

# NATIONAL CONFERENCE ON CIRCULAR ECONOMY

MINISTRY OF ENVIRONMENT, SOLID WASTE
MANAGEMENT AND CLIMATE CHANGE
REPUBLIC OF MAURITIUS

25 – 27 MAY 2022 LE MERIDIEN HOTEL, BALACLAVA







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#### 1.0 BACKGROUND INFORMATION

In March 2022, the United Nations Environment Assembly (UNEA 5.2) adopted the resolution on "Enhancing circular economy" underscoring the urgency to accelerate a structural transformation of the way we manage our natural resources, consume and produce. The shift to a circular economy model is viewed as a contribution to achieving sustainable consumption and production. As opposed to the linear 'Take-Make-Dispose' model, Circular Economy is a regenerative model that has a positive impact on all types of capital: financial, human, social and natural. It seeks at redesigning the way in which goods and services are produced and consumed, keeping raw materials in use, and to extend the product lifespan by applying the appropriate design that turns 'used' products into raw materials, so that they do not contribute to pollution.

The Republic of Mauritius as a Small Island Developing State is very limited in its resource base. Over the last decades, the country has witnessed remarkable economic growth which has led to a change in lifestyle, impacting on the way we produce and consume. This trend has led to an increase in the volume of solid waste generated, increasing by 29 percent between 2010 and 2020, and by more than 100 percent over the last 20 years. Our average daily solid waste per capita being disposed at Mare Chicose has increased from 0.6 kg in 2000 to 1.1 kg in 2019 (Circular Economy: Optimising private sector investment in Mauritius - Business Mauritius/ UNDP). To address solid waste management, the Government spends around Rs 1.5 billion annually on the operation and maintenance of the transfer stations and of the landfill site, and on transportation of wastes to landfill.

In the food sector, it is estimated that Postharvest losses (PHL) of vegetables and fruits amount to 25-35%. Out of a total food production of 2,419,685 tons including imports, 5281 tons are wasted annually which is approximately 1.73 % (Government of Mauritius PQ– B/445, 2016).

In response to these challenges, the transition to a Circular Economy paradigm provides an opportunity to review our production model and close the material loop. It also has the potential of creating business avenues, create green jobs and generating wealth.

Moreover, the Circular Economy model has also played a critical role in integrating sustainability in key economic sectors such as the food sector, tourism sector, buildings and construction sector and building our resilience as an island state.

Circular economy also optimises opportunities for public-private partnership with respect to the twin objectives of environmental management and economic recovery, in line with the Government strategy to promote waste minimization strategy (i.e. the 9R framework, namely Refuse, Reduce, Rethink, Reuse, Repair, Refurbish, Remanufacture, Repurpose, Recycle and Recover).

#### 1.1 National Conference on Circular Economy

The need for a better management of our resources is becoming more and more evident as improvements in resource management have demonstrated to have positive impacts in climate change mitigation, economic savings, resilience and poverty eradication amongst others. Transitioning to a cyclic model all throughout the value chain wherein we do more and better with less resources.

This ecological and societal transformation will require that we consume in moderation, make and use products that last longer, use products as services, limit waste generation though reuse and repair and transform wastes to resources. Our ambition is to successfully move towards a green and circular economy.

In order to ensure the uptake of circular economy policies, it is critical to formulate a clear transition plan with clear actions and measures that can be swiftly adopted by one and all. This plan will thus need to be worked out jointly with the collaboration of the business community, NGO's and the public sector.

To promote the paradigm shift to a circular economy model and to raise awareness on the potential of integrating circularity principles in key sectors, a 3 days' National Conference on Circular Economy was organised by the Ministry of Environment, Solid Waste Management and Climate Change from 25 to 27 May 2022.

Key sectors addressed during the National Conference were namely:

- (i) Agriculture and food sector;
- (ii) ICT sector;
- (iii) Construction and demolition industry;
- (iv) Energy sector;
- (v) Manufacturing sector; and
- (vi) Solid Waste sector

#### 1.2 Objectives of the National Conference on Circular Economy

- (i) To present the current state of circular economy in 6 specific sectors;
- (ii) To identify key areas of challenges and opportunities in moving to a Circular Economy Model in the various sectors;
- (iii) To promote awareness on the concept and the benefits of circular economy; and
- (iv) To make recommendations on enabling measures for implementation of circular economy and way forward.

#### 1.3 Agenda of the National Conference

The National Conference was held over three (3) days and comprised panel discussions on the 6 key sectors mentioned above with respect to the status, challenges and opportunities for integrating circular economy aspects.

Presentations addressed policy options for a transition to a circular economy paradigm, highlighted barriers and showcased success stories. A copy of the programme is at Annex 1.

#### 1.4 Outcomes

The outcomes of the event include:

- An analysis of existing framework for the 6 key sectors;
- Identifying entry points to leverage circularity as a key approach to offer systemic solutions for a new economic model;
- Opportunities to scale-up best practices and adoption of innovative techniques to achieving the triple bottom line (economic development, environmental protection and social development), and
- Financial assistance secured for the formulation of a Roadmap and Legislative Framework.

#### 1.5 Target Audience

Around **250** participants attended the dialogue over the 3 days' National Conference. They comprised the following group of stakeholders:

- Representatives of public institutions including Ministries and Public Institutions;
- Representatives of Private Sector organisations;
- Representatives of the Civil Society;

- Academia;
- Representatives operating in Circular Economy at regional level.

#### Were also present:

- ✓ Dr Patrick Mwesigye, Regional Sub-Programme Coordinator, Resource efficiency and Sustainable Consumption and Production and Project Manager of the Switch Africa Green;
- ✓ Ms Rhoda Wachira, Project Coordinator, UNEP Nairobi and
- ✓ Ms Carolyne Kilel from UNEP

#### 2.0 NATIONAL CONFERENCE ON CIRCULAR ECONOMY – DAY 1

### 2.1 Address by: His Excellency, Mr. Vincent Degert, Ambassador of the European Union Delegation to Mauritius. He elaborated on the following:

- Long-standing partnership and collaboration between the Republic of Mauritius and the European Union. One of the areas of concerted action has been the environment, be it on climate change, biodiversity conservation, solid waste management, pollution prevention and control as well as circular economy;
- Circular Economy, a global challenge to reconcile development and resource efficiency;
- The European Union was strongly committed to advance the cause of Circular Economy and
  was to that effect already supporting the shift through various projects such as the Greening
  of the Public sector, demonstration of biogas production, SWITCH Africa Green policy
  implementation and the sustainable tourism;
- The EU was also at the forefront to support actions from the private sector, more specifically
  in the formulation of a Roadmap to address Plastic pollution by the Mauritius Chamber of
  Commerce and Industry. He stressed that now was the time for action, especially that
  Mauritius has developed its Masterplan on Environment, and is the process of developing
  its Roadmap on Plastic.

### Address by: UN Resident Coordinator, a.i., Dr. Indrajit Hazarika. (Refer to speech at Annex 2). He elaborated on the following:

 Moving towards a more circular economy is of critical importance as we emerge from the COVID-19 pandemic and double down efforts to "build back better;"

- By extracting additional value from the resources already in use and reducing environmental degradation, a more circular economy can be an engine for sustainable economic growth;
- According to the Global Recovery Observatory, which tracks and assesses the COVID-19 related fiscal spending policy announced by the 50 leading economies for potential impacts on the environment and the socio-economy 100% of Mauritius' recovery spending is geared towards Green Recovery initiatives;
- In the last decade, Mauritius has been investing in renewable energy, clean waste management technologies and in public transport infrastructure;
- The Africa Office of UNEP has been implementing programmes on resource efficiency notably the SWITCH Africa Green programme. The programme has provided support services such as capacity building and mentoring, development and deployment of knowledge and information resources and tools, awareness creation, and fostering partnerships and market linkages in African countries;
- Mauritius is a participant of the SWITCH Africa Green project, with the selected priority areas for the country of Agriculture, Tourism and Manufacturing.

### Address by: Dr. the Honourable Renganaden Padayachy, Minister of Finance, Economic Planning and Development. He highlighted the following:

- Sustainable development remains one of the priority areas of action for the country and this transition will take place through the implementation of a circular economy model;
- Significant amount of funds is being invested to sustain efforts, namely in the
  implementation of a mass transit system, upgrading of infrastructure for a more resilient
  water supply, renewable energy production, and the setting up of appropriate framework for
  the sustainable management of solid waste.

## Address by: The Honourable Kavydass Ramano, Minister of Environment, Solid Waste Management and Climate Change. (Refer to speech at Annex 2). He elaborated on the following:

In view of our limited resources and vulnerable position as an island state, it was our priority
to enhance our resource efficiency and strengthen our resilience towards global challenges
such as climate change, financial and fuel crisis and the COVID 19 pandemic;

- The need to review and redefine the way we produce and consume so as to make the most of the available resources and reduce the amount of waste being generated;
- The urgency to transition to a circular economy model which is a win-win model for all to boost growth, address climate change and create new jobs at the same time.

#### **Session 1: Setting the scene**

Moderator: Mr. J. Seewoobaduth, Ag. Director of Environment

Presenter 1- Mr Davor Percan, Head of Unit DG ENV F2 Regional and Bilateral

Environmental Cooperation (Virtual) - Recent developments in the Circular Economy transition in Europe and globally

**Presenter 2 - Prof. T. Ramjeawon from the University of Mauritius -** Circular Economy in Mauritius: Current status and policy needs

Presenter 3 - Ms R. WACHIRA, Programme Management Officer UNEP Nairobi - The regional perspective and sharing of best practices

Presenter 4 - Mrs Christel Thuret, coordinatrice économie circulaire à la direction régionale Océan Indien de l'Agence de l'environnement et de la maîtrise de l'énergie (ADEME) - « Loi Anti-gaspillage »

### Presenter 1: Mr Davor Pecan, Head of Unit DG ENV F2 – Regional and Bilateral Environmental Cooperation (Virtual). He highlighted on the following:

- Overview of the status of circular economy in Europe as well as on the global arena;
- In Europe, a Circular Economy Action Plan 2020 had been developed which provides a
  Roadmap and an Action plan with respect to measures that need to be undertaken in various
  sectors including the development of Eco-Design for sustainable products, EU Digital
  product information framework, and sustainable procurement;
- Specific actions had been formulated for the textile sector, construction, empowering consumers, and packaging in terms of plastic use;
- In Africa, the Alliance on Circular Economy was conceived to support African countries in developing and implementing circular economy measures;
- 2020: EU adopted a circular economy Action Plan For a cleaner and more competitive Europe;

Agenda of European Commission: to engage international communities and to go beyond
 EU market along the international supply chain.

#### **Recommendations:**

- Promote Sustainable products in EU & at international markets;
- Through UNEP & UNIDO (United Nations Industrial Development Organization) alliance to achieve resource efficiency;
- More stable and circular value chain across all markets:
- Address crisis needs for resources more effectively;
- Appropriate Legislations to be put in place and fully applied.

### Presenter 2: Professor T. Ramjeawon from the University of Mauritius – Status of Circular Economy in Mauritius and policy needs

- Overall concept of circular economy and circular economy is not limited to the management of waste;
- Ellen MacArthur Butterfly model which explains the inter-linkages and various techniques that could be used to recover resources in the economic system;
- In 2018, only 9.1% of the world economy was considered to be circular;
- In Africa, focus is being laid on 5 specific sector to integrate circular economy (food, packaging, fashion/textile, built environment and electronics);
- To advance the circular economy integration at national level, there is need for a policy impact assessment;
- Some barriers that could hinder this process include the cultural, technological, market and regulatory/institutional ones;
- The circular economy policy goals should be to stimulate appropriate product design; management of resources to preserve value; invest in innovation and promote public private partnership;
- The current world economy is only 9.1% circular;
- Barriers to CE: cultural, technological, market, regulatory/constitutional;
- There is need to establish enabling conditions and actions plans to overcome the barriers;
- Only 5 % wastes are recycled, but no upcycling;

- Potential of bringing back wastes to the economy;
- Domestic Material Consumption per capita was 9.42 tons in 2019;
- Material footprint per capita was 20.8 tons in 2019, growing at an average annual rate of 1.43%;
- Our main barrier to CE is lack of data;
- Existing Regulations:
  - Environment Protection (Polyethylene Terephthalate (PET) Bottle Permit)
    Regulations 2021
  - Environment Protection (Control of Single Use Plastic Product) Regulations 2020
  - Environment Protection (Banning of Plastic Bags) Regulations 2020
- Forthcoming regulations
  - Environment Protection (Extended Producer Responsibility for Beverage Containers)
    Regulation
- To achieve 60% of Mauritius's energy needs from green sources and to phase out coal by 2030;
- National umbrella framework to ensure circularity across actions.
- CE to go hand in hand with SDGs.

#### **Recommendations:**

- Use less and less raw materials;
- Aggressive sensitization and awareness campaigns at all levels, especially youngsters;
- Access to finance and access to market;
- Community engagements at all levels to ensure an inclusive process;
- Appropriate legislative framework to be put in place;
- Revolution of existing waste management system towards CE;
- Close cooperation with EU, Africa, UNEP (United Nations Environment Programme) and regional countries including Reunion Island;
- Join the African CE network comprising pool of African CE experts for information/ experience sharing and benefit from their technology transfer.

### Presenter 3: Ms R. WACHIRA, Programme Management Officer UNEP Nairobi - The regional perspective and sharing of best practices.

- 5 big sectors for circular economy in Africa: Food system, packaging, built environment, electronics and fashion & textiles. There are also cross cutting areas: water, waste management and energy systems;
- UNEP has many projects on CE regional guidelines to promote CE, green financing mechanism;
- Switch Africa green, African circular economy alliance;
- Various policies & strategies in African countries;
- Milestones in Africa: African CE network pool of African CE experts;
- Uganda: Green Growth Development Strategy established in 2017;
- Ghana: Instituted a seven-year tax exemption for companies recycling plastic or polythene material for agricultural or commercial purposes;
- Kenya, Nigeria, and Rwanda: Drafted national e-waste management policies that emphasise the importance of the extended producer responsibility;
- There is need for Networking and Partnership among African countries and
- Achieving CE with the assistance of UNEP, EU, World Bank, AFD etc.

#### Recommendations

- SWITCH Africa Green countries Industrial symbiosis looking to upscale and replicate in the context of CE;
- Retooling and reskilling as part of capacity development on circular economy especially for the regulators, communities and private sector;
- Enhancement of institutional, policy and regulatory framework;
- Development of regional circular economy frameworks involving AUC and the 8 RECs;
- Stakeholder engagement and Partnerships country representatives, UNEP, EC, ACEA,
   WEF, WCEF, AfDB, etc.

Presenter 4: « Loi Anti-gaspillage » by Mrs Christel Thuret, coordinatrice économie circulaire à la direction régionale Océan Indien de l'Agence de l'environnement et de la maîtrise de l'énergie (ADEME)

- La loi anti-gaspillage pour une économie circulaire ;
- La Loi n°2020-105 relative à la lutte contre le gaspillage et à l'économie circulaire a été approuvée le 10 février 2020 ;
- Observatoire Reunionais des déchets mise en place;
- Reduire gaspillage alimentaire;
- Biodéchets:
- Eco-Conception;
- Réparation/Réemploi/reutilisation;
- Tri et recyclage;
- Valorisation énergétique;
- Démarches territoriales;
- 2040 : Fin des emballages en plastique à usage unique.

#### **Recommendations:**

- La feuille de route de l'économie circulaire (FREC);
- La hausse de la TGAP (Taxe Générale sur les Activités Polluantes) sur l'enfouissement et l'incinération ;
- L'engagement volontaire de 55 industriels et fédérations pour incorporer 300 000 tonnes supplémentaires de plastiques recyclés à l'horizon 2025.

#### Session 2: Bringing circularity in the food system

Moderator: Mr A Goolaub, Assistant Director, FAREI

Presenter 1: Mrs Indoomatee Ramma, Principal Research Scientist, FAREI - Promoting circularity in Food Production Systems

Presenter 2: Mrs Stephanie Serret, Head of Department, Marketing, Winners - Greening the retail sector, bridging the gap between production and consumption

- **Presenter 3: Mrs Rebecca Espitalier-Noel, Managing Director, FoodWise Ltd -** Transitioning to a Zero Waste Strategy in the food sector
- **Presenter 4: Prof Daya Goburdhun, Associate Professor, UOM -** Integrating food waste management into circular food economy: Opportunities and challenges

#### The following salient points were highlighted during the session:

- Food is fundamental to our health, environment, society, and economy. But the food system today is wasteful, resource intensive, and polluting. 800 million people around the world do not have enough to eat. Meanwhile, one-third of all the food produced each year is squandered or spoiled before it can be consumed. Food waste and by-products are landfilled, incinerated, and left to rot;
- Circularity in the food systems is no longer an option as we face the impacts of the COVID19 pandemic and the Ukraine-Russia war. The COVID pandemic has underscored the fragility of our global food supply chains, but has also offered the opportunity for a reflection on the importance of building the resilience and enhance the sustainability of our food systems by transitioning from a linear model of "takemake-waste" to a circular model. If we want to ensure our resilience on food security and make the most of our resources, it is critical that we shift to circularity;
- We have already embarked on this track and we need to further strengthen our efforts
  with regards to identifying entry points for the re-use of resources, maximize the
  integration of "waste" as valuable "raw materials" and engage the collaborative
  efforts of all actors;
- A circular food system is one that encompasses the full food value chain with the
  aim of incorporating back food waste or surplus food into the supply chain in a use
  loop which is based on the principles of reducing, reusing, recycling, or redistributing
  in order to create a more efficient and sustainable food supply chain with zero food
  waste;
- An overall reduction in waste production and resource consumption leads to a
  positive impact on the climate, scarce sources, natural resources, biodiversity, and
  economic growth.

#### The local context

- Due to limited land resources, the country is constrained in its agricultural production
  and it is considered to be a Net-Food Importing Developing Country (NFIDC) where
  it imports almost about 77% of its food requirements. Postharvest losses (PHL) of
  vegetables and fruits have been estimated to be 25-35% in Mauritius;
- Out of a total food production of 2,419,685 tons including imports, 5281 tons are wasted annually which is approximately 1.73 % (Government of Mauritius PQ B/445, 2016). This food waste usually ends up in landfills which produces unprecedented amounts of methane a more powerful and harmful greenhouse gas than CO<sub>2</sub> contributing significantly to global warming;
- Statistics Mauritius revealed that there has been a sustained increase in the production of methane gas from 33.70 thousand tonnes in 2006 to 40.04 thousand tonnes in 2015 (CSO,2016).

#### **Lessons learned:**

- Though efforts have been initiated, there are still barriers that we need to overcome.
   These range from lack of appropriate legislative framework, lack of knowledge and awareness, lack of support of partners from the public and private institutions, lack of infrastructural facilities as well as lack of research and development;
- For a quick transition to circular agriculture, we will need to put in place the
  necessary laws and regulations, develop a National Food Waste Strategy, support the
  collection of data through a National Food Waste Baseline to monitor and track
  progress;
- Works will also be carried out towards enhancing awareness amongst the population at large and create the enabling environment for collaboration. Government will also support Research on food waste and encourage private initiatives that will help to integrate circularity in businesses engaged in the food supply chain.

#### Addressing the challenges in the food systems

- To address the challenges of the food systems with a view to achieving resource
  efficiency and achieving the strategic objectives in terms of food security and
  minimizing food waste, it is imperative to transition to a circular economy model;
- There is need to adopt a multi-pronged approach, with actions and interventions at various levels of the agri-food supply chain;
- To apply the concept of circularity to the food sector, there is need to find solutions to eliminate waste and enhance resource efficiency at all levels of the food system;
- This transition will entail an analysis of the system to identify the gaps and challenges, a review of existing policies and regulatory frameworks for the food sector, a revamping of the production and post-harvest strategies and a re-modelling of the retail system;
- A new strategic orientation will need to be defined through the formulation of an appropriate framework, the enablers as well as regulatory and economic incentives that will create the conducive environment for the integration of circularity concepts in the food system.

### <u>Session 3 – Circular Economy in the ICT Sector (including electronic / electrical equipment</u>

Co-Moderators: Mr Kowlesser, Senior Adviser, Ministry of Environment, Solid Waste Management and Climate Change and Mr. Rajnish Hawabhay, Chief Technical Officer, Ministry of Information Technology, Communication and Innovation

Presenter 1 (Virtual): Mr Klaus Hieronymi, Consultant, Geschäftsführer bei Circular Economy Research (CER) GmbH - Moving towards Circular Economy, Developments in the Electronics Industry Sector

Presenter 2: Mr. B. Beerachee, Director, Solid Waste Management Division - Extended Producer Responsibility (E-goods)

**Presenter 3: Mr. Thierry Malabar, Project Manager, BEM Enterprises Ltd -** Recycling of Waste of Electric and Electronic Equipment (WEEE)

Presenter 4: Mr. Yash Domah, CEO, Swap Traders Ltd - "Buy Better!"

#### The following salient points were highlighted during the session:

- Waste Electrical and Electronic Equipment (WEEE) or E-wastes refer to electrical and
  electronic appliances that have reached their end-of-life and necessitate disposal. E-wastes
  constitute one of the fastest growing solid waste streams in Mauritius on account of the
  advances in technology and enhanced consumerism.
- E-wastes are classified as hazardous wastes under the Basel Convention, to which Mauritius
  is a party, and under the Environment Protection (Standards for Hazardous Wastes)
  Regulations 2001. They contain noxious substances such as heavy metals, including lead,
  mercury, arsenic, cadmium and flame retardants beyond threshold quantities.
- Currently, there is no E-waste management system Mauritius. Out of the 7,000 to 8,000 tonnes of E-wastes generated annually, it is estimated that a small fraction (2-5%) gets dismantled and treated as well as landfilled (0.4 %). In 2019, around 34,000 household E-wastes were collected during the National Household E-wastes Collection Campaign.
- All E-wastes collected are transported to a contracted E-waste recycler or exporter. There
  are 6 companies registered with the Ministry of Environment, Solid Waste Management and
  Climate Change that are involved in the dismantling and local recycling or exportation of Ewaste components.

As at date, around 13,000 e-wastes items have been collected and exported by local registered E-waste recyclers and exporters to licensed recovery facilities abroad for recovery purposes.

• In order to promote the concept of circularity and provide a sustainable solution to managing E-wastes generated in Mauritius, the Solid Waste Management Division under the aegis of the Ministry of Environment, Solid Waste Management and Climate Change, has developed an Extended Producer Responsibility (EPR) system on electrical and electronic goods. The EPR is based on the 'Polluter Pays Principle' wherein the producer of a good has to pay for its management when the product becomes a waste. The EPR system includes the take-back obligation and a deposit-refund mechanism involving an advanced recycling fee or an eco-

contribution. The whole E-waste management system will eventually be set-up and managed by the Producer Responsibility Organisation (PRO).

• Once the EPR is implemented, a circular economy model will be created in the field of E-waste management and this will be a first in the Small Island Developing States (SIDs).

#### 3.0 NATIONAL CONFERENCE ON CIRCULAR ECONOMY – DAY 2

#### Session 4: Building circularity in the construction and demolition industry

Moderator: Mr Ram Bahadoor, Executive Director of Construction Industry Development Board (CIDB)

Presenter 1: Mr Dashwanyl Jhuboo, Director, Civil Engineering Section, Ministry of National Infrastructure and Community Development (MNICD) - "Circular economy in the construction sector"

Presenter 2: Mr. Tony Lee Luen Len, Director of Green Building Council of Mauritius, and Partner at Ecosis Ltd - "Enablers for circularity in the construction industry in Mauritius"

**Presenter 3 : Ms Stéphanie Bouloc, Fondatrice, La Déchetèque -** "Le réemploi un outil d'économie circulaire pour vos matériaux de construction"

Presenter 4 : Dr. Mahen Conhyea, Head Technical & Business Development of Gamma Materials Ltd, in collaboration with the "Union Nationale des Entreprises de Valorisation (UNEV-France)" - "Gestion de Déchets de construction et de démolition"

#### The following salient points were highlighted during the session:

• Construction and demolition waste (CDW) refers to the waste generated from general construction activities and includes concrete, bricks, gypsum, wood, glass, metal, plastic, solvents, asbestos and excavated soil. According to a report of the European Commission, the construction sector produced 923 million tons of waste in 2016, which in terms of volume is the largest waste stream in the European Union, representing 30% of all waste generated;

- The construction sector is very resource intensive and is the cause for significant impacts on our environment. It consumes over 40 billion tons of materials yearly at the global level, which is equivalent of over 40% of global resource usage;
- It is estimated that for each ton of cement produced, 0.9 tons of CO<sub>2</sub> is emitted, making cement production one of the most considerable industrial emitters of CO<sub>2</sub>, currently accounting for over 8% of global emissions (2.7 billion tons of CO<sub>2</sub> per year). Its consumption in terms of energy has been evaluated to be around 43% of the total energy. (Source: https://www.sciencedaily.com/releases/2021/11/211109120321.htm);
- Bringing circularity in the construction sector would imply closing the material loop in construction, design for reconstruction, zero waste system, circulating building and demolition materials, rethink the entire supply chain to bring circularity, optimize efficiency, apply innovative new solutions to reduce life cycle costs, and impacts of C & D, use of digital technology, research and development, collaboration across the supply chain (investors, designers, builders), regulatory frameworks / certification, change in mindset and approach and policy and financial incentives;
- The activities of the construction sector are still based on a linear economic model and are mainly responsible for Greenhouse Gas (GHG) emissions, the depletion of natural resources, and the production of a considerable quantity of waste;
- A transition to a circular model in the construction sector is based on the efficiency and optimization of the use of resources and the reduction of waste throughout the life cycle of goods and products while creating economic opportunities;
- The construction sector has been known as one of the key sectors with high potential to implement circular economy strategies;
- To build circularity in the construction and demolition industry, there is need for a holistic approach that would improve resource efficiency while providing for a conceptual framework for sustainable waste management. The framework should comprise policies and guidelines for sustainable construction and environmental management at the design stage, key measures and actions to minimize waste generation as well as incentives to promote the adoption of sustainable building designs and the use of eco-friendly construction materials for minimal environmental impacts.

#### The local context

- The building and construction sector plays a major role and is a major contributor to our economy. The sector employs directly and indirectly some 120,000 workers in Mauritius representing around 22% of the total workforce;
- In 2019, the sector contributed to some 9.7% to the GDP with a net investment of Rs 48.3 billion (Budget speech 2020 2021);
- Over the past decades, the industry has progressed through many phases, evolving from the
  construction of small housing units to major projects like smart cities, port and airports,
  flyovers, motor way and more recently the light rail system. The sector has now reached the
  phase of construction and demolition leading to the generation of various types of wastes
  such as concrete and other building components (wood, metals, glass, plastic, etc.)

#### Lessons learned:

- Initiatives to bring circularity in the sector are: construction of decheteries, digital platforms to promote reuse of materials, use of recycled asphalt, green building designs;
- Some of the barriers identified are lack of awareness and technical knowhow, lack of consumer market demand, lack of financial and policy incentives, lack of scalable ready market solutions.

#### Session 5: Promoting circularity in the energy sector

Moderator: Mr Doumeraj Jahajeeah, Ag. Director, Technical Services, MEPU

Presenter 1: Ms Mreedula Mungra, Chief Executive Officer of Mauritius Renewable Energy Agency (MARENA) - Circular Economy Perspective in the Energy Sector

Presenter 2: Mr Liladhur Sewtohul, Chairperson of Energy Efficiency Management Office (EEMO) - Policy Instruments to promote Energy Efficiency in Mauritius

Presenter 3: Mr Ally Rujbally, Senior Engineer Central Electricity Board (CEB)
- Smart Grid and Renewable Energy

Presenter 4: Mr. Purseramen , Chief Operating Officer, IBL Seafoods - Integrated Value Chain

#### The following salient points were highlighted during the session:

- By reducing primary material consumption, it is believed that the circular economy will reduce the depletion of resources and environmental degradation risks, while also cutting the energy consumption and greenhouse gas emissions related to production stages.
- It is widely recognised that there are strong synergies between the circular economy and climate change mitigation with the ultimate objective of achieving net zero emissions.
- The government is firmly embarked on the green energy transition and decarbonisation initiatives.
- Mauritius has been more ambitious and bold in its nationally determined contributions submitted to the UNFCCC in the context of the cop26 conference last year.
- The energy sector has an important role to play in the mitigation of the adverse effects of climate change.
- Renewable energy target set by government at 60% by 2030.
- The government is also committed to phasing out the use of coal in electricity generation by the year 2030.
- The renewable energy roadmap charts the way on how we will be able to achieve our targets, year by year, until 2030.
- In line with the intent of government to make of the green energy a pillar of the economy, the renewable energy roadmap has forecast some 7,000 jobs would be created by renewable energy sector by 2030.
- It is further expected that the measures laid out in the re roadmap would increase the avoided CO<sub>2</sub> emissions up to 1862 kiloton by 2030, taking into account the phasing out of coal.
- Several measures have already been taken by both MARENA (Mauritius Renewable Energy Agency) and CEB (Central Electricity Board) during the past year to scale up our green energy transition.
- The CEB has launched schemes for different categories of consumers to encourage production and sale of renewable energy.

- International requests for proposals have also been launched for utility scale facilities in the fields of solar, wind or other hybrid technologies.
- MARENA has pursued its supporting role actively, in this energy transition, by exploring newer forms of renewable energy technologies resting with our ocean resources.
- MARENA has furthermore been engaged in capacity building at the level of students
  pursuing their academic studies or women entrepreneurs engaging in business opportunities
  in the re sector.
- Energy conservation and efficiency guidelines have been developed for the use of air conditioners and for the hotel sector.
- Energy labelling as well as minimum energy performance standards have been introduced in the cases of several appliances to deter the import of energy inefficient appliances.

#### Session 6: Circular Economy in the Manufacturing Sector including textile

Co- Moderators: Assoc. Prof. D. Surroop (UoM) and Dr. R. Domun, Principal Industrial Analyst, Ministry of Industrial Development, SMEs and Cooperatives

Presenter 1: Mr B. Beerachee from Solid Waste Management Division - Industrial symbiosis

Presenter 2: Mrs S. Thomas, QSE & FS Manager, Maurilait Ltd - Case study on l'économie circulaire

Presenter 3: Mr Ramlugon, Sustainability Officer, Omnicane Ltd - Industrial ecosystem and carbon burn out

Presenter 4: Mr. Constantin, Director of Operation, SOFAP - "Zero waste objective"

Presenter 5: Mr Quentin Thorel, Group Head of Sustainability, CIEL Textile - Circular Economy in the textile industry

#### The following salient points were highlighted during the session:

 Circular Economy (CE) in the manufacturing sector aims at continuously reusing and recycling materials within an industrial symbiosis, so as to reduce waste from going into landfill. Industries would benefit significantly by shifting their operation and production patterns in line with the principles of CE. These benefits include the following: creation of

- new profit opportunities by selling by-products; reduced costs due to lower virgin-material requirements and fewer wastes disposal; and stronger relationships with customers.
- Additionally, the shift to CE means using less virgin material and more recycled inputs, reducing a company's exposure to ever more volatile raw materials prices and increasing its resilience, which is also in line with resource efficiency and cleaner production practices. The threat of supply chains being disrupted by natural disasters or geopolitical imbalances is reduced because of availability of alternative materials sources within the industrial symbiosis.
- In a report published jointly by Business Mauritius and the United Nations Development Programme (UNDP) Mauritius, the quantity of industrial waste disposed at the Mare-Chicose landfill in 2019 was around 28,500 tonnes; under the 2, 4, and 6 percent growth scenarios, this is expected to rise to 29,800 tonnes; 33,700 tonnes; and 40,500 tonnes by 2030, respectively.
- According to the Industrial Waste Assessment report (2017), four industries have been identified which have the potential to develop Industrial Symbiosis in Mauritius, namely: (i) food products (poultry, seafood, beverages and bottling); (ii) textile and wearing apparel industries; (iii) chemicals and chemical products (including pharmaceutical preparations); and (iv) printing and reproduction of recording media. However, as per the assessment, only the food, and textile and wearing apparel industries generate waste which, in terms of type and amount, could become part of an industrial symbiosis project. These types of waste are organic waste from the poultry and seafood sub-industries, cotton, wool yarn and fabric from the textile industry; and wooden pallets.

#### Examples of best practices on CE in the manufacturing sector:

1. <u>DyeCoo</u> (Dutch Textile Company): has developed a process of dyeing cloth that uses no water at all, and no chemicals other than the dyes themselves. It uses highly pressurised "supercritical" carbon dioxide, halfway between a liquid and a gas, that dissolves the dye and carries it deep into the fabric. The carbon dioxide then evaporates, and is in turn recycled and used again. 98% of the dye is absorbed by the cloth, giving vibrant colours. And because the cloth doesn't need to dry, the process takes half the time, uses less energy, and even costs less.

Thus, reducing uses vast quantities of water and chemicals and produces huge amounts of toxic waste.

- 2. Close the Loop (Australian company): recovering value from old printer cartridges and soft plastics. Their new innovation turns these materials into roads. The products are mixed in with asphalt and recycled glass to produce a higher-quality road surface that lasts up to 65% longer than traditional asphalt. In every kilometre of road laid, the equivalent of 530,000 plastic bags, 168,000 glass bottles and the waste toner from 12,500 printer cartridges is used in the mix. So instead of ending up in landfill, all that waste is given a new life.
- 3. Lehigh Technologies (Atlanta firm): turns old tyres and other rubber waste into something called micronized rubber powder, which can then be used in a wide variety of applications from tyres to plastics, asphalt and construction material. Five hundred million new tyres have been made using its products, earning it the Award for Circular Economy SME.
- 4. **Miniwiz** (Taiwanese company): upcycling turning old materials into something new. Trashpresso machine is the ultimate expression of sustainable upcycling. It is a mobile upcycling plant that can turn 50kg of plastic bottles an hour into a low-cost building material, using no water, and only solar power.

Source: https://www.weforum.org/agenda/2019/02/companies-leading-way-to-circular-economy

#### Lessons learned:

- The establishment of a holistic framework emphasizing on the symbiosis between the available infrastructure, regulations, standards, incentives, institutional support and market development to integrate Circular Economy in the manufacturing sector.
- Industries would require to reengineer their process in order to generate useful by-products to be used by other industries constituting the industrial symbiosis.

#### Session 7: Circular economy in the Solid Waste sector

Moderator: Mr Gregory Martin - Regional Council of Reunion island - Office of Mauritius

Presenter 1: Mr. B. Beerachee, Director, SWMD - New Solid Waste Management Strategy

Presenter 2 : Mr. Rachid Razzak, Director, Service de Développement durable de CINOR, Réunion - Tri des déchets et économie circulaire, Expérience de la Réunion

Presenter 3: Mrs Francoise Marechal-Charlotte, Head of Business Development & Consultancy, and Mr. Thierry Marechal, Design Specialist, National Productivity and Competitiveness Council (NPCC) - Productivity and Design Thinking

Presenter 4: Mrs Christine Dimba, Quality Assurance Officer, PIM Ltd - PIM et Le Recyclage

Presenter 5: Ms Frédérique Perpetu, Sustainability Manager, Scott & Co. Ltd - Create New Opportunities with Circular Economy

Presenter 6 : Mr. Sébastien Geneuil, Project Manager, Mission Verte - Mission Verte, L'Association qui recycle !

#### The following salient points were highlighted during the session:

#### **Circular Economy initiatives in the Mauritian Context:**

- Over the years, Mauritius has experienced continuous development owing to the diversification
  of its economy. Coupled with economic growth, the standard of living of Mauritians have also
  increased. The downside of these developments is that solid wastes generation has constantly
  increased, with over 500,000 tonnes of solid wastes landfilled in 2021;
- In a bid to shift from a linear approach to a circular economy model in the waste sector, several initiatives have been taken to have a more diverse solid waste management system in Mauritius prioritising reduce, reuse and recycling over landfilling in line with the waste management hierarchy. Some of these initiatives are as follows:

#### (i) Home composting scheme

Provision of home compost bins to households to encourage source segregation of wastes and promote the practice of compost production and usage so as to reduce the amount of wastes going to the landfill.

#### (ii)Incentives on exportation/recycling of PET bottles

Incentive of MUR 15/kg PET bottles recycled locally or exported for recycling to boost the recycling/exportation of PET bottles.

#### (iii) Refund for used tyres recycling

Financial incentive of MUR 2000 for each tonne of used tyres recycled locally or exported for recycling. As regards to tyre retreading, a refund of MUR 25 will be provided for each tyre retreaded.

#### (iv) Tipping fee for recycling of wastes

In a further attempt to increase resource recovery and recycling, a tipping fee of MUR 300 will be provided for each tonne of wastes taken from transfer stations to be recycled.

#### (v) Examples of Circular Economy in Mauritius

The Government has previously implemented the industrial symbiosis project and most recently launched the initiative to construct civic amenity centres at strategic locations across the island.

#### (vi) Industrial Symbiosis Project

One of the best practices of circular economy in Mauritius is the implementation of the project "Enhancement of resource productivity and environmental performance of Micro, Small and Medium Enterprise in six African countries through the concept of Industrial Symbiosis" under the SWITCH Africa Green (SAG) Programme.

Through this project, a considerable amount of wastes from hotels, textile industries, sugar factories and food manufacturing industries have been diverted away from the landfill and used as raw/secondary materials in other industries. For instance, 86 tonnes of broken wafers from a biscuit-manufacturing industry have been used as animal feed; 42 tonnes of textile wastes from a hotel have been sent to a sugar manufacturing industry for use as boiler fuel while 141 tonnes of used toners from a printing house have been diverted to a cartridge manufacturer.

#### (vii) Setting-up of civic amenity centres

A civic amenity centre is a facility whereby households, commercial centres and SMEs may dispose of specific wastes such as plastic wastes, paper and carton, construction and demolition wastes, waste oils, wood wastes, green wastes, E-wastes, used tyres and metal wastes.

With the setting-up of civic amenity centres, the issue of illegal dumping will be reduced while the materials disposed at these civic amenity centres may be reused or recycled in line with the concept of circular economy.

There are currently two civic amenity centres operational in Mauritius in the western and eastern parts of the island and another such facility is being constructed in the northern part of the island. More such facilities are being planned for construction at strategic locations across the island.

#### Future plans to promote circular economy

- Implementation of a new waste collection system and waste valorisation infrastructures at household and commercial levels.
- Setting-up of regional composting plants and sorting units

Following the development of the new solid waste management strategy and action plan for Mauritius focussing on resource recovery and recycling and the commissioning of a feasibility study on composting plants and sorting units, Government is now proceeding with the setting-up of regional composting plants and sorting units. As a pre-requisite to the successful operation of these facilities, waste segregation at source will be privileged through the provision of three bins (one for organic wastes such as food and yard wastes, one for recyclable materials such as paper, plastics, metals and one for residual wastes). The organic wastes will be directed to the composting plant while the recyclables will be sent to the sorting unit for subsequent separation into paper, glass, plastics, etc. The sorted recyclables will then be sold to registered recyclers/exporters in Mauritius. Through the setting-up and operation of the composting plants and sorting units, a significant amount of wastes will be diverted from landfilling towards recycling and resource recovery.

## • Implementation of an extended producer responsibility mechanism for electrical and electronic equipment and post-consumer beverage containers

The extended producer responsibility (EPR) is an economic instrument that assists in achieving a circular economy model. EPR is an environmental policy approach in which a manufacturer's accountability for a particular product is not limited to the production process but extends to the post-consumer stage of the product. The producers have to take responsibility for

management of products after becoming waste. As such, EPR shifts the responsibility of managing a waste material from government/local agencies to the manufacturer of the product. In a bid to further promote the concept of circular economy in Mauritius, the Government has decided to implement an EPR system for electrical and electronic equipment. In this regards, an EPR regulations is currently being finalised for the management of electrical and electronic wastes (E-wastes).

In the same line, another EPR regulation is being drafted for the management of post-consumer beverage containers. The proposed EPR systems will ensure that E-wastes and post-consumer beverage containers are effectively collected and recycled in line with circular economy.

#### • Feasibility study on scrapyard facility for end-of-life vehicles

End-of-life vehicles are becoming a major issue in Mauritius and these are often dumped illegally on bare lands and roadsides.

To tackle this issue, the Government has embarked on a feasibility study for the setting-up and operation of a scrapyard facility for end-of-life vehicles in Mauritius.

Following the feasibility study and the setting-up and operation of the scrapyard facility, endof-life vehicles will thus be de-polluted, dismantled in an environmentally sound manner and the dismantled components will then be recycled.

#### · Feasibility study on anaerobic digestion of organic wastes in Mauritius

More than 50% of the solid waste in Mauritius is organic waste, mainly coming from households, markets, offices and the agricultural sector. The large quantities of organic waste are rapidly filling up landfill space and in the process are also creating methane, an extremely powerful GHG.

Therefore, to alleviate the problem, the anaerobic digestion is seen as a potential solution for Mauritius. As part of the digestion process, the biogas produced can be combusted to produce electricity, in line with one of the mitigation measures proposed in the Nationally Determined Contribution for Mauritius.

In this context, the Climate Technology Centre and Network (CTCN), the operating arm of the UNFCCC, is funding a technical assistance for a feasibility study on anaerobic digestion of organic wastes for Mauritius.

#### **Session 8: Financing circularity**

- Moderator: Prof. T. Ramjeawon, Professor of Environmental Engineering at the Faculty of Engineering, University of Mauritius
- **Presenter 1: Mr. Kevin Ramkaloan, CEO, Business Mauritius** Private sector response to enable circularity
- Presenter 2: Mr Aldo Sydonie, Senior Relationship Manger, Mauritius Commercial Bank Ltd
   Financing Circularity for a Strong and Resilient Local Economy
- Presenter 3: Ms Oumila Sibartie, Co-Founder and Director, Lineage Investment Services Ltd
   Financing Circularity via Impact Funds
- **Presenter 4: Mr Ashveen Gopee, Managing Director, Lex Frontier, law firm** Financing waste management and circular economy in the green bond market
- **Presenter 5: Ms Manjula Basant Rai , CEO, SPAANDA** Moving to Circular Economy through Public & Private Partnership

#### The following salient points were highlighted during the session:

- Most investments are still in the linear economy;
- Financial sector therefore has to play a key role in scaling up the funding for a transition to a circular economy;
- Investing in CE business models is considered a high risk for finance institutions;
- Some initiatives have been taken (Green Loans) but there is potential for more financial vehicles.
   A CE reduce the long term risks associated with resource scarcity, climate change, and biodiversity loss and it makes common sense for financial institution to invest in such an economy;
- We must build an ecosystem for entrepreneurs and the financing community that move the wheel
  of the circular economy;
- Using green loans, green bond, impact investment funds, blended finance, public funds,
   Development Finance Institutions etc;
- To de-risk investments for CE, using both policy and financial instruments:
  - Policy Roadmaps, EPR, Clear Targets, Capacity Building, Public Procurement
  - Financial instrument to help to transfer some of the risks to public actors (e.g Public Private Partnerships, Loan Guarantees, more research grants)

- Financial regulatory agencies need to establish the framework for the development of novel financial mechanisms such green bonds and impact investment funds;
- Need to establish reporting framework to encourage companies to report on Environmental Social and Governance (ESG);
- Different sources of funding for various stages of business (Start-up, Intermediary and Maturity);
- Develop and harmonise a CE taxonomy to help investors understand what is circular;
- Encourage collaboration platform local and regional.

#### **Session 9: Summary and Way Forward**

Co - Moderators: H.E. Mr. Vincent Degert, Ambassador of the European Union and Dr Patrick Mwesigye, Regional Sub-Programme Coordinator, Switch Africa Green Project, UNEP

During this session, the moderators of the previous sessions provided a summary of discussions as below:

- 1. Where are we?
- 2. Where do we want to go?
- 3. How to reach there? (enablers/urgent and other measures)

#### **Session 1: Setting the Scene**

#### **Summary:**

- Revolution of existing waste management system towards CE
- CE offers opportunities/ job creation for an economic model that is resilient, diverse and inclusive and is far broader than Waste Management System.

#### Way forward:

• Looking forward for close cooperation with EU, Africa, UNEP and regional countries including Reunion Island.

Join the African CE network comprising pool of African CE experts for information/ experience sharing and benefit from their technology transfer.

#### **Session 2: Bringing circularity in the food system**

#### Where are we?

- Current Policy/ incentives /schemes
  - > Strategic Plan for the Foodcrop, Livestock and Forestry sector
  - Schemes
  - > Certification MauriGAP standard

#### Initiatives

- ➤ FAREI More adapted varieties, new and more sustainable agri-practices, postharvest shelf-life, valorisation of products, agro-processing and value-addition, DeSIRA project (EU funded)
- ➤ Research and Development University of Mauritius
- ➤ FoodWise: Intermediary between businesses and NGOs/ charitable institutions, Business opportunities (ReJuice)
- ➤ The food waste Pledge Initiative by Business Mauritius Certification in the hospitality sector
- ➤ Outreach/ public awareness programmes
- > Eco-initiatives from the retail sector:
  - banning of plastic and poly-styrene products
  - e-brochures (decrease use of paper)
  - energy shift to CO<sub>2</sub> refrigeration
  - favour local products (local SMEs and planters)
  - shopping carts from recycled plastic fishnets
  - replacing plastic bags with jute and cloth bags
  - promotes collection and recycling (used oil/ e-waste/ PET bottles and carton packaging materials)
  - Support to NGOs

#### **Barriers**

- Poor awareness
- No appropriate legislative framework
- Lack of support and initiatives for enterprises to engage in converting waste to wealth
- Inadequate research and limited product development

- Practically non- existent waste segregation in Mauritius
- Insufficient volume of waste to support setting up and profitability of enterprises
- Inadequate logistics and infrastructure for supporting recycling, recovery, reuse
- Limited avenues for collection of waste
- Lack of coordination between actors in food systems and exchange of information
- No reliable data on food waste measurement

#### Where do we want to go?

- Shift from linear model to circular agriculture model
- Need for a National Food Waste Strategy
- Need for a National Food Waste Baseline to monitor and track progress
- Need for a Regulatory Framework on Food Wastage (date labeling law, liability protection for food donations, and ban businesses from throwing away edible food)

#### **How to reach there?**

- Way Forward to transitioning to Circular Food System;
- Awareness raising;
- Identify simple circular agriculture (CA) practices / technologies for high uptake;
- Formulate and implement supporting policies and regulations;
- Establish standards and support certification processes;
- Clustering of farmers to benefit from economies of scale;
- Promote integrated harmonised cross sectoral policies;
- Government investment: awareness campaigns; research on food waste; and fund food recycling infrastructure such as composting;
- Private initiatives: Create "imperfect" product lines; Upcycle byproducts; and Track food waste and its source.

#### **Session 3: ICT Sector**

#### Where we are?

- Estimated quantities: 40 000 tonnes of Electric, Electronic equipment imported annually
- No current e-waste management system in Mauritius
- International perspective slowing the loop

- <u>Locally</u>:
  - \* Repair shops
- Swap cash
  - ❖ Take back of old mobile phones, tablets, evaluate and assign a value to them
  - ❖ Put on the market refurbished devices 1-year warranty

#### **Barriers**

- Cultural:
  - o Moving the interest from new to second hand refurbished E goods
- Customer trust / Certification
- Price: very important to promote re-use in consumer sector, based on customer research
- Market
  - o low demand for second hands
- Institutional / Regulatory
- Subsidise local repair (reduced sales tax)
- Data, Segregation, EPR not yet in place

#### Where we want to go?

- Increase our collection rate
- Setting up of collection points
- Ease of convenience for consumers to dispose
- Repair thus extend product life
- Use of refurbished products, thus narrowing the loops

#### How to we reach there?

- Legislation:
  - obligations of importers and distributors in terms of information on:
    - o the availability of spare parts,
    - o display simple information on product reparability
- Longer Warranty
- EPR regulation
- Public Procurement

 Public bodies to prioritize purchase of green & environmental innovative locally made products for procurement exercises.

#### **Session 4: Construction and Demolition Industry**

#### Where are we?

- Currently, linear model, Business As Usual
- Some initiatives:
- Déchèterie (La Laura, La Chaumière, Poudre D'Or, 2 more in pipeline)
  - o Digital platform supply and demand of second hand construction (La Decheteque)
  - Use of recycled asphalt for production of new asphalt mix for new roads and for maintenance of existing roads by RDA – decrease in energy demand by 25 %
  - Decision taken by RDA to adopt a strategic road asset management system to increase efficiency in road sector
  - o Green building designs

#### **Barriers**

- Lack of awareness and technical knowhow
- Lack of consumer market demand
- Lack of financial and policy incentives
- Lack of scalable ready market solutions

#### Where do we want to go?

- Moving from linear to circular, from 3R's principle to a 9R's framework
- Closing the Material Loop in Construction
- Design at Planning stage Low carbon design, green building design, advanced software and eco-focused engineering, design for reconstruction, designing out waste, design for adaptability, selecting materials
- Zero waste system
- Circulating building materials Reuse, Repair, Recover, Repurpose, Refurbish,
   Remanufacture, and recycling of manufactured goods
- Offsite construction of modular elements
- Use of waste heat and energy or biomass fuels

#### How do we reach there?

- Rethink the entire supply chain to bring circularity;
- Consider the entire project lifespan to optimize efficiency;
  - ➤ Innovative new solutions to reduce life cycle costs, and impacts of C & D
  - > Digital technology, research and development, design for deconstruction
- Collaboration across the supply chain (investors, designers, builders);
- Regulatory frameworks / Certification;
- Change in mindset and approach –need for capacity building and communication;
- Policy and financial incentives

#### **Session 5: Energy sector**

#### Where are we?

- 115MW of Renewable Energy (RE) technologies, both PV and Wind technologies, have been installed till date.
  - These have an expected lifetime of 20 years.
- With the adoption of more EV's the waste generated from Batteries is expected to rise earlier than RE technologies, being given that the expected lifetime of a typical lithium ion battery is 8 years.
- No legal or regulatory framework as regards to waste generated from RE technologies and batteries.
- No proper sectoral data collection to calculate energy efficiency gains. The energy intensity
  of the country is used as a starting reference for energy efficiency.
- In the year 2020, the energy intensity was 0.42 as compared to the 0.43 in the year 2019. This is equivalent to 2.3% gain in energy efficiency.

#### Where do we want to go?

- Development of the proper Legal and Regulatory Frameworks for the disposal of waste generated from RE technologies to either by recycling or exporting.
- Collaboration with International Organisation specialised in recycling of RE technology waste.
- The setting up of regional recycling facilities for RE technologies and batteries for economies of scale.

 Wooden material from construction and industrial sectors could be used for electricity generation.

 Development of survey forms and cooperation with institution such as Statistics of Mauritius for the collection of sectoral data for energy efficiency.

• Setting up of waste-to-energy facility in the medium to long term.

#### **How to reach there?**

An EV Implementation and Monitoring Committee has been set up at the Ministry of Energy
and Public Utilities to oversee the implementation of the recommendations made in the 10
year EV integration roadmap. One of the recommendations is to set up recycling facilities
or second life use of EV batteries.

Mauritius is in the forefront of regional cooperation through institution such as the SADC,
 AfDB and through international institutions such as IRENA, ISA, World Bank, AFD,
 UNDP, GCF and GEF. Assistance is being sought from ISA and IRENA for the setting up of a Recycling Framework

• Through the National Biomass Framework, it is envisaged to take into consideration the wood waste generated from the construction and industrial sectors for electricity generation.

• In order to ensure quick wins in terms of demand side management, large energy consumers are now required to carry out mandatory energy audits.

 Procurement has been launched for the hiring of a Consultancy firm for the development of a Framework to promote Energy Performance Contracting to assist industries/ large energy consumers to implement energy efficiency measures.

#### **Session 6: Manufacturing sector**

#### Where we are?

Global

9% of global economy is circular.

Local

• Government Programme 2020-2024

• Industrial Policy and Strategic Plan for Mauritius 2020-2025

Parastatals and Ministry

**MSB** 

- MSB is working with ISO for a framework on circular economy.
- There are several standards in the field of eco-labelling and product certification.

Assay Office

• Gold waste sent in local recycling plant and no mercury is used.

Cooperatives

• Encourage green and circularity & Seedling Programme

Ministry- 2 Reports

- Greening the SMEs: Improving SME Access to Green Finance
- Industrial Waste Management- Cost Structure Review

**Enterprises** 

Some of the manufacturing companies have already embarked on the process of circular economy but it is voluntary and in isolation.

- o Food Maurilait
- o Sugar- Omnicane
- o Paints-SOFAP
- o Textile- CIEL

#### Sugar:

- o Loss of preferential access,
- o Growing scarcity of resources,
- o Stricter environmental legislation
- Direct competition from other countries
- o Increasing clients seeking sustainability

Textile:

Logistical hurdles

Food:

Cost of technology is high

#### Paints:

- Absence of recycling facilities
- o Poor education on waste management
- o No legal framework on circular economy
- No collaboration between stakeholders

#### Where do we want to go?

- Urgent need to decouple waste generation
- Legislation for sorting of wastes/circular economy
- Reduce the amount of waste produced during the manufacturing process.
- Using the waste produced as a raw material to manufacture other product.
- Creating new business opportunities that can contribute to the national economy.
- Divert waste from the landfill and hence reducing environmental and financial burden

# **How to reach there?**

- Increase public awareness.
- Proper legal framework on circular economy. This can be built on existing Industrial Waste Audit Regulation.
- Adequate incentives to address poorly development local recycling industry. For example, recycling companies can be incentivised for diverting waste from landfill.
- Financing Mechanism to adopt eco-friendly technology which are very expensive.
- Implementation of a shared audit waste platform.
- Encourage people engagement in circular economy.

#### **Session 7: Solid Waste Sector**

#### Where we are?

- Système linéaire de gestion des déchets collecte & enfouissement
- Uniquement 3% revalorisé
- Pas/peu de fiscalité du déchet = pas d'incitation à changer de modèle
- Volonté de l'Etat d'établir une stratégie et de l'opérationnaliser
- Engagements et initiatives du secteur privé demande de connaître les compétences et solutions du territoire et un encadrement
- Voix et engagements de la société civile Appuyé par le secteur privé et bienveillance du Gouvernement
- Citoyen/nes engagés et qui participe à l'EC

#### Where do we want to go?

- Avoir une stratégie définie avec des objectifs ambitieux
- Un engagement national (public/privé/société civile)
- Une définition claire et définie des responsabilités
- Minimum d'enfouissement valorisation maximum et surtout évitement optimum

### How do we reach there ?

- Etablir une stratégie et l'opérationnaliser
- Mise en place de cadre notamment législatif
- Organiser des exercices de consultations nationales pour connaître les forces du territoire
- Mettre en place une fiscalité incitative et dissuasive : évite enfouissement
- Structurer la filière REP pour responsabiliser les émetteurs sur le marché
- Impulser les initiatives du territoire en encadrant et/ou finançant la collecte innovante ou les solutions d'évitement/revalorisation
- Coopération avec les îles voisines de l'OI

### **Session 8: Financing circularity**

# Where we are?

- Most investment are still in the linear economy
- Financial sector therefore has to play a key role in scaling up the funding for a transition to a circular economy
- But investing in CE business models is considered a high risk for finance institutions
  - Some initiatives taken (Green Loans) but there is potential for more financial vehicles

#### Where we want to go?

- We must build an ecosystem for entrepreneurs and the financing community that move the wheel of the circular economy
- Using green loans, green bond, impact investment funds, blended finance, public funds,
   Development Finance Institutions etc

#### How to we reach there?

• To de-risk investments for CE, using both policy and financial instruments

- o Policy Roadmaps, EPR, Clear Targets, Capacity Building, Public Procurement
- Financial instrument to help to transfer some of the risks to public actors (e.g Public Private Partnerships, Loan Guarantees, more research grants)
- Financial regulatory agencies need to establish the framework for the development of novel financial mechanisms such green bonds and impact investment funds
- Need to establish reporting framework to encourage companies to report on ESG
- Different sources of funding for various stages of business (start-up, Intermediary and Maturity)
- Develop and harmonise a CE taxonomy to help investors understand what is circular
- Encourage collaboration platform local and regional

# **Way Forward**

The transition to a Circular Economy model requires that barriers be overcome and that a conducive and enabling environment be put in place. Barriers identified are multipronged and are predominantly in terms of current deficiencies at legal, fiscal, technical and institutional levels. Enablers would thus involve the introduction of a proper legal framework, revisiting the institutional set up focusing also on the establishment of a common platform to connect key sectors and facilitate information-sharing; identifying capacity building opportunities; acquisition of novel technologies; and devising policies to promote consumer demand.

The conference has been largely successful in creating the right momentum for action. There is growing interest not only from the private sector but also from banking institutions and development partners.

UNEP has expressed its wish to assist the Republic of Mauritius in the elaboration of a Roadmap and Legislative Framework on Circular Economy.

**Note:** All presentations are available on the website of the Ministry of Environment, Solid Waste Management and Climate Change.

Photo snaps taken during the 3 days' conference on circular economy:



Address by H.E. Mr. Vincent Degert, Ambassador of the European Union



Address by UN Resident Coordinator, a.i., Dr. Indrajit Hazarika, World Health Organisation representative



Address by Dr. the Honourable Renganaden Padayachy, Minister of Finance, Economic Planning and Development



Key note address and opening by Honourable Kavydass Ramano, Minister of Environment, Solid Waste Management and Climate Change



Setting the scene by Mr. J. Seewoobaduth, Ag. Director of Environment



Presentation (Virtual) by Mr Davor Percan, Head of Unit DG ENV F2 – Regional and Bilateral Environmental Cooperation on Recent developments in the Circular Economy transition in Europe and globally



Presentation by Prof. T. Ramjeawon from the University of Mauritius on Circular Economy in Mauritius: Current status and policy needs



Presentation by Ms R. WACHIRA, Programme Management Officer UNEP Nairobi on Circular Economy – The regional perspective and sharing of best practices



Presentation by Mrs Christel Thuret, coordinatrice économie circulaire à la direction régionale Océan Indien de l'Agence de l'environnement et de la maîtrise de l'énergie (ADEME) on « Loi Anti-gaspillage »



Address by Hon Maneesh GOBIN, Minister of Agro-Industry and Food Security



Presentation by Mrs Indoomatee Ramma, Principal Research Scientist, FAREI on Promoting circularity in Food Production Systems



Presentation by Mrs Stephanie Serret, Head of Department, Marketing, Winners on Greening the retail sector – bridging the gap between production and consumption



Presentation by Mrs Rebecca Espitalier-Noel, Managing Director, FoodWise Ltd on Transitioning to a Zero Waste Strategy in the food sector



Presentation by Prof Daya Goburdhun, Associate Professor, UOM on Integrating food waste management into circular food economy: Opportunities and challenges



Address by Hon. Deepak Balgobin Minister of Information Technology, Communication and Innovation



Presentation by Mr. B. Beerachee, Director, Solid Waste Management Division on Extended Producer Responsibility (E-goods)



Presentation by Ms. Christiane Albert, Consultante REP/ Economie Circulaire auprés d SICR et Vice – Présidente on Cluster Green (from La Réunion) Expérience Reunionaise - RE



Presentation by Mr. Thierry Malabar, Project Manager, BEM Enterprises Ltd on Recycling of Waste of Electric and Electronic Equipment (WEEE)



Address by Hon Mahendranuth Sharma HURREERAM, Minister of National Infrastructure and Community Development



Presentation by Mr Dashwanyl Jhuboo, Director, Civil Engineering Section, MNICD on "Circular economy in the construction sector"



Presentation by Mr. Tony Lee Luen Len, Director of Green Building Council of Mauritius, and Partner at Ecosis Ltd on "Enablers for circularity in the construction industry in Mauritius"



Presentation by Ms Stéphanie Bouloc, Fondatrice, La Déchetèque on "Le réemploi un outil d'économie circulaire pour vos matériaux de construction"



Presentation by Dr. Mahen Conhyea, Head Technical & Business Development of Gamma Materials Ltd, in collaboration with the "Union Nationale des Enterprises de Valorisation (UNEV-France)" on "Gestion de Déchets de construction et de démolition"



Address by Hon Georges Pierre LESJONGARD, Minister of Energy and Public Utilities



Presentation by Ms Mreedula Mungra, Chief Executive Officer of Mauritius Renewable Energy Agency (MARENA) on Circular Economy Perspective in the Energy Sector



Presentation by Mr Liladhur Sewtohul, Chairperson of Energy Efficiency Management Office (EEMO) on Policy Instruments to promote Energy Efficiency in Mauritius



Presentation by Mr Ally Rujbally, Senior Engineer (CEB) on Smart Grid and Renewable Energy



Presentation by Mr. Purseramen, Chief Operating Officer, IBL on 'Seafoods Integrated Value Chain'



Address by Hon Soomilduth BHOLAH, Minister of Industrial Development, SMEs and Cooperatives



Presentation by Mr B. Beerachee from Solid Waste Management Division on Industrial symbiosis



Presentation by Mrs S. Thomas, QSE & FS Manager, Maurilait Ltd on 'Case study on l'économie circulaire'



Presentation by Mr Ramlugon, Sustainability Officer, Omnicane Ltd on 'Industrial ecosystem and carbon burn out'



Presentation by Mr. Constantin, Director of Operation, SOFAP on "Zero waste objective"



Presentation by Mr Quentin Thorel, Group Head of Sustainability, CIEL Textile on Circular Economy in the textile industry



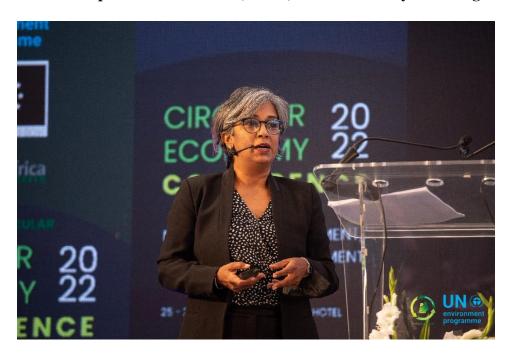
Presentation by Mr. Rachid Razzak, Director, Service de Développement durable de CINOR, Reunion on 'Tri des déchets et économie circulaire – Experience de la Reunion'



Presentation by Mrs Francoise Marechal-Charlotte, Head of Business Development & Consultancy on 'Productivity and Design Thinking'



Presentation by Mr. Thierry Marechal, Design Specialist, National Productivity and Competitiveness Council (NPCC) on 'Productivity and Design Thinking'



Presentation by Mrs Christine Dimba, Quality Assurance Officer, PIM Ltd on 'PIM et Le Recyclage'



Presentation by Ms Frédérique Perpetu, Sustainability Manager, Scott & Co. Ltd on 'Create New Opportunities with Circular Economy'



Presentation by Mr. Sébastien Geneuil, Project Manager, Mission Verte on 'Mission Verte, l'association qui recycle'



Presentation by Mr. Kevin Ramkaloan, CEO, Business Mauritius on 'Private sector response to enable circularity'



Presentation by Mr Aldo Sydonie, Senior Relationship Manager, Mauritius Commercial Bank Ltd on 'Financing Circularity for a Strong and Resilient Local Economy'



Presentation by Ms Oumila Sibartie, Co-Founder and Director, Lineage Investment Services Ltd on 'Financing Circularity via Impact Funds'



Presentation by Mr Ashveen Gopee, Managing Director, Lex Frontier – law firm on Financing waste management and circular economy in the green bond market



Presentation by Ms Manjula Basant Rai , CEO, SPAANDA on 'Moving to Circular Economy through Public & Private Partnership'