistic and universal manner, and is built on the foundation of 17 Sustainable Development Goals, or SDGs. It is clear that we will only be able to find effective long-term solutions to ending poverty, inequality and environmental disruption if all nations, regardless of their income level, work together to implement the SDGs in an integrated manner.

The Goals and associated targets are the result of over two years of intensive public consultation and engagement with civil society and other stakeholders around the world, with particular attention being paid to the voices of the poorest and most vulnerable. This consultation included valuable work done by the United Nations, and in particular by the General Assembly's Open Working Group on Sustainable Development Goals.

The 2030 Agenda promotes a society where every country enjoys sustained, inclusive and sustainable economic growth and decent work for all. A world in which consumption and production patterns and the use of all natural resources – from air to land, from rivers, lakes and aquifers to oceans and seas - are sustainable.

One in which democracy, good governance and an enabling environment at national and international levels are essential for sustainable development, and in which development and the application of technology are climate-sensitive, respect biodiversity and are resilient.

From my vantage point, I see the Sustainable Development Goal number 9, "Building resilient infrastructure, promoting inclusive and sustainable industrialization and fostering innovation", as particularly relevant to today's event, not only because of its explicit reference to innovation but also because it recognizes the inseparable link between innovation and industrialization in sustaining growth, enhancing inclusiveness and promoting sustainable development through the achievement of a number of challenging targets. These include, for example:

- 1) Target 9.2: Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries;
- 2) Target 9.3: Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit;
- 3) Target 9.5: Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.

While there may have been some debate in the past, I remain strongly convinced that the manufacturing sector remains critically important in both the developing and the developed countries.

In the former, it continues to provide a pathway from subsistence agriculture to rising incomes and living standards. In the latter, it remains a vital source of innovation and competitiveness, making significant contributions to research and development, exports, and productivity growth. In both cases technological change represents the key ingredient to the simultaneous achievement of ambitious targets in terms of sustained growth, inclusiveness and environmental sustainability. Technology and manufacturing mutually reinforce each other and create the conditions for a virtuous circle of growth and development.

UNIDO responds to SDG9 in several ways. Let me give a few examples: Firstly, our Investment and Technology Promotion Office (ITPOs) network, as the name suggests, is involved in the promotion of foreign direct investment (FDI) and the transmission of increasingly sophisticated

technologies to developing countries. Given the central role played by capital accumulation and technological change as sources of economic growth I cannot emphasize strongly enough the important contribution made by the ITPOs to developing countries. Secondly, one of the technical branches of UNIDO, the Business, Investment and Technology Branch (BIT), is in charge of a programme focusing on capacity building in the area of science, technology and innovation (STI), which is aimed at strengthening the innovation support infrastructure as well as the capabilities of individual firms to engage in innovation. A third example comes from our global forum function and is UNIDO's flagship publication, the Industrial Development Report (IDR), which this year focuses on the role of technology and innovation for ISID. These are only but a few examples of the many direct and concrete contributions that UNIDO is making to the development discourse.

### **Why the link between manufacturing and innovation? The centrality of manufacturing for innovation**

Excellencies,

Ladies and gentlemen,

The manufacturing sector continues to be the hub for innovation and technological change. It is a proven fact that Research and Development expenditures are concentrated especially in the manufacturing sector. Technology innovation and economic growth are closely related and can be represented as cycles or waves. Each wave represents a diffusion phase of technology innovations creating entirely new manufacturing sectors and thus supporting opportunities for investments and growth.

The current wave began in the 1990s and relies mainly on information systems. These have tremendously modified the transactional environment with new methods of communication and more efficient forms of management of production and distribution systems. Technological innovations have dramatically changed how goods are created, transported, distributed and consumed. Information technologies in particular are playing a greater role than ever in manufacturing and the value chains in which they are embedded. The expansion of global value chains (GVCs) and their related commodity flows has led to a change in the respective value of research and development, fabrication and marketing. The actual fabrication or production stages of GVCs are becoming relatively standardized and subject to lower economies of return while the pre-production and post-production segments are the areas where relatively high levels of value added are concentrated.

UNIDO's acknowledge the importance of global value chains, and value chains more generally, by devoting an entire organizational unit to supporting the development of SME clusters. In fact, in this area UNIDO has for many years championed its own concept and approach and I am pleased to report that our work has been very successful around the globe and as such continues to gain recognition.

### **What innovation for ISID?**

Excellencies,

Ladies and gentlemen,

According to a McKinsey study, mobile Internet usage will be particularly disruptive in the coming years by generating a global economic impact that will increase from 3.7 trillion US\$ at present to 10.8 trillion US\$ per year by 2025. About half of this impact could materialize in developing countries, where 3.5 billion people will have access to the Internet by 2025. The

creation of new technologies with so huge a market potential will be translated into the development of new and highly profitable business opportunities as well as the creation of additional jobs.

The forthcoming Industrial Development Report, to be published by UNIDO in a few weeks' time, points out that for low income countries such as Rwanda, ICT is not only seen as the central engine of socio-economic development, but also as the enabler of structural transformation out of agriculture. The country has experienced an increase in the export of ICT goods and a reduction in the time needed for the transport of goods.

As you know, there are two sides to the ICT coin: its production, where UNIDO is providing its expertise, and the consumption or use of this technology.

The latter refers to the impact that the use of ICT is having throughout societies and which we have learnt is an important source of productivity growth. I am glad to reveal that we will soon sign a Memorandum of Understanding (MoU) with the International Telecommunications Union (ITU) in Geneva to enhance our collaboration, inter alia, in innovation pertaining to ICT production and use. I strongly believe that such a partnership between our two organizations, which share a strong expertise and knowledge in a common area, promises to bring considerable benefits to developing countries. More generally, creating partnerships is the way to go in a world that is becoming increasingly complex and generating the many the development challenges we face in our daily work.

Beyond these information technologies that are changing production processes and helping to reduce poverty in different parts of the world, new technologies have been emerging to reconcile growth and environmental protection. These new technologies are useful for green industries and in particular help us to:

- 1) Increase the sufficient use of materials, water and energy in industrial production, through such approaches as the dematerialization of products and value chains, the use of materials with a longer service lifetime, and the replacement of virgin materials with recycled materials
- 2) Minimize the generation of wastes and emissions through such approaches as improvements in process operation, monitoring and maintenance, and waste minimization;
- 3) Minimize the risks associated with chemicals and hazardous wastes through such approaches as the sound management of chemicals, the phasing out of toxic and other environmentally harmful substances (including those contributing to ozone layer depletion and/or climate change), and the application of Best Environmental Practices and Best Available Techniques to prevent hazardous pollutants.

The rise of these new technologies is creating new industries producing environmental goods which are necessary for green the industries. Structural transformation is gradually taking place with a progressive increase in the use of decarbonized inputs in the manufacturing process. According to the "Global Trends in Renewable Energy Investment 2015" report published by the United Nations Environment Programme, the past year brought a rebound of green energy investments worldwide with a surge of 17% to US\$ 270 billion. A key feature of the 2014 result was the rapid expansion of renewables into new markets in developing countries. Investment in developing countries, at US\$ 131.3 billion, was up 36% on the previous year and came the close to overtaking the total for developed economies, at US\$ 138.9 billion.

Wind, solar, biomass and waste-to-power, geothermal, small hydro and marine power contributed an estimated 9.1% of world electricity generation in 2014, compared to 8.5% in 2013.

This increase in the installed capacity of these renewable sources is equivalent to a saving of 1.3 gigatonnes of CO<sub>2</sub>. It is also important to note that many of the new technologies that harness renewables are, or soon will be, economically competitive with fossil fuels. Dynamic growth rates are driving down costs and spurring rapid advances in technologies.

Despite these impressive improvements in the adoption and diffusion of environment friendly technologies at world level, there is no guarantee that the current pace of pollution and in particular of greenhouse gas emissions will lead to an environmentally sustainable path. The forthcoming Conference of Parties 21 in Paris is a unique opportunity for countries to define a concerted action to match the well-known 2 degrees temperature constraint limit set by the Copenhagen consensus. A global problem such as climate change needs a globally coordinated response together with effective national domestic actions to give a massive impulse to the diffusion of environmentally friendly technologies which are necessary to achieve inclusive and sustainable industrial development. Many environment friendly technologies are still expensive and their diffusion still needs to be induced by emissions reduction policies. The further increase of the scale of production of these technologies will also reduce their adoption costs.

As recognized worldwide, UNIDO is very active in the areas of energy and environment. Essentially, our technical cooperation projects in these areas aim to increase energy and resource efficiency, that is, we assist countries in producing more with less. Perhaps it is controversial to say this but the “old” or traditional view maintained that there was a choice between economic growth and environmental sustainability. Several studies have provided evidence of the existence of a so-called Environmental Kuznets Curve (EKC), very similar to the original version of the curve which demonstrated the tension between growth and income distribution.

However, let me provide a slightly different view. There is, first of all, a trend towards the decoupling of energy intensity and economic growth. This is a significantly positive development that UNIDO has contributed to for decades. But another important aspect is the solution to environmental concerns that technology provides, and coupled with that the entire new industry that has been created to supply the world with products such as solar panels, wind mills and other forms of energy infrastructure. So, in line with the notion of structural transformation, countries can continue their quest for growth and job creation without having to resort to environmental pollution. There are technologies that allow for old industries to become “greener” and, importantly, new industrial sectors producing new “green” products are emerging.

Through these developments, countries can advance from old-style brown production processes to green production and green jobs, Yes, the good news is that we can indeed have it both ways!

### **Successful examples: China and Republic of Korea**

Excellencies,

Ladies and gentlemen,

The Republic of Korea represents an extraordinary example of rapid industrialization and structural transformation. From 1960 to 1990, the country was able to transition from an agrarian economy to a modern industrial economic system.

During the 1960s, its economy was based on subsistence agriculture and could rely only on limited natural resources. Its endowment in terms of infrastructure was also poor, as an outcome

of the war in the previous decade. Income per capita in the Republic of Korea at that time was lower than that of countries such as Ethiopia or Haiti. Today it is one of the most important industrializing countries in the world with a 30% share of manufacturing value added in total GDP and a per capita income of nearly 30,000 US\$.

Nowadays, industrialization in the Republic of Korea is going hand in hand with environmental improvements. The country is among the world's top 10 carbon emitters, with its emissions projected to reach 850.6 million tonnes of carbon dioxide equivalent by 2030 based on business-as-usual (BAU) levels. However, it has recently finalized its 2030 target of reducing greenhouse gas emissions by 37 percent from BAU levels, higher than its earlier plan for a voluntary cut of 15-30 percent. In line with its plan to limit climate-changing greenhouse gas emissions, the Republic of Korea established the world's second-biggest carbon emission market last January, which imposes caps on emissions from 525 of the country's biggest companies.

China represents another benchmark. In the three-and-a-half decades of economic reform since 1979, China has successfully maintained a 9.9% annual rate of GDP growth and a 16.3% percent annual growth rate for exports. China is currently the world's second largest economy.

In 1979 China was one of the poorest agrarian countries in the world with a per capita annual income of US\$ 243 at current exchange rates, about one third of the average in Sub-Saharan countries. Within only three decades, China's per capita GDP had increased to approximately US\$ 5,000 in 2011.

China's rapid growth was accompanied by substantial structural change. In 1978, primary goods accounted for 28.2% of GDP and agricultural exports for around 35% of China's entire exports. With the declining share of agricultural goods, manufacturing exports increased from 65% of total exports in 1980 to approximately 96.5% in 2009. Over the same period, the share of the labour force in primary industry declined from 70.5% in 1978 to 38.1 in 2009, while the labour force in secondary industry increased from 17.3% to 27.8%.

According to the World Development Indicators, the unemployment rate in China in 2013 was only 4.6%. China is also leading the world with a massive adoption of environmentally friendly technologies. China invested more than US\$ 89 billion in renewable energy projects in 2014 alone – a growth of 31% on the previous year, even though coal still dominates the national energy mix. And in 2014, China cut energy intensity by 4.8 percent, the most in at least a decade, at a time when its GDP growth of 7.4 percent was the lowest in 24 years, even though energy consumption still continued to rise.

The last Global Innovation Index 2015 published by the World Intellectual Property Organization (WIPO) points out that both China and the Republic of Korea are performing very well in terms of innovation. Whereas the Republic of Korea is moving closer to the top performers (14<sup>th</sup> position out of 141 countries in 2015 as against 18<sup>th</sup> in 2013), China scores closer to those of high income countries in many indicators such as market competition, R&D, creation and diffusion of technology, and acquisition and transfer of knowledge.

### **The challenge of innovation promotion in low income countries**

Excellencies,  
Ladies and gentlemen,

The successful examples of the Republic of Korea and China have sadly not been replicated in many other developing countries. Low income countries do not normally possess the capacity to produce innovation by themselves, but their development strongly depends on their capacity to absorb and effectively use technology from high-income countries. Important channels for

technology transfer include licencing, trade, foreign direct investment (FDI) and participation in technology exhibitions, demonstrations and projects.

Through participation in trade, both as exporters and importers, firms in developing countries acquire technology from abroad. An exporting firm may obtain technology directly from its trading partner in order to ensure that the traded goods are of the right quality. Such a transfer of technology may for example be part of the trade agreement. Moreover, the prospect of exporting may trigger firms to purchase embodied or disembodied technology in order to be able to compete on the global export market.

Of no less importance is also the transfer of tacit knowledge that a trade relationship may bring. In similar fashion firms can acquire technology via import activities. The import of certain goods may for example come with technical support in order to facilitate their use in the production process and/or the training of the staff.

FDI is another very important channel of technology transfer because it also brings much needed capital to the host country. Such investments are also likely to bring technology embodied in the new production methods that the investors bring, which may be transferred to domestic entities through supply chains or leakages. Moreover, foreign firms typically need to provide training to local staff, which also supports technology and skills upgrading in the host country.

This is why much of UNIDO's work is focused on investment and technology promotion. I have already mentioned to you the excellent work of the ITPOs so let me provide another example. Often innovation has the connotation of something new, and hence it has a positive aura and everyone wants more of it. Because of weak innovative capacity in such countries, many UNIDO projects focus on technology transfer and capacity building as a complement to, or sometimes in preparation for, innovation.

To this end, we help build the capacities of key institutions such as business associations and R&D centres that support private sector development; we help build the capacity of firms through skills development programmes and targeted specialist knowledge transfer so that they can absorb the new more advanced technologies embodied in new equipment; we offer new management practices and new ways of organizing production so that it can become more efficient. This may be referred to as the transfer of disembodied technology.

Of course, technologies may be transferred from more industrialized countries to less industrialized countries through North-South or South-South technology transfers. In UNIDO, we facilitate both these forms of technology transfer.

What I have just described is essentially the work of one of our international technology centres, the International Centre for ISID, or IC-ISID, which was established in New Delhi, India, in 2015.

The Centre is preoccupied with identifying technologies in the North that are suitable for implementation and technology upgrading in Indian industry. Again, the transfer is accompanied by requisite capacity building. One effect of the transfer of technology is to reduce the technological distance between North and South—bearing in mind that the same distance within the South is significant. Instead of trying to transfer technology from, say, Germany to an LDC, the technology is “moulded” to fit the Indian context, which is closer to LDCs than that of Germany. The next step is then to transfer the moulded technology from India to the LDC, that is, South-South technology transfer. Through IC-ISID we have both North-South and South-South cooperation under the same roof!!!

The great advantage of North-South technology transfers is that it allows access to state of the art technology and therefore has the potential to quickly narrow the technological gap between firms in industrialized and developing countries. The drawback is that if the host economy lacks absorptive capacity, the beneficial effect of technology does not materialize.

South-South technology transfer is associated with a higher probability of success. Compared to industrialized countries, developing countries are typically more similar in terms of absorptive capacity. Technology relevant for a labour abundant developing country is different from the technology that is relevant to capital abundant industrialized countries.

The drawback of South-South technology transfers is that they do not promote a quick upgrading of developing countries as they do not normally imply the transfer of frontier technology.

Many factors currently deter firms in low income countries from adopting new technologies. The first set of explanations is related to the functioning of markets. An insufficient flow of information, market power mechanisms and the lack of full awareness of the benefits of technology across time and across firms represent significant obstacles to the promotion of innovation.

### **The central role of national governments in promoting technology and innovation**

Excellencies,  
Ladies and gentlemen,

I would like to stress that national governments have a variety of instruments at their disposal to affect the conditions for the penetration of technology and the growth of innovation capacities. In China, the government is intervening effectively to facilitate the transition to innovation-oriented growth.

As documented by the brilliant work undertaken by Prof. Fu, one of the speakers at this prestigious event, total investment in R&D in China has increased at an average annual growth rate of 13.3%, making the country the third largest R&D investor in the world. The OECD reports that the growth of scientific activity in China has been driven by public research institutes, in particular by large investments of the Chinese Academy of Science.

From an institutional point of view, the Chinese Government has established a National Science, Technology and Education Leading Group to coordinate the policies between the Ministry of Science and Technologies and the Ministry of Education. The increasing amount of investment in education has led the country to produce the highest number of science and engineering graduates and post graduates in the world, no less than 6.7 million.

The Republic of Korea was also able to create substantial research capacity in terms of research institutions, a technical university and a central research park since the 1960s. The 1980s and 1990s saw the joint effort in Research and Development from the private sector, and in particular the chaebol, and the public sector in terms of the Science and Technology Program and the 21<sup>st</sup> Century Frontier Program. The country now ranks second in the ICT Development Index 2013. The Government facilitated this process by creating ties between the public and the private sector, by creating infrastructure such as wired and wireless broadband, by defining development plans, and by computerizing many public administration operations.

Technology promotion does not just need industrial policy plans at a large scale to be effective. Supporting the creation and development of industrial clusters is seen by many scholars as a particularly promising strategy to foster industrialization and growth. Industrial clusters appear especially appropriate for the design and application of technology policies. In particular, there are important economies of scale in service delivery and in the development of local systems capabilities that make the implementation of the various policies more efficient at cluster level. In this case the government should design and implement policies to support small and medium-sized enterprises in improving their production in terms of characteristics, quality and timing.

Intervention by governments is also key to promoting sustainable industrialization, which in many cases cannot be achieved without such intervention. Under certain circumstances, individuals and industries will overexploit resources they privately own, even when property rights are secure. While government intervention may be needed to correct market distortion, government manipulation of market prices may also be a source of problems. Some of these price distortions include input subsidies and energy subsidies with predictable wasteful use. These price distortions lead to excessive consumption of energy and natural resources per unit of output. Reducing price distortions is an important step toward the greening of industries.

UNIDO offers valuable research activities and policy advice on issues related to technology creation and innovation. The forthcoming edition of UNIDO's flagship research publication, the Industrial Development Report 2016, which will be launched in Vienna during the next General Conference of UNIDO in the week of 30 November, is titled: "The role of technology and innovation in inclusive and sustainable industrial development". This report offers a deep reflection on the conditions under which technology and innovation boost inclusive and sustainable industrial development, and what policy makers can do to affect these conditions.

As I stated at the beginning of my speech, the world only offers a few cases of countries which were able to upgrade rapidly. And when they did, they could not reconcile all three dimensions of sustainability - i.e. economic growth, social inclusiveness and environmental sustainability. I therefore firmly believe that we must learn from past experiences to build a new era of industrialization. Signs of such a new era are already emerging. The promotion of the circular economy is transforming our approaches to consumption and production. Waste recycling technologies are booming in today's world markets, creating jobs and increasing resource efficiency by reducing the use of resources.

### **What the international community can do to promote technology and innovation in low-income countries through the Technology Facilitation Mechanism**

Excellencies,  
Ladies and gentlemen,

The international community can play a vital complementary role for the diffusion of technologies for inclusive and sustainable industrial development. It is against this background that it has established the Technology Facilitation Mechanism to promote meaningful and sustained capacity building and technical assistance for developing countries on technology development, transfer and deployment as a core part of its activities, while also facilitating a coordination of the activities implemented by different UN agencies.

Paragraph 273 of the Rio+20 Outcome Document states that the Technology Facilitation Mechanism should:

- i) assist developing countries at their request, consistent with their respective capabilities and national circumstances and priorities, to build or strengthen their capacity to identify technology needs, to facilitate the preparation and implementation of technology projects and strategies that foster sustainable development;
- ii) stimulate technology cooperation; and
- iii) enhance the development and transfer of technologies.

These core functions should be supported by broader outreach and awareness activities and a knowledge management system that enables learning and enhanced response quality over the life of the Technology Facilitation Mechanism.

More specifically, it is proposed that the Technology Facilitation Mechanism should engage in the following activities:

- i) Support country assessments of technology needs and collaborate with national stakeholder to prioritize technologies within sectors and analyse technologies including performing economic analysis, market assessment, barriers analysis, employment opportunities, and enabling framework creation.
- ii) Support the design and establishment of country-tailored policies spurring technology transfer and enabling frameworks for transfer of sound technologies, with a focus on public-private interface and intellectual property rights.
- iii) Build capacity in public and private institutions to deliver technology transfer services.
- iv) Facilitate regional and global peer learning, exchange, and training programmes.

It is also emphasized that the Technology Facilitation Mechanism should be delivered through a cost-effective and highly flexible structure with the ability to respond quickly and competently even to a large number of national requests.

### **UNIDO's work on technology facilitation mechanisms for ISID**

Excellencies,

Ladies and gentlemen,

As I have suggested by some references that I have already made to UNIDO's work, I am very proud that our Organization has acquired a considerable experience and expertise in this field over the years, and has established a variety of specialized networks and centres aimed at promoting the development, diffusion and dissemination of technologies, often in collaboration and partnership with other leading players in the field.

These networks and centres include:

- *National Cleaner Production Centres (NCPCs)* located in various developing countries to assist national industries, and in particular SMEs, to adopt sustainable production techniques; these have been linked with each other through a Resource Efficiency and Cleaner Production (RECP) network.
- The proposed Climate Technology Centre (CTC), aimed at responding to the demands for technical assistance by developing countries through a network of selected specialized institutions that is currently being established.
- International Technology Centers (ITCs) located in various countries, including developing countries, to develop specific technologies, especially in the field of renewable energies.
- A networked series of national ozone units established in various developing countries in connection with UNIDO's implementation of the Montreal Protocol on Substances that deplete the Ozone Layer.

- The Investment and Technology Promotion Offices (ITPOs) that I have already referred to, which are located primarily in a number of industrialized countries for the purpose of supporting and facilitating investment and technology flows to developing countries.
- The UNIDO Centres for South-South Industrial Cooperation located in emerging economies and expected to be expanded to other middle income countries with the objective of promoting South-South investment and technology flows.
- The UNIDO Institute for Capacity Development aimed at building up national capacities in developing countries to meet the challenges of industrial development, including the selection, acquisition, adaptation and adoption of suitable technologies.

With a proven track record and an extensive outreach, these institutions are well suited to serve as the potential operational elements of the future technology facilitation mechanism.

The conceptual approach underlying these networks and centres is based on UNIDO's belief that technology cooperation by a developing country with outside partners must be oriented towards that country's own sustainable development objectives, including building national capacities in science, technology and innovation. The promotion of endogenous capacities lies at the core of UNIDO's strategy to address the barriers that impede developing countries acquiring, developing or deploying socially inclusive and environmentally sound technologies.

Against this background, the services that the UNIDO's technology networks and centres typically offer may include targeted capacity building; information access and training; support for project preparation; identification and development of solutions for the removal of barriers to a wide deployment of environmentally sound technologies; joint research and collaboration in technology development; support for innovative financial mechanisms and private/public partnerships; as well as the support for local and regional partnerships for technology transfer.

### **The importance of partnerships for ISID**

Excellencies,  
Ladies and gentlemen,

To establish nationwide ISID momentum and increase overall impact, a number of interventions are required. These range from upgrading infrastructure such as roads and energy utilities, to policies and strategies aimed at fostering market access, employment generation and foreign direct investment.

Technology and skills upgrading programmes are also needed to ensure adequate and equitable wage levels and benefits, in addition to interventions addressing environmental sustainability. Financing such a comprehensive and complex industrial development process requires the mobilization and merging of significant public and private capital.

The partnership approach adopted by UNIDO under the Programme for Country Partnerships (PCP) calls for collective actions and catalyzes local and international development partners to provide the necessary support, knowledge and financial resources needed for ISID. Aside from its technical cooperation activities, UNIDO's role is to bring the various actors together and coordinate their activities – under the leadership and ownership of the host government – to build a solid foundation for sustainable economic growth.

By integrating its delivery of technical assistance with the resources of development finance institutions and private industry, UNIDO will be in a much better position to support its Member States in the pursuit of their ISID objectives.

Moreover, middle- and high-income countries also benefit through investment opportunities in local value chains and access to new markets, creating a win-win scenario for all partners.

As I indicated earlier, the PCP approach is being piloted in two countries, Ethiopia and Senegal. The PCP for Ethiopia focuses on developing labour-intensive light manufacturing, particularly in 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.

The PCP for Senegal focuses on three main areas: i) industrial policy development; ii) the establishment of agro-poles for agricultural value chains; and iii) the operationalization of existing industrial parks and the development of new ones. The PCP also integrates complementary cross-cutting interventions according to government-defined priorities.

The forthcoming UNIDO General Conference from 30<sup>th</sup> November will highlight some preliminary successes of this initiative.

### **ISID through leapfrogging is feasible and represents the way forward for achieving SDG 9**

Excellencies,

Ladies and gentlemen,

Our efforts to achieve ISID are inextricably interconnected with our work for the achievement of Sustainable Development Goal 9. Inclusive and sustainable industrial development is the primary source of income generation, allows for rapid and sustained increases in living standards for all people, and provides the technological solutions to environmentally sound industrialization.

Technological progress is the foundation of efforts to achieve environmental objectives, such as increased resource and energy-efficiency. Without technology and innovation, industrialization will not happen, and without industrialization, development will not happen. Working to achieve Sustainable Development Goal 9 means to work for technological progress,

The accomplishment of a so ambitious goal will be possible only if the governments of the world will be prepared to adopt the actions necessary to foster technological progress as a driver of ISID jointly with international cooperation. UN agencies, UNIDO and all the other actors engaged in international cooperation have never been given a stronger mandate than under the 2030 Agenda to achieve the ambitious Sustainable Development Goals, which require a complex series of interventions, expertise, knowledge and commitment.

Leapfrogging is possible for low income countries. It is possible for them to draw a completely new path of industrialization which is able to reconcile different aspects of sustainability. However, a concerted international effort will be needed to help these countries overcome the serious challenges they face in achieving their goal of inclusive and sustainable industrial development, and promoting technological innovation will be a significant element of that effort.

Excellencies,  
Ladies and gentlemen,

Let me conclude by reminding all of us that the future of the world is in our own hands. Let us make the right choices to ensure that this will be a bright future for the present and future generations.