



United Nations

Department of
Economic and
Social Affairs

Integrated strategic planning and institutional arrangements for policy coherence, leveraged by systems thinking for the implementation of the Sustainable Development Goals

Report of the Mauritius workshop

21-24 February 2023



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1. Context and background

While the COVID-19 pandemic has impacted the entire world, it has particularly wrought serious economic hardship on Small Island Developing States (SIDS), including Mauritius which is highly vulnerable to its external environment and the resulting multidimensional impact of the pandemic. Important sectors, such as the tourism services sector, the financial and textile sectors, have suffered hardships resulting in a totally disrupted labour market. Fiscal mitigation measures put in place to keep the economy afloat during the pandemic, including the wage assistance scheme, the self-employed assistance scheme, small businesses support and the food distribution scheme to vulnerable groups resulted in rising debt burdens, making the need for appropriate recovery strategies and access to development finance even more pressing at this time. Long-standing problems are also heightened by climate change, which means escalating costs from the impacts of national disasters. The increase in food and commodity prices seen in 2022, following the Russian invasion of Ukraine, has further exposed the vulnerability of those import dependent countries.

While a short-term recovery response following the pandemic has proven to be a necessity, it also presents challenges if only done with short-term lenses. Not only are the scale of financial interventions by Governments in response to the pandemic massive, but interventions aimed at recovery had to be implemented fast, without the possibility for a thorough analysis of the extent to which the immediate crisis response was aligned with a longer-term national development planning for more resilient, inclusive, and sustainable development, with a strong emphasis on climate change adaptation.

Time-bound national plans are intended to set coherent economic and socio-political objectives for overall national development and are often based on more collaborative approaches involving a wide range of stakeholders rather than top-down rationalist planning of earlier decades. Such planning is not so much a set of decisions as it is an ongoing deliberation among stakeholders that involve negotiation and renegotiation of goals, policies, and actions with the aim to reach decisions that are made technically desirable and politically feasible. Plans have typically a 4-to-6-year duration and are sometimes related to a longer-term vision document. The long-term perspective in planning is critical to attenuate possible electoral cycle change effects, help build more resilient societies and better anticipate potential risks with the best cumulative impact across different dimensions of sustainable development.

Many countries, including Mauritius have expressed the desire to become economically more independent, while reducing their import dependency and improving their energy security. In response to the COVID pandemic, the government of Mauritius highlighted the need for environmental protection, implementation of the blue and green economy frameworks (agro-business, increasing food security and reducing food import), relocating tourism towards the inland to relieve the ocean and coastal zone from erosion and waste and improving education and employment for all.

The 2019 Voluntary National Review of Mauritius highlighted that one of the country's key challenges towards the implementation of the Sustainable Development Goals (SDGs) was weak inter-ministerial collaboration and institutional coordination. The SDGs can be used as an opportunity to rethink the development pathway and direct long-term national sustainable

development efforts. The use of system thinking inspired methodologies can be valuable in identifying high-impact policies across goals over different time horizons while enhancing coherent policymaking. This can support governments in defining a pathway towards more inclusive and sustainable economic growth. Finally, the development of a strategy is not a solution by itself if it is not accompanied by institutional mechanisms that enable cross-sector collaboration and a more coherent approach to the design and implementation of policies.

In this regard, the United Nations Department of Economic and Social Affairs, Division for Public Institutions and Digital Government, and UNITAR, in close collaboration with the Resident Coordinator Office (RCO) from Mauritius and Seychelles, provided initial advisory support through the development of analytical papers on strategic planning, systems thinking and policy coherence for sustainable development in Seychelles and Mauritius. The papers illustrate the use of a system thinking approach in policy formulation and decision making and make the case for integrated policymaking towards a more coherent implementation of the Sustainable Development Goals (SDGs). The approach can offer opportunities and leverage points to transform development pathways to increase resilience and a longer-term perspective, visualize how the crisis can be an opportunity to re-assess socio-economic and environmental performance and how investments can be allocated in areas that provide short -and medium-term resilience, while addressing the most pressing concerns caused by the crisis. The reports also highlight the need for institutional reforms and an evolution of the policymaking culture.

UN DESA and UNITAR presented the findings during a consultative workshop, called “Joint Initiatives Towards Green Recovery and Long-Term SDG Planning” on 10th February 2022, which was organized by the UN and the Government of Mauritius.

The work undertaken by DPIDG and UNITAR since September 2021 has triggered discussions on the need for better food security and reduced food dependency, the understanding of the urgency to address climate change while using the opportunities of coherent planning and the existence of a Blue Economy framework in Seychelles and green economy work in Mauritius to increase revenue and diversify the economy, all with a view to create sustainable, inclusive and resilient economic growth. The Government of Mauritius highlighted that the quality of institutions is essential for an effective reform process that is owned by the Government.

Following the presentation of the findings, the Government of Seychelles and Mauritius requested UN DESA/DPIDG and UNITAR for further support in developing a more resilient recovery and development strategy, in alignment with the recommendations highlighted in their Voluntary National Review 2020 to progress towards the implementation of the SDGs. This included strengthened policy and institutional coherence and the development of a national approach to integrated planning in the context of the national development strategy preparation.

In particular, the Ministry of Foreign Affairs, Regional Integration and International Trade of Mauritius requested in 2022 UN DESA and UNITAR’s technical assistance in developing capacities for integrated planning towards the SDGs, linking post-2019 recovery needs to long-term sustainable economic objectives.

In response to this request, UN DESA/DPIDG, in collaboration with UNITAR and the UN Resident Coordinator’s office (RCO), organized on 21-24 February 2023 a hybrid workshop on integrated strategic planning and policy coherence, leveraged by systems thinking, for the implementation

of the SDGs.

The main objective of the 2023 workshop was to raise awareness and develop the capacities of the Government of Mauritius to mainstream and accelerate the SDG implementation through effective integrated planning, policy coherence for the SDGs and inter-ministerial institutional collaboration, leveraged by systems thinking approaches. The workshop provided an opportunity to examine and build on the country report for Mauritius entitled “Strategic planning, systems thinking and policy coherence for sustainable development” (see annex 4). The latter illustrates the use of a qualitative approach to systems thinking for decision making, using the crisis as an opportunity to re-assess socio-economic and environmental performance, and allocate investments in areas that provide both short and medium resilience, while addressing the most pressing concerns caused by the crisis. It also provided a platform to discuss the needs of the Government of Mauritius in terms of capacities for national development planning.

More specifically, the workshop provided participants with the opportunity to:

- Understand the difference between incorporating the SDGs individually and an integrated approach to the SDGs and national development planning.
- Discuss how systems thinking can be leveraged to support integrated/ coherent planning.
- Analyze the changes that systems thinking requires in terms of governance mechanisms, institutional arrangements and policies, including collaboration within Government and with external stakeholders.

The workshop was attended by 35 participants from a wide range of Ministries of the Government of Mauritius, including the Ministry of Public Service, Administrative and Institutional Reforms, Ministry of Industrial Development, SMEs and Cooperatives (Industrial Development Division and Cooperatives Division), Ministry of Agro-Industry and Food Security, , Ministry of Land Transport and Light Rail, Ministry of Foreign Affairs, Regional Integration and International Trade, Minister of Housing, Land Use Planning, Ministry of Finance, Economic Planning and Development, Ministry of Labor, Human Resource Development and Training, Ministry of Tourism, Ministry of Financial Services and Good governance, Ministry of Environment, Solid Waste and Climate change, Ministry of Arts and Cultural Heritage, Ministry of Education, Science and Technology, Ministry of Social Integration, Social Security and National Solidarity (Social Integration Division), Statistics Mauritius, Ministry of Youth Empowerment, Recreation and Sports, Prime Minister’s Office and Home Affairs, Ministry of Local Government and Disaster Risk Management, Ministry of Gender Equality and Family Welfare. In addition, the Ministry of Foreign Affairs had invited other organizations, including the Mauritius Council of Social Service (not for profit organization), Mauritius Research and Innovation Council, Mauritius Chamber of Commerce and Industry and the National Heritage Fund.

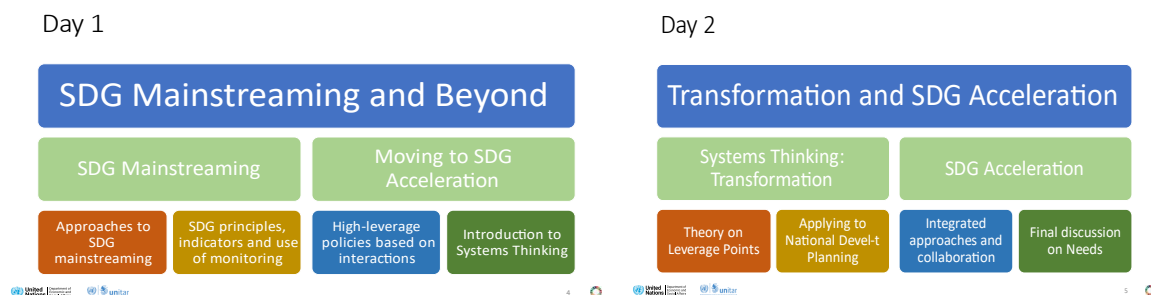
In collaboration with the UN Resident Coordinator and UNITAR, UN DESA/DPIDG also organized a 2-day capacity development workshop with the University of Mauritius which focused on the potential of the SDG framework for transformational change and how it can contribute to the development of sustainable, coherent, and inclusive development pathways. This capacity building event further strengthened the University’s prominent role in addressing the SDGs, its

to manage the consequences of the cyclone Freddy that had hit Mauritius heavily during the previous day. Mr. Banamwana thanked the Ministry of Foreign Affairs and Ms. Prateema Kutwoaroo to make the workshop happen. He also welcomed the workshop facilitators from UN DESA and UNITAR.

Ms. Prateema Kutwoaroo conveyed her apologies on behalf of the current Secretary for Foreign Affairs, Mr. Joyker NAYECK. She added that the workshop is a follow up of the meeting the Ministry had conveyed in December to discuss the United Nations Sustainable Development Coordination Framework (UNSDCF). In the meantime, public service officials had provided feedback on the common country analysis (CCA) and the UNSDCF, both developed by UN Mauritius. The workshop helped to accelerate the implementation of the SDGs to move forward in Mauritius' transformational agenda.

The UN DESA/DPIDG Interregional Advisor on Governance and Institution Building shed some light on the context. She explained that the workshop would illustrate the use of a qualitative approach to systems thinking to re-assess the country's socio-economic and environmental performance and allocate investments in areas that provide short- and medium-term resilience, while addressing the most pressing concerns caused by the crisis.

The UNITAR Senior Specialist SDGs and Strategic Implementation of the 2030 Agenda held an SDG Quiz to invite participants to test their understanding and provide some historical background on the development and implementation of the SDG framework since 2015. SDGs marked the convergence between the integrated approach to sustainable development and the environmental sustainability track into one track that addressed the social, economic, and environmental dimensions in all policies. SDGs are about managing synergies and reducing tradeoffs. In this regard, systems thinking can provide governments with a framework to design better policies, decision making, implementation, monitoring and evaluation.



Participants valued the importance of the SDGs for Mauritius because of the vulnerability of the island to climate change, but also as a way to exploit the potential of the big ocean that the island is situated in in a sustainable manner. SDGs were also perceived as important because they bring everybody together, can help to build partnerships that enable consensus building, coherence and breaks silos.

4. Approaches to SDG mainstreaming

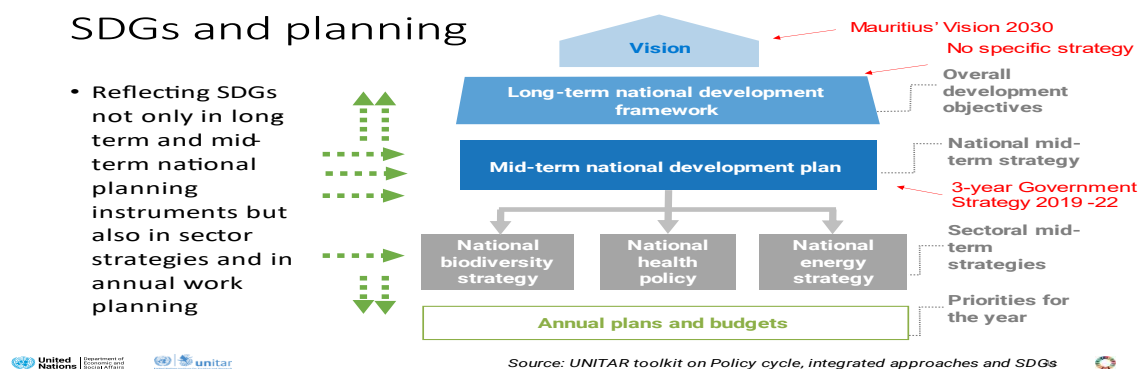
The first session of the workshop took stock of the four areas where the SDGs could be mainstreamed, i.e., through the country's national development planning and the development of national strategic frameworks, the process of SDG budgeting and financing, through institutional arrangements and stakeholders' participation and through monitoring and evaluation.

1. Mainstreaming the SDGs through national development planning

Following the agreement of the 2030 Agenda for Sustainable Development in 2015, the practice of national development planning has been reinvigorated with more governments developing plans over a longer period of 4 to 6 years and taking more ownership of their national development plans. Mindful of the interconnectedness of the SDGs, the national development plans and their specific sector plans need to cover the social, economic as well as the environmental dimension and consequently, policy making should no longer be perceived as a linear process. Moreover, due to the wicked, complex, and unpredictable character of policymaking, this process should no longer only be dealt with by technocrats who develop alternative solutions and predict outcomes in isolation but should rather encourage a more collaborative approach that involves a wide range of stakeholders from within and outside of the government. National planning should be an ongoing process of negotiations and deliberations of goals, policies, and actions to reach decisions that are technically desirable and politically feasible.

In terms of the development of national strategic frameworks, some countries like Canada and Bosnia-Herzegovina developed SDG national frameworks, whereas others aligned their strategies and plans to the SDGs, sometimes even adding additional targets. Other countries decided they rather needed an SDG Action Plan because they believed that their sector strategies, that are annually reviewed, should already be aligned to the SDGs, so the action plan is meant to monitor gaps (e.g., EU countries, like Cyprus). The SDGs can help streamline the implementation of different planning instruments, ensure coherence, promote clarity, and reduce bureaucratic burden. SDG progress reports on targets can be used to report on other strategies, but also inform budgeting processes and increase synergies and reduce short termism and relate to long term policies in the country.

Figure 1: SDG and Planning



Ideally, a vision informs a long- term national development framework which is then translated into a mid- term national development plan and into sector strategies which are aligned to annual plans and budgets. Mauritius has a Vision 2030 and a 3-year national development plan, so the question that remains to be addressed is whether there is the need for a long-term national development framework that goes beyond the 3-year plan.

2. Mainstreaming the SDGs through the budgeting process

A second way of mainstreaming the SDGs is through the budgeting process. Aligning budgeting with the SDGs has been progressing slowly, using tools to intervene in different stages of the budgeting process (see the slide below). The specific budgeting process will determine which tools can be applied. It is not necessary to use all these tools in the budgeting process.

Figure 2: SDG and budgeting

SDGs and budgeting

- Aligning budgeting with the SDGs has been progressing slowly, using some of the below tools

Strategic budgeting	Budget allocation/monitoring	Budget negotiation/approval	Budget oversight
<ul style="list-style-type: none"> • SDGs in budget calls/templates • SDG gaps/progress inform budget • KPIs reflect SDGs • MTBF reflects SDGs 	<ul style="list-style-type: none"> • SDG costing • SDG classification • Tagging against specific SDGs 	<ul style="list-style-type: none"> • Use of SDG gaps/progress information by MF, Parliament • KPIs reflect SDGs • Citizen Budgets 	<ul style="list-style-type: none"> • Use of SDG progress information by SAI, Parliament • KPIs reflect SDGs

- Budget submissions and negotiations with Ministry of Finance by individual ministries is not conducive to inter- ministerial collaborations. Cross-sector budgets or phenomenon - based budgeting as possible solutions.



Integrated National Financial Frameworks (INFFs) are comprehensive long term financing strategies, developed to support the implementation of the national development plans. The INFF framework, developed by UN DESA is specific for SIDS and it is aimed at leveraging domestic private and public resources as well as international financial resources. An overview of the VNRs has proven that many SIDS have issues with costing, budgeting, or financing their national strategies.

A growing number of countries is monitoring the SDGs on an annual basis and producing national SDG progress reports, involving stakeholders. The timing of the reports could coincide with the budgeting cycle so that both Government and Parliament could use SDG progress data in budget formulation and approval.

3. Mainstreaming the SDGs through stakeholder engagement and establishing institutional coordination mechanisms.

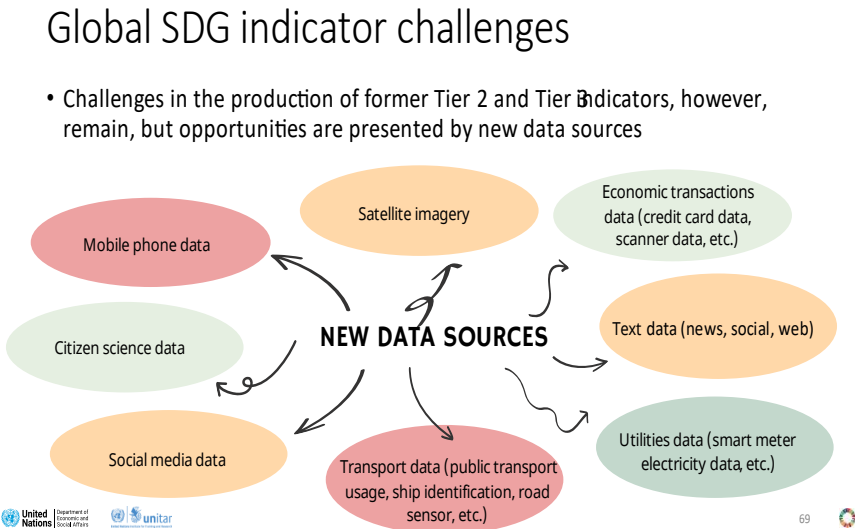
Another way to mainstream the SDGs is through stakeholder engagement and by establishing institutional coordination mechanisms. Sr. Economist at the Resident Coordinator Office (RCO), Sebastien Vauzelle, highlighted that SDGs mainstreaming should not overlap with the national development planning process or is meant to add new budget lines. Rather, SDG mainstreaming can help to make policies more coherent, create fiscal space, leverage national priorities, and facilitate partnerships.

4. Mainstreaming the SDGs through monitoring and evaluation

In line with the key SDG principles of national ownership, multi-stakeholder partnerships, interconnectedness of the SDGs and the need for inclusiveness, targets require adaptation to national realities as not all indicators are universally relevant, and data might not be available. EUROSTAT adapted 100 indicators for Europe. In the Pacific, they also developed proxies that are less ambitious than the global indicators.

SDG ex ante impact assessments and ex post evaluations can help ensure corrections that need to be made. It is important to focus on gaps in indicators that are most relevant for the countries and align standards at global level to compare data. Global metadata (<https://unstats.un.org/sdgs/metadata/>) can help to understand the data and values being presented, include key concepts and definitions, describe how data are collected and calculated and address the limitations of the data. Challenges in the production /collection of data for some indicators are nowadays compensated for by collecting data from new data sources as shown in the figure below.

Figure 3: Global SDG indicator challenges

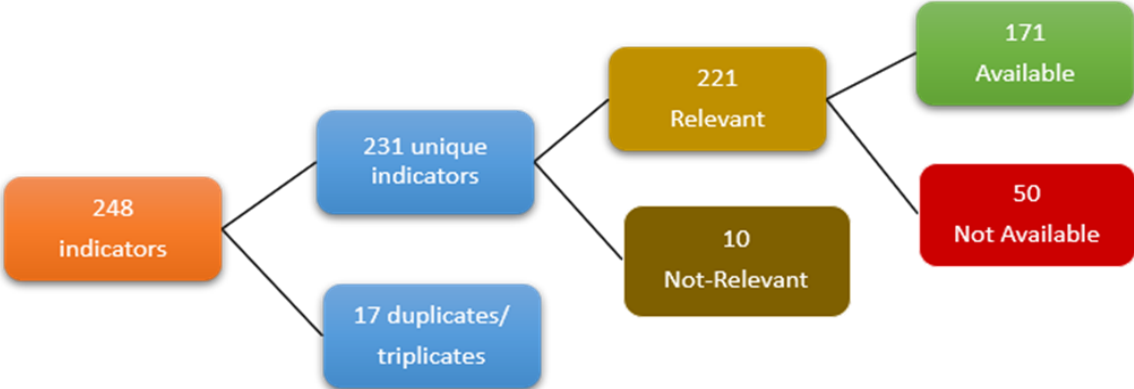


The “Fundamental principles of official statistics” (unstats.un.org) state that a clear separation of responsibilities would need to be maintained between the national statistics offices who coordinate the national statistics systems and produce the data and the policy makers who decide on targets and priority indicators.

Following the presentations, participants discussed in breakout groups the state of play of SDG mainstreaming in planning, budgeting, monitoring and evaluation and in inter-ministerial and stakeholder engagement. The SDG Unit officer at the Ministry of Foreign Affairs and the Statistics official used the discussion to update all participants, among which were also SDG focal points, on the state of play of the SDG mainstreaming process. He explained that as far as the budget goes, there is no budget allocated to a specific SDG, SDG costing or budgeting, but all budget proposals should address the SDGs. A document on the status and progress on data availability (75% data availability) for feeding into the national SDG indicator framework is included in Annex 5.

There is a lead sector ministry for each goal that contributes to monitoring progress on indicators for all SDGs and other line ministries are also asked to contribute to tracking progress on these SDGs. National targets were set for all SDGs and SDGs are central to national policy evaluations. In addition to technical steering committees that deal with monitoring and reporting, an SDG Unit was established under the Ministry of Foreign Affairs, but activities were put on hold due to COVID. This Unit will develop a National SDG Strategy and/or Action plan and establish and implement the formal monitoring framework which will then be presented at the inter-ministerial committee (Cabinet level) that will meet on a quarterly basis and will also address the power sharing mechanisms. Tracking progress on indicators should be complemented with *analysis of policies* to understand which changes would need to be undertaken. Ms. Prateema Kutwoaroo stated that Mauritius is strong on stakeholders’ engagement and its collaboration with the private sector, CSOs and academics, and stressed the point that stakeholders need to be involved in policymaking.

Figure 4: Status on Data availability, Statistics Mauritius



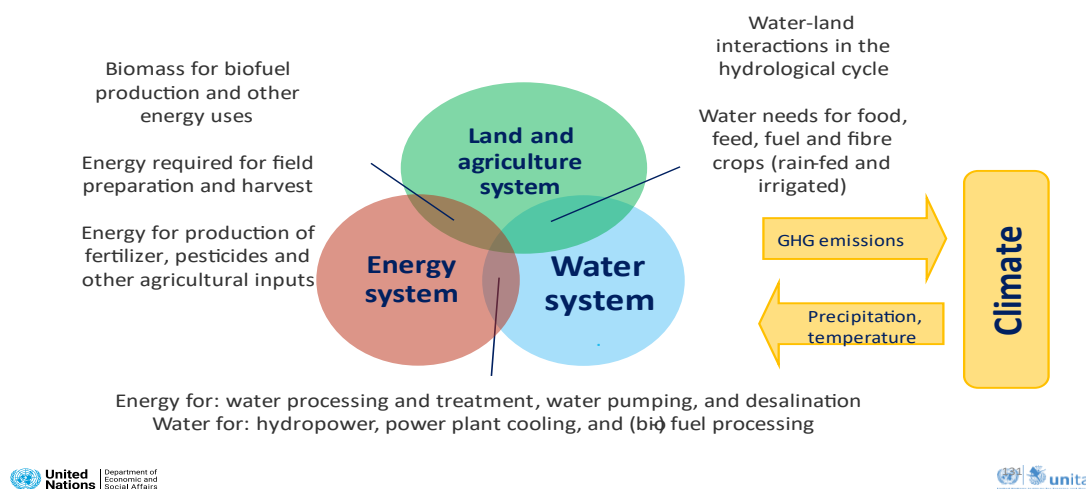
5. Acceleration of the SDGs: high leverage policies based on interactions

The COVID pandemic has interrupted and slowed down the implementation of the SDGs. If we want to accelerate the implementation of the SDGs, it is important to identify **high leverage policies** with highest impact across the SDGs and understand whether these policies are coherent among themselves. Leverage points are policy interventions that can modify the outcome of policies.

A focus on high impact policies is also required in the context of limited resources where policies need to be made more affordable. Policies have often too narrow a focus on economic performance and prosperity without addressing the social, governance or environmental aspects of policies. Sector planning does not address the interconnections between policies or a harmonization between the short and long term.

Systems thinking emphasizes the several interconnected parts of a system, rather than focusing on its individual parts. It helps to identify leverage points or high impact policies across systems, understand the interactions between policies (see figure below) and develop response planning where short-term plans are coherent with long-term development. Acting on leverage points can generate new system dynamics.

Figure 5: Interconnection between land/ agriculture energy and the water system, impacted by or influencing climate change



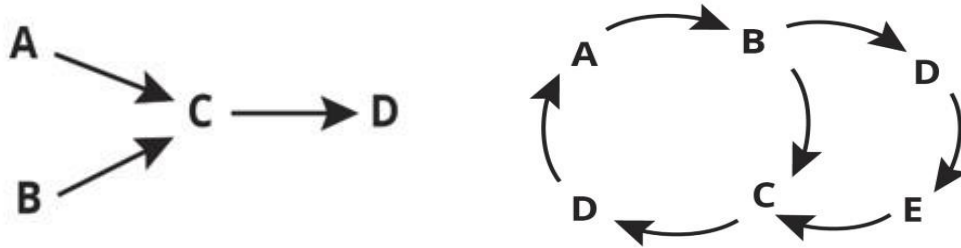
Systems Thinking is extensively used in the policymaking process, primarily to

- identify complex issues and frame the development agenda,
- inform policy formulation and
- carry out policy evaluation

Figure 6: From linear analysis to interconnected analysis in policymaking

From outcomes to policies

- However, linear causal analysis is not sufficient.
- Systems thinking helps overcome these limitations and grasp the complexity of interactions.
- As a result, leverage points in the system can be identified.



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It is therefore not enough to reflect and map SDG indicators in national strategies or programs to monitor **what you want to achieve** (outcome), but also include indicators **that reflect policies that are drivers towards achieving the outcome**. This approach can also help capture the interconnectedness between the SDGs. e.g., monitoring the mortality rate attributed to non-communicable diseases (3.4.1) would require tracking indicators that are measuring progress towards achieving the outcome, but could include indicators that are **drivers** towards achieving 3.4.1., including a healthy diet, physical activity, or coverage of essential health services. By doing so, you can assess whether the drivers reinforce each other (synergies) or have a negative impact on each other (trade-offs).

Following the COVID-19 pandemic there is a realization in Mauritius (and everywhere else) that the country is vulnerable to shocks and there is a need to address challenges like upgrading skills in the public and private sector or the greening of different sectors, among others. This requires departing from the way the country has been operating (“business as usual”) to trigger the required transformation, including moving away from the isolated, fragmented, and independent functioning of public institutions working to relatively narrow mandates towards understanding the effect of interventions that become effective over time.

Systems thinking provides scientific methods to understand the systems stakeholders live in and their purpose as well as their sphere of influence to reinvent the systems and their participants who can help to bring about the required change in reducing fragility, increasing sustainability, resilience and becoming more robust.

The Causal Loop Diagram (CLD) is a qualitative approach in systems thinking that allows to create a **shared** understanding of how the system works, and hence identify effective entry points for public policies (e.g., how to address the institutional void between the fisherman and the fishmonger in Mauritius who can sell fish to consumers for a much higher price). A system is the whole that results from the interaction of actors who come together to serve their purpose.

A system boundary separates the system from its environment. The outcome the actors intend is often the purpose for their participation in the system. The performance of a system (e.g., market, judicial system) depends on how they perform together. When you improve the performance of one part of a system taken separately, you can destroy the system. That is why developing a causal loop diagram or developing policies for that matter requires **a participatory approach**: it helps to bring people together, creates the required building blocks for the co-design of formulating and implementing high impact policies and a shared and effective theory of change or a storyline corresponding to the implementation of policy interventions. Quantifying can help test assumptions and develop scenarios where robust data are available.

Steps that can be taken to promote a systems thinking approach:

1. **Select a theme**: what are the outcomes you are interested in and what are the implications of the choices you make to accomplish them. E.g., many key performance indicators (KPIs) in the Mauritius National Plan 2019-2022. We track the impact of our actions through outcomes.
2. **Set time horizon**: the time needed to accomplish outcomes.
3. **Behavior over time of data**
4. **Set boundary**: what is the purpose for which actors are interacting; who are the interacting actors?
5. **Set level of aggregation**: information required to actors in the time horizon that is set.

Actions are directed to change the state of something and are an attempt to accomplish goals: e.g., land under conservation. Developing a **shared** causal loop diagram is helpful to understand that goals are achieved by many different stakeholders.

Feedback loops are the causal influences among actions and tell you what would happen if the variable were to change. It is a response to the outcome of an action and results in changing the outcome (illustrated through arrows).

An **intended change feedback** is feedback that accomplishes the intended outcome (e.g., schemes to encourage cultivation on abandoned lands increase land under cultivation). **Unintended changes** happen when a reaction to your outcome or action alters the state you intended with your action (e.g., schemes to encourage cultivation on abandoned lands no longer results in land under cultivation because of the impact of reduced biodiversity).

Reinforcing feedback means that more of the action results in more of the outcome which again creates more of the action (illustrated by a + sign against the arrows). **Balancing feedback** is when you have more action resulting in less outcome. (- sign against the arrow). Setting targets creates a balancing feedback loop. Many policies produce counterintuitive outcomes which policymakers need to understand e.g., recessions or pandemics will always reappear periodically because it is a dynamic problem. It also helps understand resistance to change. Sometimes policies are disjointed from the outcomes because different stakeholders intervene in the implementation of the outcome or one policy has negative impact on the policy you intend to implement, hence the need for developing coherent policies.

Figure 7: Intended change feedback

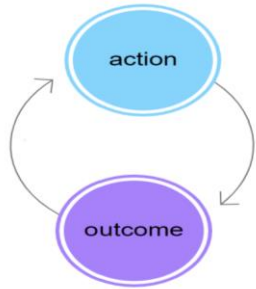


Figure 8: Unintended change feedback

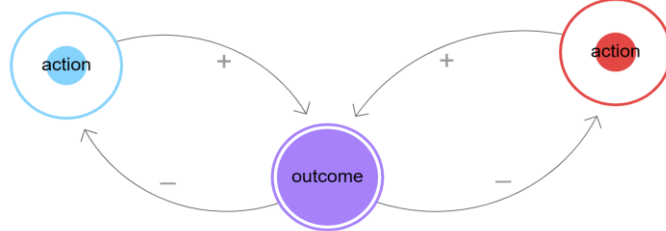


Figure 9: Reinforcing feedback loops

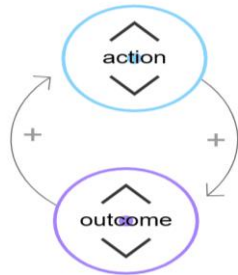


Figure 10: Balancing feedback loops



Participants were asked to test their understanding of the above concepts in breakout groups while identifying intended and unintended outcome feedback and reinforcing or balancing feedback in their own sectors, based on the national development strategy for Mauritius, 2019-2022. These breakout sessions triggered intense discussions among the participants. Outputs of this exercise will also be used to inform the UNSDCF.

In the paper that was produced by UN DESA and UNITAR on “Strategic planning, systems thinking and policy coherence for sustainable development: Mauritius country report” (UN DESA, UNITAR, 2021), the interpretation of the causal loop diagram (CLD) as shown in the figure below, including the leverage policies and sectors, feedback loops as well as the different scenarios for change and institutional reforms required, are summarized in Annex 4 of the report. This CLD was developed and validated through focus groups comprising a small range of stakeholders from different professional groups in Mauritius. The red variables represent external influences, orange variables represent policy interventions, black variables represent key performance indicators for development in Mauritius.

Figure 11: Causal loop diagram for Mauritius

Use of systems thinking to identify high leverage policies

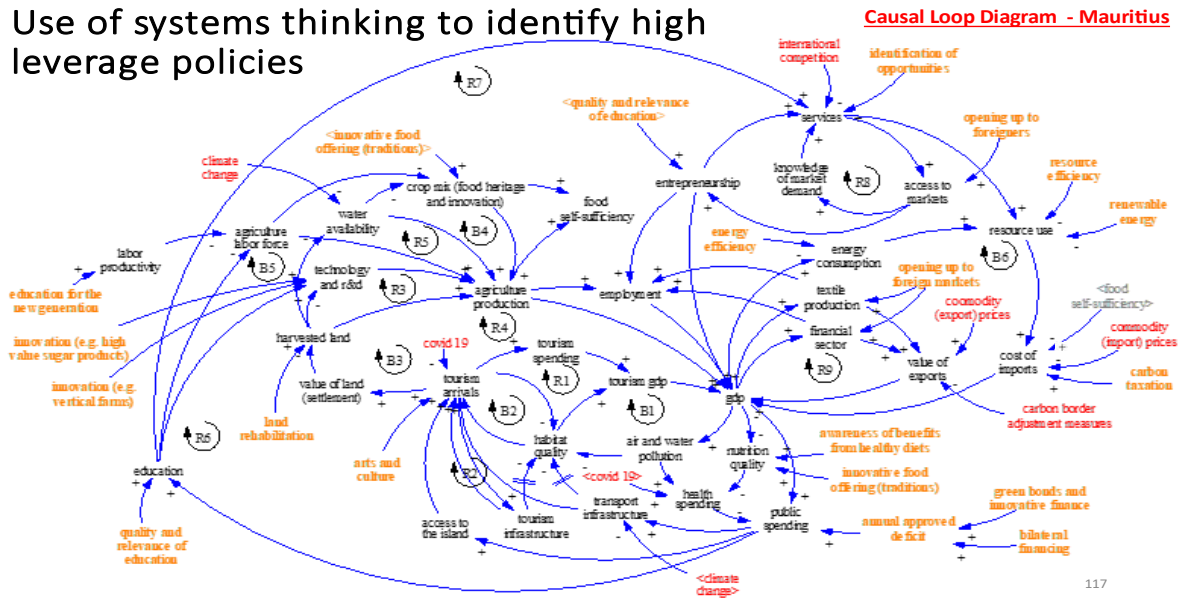
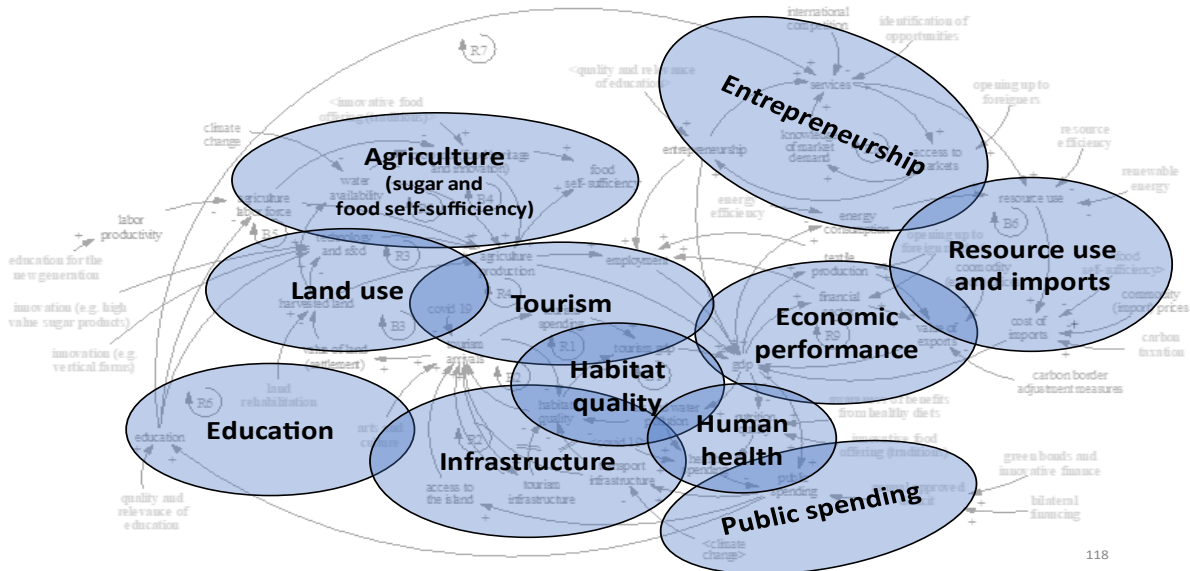


Figure 12: Graphical representation of the key sectors underlying the main drivers of change and their interactions of Mauritius

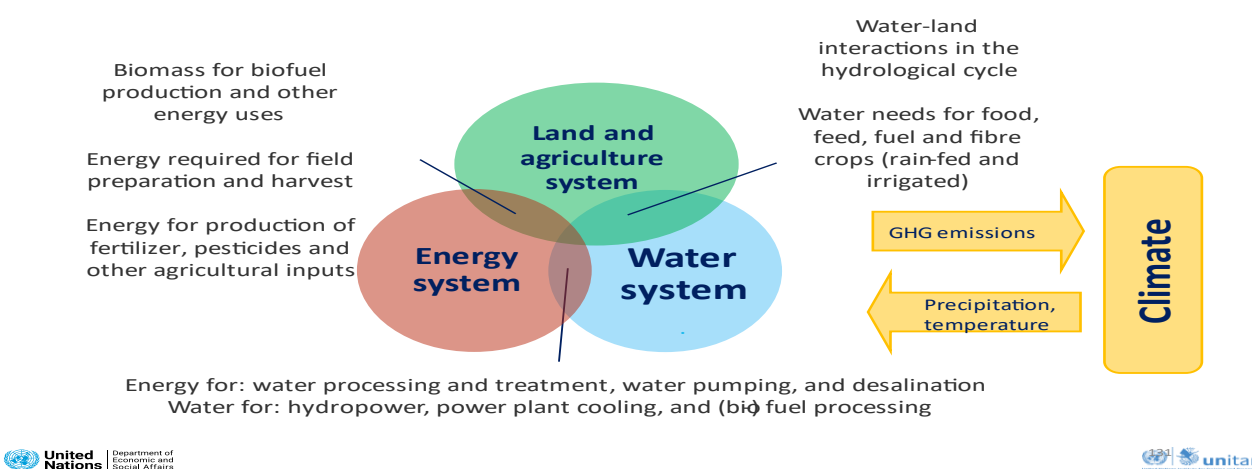
Mauritius



6. Systems thinking and policy coherence

SDG 17.14 touches upon policy coherence for sustainable development which can be defined as “systematically reducing conflicts and promoting synergies between and within different policy areas to achieve the outcomes associated with jointly agreed policy objectives” (Nilsson et al., 2012, p. 396). The aim is to identify trade-offs between policies and foster synergies. A trade-off is when an action enhances one system while negatively impacting another one and a synergy is when policies simultaneously reinforce each other.

Figure 13: Land and agriculture system vs. Energy system vs. Water system

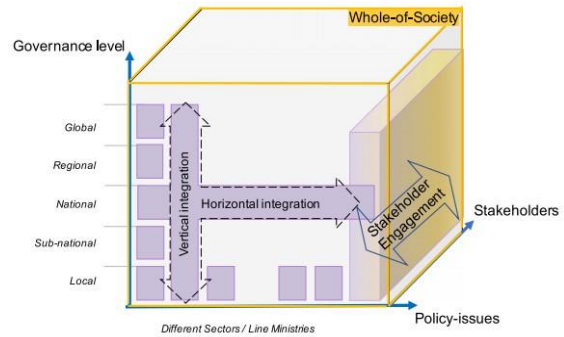


Institutional arrangements are a precondition to enhance coherent policymaking. Identifying causes of outcomes under a Ministry’s responsibility shows the need for collaboration and identifies responsibilities, while identifying consequences of a Ministry’s outcomes can help identify advantages of policies, bring on board additional stakeholders and make the case for joint or shared budgets (e.g. % of youth in non-education, employment and training opportunities (NEET) is an indicator tracked by the Ministry of Economy; mismatch between education and employment as one of the causes of youth in NEET could be tracked as an indicator by the Ministry of Education and consequences of youth in NEET such as increased number of road accidents or use of narcotics could be measured by the Ministry of Health, Justice, Transport). This is also a reason for ensuring collaboration between ministries beyond technical working groups.

Figure 14: Institutional coherence as a precondition for policy coherence

Institutional coherence as a precondition for policy coherence

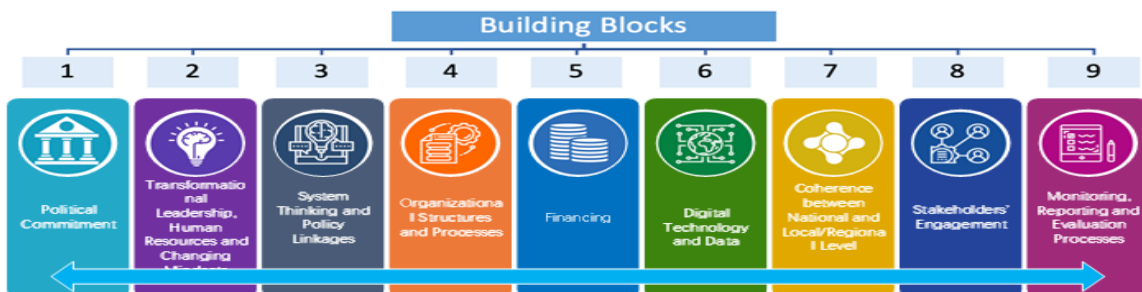
- System thinking provides a basis for developing more coherent policies vertically and horizontally.
- Systematically identify relevant linkages across the sectors and domains and consider those linkages in design of policies;
- Policies need to be consistent across sectors and scales (from local to global);
- Engagement of relevant stakeholders in design, implementation, monitoring and evaluation;
- Adequate resources are provided for implementation at all levels and at all scales



UNEP is the custodian for the indicators of policy coherence that are organized under eight building blocks. UN DESA/ DPIDG developed a **readiness assessment on institutional arrangements for policy coherence to implement the SDGs** which allows to identify the state of play in organizations in a participatory manner on the issue and helps to identify the needs and capacity gaps.

UN DESA added one additional building block that touches upon transformational leadership and changing mindsets, based on research on public sector reform that indicates the importance of the latter. As a matter of illustration, the building block 3 on systems thinking and policy linkages asks questions about whether the country has mechanisms in place that allow relevant public institutions to integrate the three dimensions of sustainable development and systematically assess the policy effects and cross-sectoral linkages throughout the policy and planning process. Building block 4 on organizations, structures and processes assesses whether the country has an institutional mechanism in place that periodically brings together relevant ministries and government entities to enhance coherence across sustainable development related policies including sectoral policies. The participants all received the Readiness Assessment but due to a lack of time during the workshop they were asked to fill it out with their colleagues after the training. The Readiness assessment can be downloaded via [United Nations Public Administration Network](#).

Figure 15: Building blocks for policy coherence



7. Key messages and outcomes of the workshop

The feedback questionnaires and reactions from participants throughout the workshop illustrated that the major outcome of the workshop with government officials was a raised awareness of the importance of the SDGs to bring about sustainable economic growth, rather than only economic growth while disregarding the possible impact of environmental challenges and structural issues like inequality and lacking education opportunities for the local population in a vulnerable environment like a SIDS, despite being an upper middle- income state/ SIDS.

The participants that represented the government very much welcomed the discussions on the need for institutional transformation and systems thinking to bring about the desired change. They most appreciated the exercises that were offered to let them practice the approach of systems thinking while applying it to their medium- term national development strategy. The qualitative approach of systems thinking that was illustrated in the paper that DPIDG and UNITAR had produced in 2022 on “Strategic planning, policy coherence and systems thinking for sustainable development” was very well received and proven to be useful and necessary for the officials’ work. The workshop participants also welcomed different ways of working that would improve inter-ministerial collaboration and communication.

The participants of the workshop that was organized for University lecturers and professors also welcomed the approach that was presented and confirmed that they would be interested to expand their knowledge of integrated planning based on systems thinking to improve the evidence that is required for issue-based policy planning and implementation for the implementation of the SDGs.

The DPIDG Advisor and UNITAR provided the opportunity for exchanges among participants from different universities and disciplines and for testing their understanding of the approach by introducing several exercises. The participants showed a great interest in preparing the ground for supporting the government with evidence-based policymaking.

The introduction of the 11 principles of effective governance for sustainable development elaborated by the United Nations Committee of Experts on Public Administration (CEPA) and its related strategy guidance notes, including on policy coherence and on science-policy interface, were very much welcomed and triggered an interesting discussion on how the University could play a role in implementing the approaches as suggested in the strategy guidance notes. The participants also expressed a great interest in the Climate, Land use, Energy and Water Systems (CLEWs) methodology that was presented by UN DESA/EAPD given the major challenges Mauritius is facing with water, land use and energy related issues (water shortages, reducing food import and securing food and reducing energy dependency).

Based on the feedback survey, the following results were achieved:

- At least 60% of the senior leadership in the Ministry of Finance, Planning Department in Mauritius is committed to promoting system thinking in coherent long-term planning.
- At least 60% of training participants have enhanced their knowledge to apply system thinking approaches to develop integrated policies for the implementation of the SDGs.

- At least 60% of participants have increased the university experts' understanding of the relevance of long term and integrated planning leveraged by using system thinking approaches to support the government officials over time in system thinking-based methodologies to inform long term development plans.

Following a presentation from Mauritius Statistics on the state of play of data collection and the challenges with it, the workshop has also brought to the surface the need for more and better data to deliver annual progress reviews on the implementation of the SDGs through an SDG Dashboard. The SDG Coordinator and the representative of Statistics Mauritius invited SDG Focal points to contribute to sharing administrative data to ensure that the current data gaps could be reduced and evidence on the state of play of SDG implementation could be improved. Participants welcomed the opportunity to receive some updates on the monitoring and evaluation process of the SDGs.

Similar observations were made by the university participants who expressed their eagerness to support the government with analysis and policy recommendations to strengthen coherent long term national development planning strategies.

Almost all participants responded that they were very satisfied to satisfied in terms of leveraging systems thinking in support of coherent planning and understanding the changes that systems thinking implies for policymaking and effective governance in the implementation of the SDGs, including in collaboration with other government officials and external stakeholders. Also, almost all respondents among government officials thought the content was relevant for their job, that they will use the information acquired, increased knowledge and skills for coherent and integrated policy design and their awareness was raised in terms of the importance of systems thinking for long term planning, and that the workshop was useful, and they would recommend it to their colleagues. They also agreed that the skills acquired were very important for their job success.

Overall, there was a request for more training, more in-depth and practical training, more direct engagement between government officials and academia, and more exercises based on policy priorities which would involve discussions.

Recommendations for improving the workshop in future trainings included the need to have tools on how to better mainstream and accelerate the SDGs in the implementation of the national development plans; more focused system thinking methods followed with more complicated exercises and additional help to the participants so that they understand better the methodology.

Quotations by participants

Some quotes from the participants include the following:

"Regular training on the SDGs is important because staff keep on changing."

"Veronica and Elena were very professional and helpful."

"More case studies illustrating causal loops with relevant examples from Mauritius."

"The participatory approach in the different exercises was useful."

"I will identify the SDG Focal point in my Ministry and will request him/ her to help fill out the readiness assessment on institutional arrangements for policy coherence."

"Would like to receive more information on SDG implementation in other countries."

"In terms of follow up actions, I will try to brief colleagues on lessons learned, make additional searches on the knowledge gained, seek best practices and applications in the local context."

"A one week training program may prove to be more beneficial."

"I liked very much the presentations and approaches on systems thinking, but the workshop should be held for at least 3 days".

"I liked the interactions with the presenters/ resource persons during the exercises."

"I will use the systems thinking approaches, the SDG Fitness Test and the policy coherence building blocks."

"Maybe some more hands-on exercises and practice could help to crystalize the knowledge gained."

"I will share the knowledge gained with policy makers and top management and would like to see and understand more concrete examples based on the country's priorities."

"The resource persons were very committed and encouraged interactions between participants. (University participant)."

*"I will apply the knowledge gained to undergraduate and post graduate students."
(University)*

"I would like to see a platform created for discussion between the university and the government. (University)."

"It would have been helpful to have amongst the participants SDG focal points at the ministries to allow for constructive discussions and potential projects. (University)."

"The interactive nature of the workshop was most appreciated. More such trainings with more in depth information is most welcome."

"If such workshops included both government officials and academia, that would have been most useful."

8. Annexes

Annex 1: List of participants

Name	Designation	Institution
Mrs Hémila RAMNATH	Deputy Permanent Secretary	Ministry of Public Service, Administrative and Institutional Reforms
Miss. KHODABUX Beebee Nabiihah	Research Assistant	Mauritius Research and Innovation Council
Dr MADHOU Madhvee	Research Coordinator	Mauritius Research and Innovation Council
Miss. BADALOO Rushaa Banu	Analyst	The Mauritius Chamber of Commerce and Industry (MCCI)
Miss. Reecha Devi KISHNAH	Industrial Analyst	Ministry of Industrial Development, SMEs and Cooperatives (Industrial Development Division)
Varuna DREEMPAUL-DABEE	Agricultural Policy and Programme Development Officer	Ministry of Agro Industry and Food Security
Thaneshwaree RAMNARAIN	Business and Enterprise Analyst	Ministry of Industrial Development, SMEs and Cooperatives
Leeswaree PERSAND NIRSIMLOO	Heritage Technical Officer	National Heritage Fund
Mohammad Khalil ELAHEE	Professor	University of Mauritius
Mamode Assad JOOMUN	DPS	Ministry of Land Transport and Light Rail
Dr Vedendranand Sharma CHUMMUN	Scientific Officer	Ministry of Foreign Affairs, Regional Integration and International Trade
Ramakrishna APPADOC	Head, Technical Unit	Ministry of Foreign Affairs, Regional Integration and International Trade
Nitin Chiranjeev RAMSAHYE	Senior Town and Country Planning Officer	Ministry of Housing and Land use Planning
Sumedha RAMPROSAND	Analyst/Senior Analyst	Ministry of Finance, Economic Planning and Development
Deepa RAM-BEEJADHUR	Cooperative Development Officer	Ministry of Industrial Development, SMEs and Cooperatives (Cooperatives Division)

Vinay BOOJHAWON	Principal Labour and Industrial Relations officer	Ministry of Labour, Human Resource Development and Training
Nira AUMEER	Chief Employment Coordinator	Ministry of Labour, Human Resource Development and Training
Jaya BISSESSUR	Cooperation Analyst	Ministry of Foreign Affairs, Regional Integration & International Trade (Regional Integration Division)
C. POHUNNAH-AUBEELUCK	TOURISM PLANNING EXECUTIVE	MINISTRY OF TOURISM
Noorinah HINGAH-SUHOOTOORAH	ANALYST/SENIOR ANALYST	MINISTRY OF FINANCE
Preetvy SOBRUN	ANALYST/SENIOR ANALYST	MINISTRY OF FINANCE
Vimi DOOKHUN	SENIOR LECTURER	UNIVERSITY OF MAURITIUS
Jenita BHOWROW	ANALYST/SENIOR ANALYST	MINISTRY OF FINANCIAL SERVICES AND GOOD GOVERNANCE
Rajshree MOKOOL	Environment Officer	Ministry of Environment, Solid Waste Management and Climate Change
Rakesh SEERKISSOON	Culture Officer	Ministry of Arts and Cultural Heritage
Shalini MAHADOWA-REECHAYE	Administrator	Ministry of Education, Tertiary Education, Science and Technology
Deepti DABEE	Assistant Permanent Secretary	Ministry of Social Integration, Social Security and National Solidarity (Social Integration Division)
Chandranee RUGHOOBUR	Statistician	Statistics Mauritius
Vinay NARRAINEN	Principal Youth Officer	Ministry of Youth Empowerment, Recreation and Sport
Harrydass NAWOOR	Migration Analyst	Prime Minister's Office, Defence and Home Affairs
Vedvyass Doobay MUDHOO	Scientific Officer	National Plant Varieties & Seeds Office, min. of Agro-Industry
Ramsing GHOOPEE	Assistant Permanent Secretary	Ministry of Local Government and Disaster Risk Management
Tapessur PURRUNSSING	Deputy Chairman	MACOSS
Prateema KUTWOAROO	Senior Analyst	Ministry of Foreign Affairs, Regional Integration & International Trade

Nisha SEEREEKISSOO	Coordinator	Ministry of Gender Equality and Family Welfare
Prakash Ramparsad	Senior Statistics Officer	Ministry of Energy & Public Utilities
Mitheela Rucktooa	Analyst	Ministry of Foreign Affairs
Shazia Kurmoo	Trade Policy Analyst,	MOFARIIT

List of Participants from Academia

Name	Organization
Mr Shane Hardowar	UOM
Dr Roshini Brizmohun-Gopaul	UOM
Dr Sheik Mohammad Roushdatt Elaheebocus	UOM
Assoc Prof (Dr) Sheereen Banon Fauzel	UOM
Dr Viraiyan Teeroovengadum	UOM
Dr Ambareen Beebeejaun	UOM
Miss Krishnee Adnarain Appadoo	UOM
Dr Minakshi Oaris	UOM
Assoc Prof (Dr) Vidushi Shradha Neergheen	UOM
Assoc Prof (Dr) Kishore Boodhoo	UOM
Assoc Prof (Dr) Girish Kumar Beeharry	UOM
Dr Nitin Rughoonath	UOM
Dr Dorothy Cooshna Naik	UOM
Mrs Sandhya Gunness	UOM
Aleesha Boolaky	UTM
Dr. Coolen, Vijaya Ramasamy	UTM
Dr Saib Aslam	UTM
Riad Sultan	UOM
Prof Taruna Ramessur	UOM
Dr Raviduth Ramful	UOM
Dr Vimi Dookhun	UOM
Vara P. Mootocurpen	UNRCO
Elena Proden	UNITAR
Sebastien Vauzelle	UNRCO
Pallavi Rengasamy	UNRCO, Intern

Annex 2: Agenda for the Training of Government officials



T23-24 February 2023 (university experts/ lecturers)

Target group: Lecturers and/or researchers/ experts of different University departments.

Agenda

TIME	ACTIVITY
Day 1	
	Opening and Welcome by the University
9 :00 – 9 :15	Introduction of trainers from UN Department of Economic and Social Affairs (UN DESA), United Nations Institute for Training and Research (UNITAR), UN Resident Coordinator Organization (UN RCO) Mauritius and participants
9:15 – 9:25	Overview of the workshop objectives Icebreaker on the value of SDGs for participants
9:25 –10:10	SDGs and national development planning The Sustainable Development Goals as a paradigm shift: their development (from MDGs to SDGs), principles and purpose: quiz, presentation, and discussion Mainstreaming of the SDGs and national development planning: common approaches, examples, and discussion (national development planning, budgeting, INFF, M&E, the development of a national indicator set) Specific challenges regarding the implementation of the SDGs in SIDS
10:10– 10:45	SDG Fitness Test and debrief
10:45 – 11:00	Break
11:00 – 12:30	SDGs, data and evidence Governance challenges associated with the implementation of the SDGs: how to improve the effectiveness and legitimacy of policy decisions 11 Principles of Effective Governance with an emphasis on sound policymaking and the science-policy interface in practice

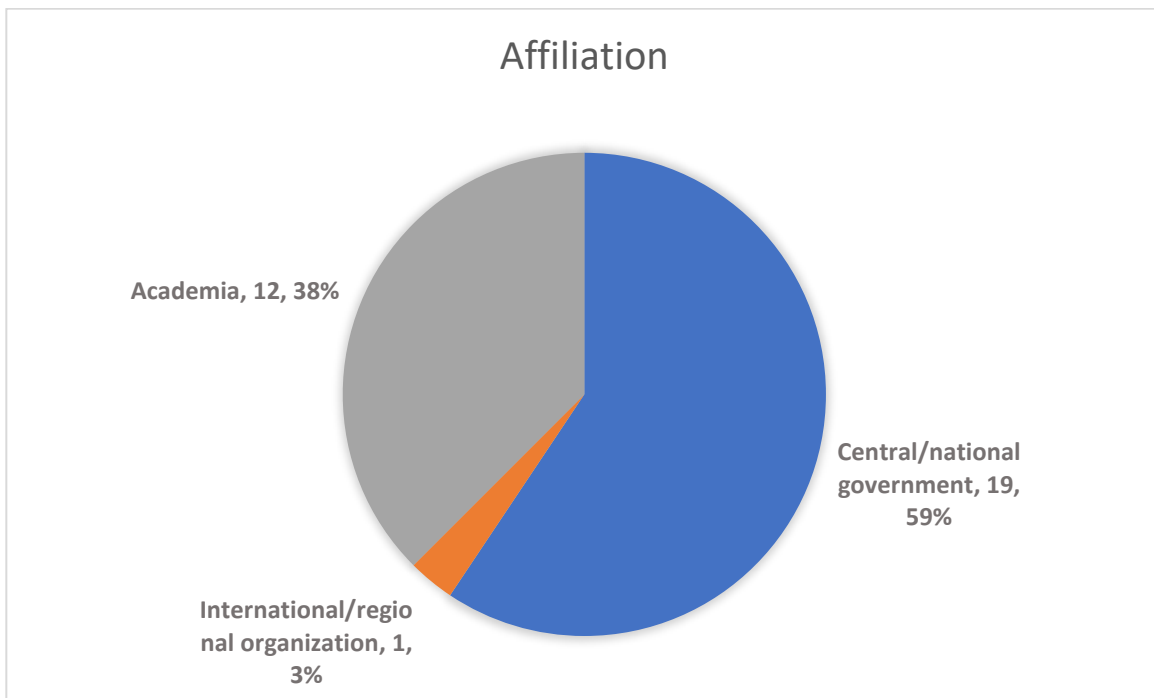
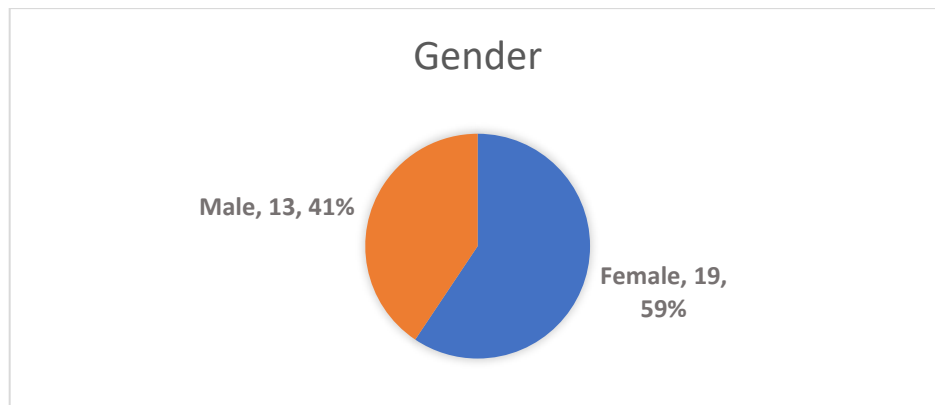
	<p>SDGs and the importance of evidence: relation between university/academic world and the government</p> <p>The importance of data: data disaggregation, global SDG indicators and national SDG indicator frameworks to reflect national priorities</p> <p>Evaluative evidence: quantitative (econometric) and qualitative approaches</p>
12:30 – 14:00	Lunch break
14:00- 15:30	<p>SDGs and Systems Thinking I</p> <p>Qualitative approach based on Systems Thinking: causal loop diagrams applied for Mauritius – presentation of the paper on “Strategic planning, Systems Thinking and Policy Coherence for Sustainable Development: Mauritius country report” (2022): context and methodology</p> <p>Discussion and Q&A</p>
15:30 – 15:45	Break
15:45- 17:00	<p>Understanding Modelling Tools for Sustainable Development and the relation with national development planning</p> <p>Macro-economic modelling and Assessing Climate, Water, Land and Energy Strategies and Systems (CLEWS) by UN DESA/ Economic Analysis and Policy Division) (referring to past experience, mainly in the area of Energy and possible broader application of CLEWS for simultaneous consideration of food, water and energy security)</p> <p>Discussion on CLEWS and its application to date in different countries/regions and its potential in terms of supporting the national development planning process in SIDS.</p>

TIME	ACTIVITY
Day 2	

09:00 – 09:15	Debriefing on Day 1
09:15 – 10:15	<p>SDGs and Systems Thinking II</p> <p>Principles of Systems as a Theory of Change</p> <p>Breakout session – ST-1</p> <p>Feedback in Plenary and discussion/ Debrief/ Q&A</p>
10:15– 10:45	<p>Presentation on System Dynamics and quantitative modelling with some illustrations</p> <p>Reflection</p>
10:45 – 11 :00	Break
11:00 – 12:30	<p>SDGs and governance</p> <p>Voluntary National Reviews and the High- Level Political Forum on Sustainable Development: state of play and challenges ahead</p> <p>Institutional coherence as a precondition for Policy coherence</p> <p>Stakeholders’ engagement: the role of stakeholders, identification, analysis, and mapping of stakeholders</p> <p>Institutional readiness for policy coherence: the state of play at the University</p> <p>Breakout session on institutional arrangements</p> <p>Plenary feedback and Q&A</p>
12:30 – 14:00	Lunch break
14:00- 15:30	Discussion on 3-year cooperation between University, UNDESA, UNITAR in close collaboration with UN RC Mauritius.
15:30-16:00	Wrap up and evaluation questionnaire

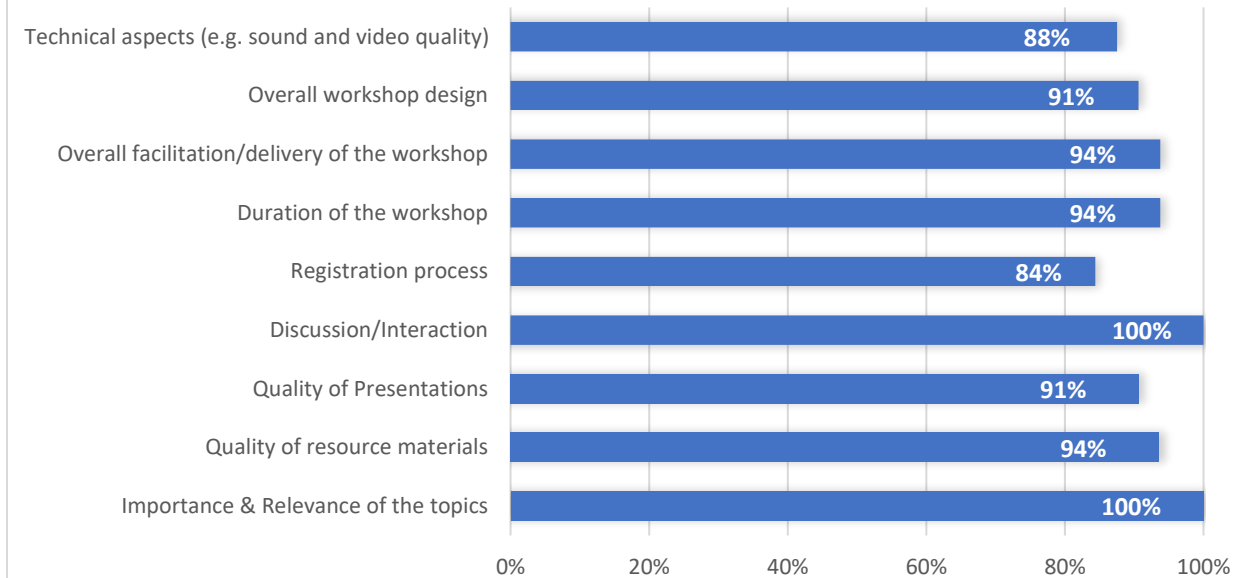
Annex 3: Post-programme evaluation questionnaire results from workshops for Government officials and Universities

In total 32 participants from 2 workshops responded to the post-programme evaluation with more than half of the participants being female. In terms of affiliation, most of the respondents come from the first workshop for government officials.



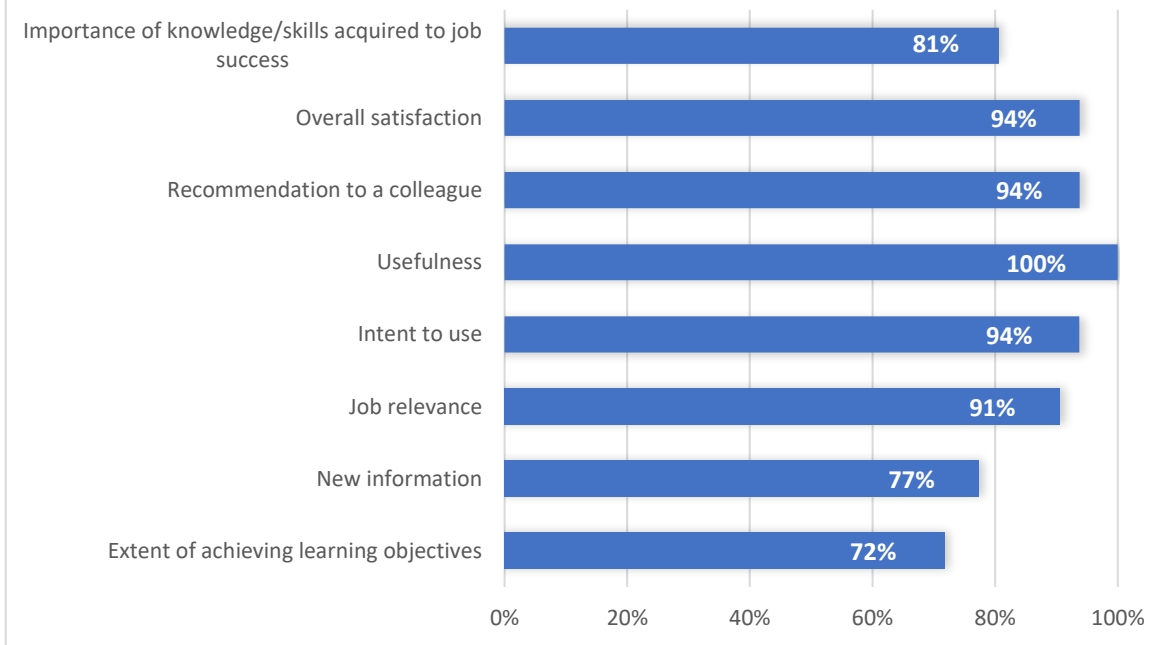
Overall participants were satisfied with the organization of the workshops, and they highly estimated the workshop design, facilitation, quality of resource materials and overall logistics. The topic of the workshops was most relevant and of high importance for the participants.

Level of satisfaction - organization of workshops

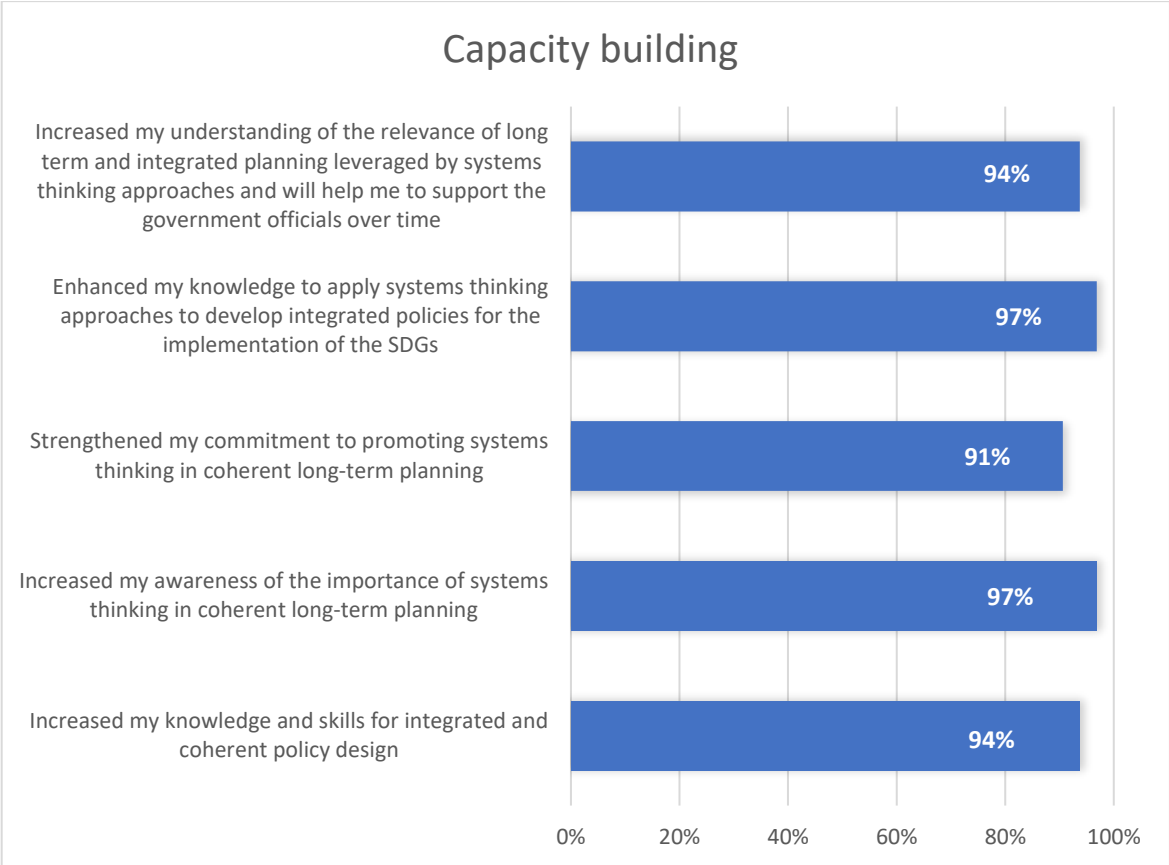


In terms of presented information, 77% of the respondents reported that it was new to them, and 91% of them found the presented information relevant to their job. 94% of the respondents intend to apply the acquired knowledge and skills. Overall, participants were very satisfied with the workshop and found it extremely useful.

Overall feedback



Most of the participants felt that the workshops helped them increase their understanding of the relevance of long-term and integrated planning leveraged by the systems thinking approaches that will help them support the government officials over time, as well as helped them enhance their knowledge and skills on using systems thinking for the integrate planning. 91% of the respondents reported that the workshops strengthened their commitment to promoting the systems thinking in coherent long-term planning.



Qualitative feedback from the participants from the workshop for the Government:

What did you like most and least about the workshop, and how can it be improved?

- More hand-on practical/ discussion
- I learned about SDG mainstreaming in national development plan; however tools need to be provided on how to do it.
- The system thinking exercise.
- Interaction with the presenters
- Most: Informal approach of the online resource penal and the new knowledge shared including lessons learnt
- participatory approach in exercises
- Least: a lot of the knowledge is not applicable to local context
- I learned about SDG mainstreaming in national plans, but tools on how to do it need to be

provided. The systems thinking exercise was only touching on the subject & may not have been fully grasped by the participants, specifically regarding the interlinkages between the policies and feedback loops. Exercises diverted due to discussions & may not have achieved the required outcome.

Comments/ suggestions on improving the workshop for future trainings:

- Focuses systems thinking methods with simple to more complicated exercises to help participants think differently and understand the methodology of the approaches rather than discuss ideas.
- More case studies on causal loops with relevant examples
- The use of more PowerPoint presentations and adopt more participatory approaches to better comprehend.
- More hand on materials and clearer examples of best practices
- More time for training
- A variety of presenters
- Training more staff to enhance their knowledge on SDGs.
- More case studies on the topics of discussion
- Try to use examples from SIDS or success stories from contexts which are applicable to Mauritius.
- A dedicated team to work directly with ministries.

What follow-up actions will you take to implement the knowledge gained?

- Make additional searches on the knowledge gained.
- Seek best practices and its application in local context.
- To ensure that ministries/ organizations are pursuing their actions as per the guidelines set & framework set.
- Sharing the knowledge at my place with colleagues and head of units
- System thinking
- To know more on how my job can help in achievement of SDGs.
- I will identify the SDG focal point in my ministry and request to fill out.
- I will integrate SDGs while discussing policies and mention the impact and evaluation of progress in reporting.
- SDG fitness test
- Using the building blocks developed by UNEP.

What type of capacity building activities would you like to see more of from the organizers in the future?

- Greenhouse gas emission
- The principles/ approaches need clearer and more explanation.
- A proper training program with at least a week may prove more beneficial
- Training/ seminars/ workshops
- Capacity building
- More participatory approach and interactive sessions on the implementation of projects in line SDGs

- Maybe some hands-on physical exercises
- workshop dedicated to SDGs with all relevant stakeholders to achieve SDG goals.
- As SDGs are dynamic & evolving, regular workshops/ capacity building is required. People working on SDGs in ministries keep changing.

I would like to receive more information on the following:

- Implementation/ mainstreaming of SDG 11 in national planning instruments
- Training programs for town planners by UN agencies
- Policies to be implemented to address the 17 SDGs.
- Linking STI policies (science, technology, innovation) to SDGs
- Application systems thinking related to agriculture in other countries.

Qualitative feedback from the participants from the workshop for the Universities:

What did you like most and least about the workshop, and how can it be improved?

- “CLEWS”, “System thinking”, “SDGs relation to each other”
- Presentation of the causal loop diagram
- The interactive nature of the workshop was most appreciated.
- The concise aspect of the workshop
- Allowed for interaction between colleagues.
- Least like: too theoretical
- The resource persons were very committed and encouraged interaction between participants.

Comments/ suggestions on improving the workshop for future trainings:

- Engagement in policymaking
- More hand on/ group discussions
- Better setting to facilitate group discussion.
- Use of simple models which leads to casual loop diagram would be very interesting.
- Further examples already implemented in other countries.
- More than 2 days
- Further training on system dynamic model
- More examples regarding the application of various techniques such as the causal loop diagram. Explanation should be based on an example to facilitate understanding.

What follow-up actions will you take to implement the knowledge gained?

- Self-exploration of system thinking and system modeling
- Try to specifically identify SDGs that could be impacted by my research outcome.
- More engagement with policy worker
- Capacity building on SDG system thinking tools and software.
- Follow-up workshops with practical training
- Foster discussion in the working groups.

What type of capacity building activities would you like to see more of from the organizers in the future?

- Use of more advanced technique to implement system training.
- Platform of discussion between academia and government
- More training on the process of system modeling software
- More such training with future depth
- How to foster closer interactions between policy makers of academia to address SDG more efficiently.
- Similar workshop with longer time
- Lab-based data analysis
- Use more advanced techniques to implement systems thinking.

I would like to receive more information on the following:

- system modeling online course which students could follow, which could at the same time be included in research module and other module
- training/ webinars by email sent.
- SDG implementation
- SDG 7
- Ethics & system thinking
- Funding opportunities for research project
- Software that can be used to facilitate the implementation of systems thinking.

Annex 4: Causal Loop Diagram for Mauritius, extract from the paper on “Strategic planning, systems thinking and policy coherence for the SDG implementation, Mauritius country report, UN DESA/UNITAR, 2021.

Identifying leverage points for systems change

3.1. A systems approach to decision making

The Causal Loop Diagram (CLD) presented in Figure 1 shows the main drivers of change that shaped historic development in Mauritius and may determine its future.

The following drivers of growth emerge from the CLD, represented as reinforcing loops (R):

- The historical growth of GDP has been supported by the ever-increasing contribution of the tourism sector (R1). Tourism arrivals result in spending (e.g., hotels, restaurants, activities), contributing to GDP growth and government revenues. Higher revenues translate in increased public budgets and investment infrastructure that further supports tourism (e.g., transport, air and road based).
- The growth of tourism arrivals also supports private investment, with the creation of more tourism infrastructure (R2), further stimulating GDP and making investments in the sector more and more attractive due to improved infrastructure.
- Public spending is allocated to various types of infrastructure and public services, including to education. Improving education results in various outcomes.
 - o First, it supports the adoption of technology and leads to faster R&D progress, contributing to the improvement of agriculture production (R3), such as in the case of sugar.
 - o Second, investment in education creates knowledge and skills for the secondary and tertiary sectors (manufacturing and services) (R7). When access to markets is guaranteed, this leads to more entrepreneurship, also thanks to improved knowledge of market demand (R8), and hence to higher GDP and more funding available for investment in education.
 - o Third, the development of new sectors has supported economic growth over time, such as in the case of the financial sector (R9), in addition to the consolidation of conventional sectors (e.g., textile).
- Additional growth is generated by the constraints faced by Mauritius, especially in the context of the limited natural resources available. Specifically, the growth of the tourism sector has created competition for land, with a process of loss of arable land to build infrastructure. On the other hand, the scarcity of land, combined with its high productivity, has resulted in the uptake of R&D (R4) and in the use of water efficient infrastructure (R5). This is an indication that Mauritius has emerged from hardship in the agriculture sector to find balance through R&D and efficient use of resources.

While the country has performed very well economically over the years, being a success story in the African continent and beyond, pressures have emerged over time that require policy action. These constraints to growth are presented in the diagram as balancing loops (B).

- The growth of GDP, and the economic activities that have supported it (including tourism), have caused air and water pollution, and habitat degradation (e.g., death of corals). This may impact negatively on both tourism arrivals (B2) (e.g., those tourists interested in nature, and ecological integrity) as well as in tourism spending (B1). The latter is reflected in the quality of the experience that tourists have in Mauritius, and in high-value tourism being replaced as the dominant force in the sector by high numbers of tourists that generate low value. This has the potential to generate a vicious cycle (R1) reversing one of the drivers of growth experienced in the past.
- The erosion of competitiveness also results from socio-cultural dynamics related to nutrition, with the quality of nutrition seeing a decline as income increases, resulting in higher health costs and public spending that could be allocated more effectively to other areas.
- The competition for land, resulting from land appreciation due to the growth of the tourism sector (and the higher profitability of housing), has led to land conversion, limiting the extent of agricultural land. While this results in higher tourism revenues and GDP, under normal circumstances, it also reduces agriculture GDP (B3). The outcome has been challenged under covid, with limited tourism revenues and, at the same time, growing interest in food self-sufficiency (still challenged by limited land availability).
- The growth of living standards, expectations and aspirations of the population, have led to growing demand for high paying jobs in the manufacturing and services sectors, further limiting labour force in the agriculture sector (B5). As in the case of production, the vulnerability to this dynamic in the agriculture sector becomes more evident during covid restrictions, where diversified crop production would have supported food self-sufficiency.
- The lack of labour force, together with the growing hardship regarding water availability have limited the potential to diversify the crop mix towards improved food security (B4 and B5). This highlights the presence of simultaneous challenges, in this case in relation to climate change (with variability in water supply) and socio-economic development (with the ambition to work in high-paying jobs, unlike agriculture).
- The high reliance on imported energy (with the exception of the use of bagasse and other renewable energy for power generation) and the comparatively high energy intensity, have led to high imports and exposure of external shocks (e.g. fossil fuel price volatility) as presented by the balancing loop B6.

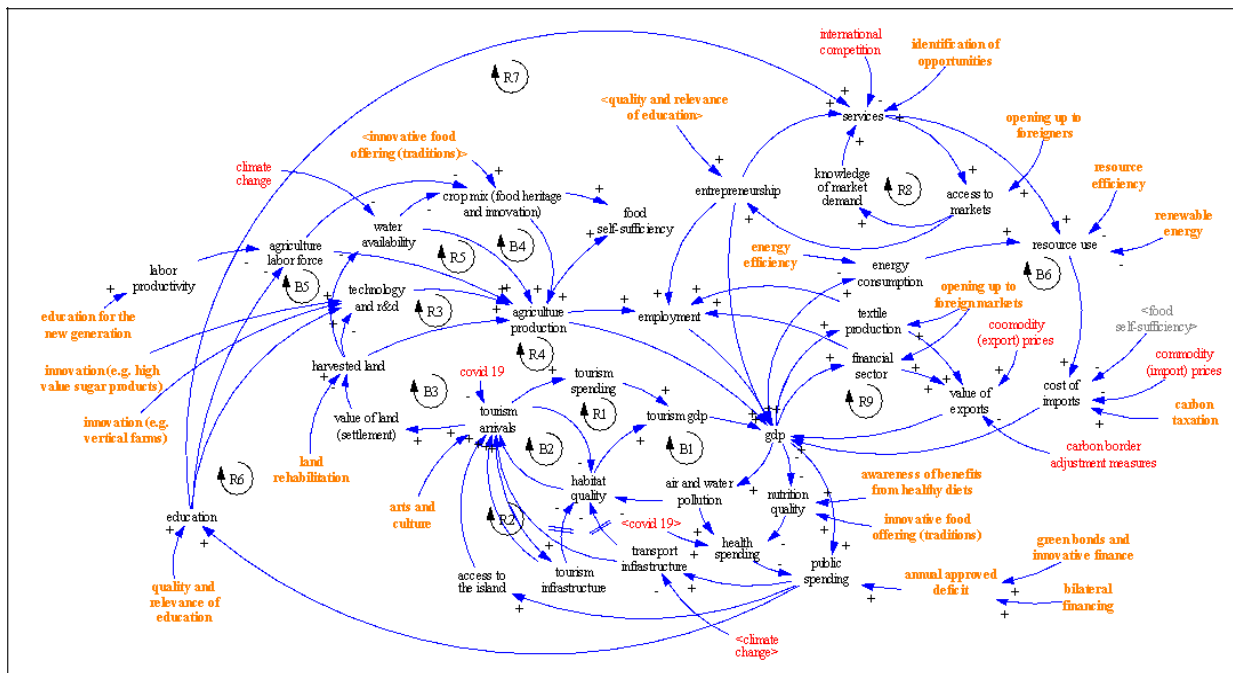
Overall, the CLD shows that several sectors have shaped, and can shape the development of Mauritius (Figure 2). Agriculture and tourism have been central in the past. Being heavily reliant on nature, growth in these sectors has to be carefully managed. The risk is that, under resource scarcity and environmental degradation these sectors transition from being *enablers of* to being

constraints to growth. In fact, both habitat quality and land use have been enablers for growth, but are also impacted by past drivers of growth, especially tourism. Consolidated sectors have to modernize infrastructure, reduce energy use and reliance on imports, with the goal to increasing competitiveness (e.g., textile sector). A new potential area of growth is emerging from the analysis, related to entrepreneurship and access to international markets. This type of economic activity is less resource intensive than traditional sectors but requires support to emerge as a viable option going forward.

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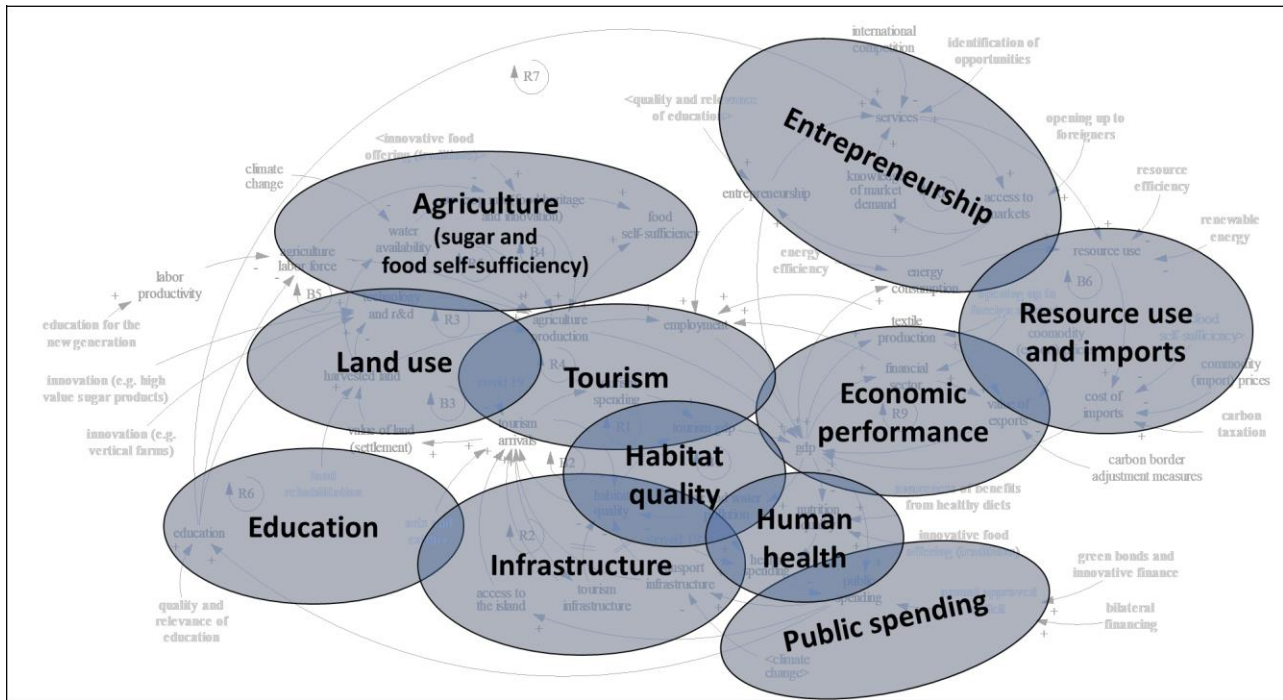
Figure 1: Causal Loop Diagram (CLD) presenting the main drivers of change of Mauritius' society, economy and environment.

Legend: red variables represent external influences, orange variables represent policy interventions, black variables represent key performance indicators for development in Mauritius.



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Figure 2: A graphical representation of the key sectors underlying the main drivers of change of Mauritius' society, economy and environment.



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3.2. Working towards policy coherence

COVID-19, but also planning exercises carried out for the Millennium Development Goals (MDGs) and the SDGs, highlight the need to formulate and implement policies that minimize the risk of side effects, and actually create synergies across sectors and for all local actors. Climate change has made this need even more explicit, by highlighting the importance of time (or urgency of action): we need to act now in a coherent way to avoid the most undesirable climate trends as well as to improve adaptive capacity. Policy coherence is critical if we want actions aimed at mitigating crises to also contribute to medium- and long-term development, that is sustainable and climate resilient.

Systems Thinking and CLDs can be used to create storylines, or scenarios accompanied by narratives to support the creation of policy coherent strategies. Scenarios can be defined in many ways, and different interpretations are used in different fields. In the context of this work, we refer to scenarios as a qualitative elaboration on what the future may hold. These scenarios are created using “what if” assumptions to take into account the outcomes of action and inaction.

For instance, Figure 3, which includes a subset of the variables presented in Figure 1, indicates that the historical approach to development planning (left side), approximating a Business As Usual (BAU) scenario, has resulted in strong economic growth, primarily driven by the tourism

sector and by investments in infrastructure. On the other hand, the use of a similar approach going forward would result in the emergence and strengthening of many side effects, including the degradation of habitat quality, reduced food security and human health, as well as higher resource use. The diagram on the right side offers a different future path, one that is based on investments in innovation and education (as opposed to transport and infrastructure), resulting in economic growth driven by entrepreneurship, offering more diversified opportunities for growth, stronger human health outcomes and reduced reliance on non-renewable natural resources.

As shown by the example above, CLDs help in the elaboration of qualitative scenarios by highlighting the main drivers of change (i.e. feedback loops, as described earlier) that have shaped past trends, and those that may emerge to shape future paths. The extent to which change will emerge in the future depends on what actions will be taken (i.e. those variables presented in orange in the CLD, or education and innovation in the example portrayed in Figure 3, right side). Exploratory storylines can therefore be created, by assuming that certain actions are taken going forward, to move the system towards a given goal (e.g. economic growth, employment creation, emission reduction).

Several intervention options (presented in orange in Figure 1) have been identified over the course of this project that would support maintaining and strengthening the current drivers of growth, as well as triggering new ones. As an example, the quality of education and its relevance for businesses could be improved, allowing to increase the competitiveness of Mauritius in international markets. Innovation could further support the agriculture sector, for instance transitioning to vertical farms and reducing reliance on (limited) land availability. Additional interventions could be envisaged to further protect and improve habitat quality, strengthening the economic contribution and resilience of the tourism sector. Economic diversification is, on the other hand, necessary for economic resilience, as the covid pandemic has shown. Balancing options for economic growth is essential, and an outward looking approach, to

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international markets, can reduce domestic resource intensity and make the economy more sustainable and may trigger investments in local sustainability as well (e.g. via green bonds).

To illustrate the above, and especially to highlight how different intervention options could be implemented in a complementary way to create synergies (i.e. the key goal of using systems thinking for development planning). Three examples are proposed, based on the use of a systemic approach:

Action aimed at improving economic growth. If economic growth is the main goal of development, via the expansion of tourism, manufacturing and finance sectors, employment and income creation are going to be the likely outcomes. On the other hand, the historical improvement of economic performance has come with the progressive worsening of the quality of nutrition and with growing health concerns. If public spending is primarily oriented towards economic growth, short term economic benefits can be expected, but long term social and economic challenges may also arise.

Action aimed at improving education. If the quality and relevance of education is improved, it is expected that there will be a better match between skills demand and offer, supporting income creation and economic growth. On the other hand, if this is not supported by training for entrepreneurship, SME incentives, and infrastructure investments, outreach activities to foreign markets it is likely that expectations will not be met.

The two examples above show that planning for a single goal is likely to generate side effects in other areas of development. On the other hand, when **systems thinking** is used to generate coherent policy packages, synergies emerging from outcome-specific actions can be realized, resulting in broader benefits for all. The example below illustrates this point.

Achieving growth and social development by exploiting synergies between education and economic growth, via low carbon development. If a multi-dimensional set of goals is set for policy making, synergies can be explored to maximize the value of the investment implemented. For instance, investments in economic growth could be targeted to low carbon development (considering both adaptation and mitigation), resulting in increased demand both for new products and services as well as for healthier food. Climate mitigation policies would stimulate the demand for new technologies, services and products that could trigger local entrepreneurship, supported by dedicated academic programs and professional training. Climate adaptation investments that favour local food production would increase the supply of healthy and nutritious food that, coupled with awareness raising could stimulate demand and reduce health costs. This would allow the goal of economic development to be supported both by climate mitigation and adaptation, working in synergy to avoid the emergence of side effects.

These examples highlight that the CLD can be used to identify the likely multidimensional outcomes of action and inaction, as well as to identify synergies among intervention options. Practically, they help to assess if there is policy coherence in existing plans and investments, and if new strategies are formulated in a way that synergies can emerge from the simultaneous implementation of several policies across sectors. Some of the outcomes of policy implementation are intended and desirable, while others may be unintended and undesirable. Having this information allows decision makers to create stronger and more

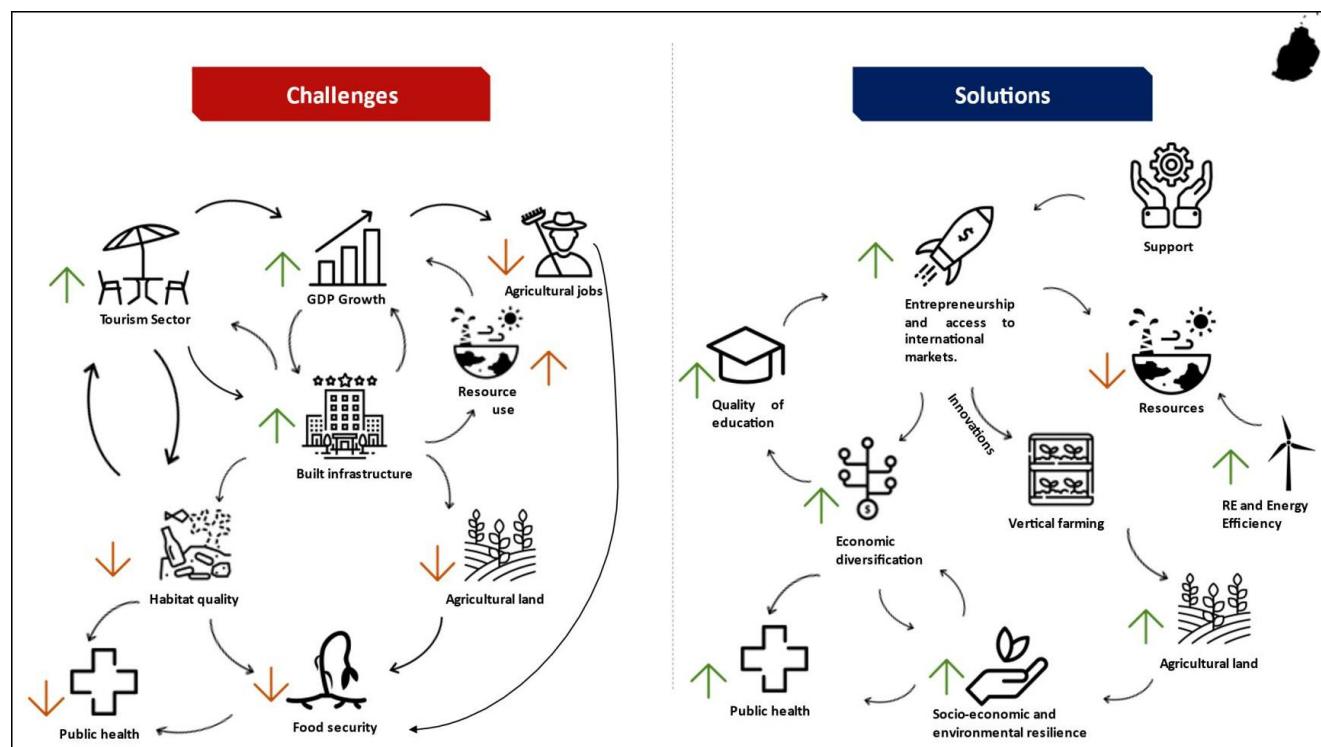
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coherent policy packages² to reach stated development targets more effectively (i.e. by planning both for intended outcomes and for the need to mitigate or avoid any potential side effect of action).

To See recent publications and UN efforts addressing coherence: Lobos Alva, Ivonne, 2021. Policy coherence for COVID-19 response and recovery: What can we learn from sound policy making in Africa? Prepared for UNDESA. Stockholm Environment Institute (SEI). For extra info see <https://unpan.un.org/node/1503>

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Figure 3: possible scenarios emerging from the CLD, depicting past experience (left) and a possible future scenario (right).



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4. Adjusting planning processes to increase policy effectiveness towards sustainable development

The identification of the main drivers of change in a system, both those that are desirable and those that are unwanted, is only the starting point for engaging in an effective policy process. The end point is the identification of the institutional processes that have to be triggered, or changed, to effectively implement the strategy formulated.

The most difficult situation to cope with, in the context of development planning, is **decision making at the time of crisis**. We use this example to analyse two different patterns for decision making. One is a common approach that focuses on addressing the immediate needs of the crisis, is documented in the literature and has emerged also in the case of the covid-19 pandemic. The second is instead an optimal case, where the crisis is taken as an opportunity to strengthen planning for medium to longer term development while considering and addressing the short-term need for emergency response. Figure 4 presents these two different patterns of decision making. Both are presented next, with the acknowledgement that a hybrid approach is likely required in reality, to balance efforts for long term development with short term needs. Specifically:

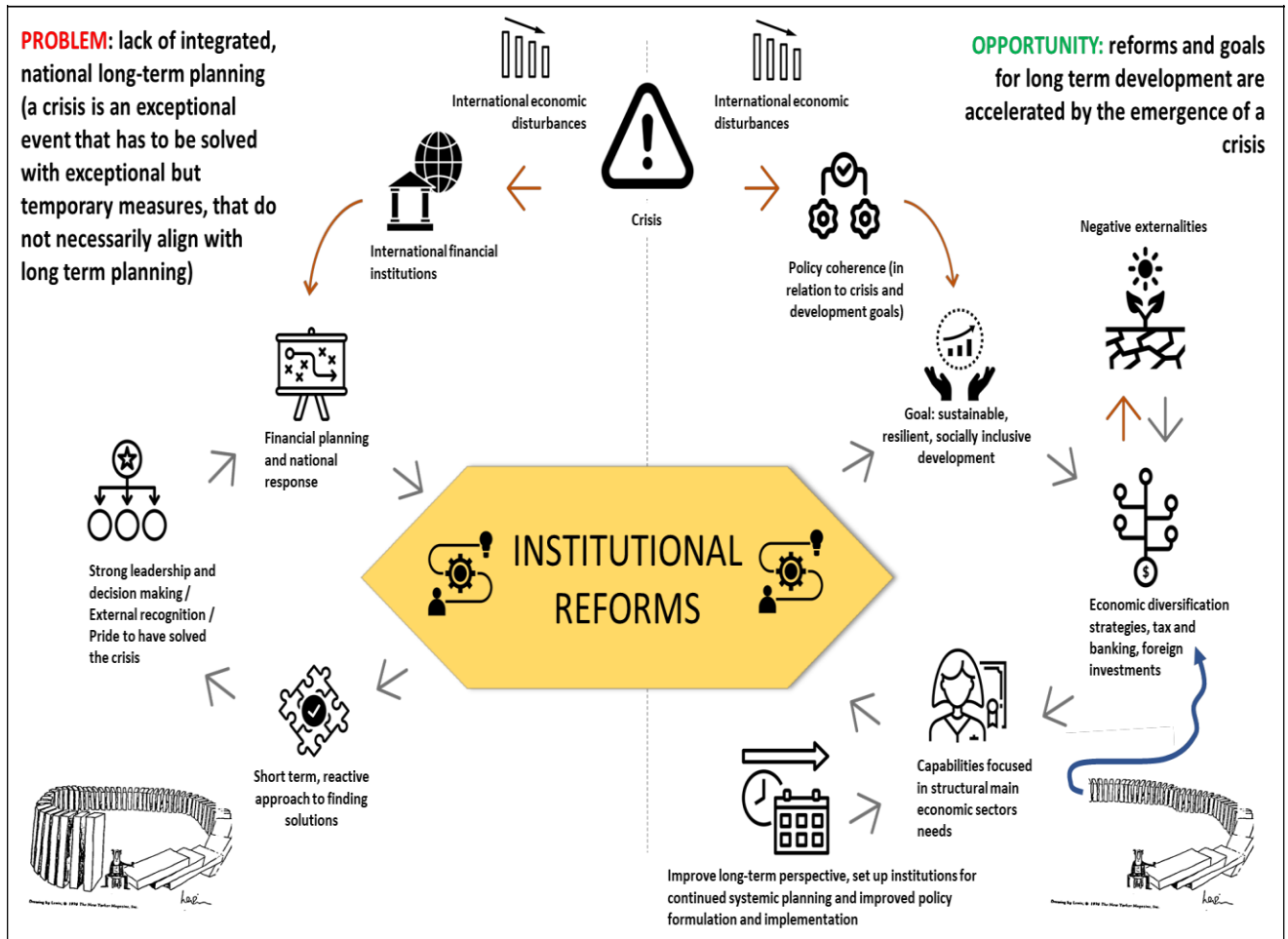
- The left side of Figure 4 shows that, when a crisis emerges, international financial institutions are engaged to discuss the potential for financial support. With new resources, financial planning and a national response to the crisis can take place, resulting in institutional reforms. The emphasis of such reforms is on the immediate needs caused by the crisis, for instance related to economic performance, manifesting itself in the loss of jobs and income. The implementation of actions targeted to the economy, aiming to solve the issue in the short term, gives the impression of strong and effective leadership. With timely action and improved economic performance, the pressure posed by the crisis fades, and the need for national responses ceases.
- The right side of Figure 4 shows a different rationale for action. When a crisis emerges, the first action consists in assessing policy coherence. The **goal is to identify areas of intervention that can be strengthened to address the weaknesses in the current policy approach brought about by the crisis.** The objective of policy making remains the same, regardless of the presence of a crisis: sustainable development, with resilient and inclusive socioeconomic development. **The need for institutional reforms, funding requirements and allocation of resources, are based on the most effective way to achieve long term development, rather than on the immediate short-term needs emerging from the crisis.** It results in institutional reforms that will lead to the creation of economic diversification, based on the creation of new capabilities and strengthened institutions capable of carrying out systemic planning on an ongoing basis.

When using a systemic approach, the preferred option is the one represented on the right side. On the other hand, in reality there is a need to balance the short-term needs caused by the crisis with long term development goals. As a result, the optimal approach would be to assess resource requirements based on both mitigation actions and by allocating investments to more effectively move towards development targets. This hybrid approach is preferred because it is aimed at realizing an opportunity, where reforms and action towards reaching development goals are accelerated by the emergence of a crisis. The resources that become available are channelled towards economic diversification and resilience, paving the way to a future that is less vulnerable to external crises. The pattern presented on the left side of

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Figure 4 represents instead a purely reactive approach, where emphasis is put on short term needs only. The risk that emerges in this case is that the investments that are successful in the short term are also responsible for the emergence of the next crisis. In other words, the crisis is seen as an exceptional event that has to be solved with exceptional but temporary measures that are not necessarily aligned with long term development goals.

Figure 4: A graphical representation of two distinct processes utilized to implement institutional reforms as a result of crises



Annex 5: Status on data availability of SDGs, presented by Ms. Chandranee Rughoobur, official at “Statistics Mauritius”

Sustainable Development Goals (SDGs)

International level

1. In March 2016, the United Nations endorsed a list of 232 indicators to track progress on the 17 Sustainable Development Goals (SDGs) and 169 Targets.
2. The list of indicators is called ‘a living list’ which is revised frequently, mostly on the basis of data/ metadata availability.
3. In March 2020, the UN endorsed a reviewed list of 231 SDG (unique) indicators following a Comprehensive Review of indicators undertaken by UN Expert Group in 2019.

National level

4. The Ministry of Foreign Affairs, Regional Integration & International Trade (MFARIIT) is responsible for the implementation and coordination of SDGs at the national level.
5. Statistics Mauritius (SM), as provider of official statistics, is leading the development of SDG indicators working in collaboration with national stakeholders.

Data availability

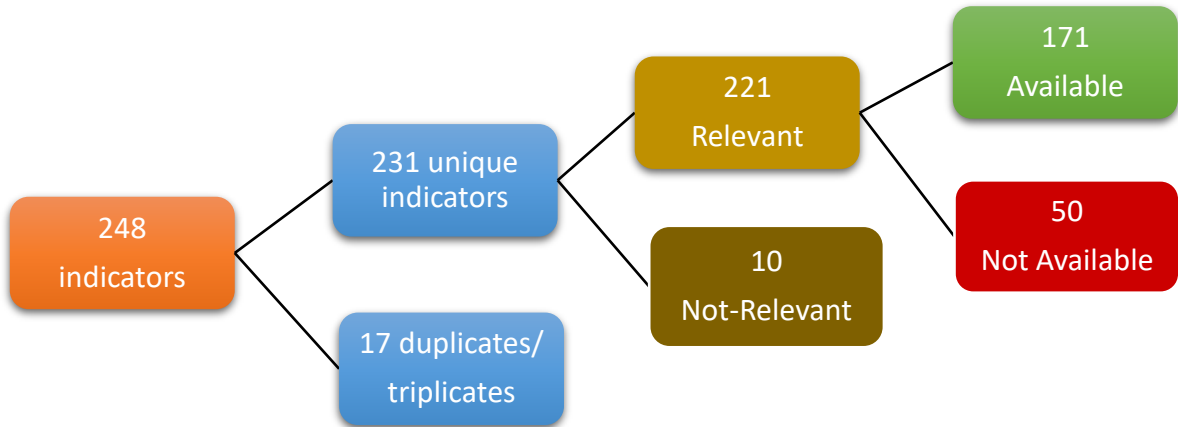
6. The national SDG database is published on SM website at the URL provided below. The database contains data as from 2010 for the Republic of Mauritius and is updated twice a year.

[https://statsmauritius.govmu.org/Documents/Statistics/By_Subject/SDGs/UN_SDG_database%20\(2010-2020\).xls](https://statsmauritius.govmu.org/Documents/Statistics/By_Subject/SDGs/UN_SDG_database%20(2010-2020).xls)

Note: The 2021 national SDG database will be soon uploaded on SM website.

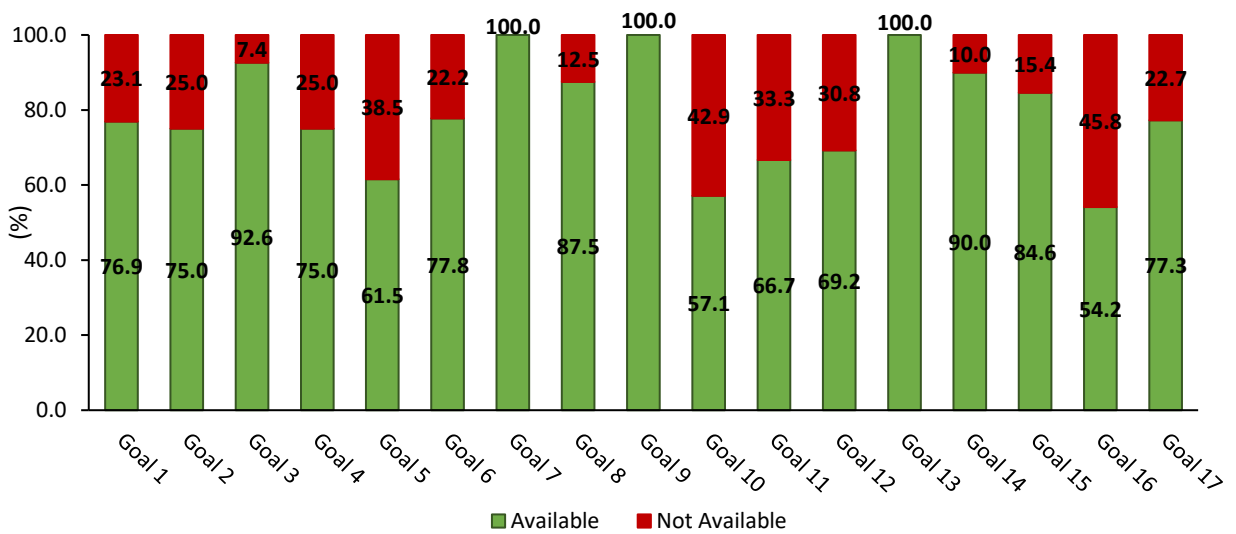
7. As at date, out of 222 indicators identified as relevant for monitoring country progress, data are available on 141 indicators (77%). There are 50 pending indicators (Figure 1).

Figure 1: Status on SDG data availability, 2021



8. Data availability by goal is given at Figure 2. (Re: List of 17 Sustainable Development Goals below)

Figure 2: Status on SDG data availability by goal, 2021



List of 17 Sustainable Development Goals

SDG 1 – No Poverty

SDG 2 – Zero Hunger

SDG 3 – Good Health and Well-being

SDG 4 – Quality Education

SDG 5 – Gender Equality

SDG 6 – Clean Water and Sanitation

SDG 7 – Affordable and Clean Energy

SDG 8 – Decent Work and Economic Growth

SDG 9 – Industry, Innovation and Infrastructure

SDG 10 – Reduced Inequalities

SDG 11 – Sustainable Cities and Communities

SDG 12 – Responsible Consumption and Production

SDG 13 – Climate Action

SDG 14 – Life Below Water

SDG 15 – Life on Land

SDG 16 – Peace, Justice and Strong Institutions

SDG 17 – Partnerships for the Goals

9. There are 50 pending indicators (Re: Annex 1: Excel Table – List of pending indicators with remarks) and the main data constraints are summarised succinctly as follows:

a. Data unavailability

- (i) Lack of data e.g., SDG indicator 1.4.2 (land tenure), SDG 4.2.1 (early childhood development), SDG 5.6.1 (reproductive health care), SDG 12.4.2 (hazardous waste), etc.
- (ii) Lack of updated geospatial land use data for indicators under Goals 11 (built-up space area) and 14 (land degradation, mountain green cover index, etc.)

b. Lack of expertise to compute indicators such as SDG indicators 8.4.1 (Material Footprint) and 8.4.2 (Domestic Consumption), SDG indicators under Goal 11 related to built-up areas and land consumption rate. In addition, Technical Assistance on the System of Economic and Environmental Accounting is preferred in order to monitor progress not only on SDG 8 but also SDG 12.

10. Other issues worth pointing out are the metadata (methodology for compiling the indicators) for a few SDG indicators are still under development at international level;

some indicators, particularly those related to Official Development Assistance, are compiled only by international custodian agencies.

In progress

11.SM, in collaboration with national stakeholders, is continuously working on the indicators and optimizing technical assistance obtained from custodian agencies (e.g., FAO, UNEP, Praia Group, etc.) through webinars. Recently, SM benefitted from virtual training conducted by UNDP to SDG 16 indicators related to crime and governance.

Annex 6: Photos



