

**INTERSESSIONAL PANEL OF THE UNITED NATIONS COMMISSION  
ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT (CSTD)**

**Geneva, Switzerland  
25-26 October 2022**

**Contribution by UNIDO**

**to the CSTD 2022-2023 priority theme on “Technology and innovation for cleaner  
and more productive and competitive production”**

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**PRIORITY THEME 1:** Technology and innovation for cleaner and more productive and competitive production

**United Nations Commission on Science and Technology for Development (CSTD)**

To Whom it May Concern,

As you are aware, the [CSTD 25<sup>th</sup> annual session](#) selected “Technology and innovation for cleaner and more productive and competitive production” as one of the priority themes for its 26<sup>th</sup> session (2022-23 period). This priority theme is directly relevant to SDG 9 on industry, innovation and infrastructure.

As highlighted by the [Technology and Innovation Report 2021](#), We live in a time of rapid technological change, at the height of the digital transformation and the early stages of the Industry 4.0 revolution. These technological waves have great potential to bring about the transformations needed to achieve the SDGs, reduce poverty, tackle climate change and put the world on a sustainable path. They also offer a window of opportunity for developing countries to catch up technologically and narrow global divides. Critical areas for innovation in this new technological revolution are renewable energy technologies and frontier technologies for sustainable production and consumption. Innovation in these areas could help diversify economies and create higher-wage jobs while protecting the planet.

This priority theme will examine national strategies and policies related to green technology and green innovation, and the role of international cooperation, including triangular and South-South cooperation, in supporting developing countries to benefit from windows of opportunity for developing, using, adopting and adapting these frontier technologies in production processes for catching up economically and technologically.

Questions to be addressed include: What countries should do to take advantage of this window of opportunity? How could the international community support developing countries in this regard?

The CSTD secretariat is in the process of drafting an issues paper on the theme to be presented at the CSTD inter-sessional panel meeting from 25 to 27 October 2022. In this context, we would like to solicit input from the CSTD members on this theme. We would be grateful if you could kindly answer the following questions based on your experience in your country or region.

1. What are some specific examples (from the public and private sectors) of green technology and innovation for cleaner and more productive and competitive production in your member countries? Please include contact, website, link to reports and any other relevant information concerning these projects and initiatives.

*UNIDO supports countries in their environmental management efforts, including the implementation of multilateral environmental agreements and the provision of sustainable energy. It helps create new green industries, establishing national road maps for greening the supply chain, determining benchmarks and indicators, disseminating and sharing best practices, running clean technology programmes, undertaking various capacity-building exercises and contributing to international forums with the necessary research and expertise.*

*Therefore, projects implemented by the UNIDO Environment Department demonstrates the use of green technology and innovation for cleaner and more productive and competitive production.*

*Just to mention one of the key areas plastic waste from industries: To support the challenges faced by its member states in reducing plastic waste leaking into the environment, please see a sample of UNIDO projects at <https://open.unido.org>:*

- *Improving resource efficiency of plastic industry (Egypt) SwitchMed*
- *Strengthening recycling industry through policy support (Israel) SwitchMed*
- *Establishing a circular economy framework for the plastics sector (Ghana)*
- *Integrated approach towards sustainable plastics use and (marine) litter prevention (Bangladesh)*
- *Improving packaging design and promoting new business model (Egypt)*
- *Promoting sustainable alternative materials (South Africa, Egypt, Kenya)*

- Strengthening recycling capacity through waste picker integration (South Africa)
  - Strengthening plastic value chains (Nigeria)
  - Plastic value chain study (Egypt, Kenya and Nigeria)
  - Switch to circular economy value chains (global)
- In **Bangladesh**, UNIDO piloted cleaner production (efficient use of chemicals, water, electricity, natural gas and occupational safety and health) in the tannery sector through a SWITCH Asia funded project between 2009 and 2012. The project also demonstrated how modern technologies can reduce water pollution.  
Based on the experience of Bangladesh, UNIDO developed in India and in few other countries an online training platform (free of charge) for the practitioners. UNIDO also developed animated online training on handling of hydrogen sulphide, a very dangerous by-product of industrial processes. The training is targeted at workers handling hydrogen sulphide in any kind of industries.  
Besides, UNIDO also developed online training on the construction and management of Central Effluent Treatment Plant (CETP). This training manual can reduce water pollution and save life under water and it is available at [letherpanel.org](http://letherpanel.org) website.  
Lastly, UNIDO and UNEP are jointly implementing a global programme on Resource Efficient and Cleaner Production (RECP) since 1994, which helps with the continuous application of preventive environmental strategies to processes, products and services in order to increase efficiency and reduce risks to humans and the environment.
  - The **Philippines** in its continuing effort to promote green technology and innovation, actively implements and supports projects and programs from the public and private sectors, directed at preventing illegal logging and poaching activities in the country's rainforests by using an IoT solutions to detects and records rainforest sounds (DENR, Huawei, PLDT & Smart's Rainforest Connection Tool.<sup>1</sup>); to protect peatlands (DENR & PLDT's Connected Mangroves programs.<sup>2</sup>); to increase productivity and income of fishers (Smart Aquaculture Development and Conservation of Marine Ecosystem of Guimaras Province, Philippines<sup>3</sup>.); to transform various plastic wastes to other usable products such as ecobricks, ecopavers, ecocast, as well as by using bamboo to reduce the use of plastic and keeping CO2 from the atmosphere<sup>4</sup>.  
In addition, the Dept. of Science and Technology, developed Technologies for Plastic Alternatives and Recycling. These are biodegradable thermoplastics starch-based plastics, Chitosan-based Green Packaging, Bacterial cellulose Packaging, Indigenous and renewable materials, and bioplastics from agricultural wastes. Recycling technologies include recycling production of plastic composites: commingled plastics for plastic panels or tiles products, natural fiber-thermoplastic composites, recycling/processing of Waste Styro/Sandobags using ITDI's styro/plastic densifier, and waste plastic to fuel technology.  
DOST-ITDI has conducted cleaner production assessments and energy audits through the Environment and Biotechnology Division (EBD) and the Chemicals and Energy Division (CED). EBD had also partnered with the Philippine Institute of Chemical Engineers (PIChE) to run a training program on resource-efficient and cleaner production (RECP) assessment to build up a mass of sustainability engineers for PIChE.<sup>5</sup>
  - In **Ethiopia**, private sector Intervention: Greening Ethiopian Manufacturing (GEM) Project a Capacity Building Training implemented by Ethiopian Chamber of commerce and sectorial association and Ethiopian Society of Chemical Engineers from the European Union External Actions No.: ENV/2017/391-389.

<sup>1</sup> [Leveraging on digital tools for biodiversity conservation, PLDT-Smart to deploy drones to preserve Philippines' peatlands | PLDT.com](#)

<sup>2</sup> [DENR seals landmark partnership with PLDT-Smart for peatlands conservation](#)

<sup>3</sup> [Smart sustains efforts to rehabilitate Guimaras marine life](#)

<sup>4</sup> <https://hlpf.un.org/countries/philippines/voluntary-national-review-2022>

<sup>5</sup> The services of both divisions may be seen on the DOST-ITDI website at [www.itdi.dost.gov.ph](http://www.itdi.dost.gov.ph). Activities of PIChE may also be viewed at [www.pichenet.org](http://www.pichenet.org).

- In **Madagascar**, ethanol national project, led by Madagascar's Ministry of Industrialization – Mr. Gaetan Ramindo, Director General of Industrialization, Min. Industrialization, ramindo3@yahoo.fr.  
Sustainable energy and energy efficiency initiative, run by the Union of Industrialists of Madagascar (SIM) and the Ministry of Industrialization – Ms. Evelyne Rakotomanana, Executive Director, Syndicat des Industries de Madagascar, de@sim.mg  
Promotion of circular economy in the textile and garment sector through the sustainable management of chemicals and waste, led by UNIDO and Madagascar's Ministry of Environment & Ministry of Industrialization, Alejandro Amadio a.amadio@unido.org; Rasha Abdrabu r.abdrabu@unido.org.
- In **Colombia**, UNIDO's Global Eco-Industrial Parks programmes is an example of innovation for cleaner and more efficient production practices in the region. It promotes the transition of industrial parks to become Eco-industrial parks, adopting sustainability policies and practices both at the park level and within the tenant enterprises. More information is available through their [website](#).

2. What are the national strategies, policies, and laws concerning green technology and innovation for cleaner and more productive and competitive production in your member countries or region?

UNIDO is involved in assisting countries to develop a very broad range national strategies, policies, and laws concerning green technology.

**One example are the Health and Pollution Action Plans: Colombia, Ghana, the Kyrgyz Republic, the Philippines, Tanzania**

UNIDO has assisted in the development of Health and Pollution Action Plans ( HPAP ) in Colombia, Ghana, the Kyrgyz Republic, the Philippines and Tanzania. This process brought together high-level representatives and experts from the Ministries of Environment, Health, Industry, Labor, Economy and Planning, and Environmental Protection Agencies together with UNIDO, WHO, UNICEF, World Bank Group, Asian Development Bank, National Cleaner Production Centers, the private sector and NGOs.

Environmental pollution challenges were prioritized based on their health impacts and 18 project proposals, following circular economy principles, were prepared for immediate to medium-term implementation and funding.

- The Government of **Bangladesh** has developed multiple strategies, policies, rules and guidelines to protect the environment from pollution. These include, among others, the Mujib Climate Change Strategy 2030, the Delta Plan 2021, the 3R strategies, the National Environment Policy 2018, the National Biodiversity law 2017, the Brick Making and Kiln Installation (Control) Act, 2013, the Solid Waste Management Rules 2021, Hazardous Waste and Shipwreck Waste Management Rules, 2011, the Bio-safety Guidelines of Bangladesh, EIA Guideline for Industries, Guidelines for the prevention of air pollution, etc.  
Most of these policies are available online at Department of Environment website (<http://www.doe.gov.bd/>), but they would require English translation for wider dissemination. In addition to the Government's efforts, UNIDO has been supporting the Department of Environment and power sector stakeholders for developing guidelines and rules for identification, management and disposal of polychlorinated biphenyls (PCBs). PCBs are hazardous chemical can cause damage to environment and health. Proper management of PCBs will also ensure food safety. UNIDO is also working with the Department of Environment to reduce plastic pollution, recycling of plastics, and cleaner production of plastics at the manufacturing level. UNIDO will develop a strategy targeted at recycling of plastics, and guidelines for sound manufacturing of plastics goods. While these projects are at initial stage, and the relative policy documents and guidelines will be uploaded once these are developed and approved.
- The **Philippine** Green Jobs Act of 2016 provides a policy framework that fosters low-carbon, resilient sustainable growth and decent job creation by providing incentives to enterprises generating green jobs. The law focuses on the development of human capital as well as

technological research to enable and support the transition to a greener economy. The incentives provided under the law are as follows<sup>6</sup>:

- Special deduction from the taxable income equivalent to 50 percent of the total expenses for skills training and research development expenses which is over and above the allowable ordinary and necessary business deductions for said expenses; and
- Tax- and duty-free importation of capital equipment, provided that the capital equipment is actually, directly and exclusively used in the promotion of green jobs of the business enterprise.
- The law also mandates the development of a National Green Jobs Human Resource Development Plan (NGJ-HRDP) which aims to support the country's transition into a green economy by (a) identifying the skills, competencies and gaps in the various sectors, so to transforming jobs in these sectors into green jobs; and (b) developing appropriate strategies to improve the country's current skills and training system, including skills and competency standards to integrate green principles/elements.
- The Renewable Energy (RE) Act of 2008 (RA 9513) aims to accelerate development of RE sources by establishing an enabling environment, and providing incentives for technology adoption.
- The DENR-DOST Joint Administrative Order No. 01-2006 institutionalizes the Environmental Technology Verification (ETV) Protocol for the verification of claims on the functionality and performance of new and innovative technologies. The policy also safeguards consumers from greenwashing.
- The **Philippine Green Public Procurement Roadmap** aims to increase demand for green products and services by integrating “green” criteria in the public procurement process.
- Senate Bill 2325/House Bill 10696 on the National Extended Producers Responsibility (EPR) framework for plastic products and packaging was recently endorsed by the Congress of the **Philippines** and it is anticipated to provide a mechanism for large scale enterprises to employ waste reduction and retrieval plans, strategies, and technologies that will address plastic waste leakage into the environment. The policy further identifies annual targets for the recovery of plastic waste from the environment.
- **Ethiopia 2030: The Pathway to Prosperity Ten Years Perspective Development Plan (2021 – 2030).**
- **Ethiopia home-grown economic reform paper.**
- **Ethiopian Climate-Resilient Green Economy (CRGE), 2011.**
- **DIGITAL ETHIOPIA 2025 STRATEGY.**
- **Ethiopian National Electrification Program (NEP 2.0).**
- **Ethiopian National Science, Technology and Innovation Policy: Building Competitiveness through Innovation, 2010.**
- **In Ethiopia, Regulation No 504/2022 CM regulation to determine the organizational power and duties of manufacturing industries development institute.**
- **Mexico has a regulatory policy framework to prevent and deal with the effects of climate change, which involves innovation and green technology. The instruments are:**
  - **Energy Transition Law**  
Objective: Regulate the sustainable use of energy  
Source: <https://www.diputados.gob.mx/LeyesBiblio/pdf/LTE.pdf>

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<sup>6</sup> Additional information can be found at:

The Philippine Development Plan, specifically Chapters 9, 14, 19 and 20: [https://pdp.neda.gov.ph/updated-pdp-2017-2022/Harmonized National Research and Development Agenda \(HNRDA\): https://www.dost.gov.ph/phocadownload/Downloads/Journals/Approved%20Harmonized%20National%20RD%20Agenda%20%202017-2022.pdf](https://pdp.neda.gov.ph/updated-pdp-2017-2022/Harmonized%20National%20Research%20and%20Development%20Agenda%20(HNRDA):https://www.dost.gov.ph/phocadownload/Downloads/Journals/Approved%20Harmonized%20National%20RD%20Agenda%20%202017-2022.pdf)

Green Economic Development: <https://www.dti.gov.ph/faps/proged/>

Major environmental laws: [https://ecac.emb.gov.ph/?page\\_id=43](https://ecac.emb.gov.ph/?page_id=43)

Compendium of Philippine science and technology laws: <https://www.dost.gov.ph/knowledge-resources/downloads/file/729-compendium-of-philippine-science-and-technology-laws.html>

- *Law for the Promotion and Development of Bioenergetics*  
Objective: Help energy diversification and sustainable development  
Source: <https://www.diputados.gob.mx/LeyesBiblio/pdf/LPDB.pdf>
- *National Development Plan 2019-2024*  
Objective: Promote alternative and innovative production and consumption schemes  
Source: [https://www.dof.gob.mx/nota\\_detalle.php?codigo=5565599&fecha=12/07/2019#gsc.tab=0](https://www.dof.gob.mx/nota_detalle.php?codigo=5565599&fecha=12/07/2019#gsc.tab=0)
- *Special Climate Change Program*  
Objective: Establishes objectives, strategies, actions, goals to face climate change  
Source: <https://www.gob.mx/semarnat/documentos/programa-especial-de-cambio-climatico-2021-2024>
- *General Law on Climate Change*  
Objective: Establish institutional mechanisms to deal with climate change  
Source: <https://www.diputados.gob.mx/LeyesBiblio/pdf/LGCC.pdf>
- *General Law of Ecological Balance and Environmental Protection*  
Objective: Promote sustainable development and a healthy environment  
Source: <https://biblioteca.semarnat.gob.mx/janium/Documentos/Ciga/agenda/DOFsr/148.pdf>
- *National Climate Change Strategy*  
Objective: Guiding instrument of the national policy to face climate change and transition to a sustainable economy  
Source: [https://www.dof.gob.mx/nota\\_detalle.php?codigo=5301093&fecha=03/06/2013#gsc.tab=0](https://www.dof.gob.mx/nota_detalle.php?codigo=5301093&fecha=03/06/2013#gsc.tab=0)
- *Examples of key policies in Colombia are:*
  - *The National Environmental Policy (2014) has as one of its 5 main objectives to promote cleaner production, with a view to optimize production processes and enhance environmental management practices.*
  - *In 2019 the National strategy on circular economy was launched, which promotes the efficient use of resources, water and energy.*

*The National strategy on energy transition (2022) promotes the decarbonization of the economy, increased energy efficiency and the adoption of cleaner technologies and the diversification of its energy matrix.*

3. What are the key industries that are pioneering green innovation in your member countries or region? List the key actors in the national ecosystem of innovation related to green innovation in your member countries or region (firms, universities, financial institutions, regulators)? What are the key networks of the ecosystem in your region (including online networks, innovation hubs, forums, etc.)?

*UNIDO works with all key industries to pioneer green innovation, this includes amongst others:*

- *Manufacturing industry*
- *Electronics industry*
- *Mining and metals industry*
- *Textile industry*
- *Beverage industry*
- *Refrigeration and AC industry*

**One example of key actors from the Refrigeration and Air-conditioning industry** related to UNIDO's dedicated Montreal Protocol Division that delivers policy advice, technology and financial solutions, and technical training to Member States. This work is broad in nature, engulfing a multitude of industrial sectors and stakeholders, from governments and industries to employees and

consumers. It is innovative in pioneering new technologies and approaches, to find the best-suited alternatives for companies, sectors and countries.

### **Policy Makers**

UNIDO's Montreal Protocol Division works with governments and institutions to develop and enforce the necessary policy and regulatory framework to comply with their commitments under the Montreal Protocol.

In addition to the policy components embedded in our technical cooperation projects, UNIDO implements 'Enabling Activities', 'ODS Alternative Surveys' and 'Institutional strengthening' projects. Here "institutional strength" refers to the collective capacity of different institutions working towards one goal. UNIDO equips them with the knowledge and tools they need to contribute to their country-specific targets under the Montreal Protocol. The enabling activities projects are designed to help countries ratify the Kigali Amendment and set up the legal and institutional framework needed for the HFC phase-down.

### **Networks and Associations**

UNIDO's Montreal Protocol Division works with networks and associations to put policies into practice. UNIDO delivers training, equipment, tools and technical assistance to training centres, vocational schools, refrigerant reclamation centres and customs offices. These institutions are key to scaling-up technical training and ensuring that the country-specific targets under the Montreal Protocol are met, so as to achieve the ambitious goals set in the national strategies.

### **Companies & Entrepreneurs**

UNIDO's Montreal Protocol Division works hand-in-hand with industries, to help companies put national policies and commitments into action. As part of our MLF portfolio, UNIDO designs and implements sector-wide programmes, to help industries identify and adopt non-ODS and low-GWP alternatives. As part of our technology demonstration projects, we help companies identify the best-suited technology or process and prove its feasibility for a given sector. This includes redesigning products and processes, training technicians and implementing additional safety measures. Once operationalized and proven effective, these solutions can be brought to market and to scale, to offer global solutions to the common objectives under the Montreal Protocol.

### **Industries, Sectors & Applications**

UNIDO's Montreal Protocol Division works with companies in major industrial sectors to promote the adoption of sustainable alternatives to ozone-depleting substances and refrigerants with a high global warming potential, for both manufacturing and servicing. Interventions target the foam, refrigeration, air conditioning, aerosol, solvent and healthcare sectors, as well as fire protection and agro-industry.

- *Garment and textile are the pioneering industries for green innovation in **Bangladesh**, as there are more than 150 green garment factories – more than anywhere else in the world. Such factories are awarded the Leadership in Environmental and Energy in Design (LEED) certification, given by the United States Green Building Council (USGBC). A green garment manufacturing plant additionally guarantees laborers' secure work environments as the plant proprietors need to comply to a number of standards to develop the structures. Additionally, more than 500 garment factories in the country have opted for green or environment-friendly production facilities, and these units are proceeding towards ensuring long-term sustainability. Although garments industries are well ahead in adopting green technologies, other industries did not reach yet a comparable development level and they must be targeted by ad-hoc interventions.*
- *Aside from the **Philippine** government, the micro, small, and medium enterprises (MSMEs), startups, and the academia are the key industries that pioneer green innovation both at the national and regional level. These industries range from food and agribusiness (notably food processing), fashion, technology, transportation and logistics, energy, blue economy and water, finance, and health, among others. The academia and the private sector are the frontrunners in the national ecosystem of innovation related to green innovation. For example,*

*the Department of Science and Technology accredits and supports research laboratories in state universities.*

*Also, several local companies in the Philippines involved in the production of Fast-Moving Consumer Goods (FMCGs) have informally coalesced under the Philippine Alliance for Recycling and Materials Sustainability (PARMS) to implement the Zero Waste to Nature, Ambisyon 2030 Roadmap. The roadmap provides a two-part phased approach to circularity: (a) improve product design and product delivery systems to reduce the use of packaging materials; and (b) support waste recovery processes such as Extended Producer Responsibility. Lastly, the key industries that are pioneering green innovation in the country are the (a) pulp and paper industry, (b) plastics industry, (c) housing industry, (d) automotive industry, and (e) furniture industry. For additional reference, please see <https://industry.gov.ph/greening-manufacturing/>.*

- **Ethiopia:**

*Ministry of Innovation and Technology (MInT)*

*Minister of Industry-Manufacturing Industry Development Institute ( leather Industry Development institutes, Metal Industry Development institutes*

*Addis Ababa Science technology University,*

*Addis Ababa University*

*Ethiopian Cleaner Production Center*

*Priority sectors: Agriculture, manufacturing, tourism, mining and ICT)*

- **Madagascar:**

*Textile and garment sector, agro & food industry.*

*Key actors include:*

*Private companies within the Groupement des Entreprises Franches et Partenaires and private sector professional groups (GEM, SIM, FIVMPAMA, GFEM...),*

*Research centers and universities: CNRIT, CIRAD, ESSA (Ecole Supérieure des Sciences Agronomiques), ESPA (Ecole Supérieure Polytechnique d'Antananarivo)*

*National Bureau of Norms and Standards (Bureau National des Normes)*

*Financial institutions SOLIDIS Capital, MIRAKAP, SUNREF, etc.*

4. What are the challenges that governments in your region (or from your member countries) have faced or may face in promoting green technology and innovation in your country to contribute to national development priorities and accelerate the progress towards the SDGs?

*The main challenges can relate to:*

- *Lack of legislative frameworks and regulations organizing the uptake of technologies.*
- *Lack of human capacities and knowledge.*
- *Infrastructure challenges.*
- *Financial challenges.*
- *Access to finance, lack of skills in assessing investment in green technology, inability to internalize environmental externalities, trade-off between risks and return, operational risk and high initial investment, lack of awareness, and shared ownership among stakeholders are the major challenges in mainstreaming green growth. Small and medium enterprises are facing hurdles, as they need guarantee to get loans from financial institutions.*
- *There is limited financial and technical capacity to adopt green technology and innovation. The uptake of green, innovative technologies and practices, particularly among MSMEs, is hampered by their limited financial and technical capacities. In the Philippines, the small enterprise technology upgrading program (SETUP) aims to address this by providing MSMEs: (a) seed fund for technology acquisition; (b) needed equipment and equipment upgrading; (c) technical trainings and consultancy services; (d) packaging and label design; (e) database information systems; and (f) support for establishment of product standards, including testing, and calibration of equipment.*



- *Although gains had been made through implementing good housekeeping practices (about 70% of cleaner production options in assessed companies fall under this category), investments in more innovative and cleaner production technologies have yet to be fully realized. Even before the onset of the pandemic, industries need financial resources to make such investments. Another concern in adopting green technologies and innovation is the potential that could lead to the displacement of workers.*
- *Cost of importation of technology (or no or limited local production of technologies).*
- *Limitation in encouragement or incentive mechanisms for innovators and technologists to innovate or develop competitive technologies.*
- *Limited budgets and resources allocation to research, innovation, start-ups and Technology development and transfer.*
- *Less experiences and exposures of technologist, innovators and researchers on the green and frontier technology.*
- *Absence of national technology transfer model and mechanisms.*
- *Weak coordination mechanism to ensure sustainable, climate-resilient growth and formalized entrepreneurship frameworks for adaptation-oriented innovation in priority sectors.*
- *Limited value placed on the resilience of ecosystem services and their link to improved and sustained productivity.*
- *Limited skills development and support for micro, small and medium-sized enterprises (MSMEs) and start/ups (especially youth and women-led) to transform their early-stage innovations into adaptation-focused technology enterprises.*
- *Insufficient business growth services and financing schemes to support MSMEs, to deploy innovation and adaptation-oriented technologies & services and transform ideas into business opportunities.*
- *Limited awareness and access to climate-smart technologies and finance mechanisms to sustainably grow the business, particularly small producers.*
- *Limited value placed on the resilience of ecosystem services and their link to improved and sustained productivity in a given sector.*

*Regarding gender issues, as part of the programme “Economic Empowerment of Women in Green Industry” (funded by Germany), the United Nations Industrial Development Organization (UNIDO), has published a [Policy Assessment report](#) covering four participating countries: Cambodia, Peru, Senegal and South Africa. The report’s findings can help policymakers and practitioners establish and implement a policy framework to integrate gender into green industry policies and capitalize on women’s untapped potential as leaders, entrepreneurs, and industrial professionals in the green economy.*

*The UNIDO report, based on research carried out in early 2020, found that most green industry policies fail to include concrete gender equality measures. Although many of the policies have good implementation plans, there is significant scope for active policies to become more gender-responsive. Qualitative and quantitative data shows that, in all four countries, there is limited evidence of women’s economic empowerment and of women’s involvement in green industry. The women entrepreneurs interviewed in each country reported similar barriers to starting a green business, including lack of access to funding and financial services; lack of access to technology; lack of information and resources on how to start a business; and lack of incentives for businesses operating in green industry.*

*However, the research found that women are more attracted to opportunities as entrepreneurs in green industry than in conventional industries due to the strong perception that there are more opportunities for women to progress in green industry.*

*Source: UNIDO, [How can more women power the transition to green industry?](#) (2021)*

5. What should governments, the private sector, organized civil society, and other stakeholders do so that developing countries can benefit from these technologies?

One of the key principles in achieving this objective is to maximize the role of public private partnerships and build it around a sustainable economic model. This way the parties involved in this partnership gain from the mutual benefit of implementing it.

- *Government and donor agencies should come forward as guarantors to address financial constraints of the entrepreneurs and sustainability of the technologies (de-risking investment on technologies (green technologies).*
- *Capacity development of factories, community development for factory workers, matching fund for sustainability initiatives, and incentivizing sustainable production process (experience sharing, twinning with South-South cooperation).*
- *Strengthen innovation networks and linkages. Governments, the private sector, organized civil society and other stakeholders should increase partnerships and cooperation to enable frontier technologies to reach a wider scale. Governments should also intensify efforts in establishing and improving bilateral and multilateral partnerships to acquire new and existing technologies on green innovation from various countries.*
- *Expand financing opportunities for adoption and innovation of green technologies. Government and the private sector should expand financing opportunities and improve access to both public and private sources of funding for development and commercialization of green technologies. Investment funds for green technology and technical assistance in innovation and technology, as well as advisory services are emerging as other instruments that can help achieve the objective.*
- *Support an enabling environment for adoption of green technologies. In addition to funding, government must ensure policies and provide technical assistance for these innovations to flourish and reach markets and communities, especially in developing countries. Government must provide strategic direction and lead in scaling-up green technology adoption through application of science, technology, and innovation in various sectors of the economy. For example, for Mexico to have new avenues for its industrial development, new strategies and policies are required to capitalize on the potential of current megatrends (digitalization and automation of production, global economic power shift, and industrial greening) in the path of building digital capabilities and absorptive capacities, fostering economic resilience through diversification, and investing in technologies that decouple industrial development from environmental damage.*
- *Adopt green procurement reforms. As the largest procuring entities, governments should adopt green procurement as this could help create a ripple effect across the rest of the economy and lead to wide-scale adoption of green innovations.*
- *Develop necessary human resource pool for application of green technologies. Government, industry, and educational institutions should provide necessary technical education and skills development training to increase capacity for application of green technologies.*
- *Apart from the usual knowledge exchange activities (e.g., conduct of innovation showcase forum), uptake of green technology and innovation in developing countries will also benefit from direct technology transfer, capacity building and financing support to pilot or scale-up innovative solutions.*
- *Select priority green and frontier technologies and work with International organizations*

Regarding gender, the [Policy Assessment report](#) of UNIDO's "Economic Empowerment of Women in Green Industry" programme makes numerous key recommendations for stakeholders, including: raising awareness of opportunities for women in green industry; increasing access to technical vocational education and training (TVET); investing in training and capacity-building initiatives for women who are professionals in green industry; and promoting women entrepreneurs who are successful in green industry as role models.

Source: UNIDO, [How can more women power the transition to green industry?](#) (2021)

6. What are some examples of international cooperation mechanisms, projects, programmes or strategies, including triangular and South-South cooperation, in green technology and innovation that your organization contribute or is part of?

**The Global Network for Resource Efficient and Cleaner Production (RECPnet)** brings together over 70 providers of RECP services on a global level, in order to catalyze the effective and widespread application of RECP in developing and transition countries. It does so by providing specialized, quality-assured, technical and advisory services and by facilitating and synergizing its members' capacities.

The primary objective of the Global Network for Resource Efficient and Cleaner Production is to contribute to the effective and efficient development, application, adaptation, scaling up and mainstreaming of RECP concepts, methods, policies, practices and technologies in developing and transition economies, both at the regional and global level. RECP also aims to facilitate inter-regional and South-South cooperation in regards to RECP-relevant knowledge, experiences and technologies.

Contact the RECPnet Secretariat at [recpnet@unido.org](mailto:recpnet@unido.org), or visit the RECPnet website at [www.recpnet.org](http://www.recpnet.org)

### **SwitchMed Programme:**

[SwitchMed - Switching to a circular economy in the Mediterranean](#)

The SwitchMed initiative aims at achieving a circular economy in the southern Mediterranean by changing the way goods and services are produced and consumed. In order to achieve this, the initiative provides tools and services directly to the private sector, supports an enabling policy environment, and facilitates exchange of information among partners and key stakeholders

One project example under the SwitchMed programme:

Promoting circular value chains for a greener and more competitive textile industry in Egypt, Morocco, and Tunisia. [MED TEST III Textile sector digital.pdf \(unido.org\)](#)

### **EU4Environment Programme**

[EU4Environment | UNIDO](#): EU4Environment Action aims to preserve and better use the natural capital, increase people's environmental well-being, and stimulate economic growth in six Eastern Partnership countries: Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova, and Ukraine.

### **Green Chemistry**

[Green Chemistry | UNIDO](#)

(UNIDO) and partners have launched a global Green Chemistry project to increase global awareness and deploy Green Chemistry approaches and technologies. Drawing on a large research consortium led by experts at the Center for Green Chemistry and Green Engineering at Yale University and other international partners, the collaboration will develop curricula and training on green chemistry practices as well as document case studies of implementing Green Chemistry in developing countries and economies in transition.

There are a variety of UNIDO projects in the field of green technology and innovation with a strong gender equality and the empowerment of women focuses, such as:

- [Economic Empowerment of Women in Green Industry](#)
- [Global Cleantech Innovation Programme](#)
- [Private Financing Advisory Network](#)
  
- In **Bangladesh**, UNIDO has been working with the Norwegian Government to reduce plastic and marine litter pollution. In addition, SWITCH-MED has also funded UNIDO to work in Circular Economy and Value Chains development of textile and plastic sectors. Besides, UNIDO also worked with the South-South Cooperation India for promotion of renewable energy in some selected community clinics. These clinics are located mainly in the rural areas. Bangladesh has established more than 13,000 community clinics (CCs) to provide primary healthcare with a plan of each covering a population of around 6,000.

Moreover, UNIDO is also working with the Ministry of Environment, Forest and Climate Change (MOEFCC) and with the Department of Environment in promoting green technologies in plastic industries, and building capacity of Government of Bangladesh to fulfil requirement of Stockholm Convention by disposing and eliminating use of PCBs in environmentally sound manner.

- In the **Philippines**, UNIDO's main counterpart on these issues is the National Economic and Development Authority (NEDA), which is the Political Focal Point for the UN Global Environment Facility, it is a member of the Technical Working Group for the GCF and a member of the Joint Committee on the Joint Crediting Mechanism (JC-JCM) between Philippines and Japan. The JCM is a bilateral mechanism that facilitates diffusion of leading technologies, products, systems, services and infrastructure that contribute to climate change mitigation and sustainable development.
  - In **Ethiopia**, Project/Program: Cleaner production for solid waste management in leather industry (UNIDO, UNEP, )
  - In **Ethiopia** public private partnership in waste to energy (koshe project), Biomass to energy (Afar prosophice project)
  - In **Madagascar**, Promotion of circular economy in the textile and garment sector through the sustainable management of chemicals and waste, financed by GEF7 and implemented by UNIDO and the Ministry of Environment & Ministry of Industrialization
  - In **Madagascar**, Building Adaptation and Resilience to climate change in the essential oil sector, financed by GEF7, implemented by UNIDO
  - In **Madagascar**, Transforming the financial system to support the development of sustainable energy solutions through technical assistance and investment, financed by the UN Joint SDG Fund and implemented by UNDP, UNIDO and UNCDF.
  - Industrial Transformation **MEXICO** (ITM) consists of a fair that contains an exhibition area, conferences and an extensive educational program, all linked by the general themes of digital transformation in Mexico and smart manufacturing (including innovation and green technology). The exhibition area features eight main categories: Research Institutes, Automation & Robotization, Digital Factory, Additive Manufacturing, Smart Logistics, Energy Solutions, Machine & Tool, and Government as well as areas for live demonstrations and individual inquiries. Also, Mexico collaborates closely with the IMT with the advocacy and promotion of alliances that contribute to a gradual transition towards a cleaner, more productive and competitive production.
  - Solar Power **Mexico** is organized by three leading event and trade show companies in the world: Deutsche Messe, SNEC PV Power Expo, and Solar Power International have joined forces to help develop the solar energy market in Mexico. Due to annual daily solar irradiation levels ranging between 4.4 kWh/m<sup>2</sup> and 6.3 kWh/m<sup>2</sup>, Mexico offers a huge investment and business opportunity in the installation of small to large scale solar systems.
7. What actions can the international community, including the CSTD, take to help developing countries take advantage of green technology and innovation for cleaner and more productive and competitive production?

**One example could be the promotion of innovative financial mechanisms & business models, such as Chemical leasing:** In order to move towards a circular economy, we need new concepts and approaches for dealing with resource productivity in industry. Innovative business models such as chemical leasing accelerate the shift to a circular economy, by intensifying the use of the product over its life cycle.

- Less focus is given to the manufacturing industries for adoption and adaption of green technologies. There are a number of forms of industrial pollution, as pollution can impact air quality, but it can enter the soil, causing widespread environmental problems. In this regard, the European Union in association with UNIDO and UNEP launched a global platform "Global Alliance on Circular Economy and Resource Efficiency (GACERE) on February 22, 2021. GACERE aims to provide a global impetus for initiatives related to the circular economy transition, resource efficiency and sustainable consumption and production.

*In addition, understanding the potential of innovation and entrepreneurship, UNIDO has established the Global Cleantech Innovation Programme (GCIP) to promote cleantech innovation and entrepreneurship to address urgent environmental challenges. The Global Environment Facility (GEF) is a key partner for GCIP, as well as the Green Climate Fund and other bilateral partners. The Network for Resource Efficient and Cleaner Production (RECPnet) jointly created by UNEP and UNIDO, brings together over 70 providers of specialized advisory services to companies and institutions in 60 countries. In its mission of facilitating North-South, South-South and South-North-South collaborations, the RECPnet disseminates relevant knowledge and innovative technologies, promotes best practices and real experiences to emerging economies for supporting the advancement of environmentally sustainable growth. Within its overarching mission, RECPnet members have positioned themselves to an increasing extent as facilitators between business and public institutions, for which they often serve as partners or consultants on matters related to cleaner production and sustainable consumption. Through this, the Network is already acting as an important ally of the 2030 Agenda, helping to translate and optimize the SDGs' targets and indicators into relevant business metrics and supportive initiatives*

*Private sector and government of developing countries will require financial and technological support to adopt these technologies. International community, including the CSTD can take advantage of these platforms and work with the relevant UN organizations to support promotion of cleaner technologies in the industries.*

- *With the Philippines' commitment to enhancing the innovation policy and governance, which include support and thrust towards advancing green technology and innovation, support from international community will be needed. In particular, support can be through knowledge-sharing, capacity building, and technical and financial assistance for innovators.*

*International support or bilateral priorities should include establishment of international innovation hubs, maker spaces, and centers. This will encourage startups and spin-offs to scale up through cross-border collaboration and expansion. International shared facilities such as fabrication labs, workshops, manufacturing centers and makers spaces are important in lessening the cost of failure and innovation.*

*Additionally, it is recommended to promote policy platforms such as crossnational regulatory sandboxes to further build an enabling ecosystem for experimentation and design. This will further enhance multi-lateral policy innovation in response to exponential technological growth in the field of green technology and innovation. There is also a need to create a cross-border system of open innovation for green innovations facilitating efficient communication and collaboration between authorities, corporations, researchers, academe, and individuals, and providing avenues and incentives to those who collaborate.*

*Lastly, it is imperative to create marketing and engagement platforms where green technologies and innovation of different communities and countries are showcased and properly presented for others to adopt. The CSTD may facilitate technology transfer by way of conducting regional knowledge exchange programs not just among government agencies, but also across private and civil society groups. For example, we note the pivotal role of UN Global Compact Network in steering discussions within local private sector groups towards the achievement of the 2030 Sustainable Development Goals.*

*Moreover, the international community, including the Commission on Science and Technology Development, should help make green technology and innovation more affordable to developing countries. The international community could consider green accounting in calculating the return on investments for the greater good of the entire planet. Support in the maintenance and long-term sustainability of these technologies and innovations is also necessary.*

- *The international community as a whole could:*
  - *Facilitate partial to full production of green technologies for the local market.*
  - *Facilitate involvement of Higher learning institution in technology related projects.*
  - *Facilitate to mitigate IP related challenges (cost of IP, ..).*
  - *Facilitate to develop technology transfer model and mechanism for developing countries using the experiences and exposures.*

- *Facilitate and engage in the frontier and green technology selection processes.*
- *Awareness creation on the objectives of the CSTD to the stakeholders organizations higher managements.*

*To ensure inclusive and sustainable growth, it is key to ensure that gender is mainstreamed in all policies, programmes and practices to support cleaner and more productive and competitive production through green technology and innovation. This means carrying out gender analyses before the start of each intervention in this field and consulting relevant stakeholders, such as women's ministries, women's business associations and civil society actors, and including a gender lens throughout implementation (e.g. specific activities on skills upgrading, access to finance) and throughout monitoring and evaluation. This will help ensure that support towards green technology and innovation will address inequalities and empower women, so that they can equally contribute to and benefit from a more sustainable future.*

*UNIDO has the following guides to mainstream gender on these issues:*

- *UNIDO Guide to Gender Analysis and Gender Mainstreaming the Project Cycle ([EN](#) | [ES](#) | [FR](#))*
- *[Guide on Gender Mainstreaming: Energy and Climate Change Projects](#)*
- *[Guide on Gender Mainstreaming: Environmental Management Projects](#)*

8. *Could you suggest some contact persons of the nodal agency responsible for projects/policies and international collaboration in this context as well as any experts (from academia, private sector, civil society or government) dealing with projects in this area? We might contact them directly for further input or invite some of them as speakers for the CSTD inter-sessional panel and annual session.*

*UNIDO Office for Gender Equality and Empowerment of Women: [gender-coordinator@unido.org](mailto:gender-coordinator@unido.org)*

9. *Do you have any documentation, references, technological assessments, future studies or reports on the priority theme in your country or region?*

*„RECPnet The Global Network for Resource Efficient and Cleaner Production“: [leaflet5.indd \(unido.org\)](#)*

*Industrial Resource Efficiency Division and CIRCULAR ECONOMY: [IRE\\_Publication\\_jk\\_NEW.indd \(unido.org\)](#)*

*[Partnership for action on green economy | UNIDO](#)*

*Green Industrial Policy and Trade – A tool box: [PAGE\\_GITA.pdf \(unido.org\)](#)*

*GREEN INDUSTRIAL POLICY: CONCEPT, POLICIES, COUNTRY EXPERIENCES: [green\\_industrial\\_policy\\_book.pdf \(unido.org\)](#)*

*A Strategic Guide to strategic green industrial policy  
[PG\\_new\\_final\\_corr\\_5\\_sepa\\_indexed\\_2\\_linked\\_%.cdr \(unido.org\)](#)*

*UNIDO's online learning course: “[Design of Energy Efficient Environmentally Friendly Refrigerators](#)” provides manufacturers, end-users, academics, and policy-makers (with a strong technical interest) with modeling tools to determine the net benefit for different energy efficient design options for refrigeration equipment.*

*UNIDO and Circular economy incl further brochures and research papers: <https://www.unido.org/our-focus-cross-cutting-services/circular-economy>*

*[Global consultations on circular economy | UNIDO](#)*

*[EU4Environment | UNIDO](#): EU4Environment Action aims to preserve and better use the natural capital, increase people's environmental well-being, and stimulate economic growth in six Eastern Partnership countries: Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova, and Ukraine.*

*[UNIDO's Montreal Protocol Division | UNIDO](#)*

*[Montreal Protocol - Resources | UNIDO](#)*

- The **Philippine** Action Plan for Sustainable Consumption and Production (PAP4SCP) serves as a guiding framework to influence and steer behaviour and practices on sustainable consumption and production over the short- (2022-2023), medium- (2024-2030), and long-term (2031-2040). The Action Plan identifies priority policy reforms and actions along four nodes: (a) policy and regulation, (b) research and development, innovation, and technology, (c) infrastructure, and (d) promotion and education. These action nodes are intended to help in internalizing and integrating the social and environmental impacts of economic activities in the market system.  
Moreover, the Industrial Technology Development Institute under the Philippines' Dept. Of Science and Technology has conducted more than sixty cleaner production assessment reports prepared during the time of the Integrated Program on Cleaner Production Technology and a DOST flagship program started in 2000.
- In **Ethiopia**: <https://mint.gov.et/wp-content/uploads/2021/05/Digital-Ethiopia-2025-Strategy-english.-.pdf>
- In **Madagascar**:
  - Plan Emergence Madagascar
  - Plan d'Action National Ethanol et Combustibles
  - Plan d'action national sur le changement climatique,
  - UNIDO's upcoming study on clean cooking options and potential for various technologies.
- In **Mexico**:
  - Volume I: National and international context of green hydrogen [https://www.energypartnership.mx/fileadmin/user\\_upload/mexico/media\\_elements/reports/Hydrogen\\_EP\\_volume\\_I.pdf](https://www.energypartnership.mx/fileadmin/user_upload/mexico/media_elements/reports/Hydrogen_EP_volume_I.pdf)
  - Volume II: Green Hydrogen integration into the grid [https://www.energypartnership.mx/fileadmin/user\\_upload/mexico/media\\_elements/reports/Hydrogen\\_EP\\_volume\\_II.pdf](https://www.energypartnership.mx/fileadmin/user_upload/mexico/media_elements/reports/Hydrogen_EP_volume_II.pdf)

Gender related:

UNIDO, [How can more women power the transition to green industry? \(2021\)](#)

Regional Academy on the United Nations and UNIDO, T. AKHALADZE, T. RAJKOVIC, and E. VAN HOLTHE TOT ECHTEN, [Sustainable and Inclusive Development: Challenges and Opportunities for Women Entrepreneurship in Clean Technology \(2021\)](#)

- For the Philippines, the following officers could be contacted:

Country	Name	Designation/Office	Contact Details
Philippines	Mr. Teddy Monroy	UNIDO Country Representative	<a href="mailto:t.monroy@unido.org">t.monroy@unido.org</a>
	Dr. Annabelle V. Briones	Director, DOST-ITDI	<a href="mailto:od@itdi.dost.gov.ph">od@itdi.dost.gov.ph</a> , <a href="mailto:avbriones@itdi.dost.gov.ph">avbriones@itdi.dost.gov.ph</a>
	Mr. Crispian Lao	Founding President, PARMS	<a href="mailto:crispianlao@gmail.com">crispianlao@gmail.com</a>
	Mr. Dave Albao	Executive Director, Philippine Reef and Rainforest Conservation Foundation	<a href="mailto:prrcfi@danjuganisland.ph">prrcfi@danjuganisland.ph</a> <a href="http://www.prrcf.org">www.prrcf.org</a>
Ethiopia	Mr. Selamyihun Adeferes	Ministry of Innovation and Technology (MInT), Director General, Innovation Development and Research	+251 944 328913, <a href="mailto:selamilume@gmail.com">selamilume@gmail.com</a>

Mr. Terefe Alemu	Ministry of Innovation and Technology (MInT), Productivity Enhancement Technologies Directorate Director	+251 936627443, <a href="mailto:ttereafealemu@gmail.com">ttereafealemu@gmail.com</a>
	Ministry of Innovation and Technology (MInT)	Website: <a href="http://mint.gov.et">mint.gov.et</a> <a href="mailto:contact@mint.gov.et">contact@mint.gov.et</a> Phone Number +251 11 126 5737 +251-111-265737
	Ministry of Innovation and Technology (MInT) State Minister, Minister of Innovation Technology Development and Management sector	H.E. Dr Bayissa Bedada, State Minister +251 944098238
	Ministry of Innovation and Technology (MInT) Director General, Innovation Development and Research	Selamyihun Adeferes, Mr, Director +251 944 328913 <a href="mailto:selamilume@gmail.com">selamilume@gmail.com</a>
	Ethiopian Chamber of Commerce and sectoral association	+25111 551 8055 +251-115-514-005
	Ethiopian Society of Chemical Engineers	+251 11 123 2438 +251-111-23-24-33 Ex.261 <a href="mailto:eschenew@gmail.com">eschenew@gmail.com</a>
	Addis Ababa University	+251-111-239752/774 Fax: +251-111-239768 P.O. Box: 1176,
	Ethiopian Cleaner Production Center	+251 11 111 7621
	Manufacturing Industries Development Institute	Mr Seleshi +251911511420
	Ethiopia Enterprise Development	+251011 515 0333 Mr Paulos +251 936 968625
	Ethiopia Climate Innovation Center (CIC)	+25111 553 6008 <a href="http://www.ethiopiatic.org/info@ethiopiatic.org">http://www.ethiopiatic.org/info@ethiopiatic.org</a>
	Ministry of Agriculture (MoA)	H.E Ato Oumer Hussein, Minister The Ministers Officer in charge: Mr Beniyam: + 251912649659 +251-11-646 07 46; +251-11-646 19 41



		Agricultural Transformation Agency	Tel: +251-115-570-678 Fax: +251-115-570-668
		Ministry Of Water and Energy	+251 116611111 info@mowe.gov.et www.mowe.org.et
		Environment, Forest and Climate Change Commission	Tele.+251 (0)11-170-4038/4150 Emailefccethiopia@gmail.com P.O.BOX 12760
Madagascar	Gaetan Ramindo	DG Industrialization	ramindo3@yahoo.fr
	Evelyne Rakotomanana	Executive Director Syndicat des Industries de Madagascar	de@sim.mg
	Olivier Rakotoson	President of the Group of Essential Oil Producers and Exporters	info@gehemgie.com
	Romy Andrianarisoa	President of the Sustainable Development and Business Ethics Commission, Groupement des Entreprises de Madagascar	romy@add-oi.com
	Delphin Rabehaja	International expert in essential oils., Teacher-researcher specialist in Essentil Oils., Head of the IMRA laboratory	
		Centre National de Recherche Industrielle et Technologique (CNRIT)	cnrit@moov.mg
		Centre National de Recherche Appliquée au Développement Rural FOFIFA/CENRADERU	
		Centre National de Recherches sur l'Environnement (CNRE)	
	Dr. Rakotondravelo Etienne	Director, ISTE Institut des Sciences et Technique de l'Environnement	
	Pr Angelo Raherinirina	Director, ISST (Institut Supérieur des Sciences et Technologies)	

		CIRAD - La Recherche Agronomique pour le Développement	
Mexico	Martha Galaz Larios	Interim Director Cleaner Production Center (CMP+L)	<a href="mailto:mgalaz@ipn.mx">mgalaz@ipn.mx</a>
	Ignacio García Sánchez	Technical and Liaison Deputy Director Cleaner Production Center (CMP+L)	<a href="mailto:igarcias@ipn.mx">igarcias@ipn.mx</a>

Please send your responses and any further inputs on the theme to the CSTD secretariat ([stdev@unctad.org](mailto:stdev@unctad.org)) by 31 July 2022. We look forward to receiving your valuable input.

Sincere Regards,

CSTD secretariat

## **EXAMPLES COLLECTED FROM MEMBER STATES**

### **MADAGASCAR**

#### **PRIORITY THEME 1: Technology and innovation for cleaner and more productive and competitive production -**

1. What are some specific examples (from the public and private sectors) of green technology and innovation for cleaner and more productive and competitive production in your member countries? Please include contact, website, link to reports and any other relevant information concerning these projects and initiatives.
  - *Ethanol national project, led by the Ministry of Industrialization – Mr. Gaetan Ramindo, Director General of Industrialization, Min. Industrialization, [ramindo3@yahoo.fr](mailto:ramindo3@yahoo.fr)*
  - *Sustainable energy and energy efficiency initiative, run by the Union of Industrialists of Madagascar (SIM) and the Ministry of Industrialization – Ms. Evelyne Rakotomanana, Executive Director, Syndicat des Industries de Madagascar, [de@sim.mg](mailto:de@sim.mg)*
  - *Promotion of circular economy in the textile and garment sector through the sustainable management of chemicals and waste, led by UNIDO and the Ministry of Environment & Ministry of Industrialization, Alejandro Amadio [a.amadio@unido.org](mailto:a.amadio@unido.org); Rasha Abdrabu [r.abdrabu@unido.org](mailto:r.abdrabu@unido.org)*
2. What are the national strategies, policies, and laws concerning green technology and innovation for cleaner and more productive and competitive production in your member countries or region?
3. What are the key industries that are pioneering green innovation in your member countries or region? List the key actors in the national ecosystem of innovation related to green innovation in your member countries or region (firms, universities, financial institutions, regulators)? What are the key networks of the ecosystem in your region (including online networks, innovation hubs, forums, etc.)?

*Textile and garment sector, agro & food industry.*

*Key actors include:*

- *Private companies within the Groupement des Entreprises Franches et Partenaires and private sector professional groups (GEM, SIM, FIVMPAMA, GFEM...),*
  - *Research centers and universities: CNRIT, CIRAD, ESSA (Ecole Supérieure des Sciences Agronomiques), ESPA (Ecole Supérieure Polytechnique d'Antananarivo)*
  - *National Bureau of Norms and Standards (Bureau National des Normes)*
  - *Financial institutions SOLIDIS Capital, MIRAKAP, SUNREF...*
4. What are the challenges that governments in your region (or from your member countries) have faced or may face in promoting green technology and innovation in your country to contribute to national development priorities and accelerate the progress towards the SDGs?
    - *Weak coordination mechanism to ensure sustainable, climate-resilient growth and formalized entrepreneurship frameworks for adaptation-oriented innovation in priority sectors*
    - *Limited value placed on the resilience of ecosystem services and their link to improved and sustained productivity*
    - *Limited skills development and support for micro, small and medium-sized enterprises (MSMEs) and start-ups (especially youth and women-led) to transform their early-stage innovations into adaptation-focused technology enterprises*
    - *Insufficient business growth services and financing schemes to support MSMEs, to deploy innovation and adaptation-oriented technologies & services and transform ideas into business opportunities*
    - *Limited awareness and access to climate-smart technologies and finance mechanisms to sustainably grow the business, particularly small producers*

- *Limited value placed on the resilience of ecosystem services and their link to improved and sustained productivity in a given sector.*

5. What are some examples of international cooperation mechanisms, projects, programmes or strategies, including triangular and South-South cooperation, in green technology and innovation that your organization contribute or is part of?

- *National Ethanol Project, financed by the World Bank and the USAID, implemented by the Ministry of Industrialization, (no UNIDO involvement)*
- *Promotion of circular economy in the textile and garment sector through the sustainable management of chemicals and waste, financed by GEF7 and implemented by UNIDO and the Ministry of Environment & Ministry of Industrialization,*
- *Building Adaptation and Resilience to climate change in the essential oil sector, financed by GEF7, implemented by UNIDO,*
- *Transforming the financial system to support the development of sustainable energy solutions through technical assistance and investment, financed by the UN Joint SDG Fund and implemented by UNDP, UNIDO and UNCDF.*

6. Could you suggest some contact persons of the nodal agency responsible for projects/policies and international collaboration in this context as well as any experts (from academia, private sector, civil society or government) dealing with projects in this area? We might contact them directly for further input or invite some of them as speakers for the CSTD inter-sessional panel and annual session.

- *Gaetan Ramindo, DG Industrialization ([ramindo3@yahoo.fr](mailto:ramindo3@yahoo.fr))*
- *Evelyne Rakotomanana, Executive Director, Syndicat des Industries de Madagascar, [de@sim.mg](mailto:de@sim.mg)*
- *DEV DURABLE*
- *Olivier Rakotoson, President of the Group of Essential Oil Producers and Exporters, [info@qehemqie.com](mailto:info@qehemqie.com)*
- *Romy Andrianarisoa, President of the Sustainable Development and Business Ethics Commission, Groupement des Entreprises de Madagascar, [romy@add-oi.com](mailto:romy@add-oi.com)*
- *Delphin Rabehaja, International expert in essential oils., Teacher-researcher specialist in Essential Oils., Head of the IMRA laboratory*
- *Centre National de Recherche Industrielle et Technologique (CNRIT) [cnrit@moov.mg](mailto:cnrit@moov.mg)*
- *Centre National de Recherche Appliquée au Développement Rural FOFIFA/CENRADERU*
- *Centre National de Recherches sur l'Environnement (CNRE)*
- *Dr. Rakotondravelo Etienne, Director, ISTE Institut des Sciences et Technique de l'Environnement*
- *Pr Angelo Raheiririna, Director, ISST (Institut Supérieur des Sciences et Technologies)*
- *CIRAD - La Recherche Agronomique pour le Développement*

7. Do you have any documentation, references, technological assessments, future studies or reports on the priority theme in your country or region?

- *Plan Emergence Madagascar*
- *Plan d'Action National Ethanol et Combustibles*
- *Plan d'action national sur le changement climatique,*
- *UNIDO's upcoming study on clean cooking options and potential for various technologies.*