

SUSTAINABILITY AND CLIMATE CHANGE PROGRAMME (SCCP)

Opportunities for PhD projects

(12 July 2021)

The Sustainability and Climate Change Programme (SCCP) is a post-graduate applied research initiative recently launched at Université des Mascareignes. Although it applies a transdisciplinary research perspective, it is housed in the Faculty of Sustainable Development and Engineering for administrative purposes. The SCCP applies a systemic approach to investigating sustainability and climate change issues that are of foremost importance to Mauritius and Small Island Developing States (SIDS) in general. It also uses a strong participatory and inclusive approach by capitalizing on strong linkages with a host of stakeholders, namely public and private sector institutions, local academics, civil society organisations and local communities. One of the other strengths of the SCCP is its access to a wide network of international researchers and close collaboration with development partners such as the Agence Française de Développement (AFD). The SCCP is proposing a wide range of thematic areas for doctoral projects. The nested sustainability framework adopted by the SCCP is illustrated in Figure 1. While opportunities for PhD projects are elaborated under two broad thematic areas and their sub-themes, they are all embedded within this nested sustainability framework. The framework integrates both quantitative and qualitative research methodologies.

While a list of research topics is proposed for the different thematic areas, prospective researchers are encouraged to propose novel research ideas. All research will use novel approaches and advanced modeling tools and techniques while adopting systemic and transdisciplinary approaches. Both qualitative and quantitative approaches will be promoted.

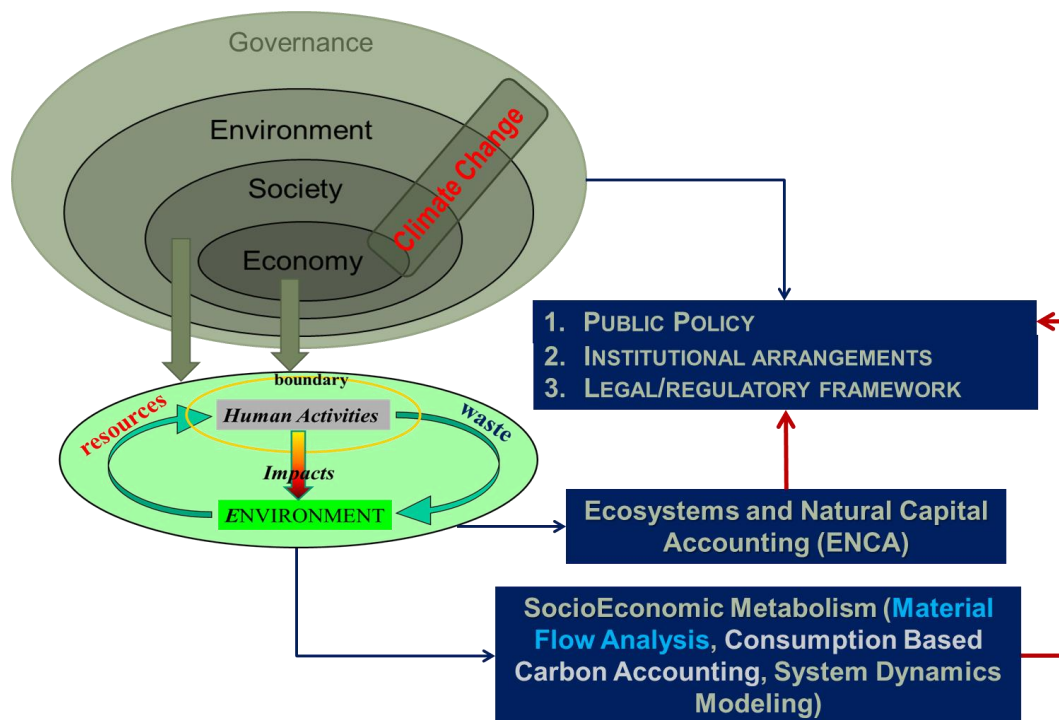


Figure 1. Framework for developing the SCCP.

(Source: Adjunct Professor Sanju Deenapanray)

Thematic Area A – Climate Change

Small Islands Developing States (SIDS) suffer from inherent economic, social and environmental vulnerabilities. These inherent vulnerabilities are exacerbated by climate change thereby posing unique challenges to achieving the Sustainable Development Goals (SDGs). Mauritius is not spared from these sustainability and climate challenges. Despite being a very small emitter of greenhouse gases, Mauritius has a high per capita emission. Rising emissions are not aligned with the objectives of the Paris Agreement. In the case of Mauritius, there is a macro-economic case for decarbonisation that is linked to our very high dependence on fossil fuels; and balance of payment issues related to a high energy bill. Despite these known vulnerabilities to the impacts of climate change and climate variability, and the strong case for decarbonisation, and despite the understanding that sustainability ought to be a cornerstone of the country's development, there is a huge deficit in high quality research to bridge the science-public policy gap. In short, there is a significant opportunity to carry out research on sustainability and climate change to support evidence-based decision-making in both the public and private sectors. There are opportunities for carrying out PhD research on a number of topics with different sectoral scopes and using a host of complementary modeling tools and approaches. Indicative lists are given below for Climate Change Mitigation (sub-thematic area A.1) and Climate Change Adaptation (sub-thematic area A.2). The topics apply equally to public and private organizations, and can involve a wide range of other stakeholders as mentioned above.

Sub-thematic Area 1 (A.1) – Climate Change Mitigation

- Scenario analyses (technological choice and technology pathways) for the decarbonization of main emitting sectors of Mauritius to 2050 and beyond
- Towards net-zero buildings
- Social, technical and macroeconomic analyses of decarbonization pathways
- Policy implications of decarbonization (governance, investments, regulatory, stranded assets, jobs etc.), including sustainable development co-benefits
- Carbon accounting tools (multiple approaches) for supporting evidence-based decision making and as pedagogical tools for sustainability
- Sociological (anthropology, ethnography, sociology, psychology, political economy, political philosophy etc ...) research related to climate change mitigation
- Cross-SIDS analysis of climate mitigation pathways
- Artificial Intelligence applications or methods for climate change mitigation in the context of sustainability
- Renewable energy resources assessments and short-term forecasting
- Market-based approaches to foster deep decarbonization of the economy

Sub-thematic Area 2 (A.2) – Climate Change Adaptation

- Better understanding of climate changes (and climate variabilities) at appropriate scales
- Location-specific vulnerability assessments to understand the current and future impacts of climate changes (and climate variabilities) on society, economy and ecosystems
- Ecosystem- and community-based adaptation approaches
- Social, technical and macroeconomic modeling of sectoral and cross-sectoral impacts of climate change using integrated tools

- Policy implications of adaptation (governance, investments, regulatory, stranded assets, resilience etc.), including sustainable development co-benefits
- Climate change adaptation and disaster risk management
- Innovative governance approaches for effective climate change adaptation and policy-induced resilience at multiple scales
- Sociological (anthropology, ethnography, sociology, psychology, political economy, political philosophy etc ...) research related to climate change adaptation
- Cross-SIDS analyses of climate adaptation policies

Thematic Area B – Sustainability Issues

The framework shown in Figure 1 depicts unsustainability as a dissonance between the organization of natural ecosystems and the organization of socioeconomic systems created by human beings. While climate change is one of the detrimental effects arising from this dissonance, unsustainability takes a multitude of other faces that have to be addressed in parallel with climate change. The following is a non-exhaustive list of research topics that prospective researchers can contemplate:

- Environmental governance in Mauritius
- Legal and regulatory frameworks for sustainable development
- Land-use planning and design for sustainable development
- Natural capital accounting and valuation of ecosystem services and functions
- Metabolic- and thermodynamic-based approaches to guiding sustainability
- Development of sustainability indicators (and at the organizational level)
- Critical evaluation of the practice of corporate sustainability in Mauritius
- Making the business case for investments in corporate sustainability
- Education for Sustainability
- Participative design of policies and infrastructure and social engineering of the ecological transition
- Sustainable digital economy
- Cross-sectoral modeling of SDG impacts of policies using emerging technologies including artificial intelligence

Interested candidates are requested to contact the following persons:

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