



Science Diplomacy and Sustainable Development in Mauritius



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Introduction

In an increasingly globalized and interconnected world, the coupling of science and diplomacy refers to the use of scientific collaborations among nations to address global challenges and to build international constructive international partnerships. (Fedoroff, 2009). Science Diplomacy is indeed an essential instrument of foreign policy. As an apolitical language, science has the capacity to balance strained relationships, open channels of communication and build trust. Science can help address cross border challenges such as climate change, pandemics, security threat, poverty and sustainable goals which all revolve among common interests.

Mauritius is conscious that science cannot be dissociated from the global challenge of sustainable development. This is why, the Government of Mauritius has made science, technology and innovation one of the pathways on its Transformative Journey to a Smart Island Nation while ensuring that its achievements shall not only be measured by the amount of wealth created but also by their inclusiveness and sustainability.

The purpose of this paper is to give a brief description of the evolution of the concept of science diplomacy and show how, notwithstanding its constraints as a Small Island State (SIDS), Mauritius is striving to achieve sustainable development through science diplomacy at national, bilateral and regional levels. In the concluding section few suggestions will be made on how to make the link between science and diplomacy more effective.

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Evolution of the Concept of Science Diplomacy

During the colonial period, the establishment of many scientific institutions resulted from Europe's urges for empire building. Schools of Tropical Medicine were set up to develop the study of tropical diseases which included only those which were relevant to British interests. Natives were found fit to work only as technicians and laboratory assistants but were not allowed the opportunity to qualify as doctors or scientists or researchers.

The colonial period saw a ruthless suppression of non-western and indigeneous sciences on the one hand whilst on the other hand the colonial powers appropriated and plagiarized non-western inventions and discoveries from Arabic, Indian and Islamic cultures (Sardar and Van Loon, 2011).

At a time when the US and the Soviet Union were involved in a standoff involving nuclear weapons, both countries cooperated on the 1959 Antarctic Treaty which made Antarctica a continent dedicated to peace and science. The Apollo-Soyuz Test Project that is the first US-Soviet space flight conducted in 1975 was another project which involved the cooperation of the two countries during the Cold War (Turekian 2018).

At the end of the Cold War, the role of science diplomacy aimed at addressing global challenges. It was in this context that the Montreal Protocol on Substances that Deplete the Ozone Layer was made and the Intergovernmental Panel on Climate Change was set up.

The events of 9/11 followed by the Iraqi War were another turning point in the evolution of science diplomacy. The world became divided into two parts: the western developed world and Muslim majority countries. In his speech delivered in Cairo, President Obama made science central in his new vision for partnerships with Muslim majority countries. The ultimate objective was to forge links between the science communities of various countries (Turekian, 2018).

Today we are witnessing a more formal integration of scientists into the diplomatic process. This is because science diplomacy is viewed as an inevitable means to help the international community meet the sustainable development goals.

Mauritius as a Small Island Developing State (SIDS)

As a Small Island Developing State (SIDS), Mauritius faces several challenges such as limited resources, vulnerability to natural disasters, small populations, dependency on strategic imports like food and energy, a narrow range of exports, remoteness from major markets and susceptibility to external economic shocks. Mauritius like all SIDS continues to address those structural and external challenges with the ultimate objective of achieving sustainable development.

The Government of Mauritius is wholly committed to the implementation of Agenda 2030 and to the 17 Sustainable Development Goals which cover several social and economic issues including poverty, hunger, health, education, global warming, gender equality, water, sanitation, energy, environment and social justice. However, the successful implementation of the SDGs involves an optimal use of existing social and physical infrastructure but also searching for new technologies in order to make these goals a reality (Saner, 2015).

S&T and Innovation in Mauritius

The Vision 2030 Blueprint of Mauritius has as one of its main aims to become a high-income innovation-led economy. Whilst, Mauritius is currently ranked among the three highest performing economies in Africa, globally it is ranked 75th out of 126 countries according to the Global Innovation Index 2018/2019. Expenditure on Research and Development represents a meagre 0.18% of GDP.

It is believed that in order to turn Mauritius into a bustling innovation hub, there should be heavy investment in state-funded research institutions. The role of the private sector is

also crucial to drive innovation in Mauritius as Research and Development involves significant associated costs. Mauritius also needs to be open for collaborations with the world's leading institutions as we cannot depend only on our limited resources to promote innovation.

With a view to promoting an Innovation Culture in Mauritius, the Mauritius Research and Innovation Council (MRC) has initiated a number of projects, some of which are:

- Satellite Technology which involves the use of small and affordable satellite systems using equipment with small pay load for capacity building and research work;
- Flood modelling and Computational Fluid Dynamics (CFD) of high rise buildings in cyclonic conditions where the MRC has developed computational models to accurately predict and provide solutions for floods;
- Robotics where the MRC in collaboration with Indian experts has trained some 1000 students on two main tools used in Robotics: Raspberry Pi and Arduino. (Fakun, 2018b)

As an apex body to promote and coordinate national investment in research and innovation, the MRC accepts proposals for its various research and innovation grant schemes in priority areas such as renewable energy, ocean/marine technology, ICT, Life Sciences, (Health, Pharmaceutical and Biotechnology), and Manufacturing. Ultimately through funding research and innovation projects in the above areas, the MRC aims at commercializing research outputs with a view to enhancing job creation and wealth generation.

Artificial Intelligence (AI) is a field in which the Government wishes to create new opportunities for private investment and employment. The Mauritius Budget 2018/2019 makes provision for a number of measures relating to the sector such as the following:

- Setting up of a Mauritius Artificial Council comprising of public and private sector, including international experts to create the legal framework for AI and propose incentives for entrepreneurs;
- New scholarships for 50 students specializing

in AI and other digital technology courses;

- Training of 2,000 students in primary schools and 2500 students in secondary schools in coding.

However, the formulation of an AI policy is considered mandatory to sustain an ethical and effective integration of AI in our local context. It is also important to fit the right curriculum in our educational system in order to avoid job mismatch once AI takes over the traditional technologies. AI investment is expected to bring major contributions in various sectors including transport (road decongestion); agriculture (identification of crop diseases and monitoring of soil productivity); government to citizen services (analysis to improve citizen satisfaction); industry (reduced time in doing repetitive tasks) and health (assisted surgery). (Fakun, 2018a).

It is with the objectives of positioning Mauritius on the world map of emerging technologies and fostering a new generation of entrepreneurs who master emerging technologies such as AI that the Government hosted the 2018 World Artificial Intelligence Show and Blockchain Summit 2018 from 28 to 30 November 2018. The event connected AI experts, startups, data scientists, technology innovators to discuss the impact of AI on commercial applications and the revolutionary ways it can transform business and government functions.

The AI Show featured humanoid robot Sophia developed by Hong Kong-based Company Hanson Robotics and named the United Nations Development Programme's first ever non-human innovation Champion.

Bilateral Perspective

Notwithstanding its limited resources, Mauritius is multiplying its efforts to incorporate science, technology and innovation into its national sustainable development strategies. However, it relies to a large extent on the cooperation and assistance of its major partners to attain this objective as shown below.

India is considered as one of the most important partners of Mauritius. The two countries share

strong historical, social and economic links. Since the establishment of diplomatic relations between Mauritius and India in 1948, several bilateral agreements have been signed. Some of them are the Agreement on Cooperation in ICT (2000), MoU on Cooperation in Biotechnology (2002), MoU in the field of Hydrography (2005), Agreement on Early Warning and Coastal Hazards (2010) and MoU on Science and Technology (2012).

Mauritius is one of the largest beneficiary countries of the Indian Technical and Economic Cooperation (ITEC). Lately an overwhelming proportion of civilian ITEC training courses slots have been used for training in IT related fields.

Joint projects between Mauritius and India in the area of science, technology and innovation include the Cyber Tower which made ICT one of the pillars of the Mauritian economy and the Rajiv Gandhi Science Centre whose objective is to create science awareness among young Mauritians.

Through the Japan International Cooperation Agency, Japan has been providing technical assistance in several areas, namely disaster risk management, coastal protection and landslide management. Last year saw the signing of a project which aims at enhancing meteorological observation, weather forecasting and warning capabilities of Mauritius Meteorological Services to disseminate highly accurate meteorological information.

During the World AI Show and Blockchain Summit held in Mauritius last year, a Memorandum of Understanding was signed between the Economic Development Board of Mauritius and Huawei Technologies (Mauritius) Ltd. The MoU focuses on four key components aiming at unlocking the full potential of the Information, Communication and Technology sector of Mauritius: capacity building, infrastructure development, strategizing future development and diversification of the ICT sector, and fostering development in AI and Blockchain.

As regards the bilateral cooperation with EU, the focus of the 11th European Development Fund (EDF) will be tertiary education including

research and innovation. There is a growing awareness that research and innovation are key ingredients to enable Mauritius move from a Upper Middle Income Country Status to a High Income one. The EU will assist Mauritius in addressing major challenges such as how to increase the involvement of the private sector in research, increase public expenditure in research and encourage a culture of research.

Other long time partners of Mauritius like UK and France provide significant assistance in the area of training, higher education and research through inter-university cooperation and grants programme.

Regional Perspective

Mauritius belongs to various regional organisations namely Southern Africa Development Community (SADC), Common Market for Eastern and Southern Africa (COMESA) and Indian Ocean Rim Association (IORA). The vision of these regional groupings is to make science, technology and innovation drive sustainable development, alleviate poverty and disease, create wealth and employment opportunities, and improve living standards.

Conscious that science, technology and innovation have crosscutting relevance in addressing the above challenges, SADC Heads of State and Government adopted the Protocol on Science, Technology and Innovation in 2008. The overall objective of the Protocol is to foster cooperation and promote the development, transfer and mastery of science, technology and innovation in member states in order to inter-alia pool resources for scientific research, technological development and innovation within the region; optimize public and private investment in research and development within the region; recognize, develop and promote the value of indigenous knowledge and technologies; work towards the elimination of restrictions of movement of scientists within SADC; and promote public understanding and awareness in science, technology and innovation.

The Common Market for Eastern and Southern Africa (COMESA) has also been turning to science, technology and innovation to foster trade and investment in the region. The 16th Summit of Heads of State and Government held in Kampala in 2012 endorsed the establishment of an Innovation Council. The objective of the Council is to support the mobilization and coordination of scientists and engineers and encourage innovation by individuals and small and medium enterprises (SMEs). The ultimate goal is the production of innovative goods and services for regional and global markets that can transform the region into a leading destination for technology investment (COMESA, 2019).

Within the IORA, it is also acknowledged that the contributions of science and technology have the potential to enhance the countries of IORA knowledge and capabilities in a number of fields including Indian Ocean phenomena such as biology, meteorology, coastal zone management and renewable energy. IORA further fosters sustainable ocean initiatives, projects and partnerships with the objective of supporting the Blue Economy Concept. The contribution of scientists in driving the ocean agenda forward is significant. Through research, scientists can provide the knowledge and understanding that feeds into policy considerations (IORA, 2019).

A recent example of science diplomacy in action within the IORA is the inauguration in May 2018 of the IORA Regional Centre for Science and Technology Transfer Coordination Centre on Medicinal Plants in Lucknow. The Centre will help disseminate knowledge of the use and benefits of medicinal plants among IORA countries and promote the commercialization of their resources.

Conclusion

Science alone does not drive successful policy outcomes while Diplomacy that ignores science is unlikely to achieve an effective outcome. Therefore in today's globally interconnected world characterized by rapid advances in science, technology and innovation, science diplomacy offers a unique instrument to build

our common future. However for science diplomacy to be effective there should not be any disconnect between Foreign Ministries and Ministries of Science. One immediate solution to this disconnect would be the appointment of scientific advisers within the Foreign Ministries and in Embassies.

Since both science and diplomacy may involve dishonesty, the need for a code for the practice of science in an ethical and responsible way subscribed by all stakeholders is essential. Ethical norms and standards will help promote the aims of research (knowledge and truth) and values that are essential to collaborative work (trust and respect); provide guidelines for the protection of intellectual property rights; ensure accountability to the public; help to build public support for research; and promote moral and social values such as human rights, public health and safety, animal welfare.

Mauritius may be a small island developing state with all the constraints which that status involves. However, it also has several strengths including a secure investment climate, a conducive business environment, political stability and a bilingual workforce which it can make available to this new branch of diplomacy which is science diplomacy in order to achieve sustainable development and pursue its transformative Journey to a Smart City Island Nation.

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