Industrial Development Board's input to the High-Level Political Forum 2019

Executive Summary

1. **Introduction:** Inclusive and Sustainable Industrial Development (ISID) pursues the effective integration of the economic, social and environmental dimensions of sustainable development and therefore directly contributes to the achievement of all Sustainable Development Goals (SDGs) and the 2030 Agenda principle that "no one will be left behind". SDG 9 on industry, innovation and infrastructure reiterates the relevance of ISID, the Lima Declaration and UNIDO's mandate for the new global architecture.

2. Within the pursuit of ISID, UNIDO has developed areas of expertise and a portfolio of concrete activities that contribute to promoting quality education (SDG 4), creating green and decent jobs (SDG 8), advancing low-emission climate-resilient development of industries (SDG 13) as well as reducing inequalities through poverty alleviation (SDG 10). This input to the High-Level Political Forum (HLPF) in 2019 by the Industrial Development Board has therefore been designed with a focus on SDGs 4, 8, 10 and 13 through an ISID-perspective.

3. **Assessment of the situation regarding the principle of "ensuring that no one is left behind":** Industrial development is a vehicle for poverty reduction through the generation of income-earning opportunities for the poor. Manufacturing jobs provide greater opportunities for skill upgrading and offer higher employment security and benefits, particularly for women and young people, and hence play an important role in achieving SDG targets on quality technical vocational education (SDG 4), economic productivity and decent work (SDG 8) and the reduction of inequalities (SDG 10).

4. **Identification of progress, gaps, areas requiring urgent attention, risks and challenges:** Although industry is a key generator of viable solutions to global development challenges, these solutions are not being adapted, scaled-up and deployed at the pace that would ensure world-wide achievement of SDGs. Industry will still need to undertake significant greenhouse gas (GHG) emission reductions of 65-90 per cent by 2050 compared to the 2010 baseline. This will only be possible through an unprecedented transformation of industrial systems and new industrial development pathways.

5. An increasing number of successful examples of sustainable industrial development can now be found in developing and developed countries. These urgently need to be scaled-up and replicated within and across countries and regions. GHG emission reductions from industry can be achieved through energy, emissions and material efficiency, and reduced product demand. Progress in these areas contributes to achieving SDG 13 and is strongly interlinked with aspects of quality education (SDG 4), decent work (SDG 8) and reduced inequalities (SDG 10).

6. **Valuable successful experiences and lessons learned:** Improved access to clean and innovative technologies, particularly in developing countries, significantly contributes

to promoting ISID thereby facilitating the achievement of SDGs 4, 8, 10 and 13. Multi-stakeholder collaboration and private sector engagement are key for enabling a shift towards low-emission climate-resilient industrial development that leaves no one behind. UNIDO has been effectively supporting Member States from developing countries to implement ISID projects in close collaboration with local businesses and through the Global Partnership for Action on Green Economy, which focuses on the promotion of decent jobs and social inclusion.

7. Significant advancements towards ISID while fostering quality education (SDG 4), decent jobs (SDG 8), reducing inequalities (SDG 10) and promoting gender equality and women's empowerment have also been made through the work of the Climate Technology Centre and Network, co-hosted by UNIDO together with UN Environment, the Global Network of Regional Sustainable Energy Centers (GN-SEC) and the Global Cleantech Innovation Programme (GCIP), both supported by UNIDO.

8. **Emerging issues:** Adequate and predictable finance from a range of public and private sources is crucial for realizing the global transition to ISID. Governments could de-risk investments to enable wider dissemination and use of clean and innovative technologies that in turn create education opportunities and reduce unemployment. Facilitation of the flow of international finance, through the central government to sub-national governments and non-State actors, is needed to fund green investments.

9. Emerging digital solutions for the energy-water-food nexus enable the development of new business models in the industrial sector while helping increase resilience to the adverse effects of climate change. Digital technologies help enhance resource-efficient production and heighten environmental standards in manufacturing through, for example, mapping of environmental footprints of products. However, digital technologies are also posing risks of leaving people, especially women and persons without adequate skills, behind. Concerted efforts are therefore required to ensure a just and equitable transition of the affected workforce.

10. **Political guidance by the HLPF:** Coordination at the national level will support the achievement of SDGs 4, 8, 10, 13 and 16 through ISID. The HLPF should encourage Member States to ensure transparency and accountability in this regard. Combined efforts by non-State actors, such as industries, cities and regions, can result in annual GHG emission reductions of around 1.5 to 2.2 GtCO2e by 2030 in addition to mitigation actions implemented through national government policies (Data Driven Yale, NewClimate Institute, PBL 2018). The HLPF should further encourage Member States to integrate ISID principles into their respective nationally determined contributions and national adaptation plans in a socially inclusive manner to contribute to achieving the 2030 Agenda through the implementation of the Paris Agreement adopted under the United Nations Framework Convention on Climate Change (UNFCCC). Effective multilateralism and international law, including an effective United Nations Development System, are essential to tackle global and local challenges and to achieve inclusive and sustainable industrialization as a part of the 2030 Agenda for Sustainable Development.

11. **Policy recommendations:** Policy frameworks in both developed and developing countries should be enhanced towards ISID to bend the global GHG emissions curve, increase industry's resilience to adverse impacts of climate change and ensure the social and economic inclusion of all. For the effective realization of ISID, governments need to pursue policy coherence with regard to industry, education, labour and investment to enable the creation of green jobs and empower the workforce with skills required for taking on these jobs.

12. Support for startups, entrepreneurships and small and medium sized enterprises (SMEs) is needed to catalyze innovation in, and scaling-up of, climate change solutions as well as to enable the just transition of high-emission industrial sectors. Policies at the global, regional, national and local levels need to be gender-responsive and inclusive to ensure equal and equitable participation in decision-making processes and access to social and economic benefits of industrial development. A high-level political commitment of governments on institutional, systemic and individual capacity-building should be sustained to realize sustainable industrial practices in a socially inclusive manner.

Empowering people and ensuring inclusiveness and equality through inclusive and sustainable industrial development

1. Introduction

1.1 The Lima Declaration[1] stipulates that inclusive and sustainable industrial development (ISID) offers equal opportunities and an equitable distribution of the benefits of industrialization to all stakeholders, while decoupling the prosperity generated from industrial activities from excessive natural resource use and negative environmental impacts.[2] ISID pursues the effective integration of the economic, social and environmental dimensions of sustainable development contributing to the achievement of all Sustainable Development Goals (SDGs) as well as the principle of the 2030 Agenda for Sustainable Development (2030 Agenda) that "no one will be left behind" (UNGA 2015). SDG 9 (Industry, Innovation and Infrastructure) in particular recognizes the importance of industrial development to be inclusive and sustainable, thus reiterating the relevance of ISID, and subsequently, UNIDO's mandate.

1.2 The 2030 Agenda for Sustainable Development calls for integrated approaches, highlighting the need for ISID as advocated through SDG 9 to support the attainment of sustainable development. The achievement of the SDGs that are being reviewed at the High-Level Political Forum (HLPF) in 2019, namely of SDG 4 (Quality Education), SDG 8 (Decent Work and Economic Growth), SDG 10 (Reduced Inequalities), SDG 13 (Climate Action), SDG 16 (Peace, Justice and Strong Institutions) and SDG 17 (Partnership for the Goals), are inextricably intertwined with the promotion and acceleration of ISID.

1.3 The Sustainable Development Goals Report 2018, reviewing the progress made in the third year of implementation of the 2030 Agenda noted that, whilst people overall are living better lives than they were a decade ago, the rate of progress is not keeping pace with the ambitions of the Agenda (UN, 2018). The implementation of the 2030 Agenda is being undertaken in an era of rapid technological growth, the Fourth Industrial Revolution (4IR). 4IR is a paradigm change that is affecting all spheres of development and having consequences on ISID by providing the access to know-how, skills, education and technology.

1.4 ISID serves as an important enabler for achieving SDG 4, in particular on access to affordable and quality technical, vocational and tertiary education (Target 4.3), the substantial increase in number of youth and adults who have technical and vocational skills for employment, decent jobs and entrepreneurship (Target 4.4), and equal access to vocational training for women and men and the vulnerable, including persons with disability and indigenous peoples (Target 4.5).

1.5 ISID is also key for sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all (SDG 8), in particular for economic

[1] The Lima Declaration was adopted by UNIDO's Member States at the 15th session of the UNIDO General Conference on 2 December 2013 in Lima, Peru.
[2] https://isid.unido.org/about-isid.html.

growth per capita (Target 8.1), higher levels of economic productivity and decent work (Target 8.2, 8.3, 8.5, 8.6, 8.7 and 8.8) as well as resource efficiencies in consumption and production (Target 8.4).

1.6 ISID helps reduce inequalities within and among countries by supporting sustained income growth of the bottom 40 per cent of the population at a rate higher than the national average (Target 10.1) and empowering the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status (Target 10.2).

1.7 Promoting and accelerating ISID complements and amplifies urgent climate action by devising low-emission climate-resilient industrial development pathways that enhance resilience and adaptive capacity to climate-related hazards and natural disasters (Target 13.1), integrate climate change measures into national policies, strategies and planning (Target 13.2), and improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning (Target 13.3).

1.8 Industry contributes to roughly a third of global greenhouse gas (GHG) emissions. At the same time, it is an important driver of climate change solutions, such as renewable energy and energy efficiency technologies and approaches. Therefore, bending the global GHG emissions curve to a level that would prevent dangerous anthropogenic interference with the climate system can only be achieved through significant emission reductions from industry.

1.9 It is crucial to make industries more climate-resilient, if economic and social benefits of industrialization are to be sustained and expanded. With the 4IR, technology developments in industry are helping increase livelihoods and create green jobs. Literature on the impact of 4IR has not reached a consensus yet on the likely consequences of the rapid technological uptake.

1.10 ISID strengthens the means of implementation and revitalizes the global partnership for sustainable development, in particular through mobilizing additional financial resources for developing countries (Target 17.3), enhancing North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation (Target 17.6) and promoting the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries (Target 17.7).

1.11 This input to the High-Level Political Forum (HLPF) in 2019 by the Industrial Development Board has been designed with a focus on SDGs 4, 8, 10 and 13 through an ISID-perspective. It draws on the expertise and wealth of experience of the Industrial Development Board member countries, acquired through international organizations, such as UNIDO.

2. Assessment of the situation regarding the principle of "ensuring that no one is left behind"

2.1 Over the last decades, significant progress has been made in reducing extreme poverty around the world. While in 1990 around two billion people or 36 per cent of the world

population lived in extreme poverty, by 2015 the situation had considerably improved with an estimated 736 million people or about 10 per cent of the world population remaining in extreme poverty (World Bank 2018a). Despite this positive development, the world is still far from eradicating extreme poverty by 2030 as stipulated in SDG 1, given that global poverty reduction rates have been slowing and extreme poverty continues to rise in some regions. Sub-Saharan Africa now accounts for most of the world's poor people with about 413 million or 41 per cent of its population still living in extreme poverty (World Bank 2018a).

2.2 The regions of the world which have achieved the greatest progress in reducing poverty are the regions that showed the most dynamic trends in terms of industrialization, most notably East Asia, the Pacific and South Asia. Since the early 1990s, the manufacturing employment share has increased in these regions with East Asia currently being home to 44 per cent of workers employed in manufacturing worldwide (UNIDO 2017c).

2.3 Industrial development plays a key role in poverty reduction through the generation of income-earning opportunities for the poor (UNIDO 2017c). Manufacturing jobs also provide greater opportunities for skills upgrading and offer higher employment security and benefits, in particular for women and young people (UNIDO 2013). This plays an important role in achieving SDG targets on quality technical vocational education (SDG targets 4.3, 4.4 and 4.5), economic productivity and decent work (SDG targets 8.1, 8.2, 8.3, 8.5, 8.6, 8.7 and 8.8) and the reduction of inequalities (SDG targets 10.1 and 10.2).

2.4 Achieving the above SDG targets requires the advancement of gender equality and women's empowerment as a vital means of promoting ISID. In the past few decades, gender gaps have narrowed for all levels of formal education in most regions, but technical fields of study and access to specialized vocational training remain highly gender stratified (UNIDO, 2019). Within the manufacturing sector in developing countries, women's participation is particularly associated with export-oriented, labour-intensive manufacturing sectors that employ low-skilled workers, most notably textiles and garments. This trend shows that women tend to be preferred as semi-skilled assembly operators, but are largely excluded from higher skilled roles, thereby limiting their opportunities for accessing the full spectrum of benefits from manufacturing jobs, including skills development, employment security and career advancement (UNIDO, 2019).

2.5 To ensure that no one is left behind, global and regional development policies and support structures need to be designed and operated in a way that countries which are most in need are benefiting the most, in particular the least developed countries (LDCs) and small island developing States (SIDS), given that the current distribution of aid does not correlate with developing countries' poverty levels (OECD 2018). LDCs remain the weakest link in global economic development with less adaptive capacity and the largest numbers of people living in poverty. With 12 per cent of the world's population, LDCs account for less than 2 per cent of world's GDP and about one per cent of global trade in goods. This can be attributed to weak human and institutional capacities, low levels of economic diversification, significant informal sectors, and low and unequally distributed income.

2.6 Enhancing South-South and triangular regional and international cooperation on, and access to, science, technology and innovation (SDG target 17.6) and promoting the gender-responsive development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries (SDG target 17.7) should also be focused on those countries which are most in need. The implementation of the Third Industrial Development Decade for Africa (2016-2025) (IDDA III)[3] is an example of a focused effort to firmly anchor Africa on path towards ISID in collaboration with a range of partners.

2.7 ISID provides a tremendous opportunity for ensuring that no one is left behind, in particular with regard to achieving eradication of extreme poverty through industrialization in vulnerable regions, such as Sub-Saharan Africa. This is particularly so given the ongoing shift of global manufacturing, and the move from centralized mass production being gradually replaced by decentralized manufacturing. South-South and triangular cooperation approaches can be instrumental in this context, guided by ISID principles.

2.8 At the national level, industrial policy needs to pursue ISID and embrace the principle of ensuring that no one is left behind. Domestic industrial policy could complement policies in the areas of education, labour and investment to achieve inclusive development. It also needs to ensure that those industries that will require a change of business to discontinue unsustainable practices will have a just transition[4]. This means that support structures must be in place for enterprises to change their production processes or products as well as for workers to acquire the necessary skills for green jobs.

3. Identification of progress, gaps, areas requiring urgent attention, risks and challenges

3.1 Achievements have been made across the globe in making industrial development more inclusive and sustainable both from the demand and supply side. Consumers increasingly demand from industry sustainable practices and transparency with regard to environmental and social impacts along the supply chains. Industry is expanding inclusive and sustainable approaches to respond to these demands, but also to achieve cost reductions and innovations.

3.2 Material efficiencies offer huge potentials for GHG emission reductions in the industry sector. These can be realized through circular economy (UNIDO 2017a) approaches that include product and production process design optimization to reduce material inputs, increase the lifetime of products, re-use or recycle products and reduce supply chain waste. More and more governments are encouraging and, in some cases, requiring the adoption of such circular economy principles and practices.

[3] https://undocs.org/A/RES/70/293.

[4] As described in the Solidarity and Just Transition Silesia Declaration adopted at the United Nations Climate Change Conference, which took place in Katowice, Poland, in December 2018.

3.3 In response, for over two decades, the Resource Efficient and Cleaner Production[5] (RECP) programme and the Global Network for RECP[6] (RECPnet) have been fostering circular economy approaches in participating countries. Improving energy efficiency in industry is one of the most cost-effective measures to reduce GHG emissions and improve competitiveness and save jobs, particularly in supply-constrained developing countries that struggle to meet their increasing energy demand[7]. RECP programme bolsters economic performance through improved productive use of resources (SDG 8), reduces GHG emissions by conserving resources (SDG Targets 8.4 and 13.3) and delivers social enhancement by providing jobs and protecting the wellbeing of workers and local communities (SDG Targets 8.6, 8.8, 10.1 and 10.2).

3.4 As many countries move to more efficient and less energy-intensive industries, their emissions of carbon dioxide per unit of manufacturing value added are generally declining. Globally, carbon intensity decreased by 19 per cent from 2000 to 2015 — from 0.38 to 0.31 kilograms of carbon dioxide per dollar of value added. Moreover, manufacturing value added as a share of GDP increased from 15.3 per cent in 2005 to 16.2 per cent in 2016. These achievements promote economic growth (SDG 8) and also reduce GHG emissions (SDG 13).

3.5 However, overall GHG emissions from the industrial sector continue to rise and the transition to green jobs remains challenging (ILO 2015). This is partially due to a lack of high-level political commitment to create enabling environments for investment in development, transfer and dissemination of climate technologies (SDG Targets 17.3 and 17.7). National policies in this area need to be devised in cooperation with all stakeholders and according to domestic and local needs and circumstances. Systemic, institutional and individual capacity needs to be built to enable a broad shift towards sustainable production and consumption patterns. Such policies and investment incentives should address educational inequalities among women and men, and equip them with relevant industrial skills to design and deploy innovative solutions to national and global challenges.

3.6 Persistent gender gaps within technical fields and the preclusion of women from higher skilled, higher value added jobs within the manufacturing sector can be addressed by integrating gender considerations throughout the development of relevant policies and initiatives. Effectively targeting such inequalities also requires women's equal and equitable participation in decision-making processes and access to the social and economic benefits of industrial development. This will ensure women are not left behind in efforts to create green jobs and transition to sustainable production and consumption patterns, but that their skills, knowledge and increasing consumer power support a just transition to sustainable industrial practices.

5 https://www.unido.org/our-focus/safeguarding-environment/resource-efficient-and-low-carbon-industrial-production/resource-efficient-and-cleaner-production-recp.
6 http://www.recpnet.org.
7 UNIDO's Global Energy Management Systems is a flagship initiative that is active in promoting industrial energy efficiency in 18 countries.

3.7 Although industry is a leading generator of viable solutions to global development challenges, these solutions are not being adapted, scaled-up and deployed at the pace that would ensure world-wide achievement of the SDGs. There is a need to enhance access to information on successful cases transforming industrial practices that have multiple cascading effect on sustainable development, and in particular effects on social development through increasing inclusiveness, equality and the empowerment of people, especially women and youth.

3.8 Industry is a key stakeholder in achieving SDG 13 and the goals set forth in the Paris Agreement as it is a major GHG emitter and also an essential provider of technology and business models, that enable low-emission and climate-resilient development. Direct and indirect GHG emissions from industry account for about a third of global GHG emissions and are projected to increase by 50 to 150 per cent by 2050 in the baseline scenarios presented in the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, unless energy efficiency improvements are accelerated significantly (IPCC 2014). However, to avoid catastrophic climate change by keeping global warming to 1.5 °C (IPCC 2018), industry will not only need to prevent the projected emission increases, but to achieve significant emission reductions of 65-90 per cent by 2050 in comparison with the 2010 baseline (IPCC 2018). This will only be possible through an unprecedented transformation of industrial systems and new industrial development pathways that are sustainable and inclusive. This, in turn, can only happen if governments are able to create the appropriate conditions for sustainable industries to be profitable and competitive vis à vis unsustainable business practices. This involves both the alignment of public incentives with mitigation and adaptation goals, and the introduction of mechanisms that place a cost on the social and environmental externalities of the sector.

3.9 An increasing number of successful examples of sustainable industrial development can now be found in developing and developed countries. For example, UNIDO has been spearheading the establishment of eco-industrial parks in China, Colombia, India, South Africa and Vietnam.[8] These and other examples urgently need to be scaled-up and replicated within and across countries and regions. Urgent action is required as direct GHG emissions from industry still continue to grow in average by 1.3 per cent per year (IEA 2018) and the number of countries with concrete targets for new low-emission installations in emission-intensive industry sectors remains limited (Climate Transparency 2018).

3.10 There is an urgent need for industries to become more resilient to the adverse effects of climate change. The importance of climate change adaptation for industrial development is only starting to be explored. National governments should be equipped with the necessary statistics and information to be able to take decisions that are based on sustainable development aspects and climate risks. Credit allocation and public investment standards should be based on sustainability criteria, in order to ensure that all financial flows are consistent with low-emissions and climate-resilient development while maintaining a good balance between the environmental, economic and social aspects.

[8] https://www.unido.org/news/eco-industrial-parks-creating-shared-prosperity-and-safeguarding-environment.

3.11 GHG emission reductions from industry fall into the following four main categories that are strongly interlinked with aspects of quality education (SDG 4), decent work (SDG 8) and reduced inequalities (SDG 10): energy efficiency, emissions efficiency, material efficiency and reduced product demand. While considerable progress has been made in efficiency with which industry uses its energy, overall energy efficiency remains well below the technically feasible and economic optimum. Many countries now have industrial energy efficiency policies, but only a few of those policies include mandatory energy efficiency targets and standards (IEA 2018).

3.12 Industrial energy efficiency can be developed. Building on more than three decades of experience and unique expertise in the field, UNIDO's Industrial Energy Efficiency Programme (UNIDO 2015a) strives to address the energy efficiency gap in industry by adopting a comprehensive approach to promoting and supporting continuous improvement of industrial energy efficiency in developing countries and emerging economies with a focus on energy system optimization[9] and energy management standards[10] (SDG Targets 4.3, 4.4, 4.5, 8.2, 8.3, 8.5 and 13.3). However, in many countries there is a lack of local professionals with the required skill sets to guide and assist industry with energy efficiency targets and standards.

3.13 Significant emission efficiencies in industry can be achieved through fuel switching from high to lower emission fossil fuels and from fossil fuels to locally available renewable sources. Appropriate support structures such as policy frameworks and capacity-building activities should be in place for industries to transform their production processes and for workers to acquire necessary skills for green jobs. These would support a just transition towards a low-emission economy.

3.14 Developing countries and countries with economies in transition have been supported to mainstream the use of renewable energy in industrial applications, in particular in SMEs, so as to increase their competitiveness and reduce dependence on fossil fuels.[11] In this context, the promotion of renewable energy as a business sector is an effective approach. UNIDO and other agencies have undertaken this by supporting the development of entrepreneurial culture and skills and providing technical and vocational training with a focus on young people and women (SDG Targets 4.3, 4.4, 4.5 and 13.3). However, there is still a lack of a broad application of integrated energy approaches that are digitally coordinated and combine electricity, thermal and gas grids with energy storage technologies to achieve maximum efficiencies.

3.15 Reduced product demand has a significant effect on GHG emissions in the industry sector (IPCC 2014). When consumer preferences steer away from goods that are damaging to the environment or society, industrialization leads to greater inclusivity and sustainability (UNIDO 2017b). Focusing on consumers is therefore an important

[9] Given that energy use in industry is much more related to operational practices than in the commercial and residential sectors, UNIDO's approach to industrial energy system optimization goes beyond energy efficient equipment by focusing on energy system design and operation.

[10] UNIDO has significantly contributed to the development of the International Organization for Standardization's energy management standard ISO 50001 and supports developing countries and countries with economies in transition with the adoption and implementation of this standard.

[11] https://www.unido.org/our-focus/safeguarding-environment/clean-energy-access-productive-use/renewable-energy.

aspect of ISID and the achievement of equitable and low-emission industrial development (SDG Targets 8.4, 10.1, 10.2, 13.3, 16.5, 16.7). However, more needs to be done to raise awareness of consumers and policy-makers on the impact of their lifestyle and business operation choices.

4. Valuable successful experiences and lessons learned

4.1 *Enhancing cooperation platforms that promote research and development, technology transfer and inclusivity* - Despite efficiency gains reached so far, unsustainable production and consumption patterns in developed and developing countries lead to rising carbon footprints for energy, water and other natural resources. Therefore, actions supporting research and development of innovative technologies that reduce GHG emissions and increase energy storage, sustainable modes of consumption and production as well as increased material efficiency that lower the environmental impact of industry need to be continually used to reach targets set in SDGs 7, 8, 9, 10 and 13. Circular economy (UNIDO 2017a) is one of the approaches that can help raise material efficiency by increasing the use of renewable materials and reducing waste by optimizing product design and usage.

4.2 Experience sharing and cooperation platforms, such as the Climate Technology Centre and Network of the UNFCCC Technology Mechanism and the Global Network of Regional Sustainable Energy Centers [12] (GN-SEC), facilitate North-South, South-South, South-North and triangular cooperation to bridge existing technology and knowledge divide between developed and developing countries, actively promoting SDGs 4, 5, 8, 9, 10 and 13.

4.2.1. Among other technical assistance, CTCN is helping developing countries equip local experts with skills to prepare robust technical proposals to mobilize funding from international financial institutions and private investors for clean technology projects (CTCN 2018).

4.2.2. GN-SEC (UNIDO 2015b) helps bridge the gap between global and local initiatives, coordinate regional efforts supporting ISID and mobilize finance. It does so by promoting integrated inclusive regional markets for sustainable energy and climate technology products and services, and empowering ownership of individual countries through a regional approach. For example, common standards for energy efficient appliances are utilized to benefit various countries in a region through the creation of future markets for energy efficient products. The Regional Centers ensure that regulations increase domestic value creation by strengthening the productive (manufacturing, assembling, servicing) and innovation capacities of domestic businesses and entrepreneurs.

4.3 *Increasing knowledge and facilitating the use of technologies, processes and solutions* - To accelerate ISID, it is paramount to increase knowledge on, and facilitate the use

[12] https://www.unido.org/our-focus/safeguarding-environment/clean-energy-access-productive-use/climate-policies-and-networks/global-network-regional-sustainable-energy-centres.

of, technologies, processes and solutions, including methodologies for estimating carbon footprint caused by the usage of technology. Gaps in knowledge between institutions and individual actors as well as poor access to information on available technologies facilitating sustainable development, poverty reduction and climate action add to the challenge of addressing these global issues. Today, more than a half of children and adolescents worldwide are not meeting minimum proficiency standards in reading and mathematics. Disparities in education along the lines of gender and urban-rural location still run deep, and more investments in education infrastructure are required to advance ISID, directly addressing SDGs 4 and 5.

4.4 *Increasing technology development and transfer, and engaging the private sector and non-State actors* - Successful experiences show that increasing clean technology development and transfer, enhancing capacity-building, creating enabling environments through regulations that de-risk investments[13], introducing mechanisms that reduce poverty and create green jobs are imperative to sustainable industrialization.

4.5 Technology transfer and cooperation occur with the involvement of the private sector, and increasingly also through actions undertaken by non-State actors. Hence, in order to achieve the SDGs and the goals set forth in the Paris Agreement[14], through ISID, it is necessary to support activities of the private sector and non-State actors such as local governments, companies, financial institutions, research organizations and non-governmental organizations. Collaboration among diverse stakeholders is a highly effective vehicle for advancing ISID and a decarbonized[15] society on a global scale.

4.6 Collaborative action engaging multiple stakeholders not only promotes inclusiveness but leads to tangible results and long-lasting impact on the ground, such as:

- A total investment of over USD 1.46 billion leveraged to support innovation, research and development work of SMEs and entrepreneurs as well as annual GHG emission reductions of 3.5 million tCO2e achieved by the Private Financing Advisory Network (PFAN) since its inception in 2008;
- Over 10 million tCO2e annually reduced through technical assistance and capacity-building provided by the CTCN to 79 developing countries.

4.7 The Low Carbon and Climate Resilient Industrial Development project (LCCR), supported by UNIDO, advances ISID by cooperating with diverse stakeholders, in particular the private sector. The LCCR aims to reduce energy consumption in enterprises directly affected by climate change through the introduction of Green Industry principles and resource efficient production practices. The LCCR project helped participating companies from the food processing industry in four African countries reduce power demand significantly, saving energy costs. The financial

[13] De-risking of investments is a term used where governments enact polices to cost-effectively promote and scale up private sector investments in clean technology by reducing, transferring or compensating for potential risks.

[14] Applicable to countries that are Parties to the Paris Agreement.

[15] Carbon intensity is calculated as the ratio of emissions of CO2 per unit of primary or final energy, whereas decarbonization refers to the rate at which the carbon intensity of energy decreases (IPCC, 2014)

savings were re-invested in additional energy technologies, such as modern cooling, heat recovery, energy generating systems, allowing for a more sustainable production process and strengthening of the companies' climate resilience (UNIDO 2018).

4.8 Inclusive and quality education and empowered people are needed to reduce inequality within and among nations (SDG 10). Improved access to affordable energy and digital services create online learning opportunities, including through the use of mobile applications, thus contributing to quality education (SDG 4).

4.9 UNIDO, jointly with the UN Environment, the International Labour Organization, and the United Nations Institute for Training and Research created the Partnership for Action on Green Economy (PAGE) to promote environmental sustainability with job creation and social inclusion, directly supporting SDG 8.[16] Through its convening power and by identifying change makers from private and public institutions, the Partnership helped increase employment opportunities, especially for young people, reduce labour market inequality, particularly in terms of gender pay gap, promote safe and secure working environments, and improve access to financial services. In doing so, it promoted decent work, reduced inequalities and increased access to quality education.

4.10 Creation of decent work results in preventing abusive work practices, curbing excessive overtime and closing the gender gap, increasing social justice and reducing poverty, thus addressing main issues under SDG 10.[17] It is expected that by 2030 the world's working-age population will grow by nearly 1 billion, nearly three-quarters of this labour force growth will be in South Asia and Sub-Saharan Africa (ILO 2017). According to the International Renewable Energy Agency, the number of jobs in the renewable energy sector will increase from 10.3 million in 2017 to 29 million in 2050, offering also growing income generation opportunities to women.[18] At the same time, green jobs will introduce more energy and resource efficient practices, reducing pollution and managing natural resources sustainably thereby directly addressing SDG 5, 7, 8, 9, 10 and 13, and increasing the resilience of societies (ILO 2015).

5. Emerging issues likely to affect inclusiveness and equality at various levels

5.1. Low quality education and insufficient job opportunities, social and economic inequalities and climate change pose an existential threat to many vulnerable countries, especially LDCs, SIDS and African countries. Addressing these challenges will require adequate financial resources over the coming decades.

5.2. Investment in ISID, renewable energy, green buildings, climate-smart agribusiness, low-emission urban transportation, clean water, urban waste management and energy saving technologies all require scalable and predictable finance from a wide range of public and private sources. Investment in clean technologies for these economic sectors in developing countries is expected to become a trillion dollar market over the

[16] https://www.un-page.org/about/who-are-we.

[17] https://betterwork.org/blog/portfolio/impact-assessment.

[18] https://www.irena.org/newsroom/articles/2019/Jan/Gender-equality-for-an-inclusive-energy-transition.

coming decades, with USD 1.6 trillion of that investment accessible to SMEs. The emerging clean technology market offers attractive economic opportunities while the urgent need to deploy climate-friendly technologies to mitigate the adverse effects of climate change provides the SMEs sector with a highly positive investment outlook. (VEF 2018).

5.2.1 Governments and non-State actors need to actively mobilize public and private finance sources, de-risk investments in innovative technologies and create enabling environment for knowledge and experience sharing as well as research, development and deployment of technology. The transformation towards ISID cannot be achieved without the effective engagement of the private sector and financial institutions. In this regard, development banks and other financial institutions should make their core strategies compatible with SDGs and align their investment portfolios with ISID.

5.2.2 While some of international financial institutions, such as the Green Climate Fund (GCF) and the Global Environment Facility (GEF) already channel financial resources into climate change mitigation and adaptation projects with ISID related co-benefits, increased access to international finance, through national governments, for sub-national (as applicable) governments and non-State actors is needed to enable system-wide transformation of industry. In addition, availability of appropriate co-financing and partnership opportunities would facilitate the achievement of the SDGs and the promotion of clean technology innovations and entrepreneurship, supporting directly SDG 8, 10, 13 and 17.

5.3. Sustainable industrialization can help secure access to clean energy to ensure inclusiveness and equality, towards achieving SDG 7, 8, 9, 10 and 13. The efforts towards clean energy production and distribution as well as the implementation of sustainable production systems significantly contribute to increasing affordable energy access in developing countries and empowering people to find new work opportunities to support their life, helping fulfill SDG 8. The slow implementation of capacity-building activities and the lack of awareness of the benefits of ISID could hamper the achievement of the 2030 Agenda.

5.4. Advancements in digital technologies - big data, artificial intelligence and Internet of Things - have major implications for the development of sustainable societies. For instance, modern technologies allow for increasing efficiency and flexibility in managing large and small renewable energy installations helping the transitioning towards smart energy and production systems. New digital technologies can also facilitate the decentralization of industrial processes as well as energy generation and distribution, thereby leading to the development of new business models in the sustainable industrial sector.

5.5. Ensuring equal access to digital technologies will subsequently lead to equal distribution of related development benefits such as accessible higher education and skilled workforce for emerging green jobs. Holistically transforming unsustainable industries, through the deployment of new and innovative technologies, can increase the economic,

environmental and social benefits of ISID for all and help achieve SDGs 8, 10, 13 and 17.

5.6. Private companies can play a decisive role in using digital technologies to map their environmental footprints as well as assess social and environmental impacts of their business practices. At the same time, disruptive digital technologies are a source of fundamental change of existing industries, increasing the risk of leaving people without adequate skill sets behind. Hence, industrial development based on digital technologies must take place under a just and equitable transition allowing for the creation of conditions for decent work (SDG 8 and 10) and peace and justice (SDG 16).

5.7. Considering that rapid technological change includes new and powerful tools that can help realize the vision of the 2030 Agenda,[19] it is essential to devise strategies to effectively utilize these tools while putting in place policies, regulations and capacity-building activities to ensure that proliferation of advanced technologies would not lead to increasing inequalities especially as relates to access to high-skilled jobs and educational opportunities.

6. Areas where political guidance by the HLPF is required

Taking into consideration various existing issues, identified gaps and challenges, success stories and good practices, the HLPF may consider:

6.1 *Promoting transparency and accountability* - Enhancing integrated and holistic cooperation at the political level to achieve SDGs 4, 8, 10, 13 and 17. In this regard, the HLPF should promote transparency and accountability in Member States on actions to achieve respective SDGs targets ensuring inclusive and sustainable development for all countries. Cooperation and assistance among countries and enhanced transparency in reporting lead to mutual trust building, learning and enrichment, which are the basis of effective implementation of the 2030 Agenda. Enhanced transparency also enables the visualization of priorities and needs for action for each country, and facilitates the identification of applicable technologies and know-how of private companies and other stakeholders required for this action.

6.2 *Fostering research, development and transfer of clean and innovative technologies* - Political cooperation is necessary to foster research, development and transfer of clean and innovative technologies, especially for developing countries. This will help meet the need for synergies and collaborative network between industries, academia and the government to enhance national research and development frameworks that will ensure commercial application of successful research projects related to climate-friendly industrial practices. Therefore, the HLPF may consider how to further the involvement of industries in national and sub-national dialogue processes to identify suitable pathways in the 4IR era for the transition towards technology-based ISID.

6.3 *Integrating ISID into national climate change planning* - The HLPF may consider encouraging Member States to integrate ISID into their respective nationally

[19] This is in reference to the UN General Assembly resolution on the impact of rapid technological change on the achievement of the Sustainable Development Goals and Targets (A/RES/73/17).

determined contributions under the Paris Agreement and national adaptation plans in a socially inclusive manner. This would enable the channeling of limited resources, especially in LDCs and SIDS, to the implementation of those actions that simultaneously address climate change while promoting sustainable industrialization, job creation and reduction of inequalities. Effective multilateralism and international law, including an effective United Nations Development System, are essential to tackle global and local challenges and to achieve inclusive and sustainable industrialization as a part of the 2030 Agenda for Sustainable Development.

6.4 *Providing adequate and predictable finance and technical assistance* – The developing world is facing challenges in attaining access to adequate finance and technical assistance for advancing ISID and achieving the 2030 Agenda. The HLPF may consider recommending concrete steps to be taken for the provision of financial mechanisms and instruments that strengthen technical assistance to developing countries to deploy inclusive and sustainable practices in their industrial sectors.

7. Policy recommendations

7.1 *Fostering coherence between industrial policy and other policies towards an integrated approach* - Policy frameworks in developed and developing countries need to be enhanced towards ISID to bend the global GHG emissions curve, increase industry's climate resilience and ensure the social and economic inclusion of all. For the effective realization of ISID, governments need to foster coherence between industrial policy and policies on education, energy, labour, nature conservation and investment to enable the transformation of the energy systems and the creation of green jobs, while empowering the workforce with skills to drive the transition and benefit from it. Support for startups, entrepreneurships and SMEs is needed to catalyze innovation in, and scaling-up of, clean technology solutions and enable a just transition of high-emission industrial sectors.

7.2 *Ensuring gender-responsive and inclusive approaches* - Policies, regulations, projects and support structures at the global, regional, national and local levels should be gender-responsive and inclusive to ensure equal and equitable participation in decision-making processes and access to social and economic benefits derived from ISID.

7.3 *Strengthening domestic sectoral policies* - Countries should enhance climate action in the industrial sector by increasing awareness on climate change impacts and co-benefits of mitigation options, strengthening domestic sectoral policies, introducing mandatory energy efficiency targets and standards as well as material efficiency measures. These actions can be complemented by sensitization and capacity-building on green manufacturing practices and eco-friendly products for enterprises and operators. Improving material efficiencies and developing circular economies should be incentivized through better integrating industry, consumer and waste policies as well as through raising awareness of the competitive advantages companies can achieve by pursuing efforts in this area.

7.4 *Promoting sustainable industry transition in a socially inclusive manner* - Governments should establish policy measures that significantly strengthen individual,

institutional and systemic capacity-building to promote the sustainable industry transition in a socially inclusive manner. In this regard fostering the exchange of experiences and good practices among countries with similar socio-economic circumstances through South-South and triangular cooperation can be an effective means for enhancing capacities in addition to North-South cooperation.

7.5 *Harnessing the potential of clean technologies and promoting the transfer of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed* – Recognizing the multiple benefits that clean and innovative technologies could bring for advancing ISID is a first step to promoting transfer and uptake of such technologies in industries. Creating enabling frameworks to increase awareness, promote partnerships and de-risk investments, including in clean and innovative technologies could help countries tap into these benefits to ensure that nobody is left behind. Policies, however, should be designed to tackle potential adverse environmental and social impacts of the application of these technologies.

7.6 *Creating an enabling, inclusive and equal environment for innovation* - Governments should develop and implement policies that provide an enabling environment for innovation ecosystems and contain provisions to promote inclusiveness and equality as relates to access to digital technologies and services. The introduction of suitable policies, regulative frameworks and funding schemes to spur digital innovation, research and development of related technologies in partnerships with industries, financial institutions, and other stakeholders should therefore be seen as an investment in a sustainable future where no one is left behind. Fast-paced innovation and concerns around inclusiveness and environmental sustainability as 4IR progresses will continue to influence industrialization as a driver of development and shared prosperity.

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