Assessment of Knowledge Society Development in Mauritius

June 2017

African Leadership in ICT (ALICT)

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Introduction

The Global E-Schools and Communities Initiative (Gesci), in collaboration with the African Union Commission (AUC) and other partners, developed an African Leaders in ICT (ALICT) capacity-building programme. The first phase of the programme ran from 2012-2013, focusing on leadership capacity-building in twelve countries (Botswana, Ethiopia, Kenya, Malawi, Mauritius, Mozambique, Namibia, Rwanda, South Africa, Tanzania, Uganda, and Zambia). A second phase of the programme ran between 2014 and 2016 and included four countries (Ghana, Ivory Coast, Morocco, and Senegal). ALICT has built the capacities of 487 mid and senior government leaders in 16 Anglophone and Francophone African countries, as well as officials from the AUC between 2012 to 2015. The Francophone version of the ALICT Programme is referred to as the Leadership Africain pour les TIC et le développement de la société du savoir (LATIC).

The course presented a multi-stakeholder approach for awareness-raising and capacity-building of African leaders around issues of Knowledge Society (KS), Information, Communication Technologies (ICT), Education, and Science Technology and Innovation (STI) in support of the AUC Action Plan and the EU-AU P8. Courses comprised of contextualized, modular content, founded upon country research and reflecting the identified needs of country governments.

The programme is currently under review to integrate leadership for sustainable development components in line with international frameworks and AU continental strategies for achieving 2030 sustainable development goals and objectives. The focus is on a continent-wide expansion of the programme through a wider access model.

Aims and Objectives of the study

To inform future development of the ALICT programme, it is important to understand where the participating countries are at in terms of developing a KS. Thus, Gesci commissioned Neil Butcher and Associates to prepare updates on the status of the KS in the 16 participating countries. Specifically, the focus was to update the situational and needs analysis of each country to keep abreast of developments since 2013 regarding the KS and its pillars of Education, STI, and ICT.

The specific objectives of the study were to:

- Update briefs of country KS pillars for the ALICT-LATIC Database.
- Update the ALICT KS country study database of the KS pillar status in each country, which involved:
  - Desk review of country KS documentation, identifying essential policies, strategies, plans, and papers on KS;
  - Review of KS pillar documentation sets related to Education, ICT, and STI; and
  - Identification of major actors, stakeholders, and partners and their role in KS pillar development.

Methodology

The report methodology involved a desk review of various government policy and strategy documents. Additionally, documents from development partners, research and academic papers, news articles, websites, and publications from various organizations were consulted. Further, data from the 2013 report were included where relevant. A framework for the country reports was
prepared, outlining what the various sections would cover. This was done to ensure uniformity in the type of information collected. The major areas and themes covered included policies and plans in ICT, Education, and STI. Additionally, socio-economic background information and indicators were reviewed to obtain an understanding of the context of each country. After receiving approval from Gesci for this framework, draft reports were prepared for each of the 16 countries. The reports were sent to Gesci for review and, based on feedback received, the reports were then finalized.

Overview of theoretical model

Modern economies are transforming from agricultural and industrial economies to information and knowledge-based economies. Such rapid transformation has had significant impact on social, economic, political, and cultural development across the world. For such development and growth, ICT is seen as both a driver and an enabler towards establishing and developing the various sectors in an economy that contribute to stronger, more developed, and richer societies. Africa is on a journey of transformation towards information and knowledge societies. During any such transformational journey, the leaders of a society and policy makers are likely to undergo a paradigm shift that involves developing their capacity and providing tools and direction for accepting relevant changes in mindset.

Dahlman (2011) defines a KS as a society that values the creation, dissemination, and effective use of knowledge, and has the institutions, infrastructure, norms, social interactions, and culture that support this. UNESCO (2005) describes a KS as one that is nurtured by its diversity and its capacities. It further argues that, in the increasingly knowledge-based world, it is critical to embrace knowledge and innovation-related policies to spur competitiveness, growth, and improvements in welfare.

Gesci believes that ICT, education, and innovation are the critical pillars and key elements for development towards a knowledge-based future. Butcher (2010) visually captured the inter-relationship between the three pillars as follows:

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The innovation pillar incorporates the fields of Science, Technology, and Innovation (STI) in a single
pillar. The education and innovation pillars are presented as interrelated drivers for development.
The ICT pillar is the enabler for Education and Innovation dynamics that will drive Development
towards the Knowledge Society. 

ICT is regarded as an engine for growth and a tool for empowerment, which has profound
implications for education change and socio-economic development. UNESCO (2007) defines ICT as
Forms of technology that are used to transmit, process, store, create, display, share or
exchange information by electronic means. This broad definition of ICT includes technologies
such as radio, television, video, DVD, telephone (both fixed line and mobile phones), satellite
systems, and computer and network hardware and software, as well as the equipment and
services associated with these technologies, such as videoconferencing, e-mail and blogs. 

ICT is considered a critical tool in preparing students with the skills required for the
global workplace. Thus, technology integration is becoming a key element in almost every plan for the
restructuring and re-engineering of education systems. This enables continuous adaptation to a

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work world of continuous technological innovations and makes it easier for students to access knowledge.

Challenges of ICT within Africa often relate to lack of human and financial resources, which translate into inadequate and insufficient skills supply, irrelevant or incomplete regulatory frameworks, including policies and legislation, and inadequate infrastructure and communication platforms.⁷ To embrace a KS, Gesci believes that there is a requirement to ensure that leaders develop skills to make informed policy and investment decisions to support socio-economic development effectively. This encompasses building both leadership ICT skills and ICT management skills.

Lifelong learning is regarded as a requirement to keep pace with the constantly changing global job markets and technologies. Education contributes to all other sectors by providing required skills and knowledge for economic development. Thus, it is not limited to formal education in traditional structures, but encompasses the broader societal learning necessary for development. Preparation for lifelong learning involves an emphasis, in primary and secondary schools, on learning general skills and competencies (communication, mathematics and science skills, new literacy skills, problem-solving and interpersonal skills, and self-directed learning skills to learn other subjects) and at tertiary level on capacity-building in science and technology, discipline-specific skills, research, and development.⁸ Additionally, there is a need for postgraduate programmes to build specific research capacity to handle knowledge-innovation process development – to meet needs and demands for national and regional competitiveness and growth. Education plays critical roles in imparting learning skills.⁹

Innovation is described as a process of creation, exchange, evolution, and application of knowledge to produce new goods. It involves adapting, adopting, or using knowledge to produce new goods and services in local contexts or to advance society in general.¹⁰ The UN Economic Commission for Africa (UNECA) (2010) regards innovation and change as fundamental when developing a KS to drive economic growth and advancement. It has been argued that the basic ingredient for nurturing the innovation dynamic is setting up systems to enable cross-fertilization of ideas between the fields of Science, Engineering, Technology, and Innovation (SETI).¹¹

Overview of the ALICT-LATIC programme

The ALICT Programme is conceptualized to model a methodology and multi-stakeholder approach for capacity building and awareness raising of African leaders on the issues of the KS, ICT, Education, and STI.¹² The programme is based on the premise that investments in ICT, Education, and STI contribute to socio-economic development and a shift towards the development of a KS.

The programme’s focus is to build absorptive capacity of current and potential future African leaders to acquire, assimilate, transform, and exploit the benefits of knowledge. It aims to foster dynamic

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¹² ibid
organizational capability through knowledge sharing, collaboration, and exposure to technology. It is hoped that, through participation in the ALICT-LATIC course, future African leaders will demonstrate knowledge, skills, and attitudes that promote their role as change agents. These are expected to translate into positive benefits for their respective countries in pursuit of inclusive knowledge societies.

The core concepts of the programme are as follows:

• Capacity Building: The ALICT capacity-building model aims to build and enhance the knowledge, skills, and attitudes of future leaders to manage transformation and change, manage institutional pluralism, enhance coordination, foster communication, and ensure that data and information are shared and used in planning, resource mobilization, implementation, and evaluation processes.

• Knowledge Society: The ALICT model focuses on the role all facets of ICT play in building the absorptive capacities of current and potential future African leaders to acquire, assimilate, transform, and exploit the benefits of ICT and knowledge to produce a dynamic organizational capability through peer knowledge sharing and exposure to technology. The ALICT approach to KS development focuses on the interconnection between leadership, policy development, and future-proof planning and how they contribute to KS development through Education, STI, and ICT.

• Leadership: A prerequisite for leadership development for knowledge societies is policy coherence between the three pillars (ICT, Education, and STI) that form the basis of any KS. For future African leaders to be able to steer their countries towards that goal, it is essential for them to not only be well versed in management, leadership, project formulation and project management skills, but also to acquire comprehensive knowledge about the interrelationship of the three KS pillars (Education, STI and ICT) and then be able to apply that knowledge in the African context.

• Policy Coherence: Policy coherence is the development and implementation of conjointly supportive policy actions across all sectors of the economy and society and, more specifically across government departments and agencies. Policy coherence pursues the creation of synergies across policies that advance the achievement of shared and agreed objectives. Within national governments, policy coherence issues arise between different types of public policies, between different levels of government, between different stakeholders, and at an international level.

• Futures Thinking: Futures Thinking was first theorized by Jim Dator (Bezold, 2009). Among its many uses within complex and rapidly shifting economic and social systems is its relevance to policy development and implementation. Futures Thinking requires the revisitation of plans and policies at regular intervals to take into consideration any new signals that appear in the environment that may affect a sector or number of sectors.13

Considering Sustainable Development Goals

The 17 Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development officially came into force in January 2016. These new goals apply to all countries when mobilizing efforts to end all forms of poverty, fight inequalities, and tackle climate change over the next 15 years.

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They recognize that ending poverty must go hand-in-hand with strategies that build economic growth and addresses a range of social needs including education, health, social protection, and job opportunities, while tackling climate change and environmental protection.\textsuperscript{14}

While the SDGs are not legally binding, governments are expected to take ownership of, and establish national frameworks to achieve, the 17 Goals: no poverty; zero hunger; quality education; gender equality; clean water and sanitation; affordable and clean energy; decent work and economic growth; industry, innovation and infrastructure; reduced inequalities; sustainable cities and communities; responsible consumption and production; climate action; life below water; life on land; peace, justice, and strong institutions; and partnerships for the goals.

Primary responsibility for follow-up and review of progress made in implementing the SDGs rests with countries. Implementation and success of the SDGs depends on countries’ own sustainable development policies, plans, and programmes. However, regional follow-up and review will be based on national-level analyses and contribute to follow-up and review at the global level.\textsuperscript{15}

Whilst implementation of SDGs is still in early phases, it provides an opportunity to frame the ALICT programme as a mechanism for countries to address SDGs, due to the programme’s cross-cutting nature. Specifically, KS development relies on the progress made in many of the SDGs.


\textsuperscript{15} Ibid
Knowledge Society Development in Mauritius

1. Introduction

Mauritius is an island in the Indian Ocean, about 800 km east of Madagascar. The capital of Mauritius is Port Louis and other main towns in the country include Beau Bassin-Rose Hill, Vacoas-Phoenix and Curepipe. Mauritius has a population of 1.3 million people, and the island spans 1,865 square kilometres. The country possesses an immense maritime territory of over one million square kilometres.

Figure 2  Map of Mauritius

In international affairs, Mauritius is part of the Indian Ocean Commission (IOC), the Indian Ocean Rim Association, the Southern African Development Community (SADC), the Common Market for Eastern and Southern Africa (COMESA), the Commonwealth of Nations and La Francophonie (French speaking countries).

Since gaining independence from British rule in 1968, Mauritius has been a stable, multiparty parliamentary democracy, and shifting coalitions are a feature of politics in the country. The president is the head of state and the prime minister has full executive powers and heads the government. Mauritius has regular free elections and a positive human rights record. However, since Sir Anerood Jugnauth resigned as Prime Minister and has appointed his son to succeed him, the risk of a snap election because of discontent in the ruling party has increased.

In 2015, Mauritius ranked 1 out of 54 African countries on the Mo Ibrahim Index which offers a comprehensive assessment of governance that informs and empowers citizens, civil society,

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20 Ibid
parliaments and governments as a tool of measuring progress in governance. The country was given an overall governance score of 79.9 out of 100 in the same Index. This score puts Mauritius considerably higher than the average score in Africa of 50.0 and higher than the Southern African regional score of 58.3. Mauritius’ highest score was in Human Development, for which it scored 83.7, while its lowest scoring category was a score of 76.0 in Participation and Human Rights.  

The main ethnic groups in Mauritius are Indo-Mauritian 68%, Creole 27%, Sino-Mauritian 3%, Franco-Mauritian 2%. The main language spoken by most of the population (86.5%) is Creole. The official language is English, which is spoken by less than 1% of the population. Data from 2015 indicates that 90.6% percent of the population is literate.

**Figure 3  Population Pyramid of Mauritius**

The figure above demonstrates a breakdown of the population by age. Evidently, the majority of the population (43.87%) is between the ages of 25 and 54. The median age of the population is 34.8. Mauritius’ population growth rate is 0.61% (2016), there are 13.1 births per 1000 people (2016), and the death rate is 7 deaths per 1000 people. Life expectancy in Mauritius is 75.6 years while the fertility rate is 1.75 children per woman and 63.8% of the population use contraceptives. The HIV/AIDS prevalence is Mauritius is low at 0.88%, translating to 8,200 people living with the disease (2015).

With reference to the Sustainable Development Goals (SDGs), Mauritius has a poverty rate of 1%, meaning that 1% of the population lives on $1,25 a day. The SDGs were outlined recently in 2015/16, making it difficult to track progress so early on. However, the fact that Mauritius has such a low poverty rate and, as it will be demonstrated, evidently better access to ICT and education stands  

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25 Ibid
26 Ibid
it in good stead to achieve the SDGs by 2030. The Government has subsequently highlighted four areas upon which to focus:

- Unemployment
- Alleviating, if not completely eradicating poverty
- New air access policies and opening up Mauritius
- Sustainable development and innovation.  

Interestingly, the country has a negative rate of urbanisation – there was a -0.08% annual rate of change between 2010 and 2015. As of 2015, the urban population comprises 39.7% of the total population.  

The currency is Mauritius is the Mauritius Rupee. Currently, the economy depends on sugar, tourism, textiles and apparel, and financial services, but is expanding into fish processing, ICT, and hospitality and property development. Sugarcane is grown on about 90% of the cultivated land area and accounts for 15% of export earnings. Once dependent on sugar exports, the island has built up a strong outsourcing and financial services sector, and an important tourism industry and now boasts one of Africa’s highest per capita incomes. Mauritius has attracted more than 32,000 offshore entities, many aimed at commerce in India, South Africa, and China. Investment in the banking sector alone has reached over $1 billion. Mauritius’ textile sector has taken advantage of the Africa Growth and Opportunity Act, a preferential trade program that allows duty free access to the US market, with Mauritian exports to the US growing by 40% from 2000 to 2014.  

Mauritius’ sound economic policies and prudent banking practices helped to mitigate negative effects of the global financial crisis in 2008-09. GDP grew in the 3-4% per year range in 2010-14, and the country continues to expand its trade and investment outreach around the globe. Growth in the US and Europe fostered goods and services exports, including tourism, while lower oil prices kept inflation low in 2015. The Mauritian economy grew by 3.7% in 2015 – slightly more than the 3.6% recorded in 2014, and is projected to grow by 4% in 2017 on the back of stronger domestic and external demand. Mauritius was rated as the best performing economy in Africa and was ranked 46th out of 140 economies in the latest edition of the World Economic Forum Global Competitiveness Report. The World Bank’s “Ease of doing business” index, a measure of the relative ease for starting a running a local business, for 2016 ranked Mauritius as 49 out of 190 countries.  

Mauritius is faced with constraints that hinder further growth of its economy primarily precipitated by an erosion of its preferences in the international community in sugar and textile sectors, general dismantling of subsidies worldwide and the rapid emergence of low-cost competitor nations across the world. The government recognised that its Information and Communication Technology (ICT) sector is important to future development of the country. It sees ICT as a tool to support business processes and information flow within and across economic activities, leading to increase in value added at the national level. The government’s vision is to transform Mauritius into a Regional ICT

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32 Ibid
The government introduced an innovative urban development approach, consisting of eight “Smart Cities” and five techno-parks, in an effort to boost sustainable economic growth and enhance the competitiveness of Mauritius.\(^35\)

The Global Competitiveness Index (GCI, 2016-17) which assesses the ability of countries to provide high levels of prosperity to their citizens through measuring the set of institutions, policies, and factors that set the sustainable current and medium-term levels of economic prosperity ranks Mauritius 45 out of 138 countries with a score of 4.5. The index points to access to inefficient government bureaucracy, insufficient capacity to innovate, and inadequately educated workforce as primary limiting factors.\(^37\) In 2016, the unemployment rate stood at 7.8%.\(^38\) While the country’s political and economic situation has been stable since its independence in 1968, environmental circumstances place the country at great risk to climate change and rising water levels.\(^39\) Some observed climate changes in Mauritius are:

- Between 1998 and 2007, local mean sea level rose by 2.1mm per year. Over the past five years, sea level has been rising by around 3.8 mm/year.
- There is a decreasing trend in annual rainfall of around 8% over Mauritius since the 1950s.
- There is an increase in the annual number of hot days and warm nights.
- There is an increase in the frequency of extreme weather events, heavy rains and storms.\(^40\)

The projected impacts of climate change in Mauritius include:

- Decreasing trend of 8% in annual rainfall. Utilizable water resources will decrease by up to 13% by 2050.
- Increase in heavy precipitation events with increased risk of flash flood.
- Increase in heat waves in summer.
- Increase in the number of intense tropical cyclones
- Increase in duration of dry spells
- Increase events of high energy waves (tidal surge) impacting the shores of Mauritius.
- Increase in vector-borne and infectious diseases as a result of higher temperature and recurrent floods.
- Decrease in live corals due to increase in temperatures
- Migratory shifts in tuna aggregations thereby disrupting the local seafood hub activities and other fish based industries.\(^41\)

CO2 emissions in the country have been steadily increasing from 0.506 metric tons per capita in 1982 to 2.96 metric tons per capita in 2013, although there was a slight decrease between 2012 and 2013, where CO2 emissions sat at 3.241 metric tons per capita in the former year.\(^42\) The fact that Mauritius is a small island and a developing state makes it rather vulnerable to the effects of climate change.

\(^40\) Ministry of Social Security, National Solidarity, and Environment and Sustainable Development (Environment and Sustainable Development Division). (no date). Climate Change. Retrieved April 21, 2017 from [http://environment.govmu.org/English/Climate_Change/Pages/Climate-Change.aspx](http://environment.govmu.org/English/Climate_Change/Pages/Climate-Change.aspx)
\(^41\) Ibid
change. Although the primary impact would be on the environment, the effects would also be felt economically and with regard to heightened social stresses.  

In recognition of climate change challenges, in 2012 the government released a technology needs assessment for climate adaptation and migration, which recognizes the island’s vulnerability to the impact of climate change and identifies priority sectors impacted by climate change. Additionally, the government has established a Climate Change Division in the Ministry of Environment and Sustainable Development to address all matters relating to climate change. Additionally, a National Climate Change Adaptation Policy Framework and a Disaster Risk Reduction and Management Strategic Framework and Action Plan have been developed. The government also acknowledges the significance of Green societies as fundamentally knowledge societies in which science and technology play a crucial role in helping create green jobs as well as boosting social development.

There is also a Climate Change Adaptation Programme in the Coastal Zone of Mauritius, which aims to overcome beach erosion and the risk of flood in the coastal parts of the country including Mon Choisy, Riviere des Galets, and Quatre Soeurs. Additionally, the programme seeks to align the goals of all policies, strategies, plans, and regulations with the aim of addressing climate change impacts in the coastal zone over the next 50 years and to provide regular, accessible public information on climate change effects in the coastal zone that will help policymakers and private individuals and businesses.

Mauritius is party to a number of international agreements relating to the environment. These are: Antarctic-Marine Living Resources, Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Marine Life Conservation, Ozone Layer Protection, Ship Pollution, and Wetlands.

In July 2017, the country hosted the second International Conference on Energy, Environment and Climate Change (ICEECC). The conference was intended to:

- Exchange of latest technical information;
- Disseminate of the high-quality research results;
- Present of the new developments in the area; and
- Discuss the future global development on energy access, energy security together with the associated environmental impacts.

The Green Climate Fund aims to transform Mauritius, amongst other countries, into a low-carbon economy. At the date of this writing, they estimated that they had saved the emission of 4.7 million tonnes of carbon dioxide into the atmosphere.

According to Statistics Mauritius, 2,575 GWh of electricity were generated in 2013 amounting to a 3.2% increase in consumption in comparison to 2012. Renewable energy (R.E) constituted 20.6% of

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46 Adaptation Fund. (no date). Climate Change Adaptation Programme in the Coastal Zone of Mauritius. Op cit


total production. Although bagasse remains the key source of renewable energy at 16.4%, the other 4.2% of electricity generation came from hydro, wind, landfill gas and solar PV in 2013. In the following year, 18 GWh of electricity were produced from solar energy while there are currently wind and solar projects that are in development which have a potential capacity of 49 MW.\textsuperscript{49}

Mauritius’ National Budget 2014 lays out regulations to liberalise the sale of electricity to third parties in well-defined developments which enables the generation of electricity from renewable energy sources by private promoters for direct sale to third-party consumption (including tenants). Moreover, opportunities exist for Energy Efficiency Projects targeting Large Energy Consumers and Energy Audit, Management and Advisory Services.

Other Transformational Energy Projects in Mauritius include:

- \textit{Deep Ocean Water Applications (DOWA)} that exploit deep sea water currents for cooling and other uses.
- \textit{Geothermal energy, currently under study, taps into the potential of heat generated by the earth.}
- \textit{Offshore wind farms which, following preliminary results by the Mauritius Research Council, demonstrate the potential for large scale developments in the waters of Mauritius and Rodrigues.}
- \textit{Offshore wave farms demonstrating conclusive results following preliminary studies by the Mauritius Research Council.}\textsuperscript{50}


\textsuperscript{50}Ibid
2. Information and Communication Technology (ICT)

In recent years, Mauritius has placed increasing efforts on developing ICT in the wish become a regional hub for ICT. It has revamped its ICT industry and has retained its position as the African country with the highest ICT development index. This is according to research by Frost & Sullivan in its report *The Telecommunications Market in Southern Africa – Key Fixed and Mobile Market Indicators*.\(^{51}\)

The ICT Development Index (IDI) ranks Malawi at 73 out of 175 countries with an IDI value of 5.55. The rankings also place Mauritius at number one in the 2015 regional rankings.\(^{52}\) Mauritius is regarded as having some of the best telecommunication market indicators in Africa and has been the first with many innovations: Africa’s first cellular system was launched in Mauritius in 1989, the first commercial 3G mobile service in 2004, the world’s first nationwide Worldwide Interoperability for Microwave Access (WiMAX) wireless broadband network in 2005, and one of Africa’s first Internet Protocol Television (IPTV) services in 2006.\(^{53}\)

The Ministry of Technology, Innovation, and Communication is responsible for providing a favourable environment to harness ICT to generate employment, increase national wealth, improve quality of life and create new opportunities for sustainable socio-economic development of the country. Its objectives are as follows:

- **Formulate appropriate policies and provide the necessary legal framework for the development of ICT and its optimal use across all sectors**
- **Facilitate, through the implementation of an E-Government programme, the provision of Government services electronically anytime anywhere for the greater convenience of the public**
- **Promote and facilitate the development of the ICT sector**
- **Ensure that the ICT culture permeates all levels of the society to bridge the digital divide to the extent possible**
- **Promote the development of ICT enabled services including e-business**
- **Encourage the adoption of new technologies and best practices in the ICT sector**
- **Promote capacity building in ICT sector**
- **Promote and facilitate IT Security within Government Systems.**\(^{54}\)

The ICT Authority is the national regulator for the ICT sector and postal services in Mauritius. Its mission is to promote affordable and adequate access to quality ICT services. It provides licenses to operators who wish to start or conduct telecom operations. The ICT Authority also acts as the Controller of Certification Authorities (CCA). The Controller of Certification Authorities as the “Root” Authority certifies the technologies, infrastructure and practices of all the Certification Authorities licensed to issue Digital Signature Certificates. It is also responsible for protecting consumers of telecommunication services.\(^{55}\)

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\(^{55}\) Information and Communication Technology Authority. (no date). About ICT Authority. Retrieved April 25, 2017 from [https://www.icta.mu/home/intro.htm](https://www.icta.mu/home/intro.htm)
2.1 ICT Policy Frameworks

There are various ICT policy frameworks governing the ICT sector in Mauritius. These are described below:

The Electronic Transactions Act 2000

This Act addresses information security and data protection in e-services. It also makes provisions for electronic signatures and their legal bindings.56

The National ICT Policy 2007 - 2011

The Vision of the Government is to make of the ICT sector the fifth pillar of the economy and to transform Mauritius into a regional ICT hub. The main policy objectives are:

1) Strengthen the legal and regulatory framework;
2) Develop ICT infrastructure;
3) Enhanced productivity and efficiency across economic sectors and SMEs through ICT;
4) ICT In Education;
5) Develop a culture of Cyber Security;
6) Accelerate e-Government;
7) Harness ICT For Social Development;
8) Attain ICT Leadership in the region; and
9) Boost ICT Exports.57


This strategy outlines the government’s vision is to make ICT the fifth pillar of the economy and transform Mauritius into a Regional ICT Hub. ICT as the Fifth Pillar. It highlights that to raise ICT to become a ‘pillar’ of the economy requires the development of an Information Economy and Information Society. The former calls for measures which, significantly:

1) enables the ICT sector to contribute into the GDP of Mauritius;
2) leads to the ICT sector employing more Mauritians;
3) makes for a sustained availability of skilled manpower to power the sector; and
4) facilitates contribution from the ICT sector into the Mauritian export basket.

Initiatives to create an information society revolve around the instilling of a “technology temper” in Mauritians to bring about increased adoption and usage of ICT, ICT-enabled knowledge networking among citizens, and generally accepting ICT as a stream of professional persuasion at par with others.58

The strategy also highlights that Mauritius must follow a two-fold strategy to transform itself into a Regional ICT Hub. It must emerge as a leader in some identified select areas of ICT where expertise does not substantially exist in the region and, more generally, it must increasingly be seen as a preferred centre of ICT skills, expertise and employment in the region. This requires Mauritius to cooperate with other countries of the region to boost its availability of skilled ICT manpower.

In order to realize the vision, the strategy points out that holistic interventions are required, and thus identified five ‘Strategic Thrust Areas’:

1) **Support**: Set up a robust, transparent, equitable and progressive support structure for ICT;

2) **Catalyze**: Catalyze economic activity in critical sectors through increased adoption and usage of ICT;

3) **Accelerate**: Accelerate uptake of ICT in society by provision and adoption of ICT services/facilities of use to citizens;

4) **Lead**: Aim for regional leadership by becoming a hub of ICT activity and a regional leader in niche areas; and

5) **Emerge**: Emerge as a global point of reference for offshore services and a Gateway to Africa.

**National ICT Strategic Plan 2011 – 2014 (NICTSP)**

The National ICT Strategic Plan 2011 – 2014 - ‘Towards an i-Mauritius’ recognized that several of what have been identified in the NICTSP as “knowledge economy” targets were unrealistic, and the focus is therefore on a well-connected nation, focussed on increasing ICT penetration in an “information society”. The strategy reviews the previous recommendations of the NICTSP 2007-2011 and assesses whether the country is on the right track to achieve the objectives set in the NICTSP. It also provides guidance to accelerate growth by making the ICT sector a main pillar of the economy while making Mauritius a regional ICT hub. The strategic areas of intervention are:

- Reviewing the regulatory, institutional and policy frameworks to attract investment in the ICT sector and to enhance the performance and optimization of IT services;
- Positioning Mauritius as an excellent export destination and a regional ICT hub; Enhancing e-government services;
- Providing a secure and reliable ICT environment for online transactions;
- Investing in human capital development for ICT; and
- Elaborating on and implementing a Broadband strategy.

**National Broadband Policy (2012)**

This policy views broadband as a key driver of economic growth and national competitiveness since it can contribute to social and cultural development. The National Broadband Policy 2012 – 2020 (NBP2012) outlines a strategic vision for a broadband Intelligent Mauritius, branded as “Towards i-Mauritius”, and establishes national goals regarding broadband while elaborating specific policies to achieve those goals within the overarching National ICT Strategic Plan (NICTSP) 2011-2014 context.


The vision of this strategy is to “to make Mauritius a Cyber Island and the ICT leader in the Region”. Following the analysis of a needs survey conducted in 880 households, online, and with government officials and businesses in Mauritius, the e-Government strategy made several recommendations. These included: market and create awareness of Government Portal and e-services; provide e-services with e-payment and m-payment facilities; promote use of online transactions using Digital Signatures; and democratise access to Government information. These aims were incorporated into the Strategy in an effort to achieve the overall vision.

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59 Ibid
63 Ibid
Open Access Policy for Undersea Cable Landing Stations in Mauritius 2010

The government of Mauritius decided that for any new undersea cable system that will be established in Mauritius, it will follow principles of an “Open Access Policy”: “The Open Access Policy would allow interested parties, on equal conditions with a transparent relation between cost and pricing, to get access to and share communication resources on one level to provide value-added services on another level in a layered communication system architecture. It also encourages market entry from smaller local companies and seeks to ensure that no entity can take a position of dominant market power.”

National Telecommunications Policy (NTP - 2004)

The vision of this policy is to create a telecommunication environment that to allow optimal opportunities for everyone to participate in the modern global information economy. It considers issues such as competition policy, economic regulation, technical regulation, and consumer protection.

National Green IT Policy and Strategy

Green ICT refers to the approach in reducing the energy and other resources consumed and the emissions and other waste produced across the ICT lifecycle – from manufacture, procurement and use of ICT in an organisation to its re-use. It aims to improve environmental sustainability of organisations. More specifically, Green ICT as applied to the use of ICT resources aims to: reduce energy consumption and CO2 emissions during ICT use, and reduce environmental impact of disposal of ICT waste products. In addition, Green ICT also explores how ICT applications can be used to help other sectors conserve and optimise energy usage.

The National Computer Board has held workshops to enable organizations to understand how to implement Green IT practices and measurements to reduce their environmental footprint and to evolve towards a sustainable business.

National Open Source Software Policy

Mauritius also has an open source policy, which outlines its vision as an open knowledge society based on open standards, technological neutrality, and the availability of ICT to empower Mauritian citizens and the private sector.

2.2 ICT Infrastructure

Mauritius has invested significantly in developing its ICT infrastructure in order to develop the sector and make access to the Internet a basic right for all its citizens. Since the end of 2001, the telecommunications sector has moved from an analogue network to a fully digital one, endowed with enhanced capabilities in terms of bandwidth, connectivity and value-added services. Mauritius is well connected to the rest of the world via satellite and through the South Africa Far East (SAFE)
submarine cable providing high bandwidth international connectivity. Connection to the SAFE cable network has enabled a significant tariff reduction on international telecommunications services including International Private Leased Circuit (IPLC) and IP connectivity to the Global Internet (IP-IPLC & IP-VPN). Telecommunication rates are revised on a regular basis to facilitate the growth of ICT and boost the competitiveness of Mauritius as a destination for ICT activities. In 2009, the government launched the Lower Indian Ocean Network (LION) submarine fibre cable system, which links Madagascar, Mauritius and Reunion Island, is 1070 km in length, adding resiliency to the country’s connections. In 2011, the government launched the LION2 submarine cable (3,000 km in length), which extends the LION cable to Kenya via the island of Mayotte. The LION2 cable provides Mayotte, for the first time, with access to a broadband Internet network benefiting from a transmission capacity and service quality equivalent to those available in Europe. The Eastern Africa Submarine Cable System (EASSy), is currently under construction, and will connect Mauritius and countries of Eastern Africa via a high bandwidth fibre optic cable system to the rest of the world.\textsuperscript{69}

\textit{Figure 4} \textit{The LION Submarine Fibre Cable System}\textsuperscript{70}

In recent years, the ICT sector has experienced a rapid and sustained growth and is a major pillar of the Mauritian economy. The ICT sector represented only 4% of the country’s GDP in 2002 and has grown to 5.6% in 2016.\textsuperscript{71}

\textbf{2.3 ICT4D Initiatives}

In working towards achieving its goals as a regional ICT hub, Mauritius has implemented numerous ICT for Development initiatives to ensure that ICT is accessible to all citizens. Some of these initiatives are highlighted below:

\textsuperscript{69} ICT Export Portal. (no date). ICT Industry in Mauritius. Op cit
\textsuperscript{71} ICT Export Portal. (no date). ICT Industry in Mauritius. Op cit
Community Empowerment Programme

The Community Empowerment Programme (CEP) aims to empower Mauritian citizens to build an information society by enabling the creation and sharing of information and knowledge for community development. It is in line with the Government ambition to build an information society and promote development of local content. Its objectives are:

- To facilitate the democratisation of Information and Communication Technologies (ICTs) in order to contribute in the alleviation of poverty within the community through the use of ICTs;
- To develop a Community Web Portal with a view to encourage the development of local content and creativity;
- To promote ICT for educational, personal and social development.72

The CEP consists of the following:

- Developing a Community Web Portal;
- Setting up Computer Clubs on a regional basis in Mauritius;
- Setting up Learning Corners in Mauritius;
- Setting up of Learning Corners in Rodrigues; and
- Creating Public Internet Access Points.

To date, 280 computer clubs with free Internet access have been set up in 23 youth centres, 17 women centres, 57 social welfare centres, 132 community centres, 20 day-care centres and 31 NGOs/Municipal Councils/Village Halls across the island. Around 1.37 million people (including recurrent users) have been able to make use of the facilities. Access to ICT has been further extended by setting up seven Learning Corners in different parts of Mauritius and in eleven other locations with the collaboration of the National Empowerment Foundation (NEF). The CEP has been extended to Rodrigues Island in collaboration with the NEF by setting up of Learning Corners. Each Learning Corner is equipped with three computers and free Internet access and is open to the public. 12 Learning Corners have been set up in Rodrigues. This service is provided free to disabled, orphans, senior citizens, unemployed and a nominal fee for other users.73

Tablet PC Project

The Ministry of Education and Human Resources also began a project in 2013 seeks to provide tablet computers to more than 26,000 students and educators of Form V in 2014 in all government and aided secondary schools. The type of tablet that was selected for the project contains pedagogical materials relevant to Form IV and V curricula and are aligned with the teaching of Cambridge GCE O Level syllabi for Mauritius. They can be used for educational purposes both online and offline.74

Universal ICT Education Programme

The Universal ICT Education Programme (UIEP) aims at developing computer proficiency skills in students, workers, unemployed and the population at large. Through the UIEP, the government aims to train a maximum number of individuals on the internationally acknowledged Internet and Computing Core Certification (IC3) course. The belief is that this programme would create a significant pool of ICT professionals which, in turn, would attract employers interested in using

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Mauritius as an ICT bridge between India and Africa and between India and French-speaking countries. 75

Cyber Caravan Project
The Cyber Caravan Project was launched in November 2000 and aims at making IT facilities available to the community. The NCB operates three Cyber Caravans, which are equipped with 9, 10 and 21 PCs respectively and broadband Internet Connection. IT Support Officers provide training on board according to the needs of people, regardless of age, education background or profession. Training includes ICT Awareness, Microsoft Office Package (MOP) and The Internet and Computing Core Certification (IC3). As at 5th June 2017, about 203,407 persons have followed ICT Literacy and ICT Awareness Courses. 76, 77

Community Web Portal
The Community Web Portal (CWP), launched in 2013 encourages the development of local content and creativity. It is a platform to facilitate the process for the community to make use of ICT to participate in the socio-economic development of the country. Its objectives are to:

- Encourage the development of local content and creativity;
- Democratise access to information; and
- Promoting community development by enabling collaboration and knowledge sharing and facilitating communication. 78

Thus far, content for above 100 villages and localities of Mauritius has been gathered. Contents for the remaining locations of Mauritius are being gathered progressively. 79

eRegistry Project
The Registrar-General Department (RGD) embarked on implementing the second phase of the Mauritius eRegistry Project (MeRP) to transform the RGD from a Service to an e-Service organisation. The second phase of the MeRP focuses on transforming the services to electronic mode. The key objective is to provide the RGD and stakeholders an electronic dashboard through which they can perform the following tasks: eSubmission of documents; ePayment of fees; eRegistration; eSearch; and eDelivery of registered documents. The aim is to enable the RGD to have an integrated system for its customers by harnessing the latest technologies and solutions that can provide integrated workflows and options for businesses, professionals and members of the public to conduct transactions with the RGD online. 80

Mauritius National Identity Scheme
The Mauritius National Identity Scheme was implemented in 2013 as a new system that uses Smart identity cards which are more secure and effective. 81

77 IST Africa. (no date). Current ICT Initiatives and projects – Mauritius. Op cit
78 IST Africa. (no date). Current ICT Initiatives and projects – Mauritius. Op cit
**Crime Occurrence Tracking System (COTS)**

This project provides for the automation of all processes from the electronic lodging of a complaint at the Police Station to the sentence of the court, with electronic tracking of intermediate phases. The system allows for close monitoring of crime, and real-time generation of crime statistics. Thus far, the project was piloted at two Police Divisions, and it is being extended to a further five Police Divisions.\(^\text{82}\)

**ePrison**

The e-Prison system was launched in May 2014 for a better management of the prison inmates and a follow-up on their rehabilitation.\(^\text{83}\)

**E-Health System**

There are plans to develop an e-health system would ensure the computerization of all health services in hospitals, area health centres and Community health centres. It is seen as a major building block towards having a National Health Information Systems that spans over the public and private health sectors.\(^\text{84}\)

**Penalty Point Management System**

The Traffic Branch of the Mauritius Police Force (MPF) is currently implementing a Penalty Point Management System (PPMS) for the management of penalty points for drivers in Mauritius and Rodrigues.\(^\text{85}\)

**e-Judiciary**

In April 2013, an e-Filing System was implemented at the Commercial Court for commercial cases, which impacts on the way cases are filed and processed in the courts. The next stage will be the roll out of the solution to other courts including district courts for the trial of criminal cases.\(^\text{86}\)

**NCB ICT Incubator Centre**

The NCB ICT Incubator Centre was set up to encourage young entrepreneurs to create start-ups in the ICT sector by providing them with logistic and business support. NCB has revamped its ICT Incubator Centre to a Technopreneurship Programme to encourage innovation and creativity to develop a community of Entrepreneurs in the ICT Sector. The NCB Provides Guidance, Business Advice, Support and Training to Start Ups under its Technopreneurship Programme.\(^\text{87, 88}\)

**ICT Academy**

An ICT Academy was set up by the MTCI and operated by the NCB, with the following objectives:

- *To provide industry Led Trainings in view to address the mismatch in terms of available manpower and industry requirements.*
- *To maintain high standards that will be recognized and accredited by the ICT industry.*

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\(^\text{83}\) IST Africa. (no date). Current ICT Initiatives and projects – Mauritius. Op cit

\(^\text{84}\) Central Informatics Bureau. (no date). Projects Under Implementation. Op cit

\(^\text{85}\) Ibid

\(^\text{86}\) IST Africa. (no date). Current ICT Initiatives and projects – Mauritius. Op cit


\(^\text{88}\) IST Africa. (no date). Current ICT Initiatives and projects – Mauritius. Op cit
Various training programmes are implemented at the Academy to increase employability, address the skill shortage that exist in the ICT and Business Process Outsourcing (BPO) sector and to bridge the skill mismatch gap between unemployed IT jobseekers and industry requirements. Training programmes are dispensed at the Academy in collaboration with different Industry players such SIL, IBM, Microsoft, TWO institute for Cisco Academy, OTAM, MITIA and others. Trainings such as BPO Certification courses are also provided as required. The Training and Work Placement Scheme encourages ICT-BPO companies to train unemployed youths having a School Certificate (SC), Higher School Certificate (HSC), Diploma and/or Degree on an industry led Mauritius Qualification Authority (MQA) approved course and to offer them a placement. The scheme entitles ICT/BPO companies to claim the refund of up to 50% of stipend and 50% of training costs, where applicable. Another scheme, the Work-Based Learning for University Students scheme, allows Employers to identify talents before graduation among Tertiary Level Students through a 'Work Based Learning' concept. ICT/BPO companies are encouraged to recruit trainees from the Instructional Systems Development (ISD) Programme database and offer them a work-based training/placement. Trainees should undergo the training/placement for at least 2 times for a period of 6 weeks each during a year of study. Participants receive an all-inclusive stipend during the placement. The scheme refunds 50% of the stipend paid to the ICT/BPO Company.90

Implementation of Anti-Cyber Threat Monitoring System

The government is also looking at establishing a cyber threat monitoring system that will enable the Computer Emergency Response Team (CERT) to better respond, monitor and coordinate cyber-threats at the national level. The system will have the capability for early detection of potentially devastating cyber-attacks and the ability to respond to cyber security incidents in real time.91

2.4 Key Actors and Players

<table>
<thead>
<tr>
<th>Actor/Player</th>
<th>Role and Area of Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of Technology, Innovation and Communication</td>
<td>The ministry is responsible for formulating the policies and legal framework to implement ICT in all relevant sectors within Mauritius. This includes implementing the e-government programme and promoting the development of e-business.92</td>
</tr>
<tr>
<td>ICT Authority</td>
<td>Operators who want to start or conduct telecom operations must apply to the ICT Authority for a licence. The ICT Authority is also in charge of the Mauritian numbering plan and allocates number resources to telecom operators. It acts as the Controller of Certification Authorities (CCA). The Controller of Certification Authorities as the “Root” Authority certifies the technologies, infrastructure and practices of all the Certification Authorities licensed to issue Digital Signature Certificates. It is also responsible for protecting consumers of</td>
</tr>
</tbody>
</table>

90 IST Africa. (no date). Current ICT Initiatives and projects – Mauritius. Op cit
91 Ibid
<table>
<thead>
<tr>
<th>Actor/Player</th>
<th>Role and Area of Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Computer Board (NCB)</td>
<td>Government agency responsible for aiding in the development of ICT in Mauritius. The parastatal does this by promoting ICT literacy and the benefits of ICT for the Mauritian population. It also encourages the use of ICT in business and the export market for ICT.</td>
</tr>
<tr>
<td>Computer Emergency Response Team (CERT-MU)</td>
<td>Operates under the NCB and aims to give information and assistance for proactive measures that will mitigate the chances of information security incidents, as well as dealing with these incidences when they occur.</td>
</tr>
</tbody>
</table>

### 2.5 Challenges in ICT Development

Despite the many efforts to make Mauritius an ICT hub, Mauritius is still far from its objective of becoming a fully-fledged ICT hub. The country still requires heavy investment in education and infrastructure to help the industry move up the value chain. Whilst the government has voiced high ambitions, there has been slow action towards attaining them. Additionally, new financial structures are required.96

Moreover, there is a need for people with ICT qualifications in the country.97 In a SWOT analysis conducted for the National ICT Policy 2011-2014, some of the weaknesses of the ICT sector that were found included a high level of bureaucracy within the ICT sector, an unsatisfactory technocratic capacity within the Ministry, the size and location of Mauritius, and outdated institutional organisation which heightens the regulatory risk, poses a threat to regulatory efficiency, and impedes investment in the sector. The threats that the policy notes include institutional reluctance for change as well as a lack of budget.98

Another challenge is that the speed of connectivity in the country remains erratic, with an average speed of 19.91mb per second. This ranks Mauritius at 52nd place globally in the NetIndex 2015 rankings. Small and Medium Enterprises (SMEs) are also struggling with the ICT sector as there are indications that there is not enough government support to help SMEs integrate ICTs into their businesses. The ICT sector employs 19,000 professional, but there are not enough skills in the country to develop the ICT industry.99

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3. Education

The Ministry of Education and Human Resources, Tertiary Education and Scientific Research is responsible for education in Mauritius. Education is compulsory from age five up to the age of sixteen. The present education system allows a student to study for a period of two years at pre-primary level.\textsuperscript{100} Children enter primary school at five years of age, where they study for six years. Students must pass a national examination, conducted by the Mauritius Examination Syndicate (MES), to receive a Certificate of Primary Education (CPE) and gain admission to secondary school. Secondary Education is for six years. After the first four of these, students write their O-Level in at least six subjects. If they wish to, they may remain on for the final two years, in preparation for the A-Level examinations administered by the University of Cambridge.\textsuperscript{101} The University of Cambridge Local Examinations Syndicate, along with the MES, oversees the final examinations for secondary students. The official language of instruction at all levels is English.\textsuperscript{102}

Private schools are common in Mauritius mainly because the Education Act allows any business or individual in the country to create a primary or secondary school. The Private Secondary Schools Authority oversees government funding to private institutions. Private postsecondary institutions must be approved by the Industrial and Vocational Training Board and are subject to audit by the National Accreditation and Equivalence Council.\textsuperscript{103}

Pre-vocational Education (PVE) is provided in secondary schools for those who have failed the CPE examinations. This involves a four-year programme which aims at bridging their learning gaps and preparing them for further vocational training. The PVE programme is conducted in the secondary schools for the first three years and in Mauritius Institute of Training and Development (MITD) centres for the fourth year. Successful completion leads to the award of a National Qualifications Framework (NQF) level 2 certificate that allows the student to either join the world of work or continue with further vocational training at National Certificate Level 3 (NC3).\textsuperscript{104}

Students who complete their A-levels are eligible for post-secondary and university studies offered by a number of tertiary institutions including nine publicly funded institutions (including the University of Mauritius and the University of Technology) and 55 privately owned and administered tertiary education institutions.\textsuperscript{105}

In higher education, the Action Plan for the Tertiary Education Strategic Plan 2013-2025 highlights five main strategic directions for the sector: widening access and ensuring equity; improving quality and relevance; internationalisation of tertiary education; enhancing research and innovation; and strengthening governance and financial sustainability.\textsuperscript{106}

\textsuperscript{101} Foreign Credits. (no date). Education System in Mauritius. Retrieved May 9, 2017 from http://www.classbase.com/countries/Mauritius/Education-System
\textsuperscript{103} Ibid
\textsuperscript{105} Ibid
The tables below give an indication of the profile of primary, secondary, and Technical and Vocational Education and Training in Mauritius.

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### Table 1  Primary education profile (2015)\(^{108}\)

<table>
<thead>
<tr>
<th>Schools</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>223</td>
</tr>
<tr>
<td>Private Aided</td>
<td>53</td>
</tr>
<tr>
<td>Private Unaided</td>
<td>44</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>320</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Enrolment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>51,287</td>
</tr>
<tr>
<td>Female</td>
<td>50,135</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>101,422</strong></td>
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</table>

<table>
<thead>
<tr>
<th>Teachers</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Number of teachers</td>
<td>5,400</td>
</tr>
<tr>
<td>Teacher: pupil ratio</td>
<td>25</td>
</tr>
</tbody>
</table>

### Table 2  Secondary education profile (2015)\(^{109}\)

<table>
<thead>
<tr>
<th>Schools</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>State</td>
<td>68</td>
</tr>
<tr>
<td>Private Aided</td>
<td>86</td>
</tr>
<tr>
<td>Private Unaided</td>
<td>23</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>177</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Enrolment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>54,694</td>
</tr>
<tr>
<td>Female</td>
<td>59,617</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>114,311</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teachers</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of teachers</td>
<td>7,531</td>
</tr>
<tr>
<td>Teacher: pupil ratio</td>
<td>15</td>
</tr>
</tbody>
</table>

### Table 3  Technical and Vocational education enrolment (2015)\(^{110}\)

<table>
<thead>
<tr>
<th>Centres</th>
<th>15</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Enrolment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>5,516</td>
</tr>
<tr>
<td>Female</td>
<td>1,368</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6,884</strong></td>
</tr>
</tbody>
</table>

In December 2015, the National Curriculum Framework (NCF) 2015: Nine-Year Continuous Basic Education, and its accompanying document, the NCF Grades 1 to 6, charting out what has to be taught and learnt, and when and how this should be done so as to cater to the needs for the holistic development of all learners; were launched. This initiative aims is to offer a comprehensive basic education cycle that provides students with the foundational skills for success in all further learning leading to an empowered 2030 citizenry. The proposed education structure will comprise 13 grades as follows:

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\(^{109}\) Ibid

\(^{110}\) Ibid
Table 4  Proposed education structure

<table>
<thead>
<tr>
<th>Grade</th>
<th>Level of Education</th>
<th>School Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grades 1-6</td>
<td>Basic Education (Primary)</td>
<td>Primary Schools</td>
</tr>
<tr>
<td>Grades 7-9</td>
<td>Basic Education (Lower Secondary)</td>
<td>Regional Secondary Schools</td>
</tr>
<tr>
<td>Grades 10-11</td>
<td>Upper Secondary</td>
<td>Regional Secondary Schools/Academies</td>
</tr>
<tr>
<td>Grades 12-13</td>
<td>Upper Secondary</td>
<td>Regional Secondary Schools/Academies/Polytechnics</td>
</tr>
</tbody>
</table>

The core of the reform will be the replacement of the Certificate of Primary Education (CPE) by the Primary School Achievement Certificate at the end of Grade 6 as from 2017 onwards; the introduction of a National Certificate of Education as from 2020 onwards; and the setting up of Academies which will run classes from Grades 10 to 13 and specialise in certain streams/subjects, and of Polytechnics.112

State-owned secondary schools are all equipped with a minimum of ten computers; private schools seek out grant funding for instructional technology. Similarly, science classrooms in state schools are furnished with laboratory implements, while private institutions receive loans to fund the purchase of similar equipment. Textbooks are free to all primary school students. Secondary school students must pay for their texts, which are standardized at the lower level and selected by school-based curriculum committees for upper level courses.113

3.1. ICT in Education

As part of Government’s broader strategy to make Mauritius a regional ICT hub, schools are being encouraged to introduce and adopt ICT as a pedagogical tool across the curriculum. The government has thus invested in providing ICT infrastructure to all schools in Mauritius. Data indicates that in March 2015, 439 of the 939 pre-primary schools (47%) had computers. All primary and secondary schools (general and pre-vocational) were equipped with computers. With regards to internet access for students, 10% pre-primary, 41% primary, and 99% secondary students had access to the internet at school.

Moreover, Computer-Assisted Instruction (CAI) is where teachers use computers as a teaching tool for presenting instructional material. CAI is almost universal in Mauritian schools. A very important aspect of successful CAI depends on the number of computers available to students – there are computer laboratories in 72% of primary schools and 93% of secondary schools.114

Table 5  ICT in pre-primary, primary, and secondary schools (2015)

<table>
<thead>
<tr>
<th></th>
<th>Pre-primary</th>
<th>Primary</th>
<th>Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>%</td>
<td>Number</td>
<td>%</td>
</tr>
</tbody>
</table>


112 Ibid


<table>
<thead>
<tr>
<th></th>
<th>Pre-primary</th>
<th>Primary</th>
<th>Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number  %</td>
<td>Number %</td>
<td>Number %</td>
</tr>
<tr>
<td>Schools having computers</td>
<td>439 47</td>
<td>320 100</td>
<td>178 100</td>
</tr>
<tr>
<td>Number of computers</td>
<td>965 -</td>
<td>5,407 -</td>
<td>8,078 -</td>
</tr>
<tr>
<td>Schools having access to</td>
<td>194 21</td>
<td>301 94</td>
<td>176 99</td>
</tr>
<tr>
<td>internet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schools having a website</td>
<td>52 6</td>
<td>36 11</td>
<td>93 52</td>
</tr>
<tr>
<td>Schools with a computer used</td>
<td>358 38</td>
<td>308 96</td>
<td>177 99</td>
</tr>
<tr>
<td>for educational purposes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schools with a television</td>
<td>582 62</td>
<td>291 91</td>
<td>158 89</td>
</tr>
<tr>
<td>used for educational purposes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schools having ICT-assisted</td>
<td>809 86</td>
<td>316 99</td>
<td>166 93</td>
</tr>
<tr>
<td>instruction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schools having ICT support</td>
<td>169 18</td>
<td>298 93</td>
<td>165 93</td>
</tr>
<tr>
<td>service</td>
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</table>

There are several initiatives to promote the use of ICT in education. Some examples are noted below:

The National Computer Board (NCB) operating under the aegis of the MTCI has been implementing the Universal ICT Education Programme (UIEP) since September 2006. One of the priorities of the programme is the introduction of the internationally acknowledged Internet and \Computing Core Certification (IC3) course with a view of making it the benchmark for digital literacy/proficiency in Mauritius.

The programme aims at training a maximum number of persons comprising students, employees, non-employee and the population at large on the IC3 course in line with Government’s vision of accelerating the transformation of Mauritius into an ICT hub and in developing ICT into a major pillar of the economy.

The IC3 course 45 hrs in duration and trainings are done in state secondary colleges after school hours. To date 197,000 people have been trained on IC3.

In January 2010, NCB launched the UIEP Phase II whereby more than 3,000 online professional IT and non-IT courses were made available at very interesting prices to all those who complete the IC3 or already have a recognised certificate in IT. The courses modules are bundled into 15 separate packages and includes course materials leading to popular certifications such as MCSE, MCSA, MCAD, CISCO, CompTia, Oracle, A+, N+, Server+, Linux, Project Management etc. This phase II is currently being reviewed where most of the advanced courses will be delivered by the ICT Academy. 116

According to Ministry, there is an increasing platform of digital tools and content in primary schools from standards one to six. All primary and secondary schools are quipped with computer rooms/labs.

The culture of e-education is being expanded with training of school officials at all levels (including management). In addition, there are ICT support staff at all primary schools and ICT technicians in all zones.\footnote{Auckbur, R. (no date). Digital Education in Mauritius: A Ministry Perspective. Retrieved June 8, 2017 from \url{http://www.tec.mu/pdf_downloads/depolpre/rauckbur.pdf}}

The \textit{Sankoré project} aims to empower teachers and other stakeholders in the education sector to create, use and share digital educational resources. The project relies on the following to bring about qualitative change in the classroom:

1) The provision of an interactive interface (an interactive whiteboard);  
2) A platform for sharing digital educational resources (Sankoré website); and 

In 2014, Tablet PCs were given to Form V students for use at school, while the secondary school classrooms are being provided with Wi-Fi connection and high bandwidth Internet.\footnote{IST Africa. (2017). Current ICT Initiatives and projects – Mauritius. Op cit} Interactive projectors were introduced at upper primary level through the Sankore project.\footnote{Ibid}

It is not clear whether this project is still running as the website did not have any content at the time of preparing this report.


\textbf{Cisco Systems} is a global company that advocates for networking for the Internet. Within Africa, the company is an important partner in the New Partnership for Africa’s Development (NEPAD) e-Schools Programme. Cisco has contributed financial and human resources to the programme also lead a consortium of similar companies in a project that aimed to install networking equipment for Internet access and satellite connectivity in schools around Africa, including Rwanda, Mauritius, and Ghana. Cisco has also spearheaded an initiative to promote digital education and teacher training in the aforementioned countries, as well as establishing a Networking Academy programme which
upskills students in designing, building, and maintaining computer networks. Mauritius has also benefitted from these Network Academies.\textsuperscript{124}

The \textbf{Microsoft Partners in Learning (PIL) programme} is another project which promotes innovative teaching strategies using IT and the use of search engines as a pedagogical tool. Managed by the Microsoft Indian Ocean and French Pacific branch, based in Mauritius, the programme seeks to promote the use and integration of ICT into Mauritian classrooms with a specific focus on primary and secondary education.\textsuperscript{125} Recently Webcasting has been introduced for educational interactions between the different stakeholders such as rectors, educators and students.\textsuperscript{126}

\section*{3.2. Curriculum}

The Mauritius Institute of Education (MIE) is a parastatal body, working under the aegis of the Ministry of Education and Human Resources, Tertiary Education and Scientific Research. MIE is responsible for Research and Curriculum Development. It is the body in charge of developing the curriculum, textbook writing and evaluation.\textsuperscript{127}

The primary education curriculum framework makes mention of embedding ICT to improve teaching and learning. It highlights the use of ICT as a pedagogical support in primary and pre-vocational schools. The ICT syllabus is designed in such a way that it is integrated across the curriculum across various subject areas.\textsuperscript{128} It is positive that the curriculum materials for the foundation phase are available online for anyone to view and download.\textsuperscript{129}

The secondary curriculum also mentioned the integration of ICT into the curriculum. ICT is also one of the core subjects (with English, French, Science, and Mathematics). Thus, ICT is used as a tool for teaching and learning, as well as a discipline on its own.\textsuperscript{130} Overall, a 2015 UNESCO report on ICT in Education in Sub-Saharan Africa found that there was a course in computer skills or computing at Primary, Lower Secondary and Upper Secondary levels.\textsuperscript{131}

\section*{3.2 Professional Development}

MIE provides training for the pre-primary, primary and secondary sectors of education, targeting all cadres, including teaching and management.\textsuperscript{132} The MIE also runs a training programme for teachers working in pre-vocational schools.

\footnotesize{$^{126}$ Bezern. (no date). ICT tools and its Application in Mauritius in Teaching. Op cit}$\hfill$
\footnotesize{$^{127}$ Mauritius Institute of Education. (no date). About Us. Retrieved May 10, 2017 from \url{http://www.mie.ac.mu/home/categories/about-us.html}$\hfill$
\footnotesize{$^{129}$ Mauritius Institute of Education. (no date). No title. Retrieved June 8, 2017 from \url{http://www.mie.ac.mu/curriculum.html}$\hfill$
\footnotesize{$^{131}$ UNESCO. (2015). ICT in Education in Sub-Saharan Africa: A Comparative Analysis of Basic e-Readiness in Schools. Op cit}$\hfill$
\footnotesize{$^{132}$ Mauritius Institute of Education. (no date). About Us. Op cit}$
It is worth mentioning that the new national Curriculum Framework specifically notes that all teachers will be provided with technological skills to manage ICT and social networks, and to adopt ICT-mediated learning.  

3.3 Key Actors and Players

<table>
<thead>
<tr>
<th>Actor/Player</th>
<th>Role and Area of Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Ministry of Education and Human Resources, Tertiary Education and Scientific Research</td>
<td>Aims to provide good quality education aiding in Human Resource development to make Mauritius an example of global progress and innovation.</td>
</tr>
<tr>
<td>Mauritius Institute of Education (MIE)</td>
<td>Parastatal body, responsible for teacher professional development, research, textbook writing, evaluation, and curriculum development.</td>
</tr>
<tr>
<td>Cisco Systems</td>
<td>A global company that advocates for networking for the Internet. Within Africa, the company is an important partner in the New Partnership for Africa’s Development (NEPAD) e-Schools Programme.</td>
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<tr>
<td>Microsoft</td>
<td>Has started ICT initiatives throughout Africa, including Mauritius. The Microsoft Partners in Learning (PIL) programme promotes innovative teaching strategies using IT and the use of search engines as a pedagogical tool.</td>
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3.4 Challenges facing the education sector

Although the National ICT Policy provides for internet connection for all schools, reports show serious connectivity problems. In tertiary education, while the Mauritius College of the Air, the Centre for Professional Development and Lifelong Learning and the Virtual Centre for Innovation and Learning Technologies at the Open University of Mauritius, offer online learning other tertiary institutions continue to lag behind.

Another significant challenge in the education system is that it remains decidedly pyramidal, meaning that many children leave the education system due to resource constraints and other reasons. This, in turn, affects the development of the knowledge society because a large number of students do not have the opportunity to upskill themselves sufficiently to be able to contribute in that respect.

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4. Science, Technology, and Innovation (STI)

The president of Mauritius recognizes the significance of STI and the importance for Mauritius to develop new strategies and policies to bolster its economy, help generate employment, and improve the living conditions of its people. She specifically acknowledges the importance of building new pillars of development in which science and technology remain the major drivers of sustained economic growth.¹⁴⁰

The responsibility for STI in Mauritius rests with both the Ministry of Technology, Communication, and Innovation, and the Ministry of Education and Human Resources, Tertiary Education and Scientific Research.

The Rajiv Gandhi Science Centre (RGSC) is a parastatal body working under the support of the Ministry of Education and Human Resources, Tertiary Education and Scientific Research. The Centre’s Trust Fund was established in 1994 by an Act of Parliament with the aim of promoting Science and Technology, supplementing school education through non-formal programmes and creating awareness on developments in Science and Technology among the public. The vision of the centre is to be a centre of excellence in the communication and promotion of Science and Technology. Its mission is to serve as a centre for non-formal education and popularization of Science and Technology among Mauritians through various media. Its objectives are as follows:

- Create awareness for Science and Technology.
- Encourage creativity and innovation particularly among young people.
- Supplement education in Science and Technology at all levels.
- Enhance public understanding of Science and Technology.¹⁴¹

The RGSC is active in promoting STI amongst the student population through initiatives such as exhibitions, workshops, lectures, competitions and science shows.¹⁴²

4.1. STI Policies and Objectives

No relevant STI policies were located at the time of writing the report. It is possible that these policies are still being developed.

4.2. Research and Innovation

Mauritius is investing in a collaborative research and development grant scheme to promote innovative ideas and commercialize them to create jobs, and ultimately, wealth. The Collaborative Research and Innovation (CRI) grant scheme was launched in 2014, and covers the financing of research and innovation projects, including a collaborative research scheme, small business innovative scheme and research by public sector institutions. A joint venture has also been established to provide opportunities for local companies across public and private sectors to undertake sustainable development projects and help transform Mauritius into a knowledge industry. Under this scheme, local companies which are willing to undertake a project can either

¹⁴¹ Rajiv Gandhi Science Centre. (no date). About the Centre. Retrieved June 6, 2017 from http://rgsc.govmu.org/English/AboutUs/Pages/About-the-Centre.aspx
partner with a local research agency, a tertiary education institution or opt for an international institution.¹⁴³

There are several organizations and bodies involved in research activities in Mauritius. These are described briefly.

**Mauritius Research Council**

The Mauritius Research Council (MRC) acts as a central body to advise Government on Science and Technology issues and to influence the direction of technological innovation by funding research projects in areas of national priority and encouraging strategic partnerships.¹⁴⁴

One of the core objectives of the Mauritius Research Council’s (MRC) includes the promotion of innovation. It recognizes the value and benefit of investing in innovation, which is considered as a key driver of economic growth and international competitiveness. The MRC supports and promotes innovation through a variety of activities and initiatives including:

- Funding Schemes (there are currently 18 different funding schemes);
- Vehicles of Innovation;
- Strategic Planning & Policy Making; and
- Innovation through Technopreneurship.¹⁴⁵

The MRC is involved in coordinating the development of the National Innovation Framework, designed to focus their strategy for innovation through an understanding of the priority areas for Mauritius and where its scientific, technological and social actors can collaborate and maximize their collective impact. The National Innovation Framework aims at promoting creativity in businesses and at enhancing techno-preneurship through strong Science and Technology and Research cast within a multidisciplinary and collaborative environment. The document is still in the process of being finalised.¹⁴⁶

The Mauritius Research Council Business Research Incubator Centre (MRC-BRIC) has been operating since March 2011 and has provided assistance to some 15 pre-start-up ideas. Incubatees benefit from regular in-house counselling, meeting with potential venture capitalists, and exposure to business angels.¹⁴⁷

**Food and Agricultural Research Council**

The Food and Agricultural Research Council is involved in agricultural research planning, promotion, monitoring, and evaluation. It undertakes research, training, development and outreach activities in selected priority areas. It is also involved in providing research-based policy advice and development of national strategies for research & development and related themes in the Agri-food sector and its natural resource base.¹⁴⁸ The Council is involved in steering several development projects relating to land use, hydroponics, and biotechnology regulation.

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¹⁴⁶ Ibid

¹⁴⁷ Ibid

Mauritius Sugar Industry Research Institute

The primary objectives of the Mauritius Sugar Industry Research Institute (MSIRI) are to:

• Conduct research on canes to enhance the cost effectiveness and competitiveness of the cane industry;
• Conduct research on technical and engineering options for improving the efficiency of factories and for value additions to the co-products;
• Maintain effective interaction with the agricultural sector and with relevant national and international bodies.149

Centre for Biomedical and Biomaterials Research

The Centre for Biomedical and Biomaterials Research (CBBR) is attached to the Faculty of Science, and its labs and offices are located at the Mauritius Sugar Industry Research Institute. It was designated as a Centre of Excellence by the African Network for Drugs and Diagnostics Innovation (ANDI). The centre is a first multi-disciplinary research Centre of its kind in Mauritius, and pools together researchers from Biosciences, Biotechnology, Bioengineering, Chemistry and Pharmaceutical expertise. It aims to assist Mauritius in its endeavour to develop knowledge-based industries and innovation, and has the specific objectives of building a critical mass of expertise, resources, and technology; fostering multi-institutional partnerships; assisting in technology transfer; developing clinical care facilities; and acting as an interface between the University and the private sector at national level.150

Mauritius Institute of Health

The Mauritius Institute of Health (MIH) was established as a parastatal body under the aegis of the Ministry of Health & Quality of Life, responsible for undertaking training and research in the health sector and health related disciplines.151 The institute comprises four units:

• The Training Unit has the expertise to develop educational programmes for the health sector. Its activities include training needs analysis; curriculum development for different categories of health workers; organisation of courses, workshops and seminars; in-service training of health personnel and continuing professional education.
• The Research Unit is mainly concerned with the conduct of Health System Research (HSR), the evaluation of health programmes and epidemiological studies.
• The Media Unit:-The Documentation Section responsible for the lending of books/publications, audio-visual services and video recordings. The Printing and Publishing Section responsible for photocopy services, desktop publishing and the production of learning/teaching materials.
• The Administrative Unit looks after staff welfare and personnel management, finance and stores, transport services, maintenance of vehicles, building and equipment, logistic support and catering services.152

Mauritius Oceanography Institute

The Mauritius Oceanography Institute (MOI), a parastatal research organisation, advises Government on the formulation and implementation of policies and programmes in respect to

152 Mauritius Institute of Health. (no date). Functions of MIH. Retrieved June 6, 2017 from http://mih.govmu.org/English/AboutUs/Pages/Senior-Staff-Organization.aspx
oceanography. The Institute also undertakes and coordinates research and development in that field.153

The Faculty of Science at the University of Mauritius is responsible for spearheading a significant portion of the country’s research output. Its contribution includes Astronomy and Astrophysics, Biomedical Application of Polymers, Climate Change, Computational Chemistry

Not all efforts to entrench STI in Mauritius have been successful. In 2014, it was announced that the Indian Institute of Technology (IIT) in Delhi, India would start planning to open up an International Institution of Technology Research Academy (IIT-RA) in Mauritius, funded partially by the Mauritian Government. However, after considerable controversy, IIT-Delhi announced that it would not be continuing with these plans in the foreseeable future. The Institute also pulled its resources from Mauritian institutions.154

Figure 6  Research and Development Expenditure in Mauritius (% of GDP)155

From the above figure, it is evident that expenditure on research and development in Mauritius decreased sharply between 2004 and 2012. This is an alarming finding if Mauritius wants to strive towards becoming a knowledge society.

4.3. Human Resource Development

The inclusion of the Human Resources portfolio within the Ministry of Education was made to focus more holistically on the country’s education and training needs. There are also various initiatives to develop human resources in STI. Examples of some notable initiatives are noted below:

Science and Technology Enrolment Programme (STEP)

STEP is an educational programme designed to deliver interactive study days in Mauritian schools, with the ultimate aim of increasing student enrolment within the sciences. The programme also aims at fostering young Mauritian students to think seriously about pursuing a career in the sciences, and help provide the practical support to do so. STEP has as objectives to change perceptions of science by widening students’ experiences by giving them opportunities to meet specialists, helping them to link the subject to the real world, and promoting career prospects.156

Mrs Ameenah Gurib-Fakim PhD Scholarships Awarded

In 2015, ten young people were presented the Mrs Ameenah Gurib-Fakim PhD Scholarship Award. The objective is to provide direct support to Mauritian scientists/researchers as part of the effort to promote science, technology and innovation as key drivers of growth and development. The PhD Programme is being jointly financed by the Planet Earth Institute and the Bill and Melinda Gates Foundation Initiative in partnership with the African Academy of Sciences. Research areas of focus are: water and sanitation, energy, agri-business, health and blue-sky research.157

The Mauritian government is offering tax breaks for scientists who move against the brain drain and stay in the country instead of moving to the west and other countries. It remains challenging for scientists who stay behind in Mauritius as they struggle to find adequate funding for their research.158

The Mauritian Research Council offers three schemes to increase capacity in STI:

- MRC Post Graduate Research Award targets unemployed and employed graduates to undertake research studies at a local tertiary education institution, leading to an MPhil or PhD and DBA.
- Best Young Mauritian Scientist Award recognises and rewards the work of three best young Mauritian scientists in each of the fields of Natural Sciences, Social Sciences and Technology.
- Best Mauritian Scientist Award is an initiative of the Ministry of Tertiary Education, Science, Research and Technology. The award is meant to specially recognise and reward the work of the best Mauritian scientist. The Award covers all forms of sciences, including Natural and Social Sciences.159

### 4.4. Key Actors and Players

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</tr>
<tr>
<td>Ministry of Technology, Innovation and Communication</td>
<td>The ministry is responsible for formulating the policies and legal framework to implement ICT in all relevant sectors within Mauritius.(^{161})</td>
</tr>
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<td>The Rajiv Gandhi Science Centre (RGSC)</td>
<td>A parastatal body working under the support of the Ministry of Education and Human Resources, Tertiary Education and Scientific Research. It has the aim of promoting Science and Technology, supplementing school education through non-formal programmes and creating awareness on developments in Science and Technology among the public.(^{162})</td>
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</tr>
<tr>
<td>University of</td>
<td>Provides multi-level tertiary education and training, including</td>
</tr>
</tbody>
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\(^{162}\) The Rajiv Gandhi Science Centre (RGSC). (2017). Homepage. Retrieved June 13, 2017 from [http://rgsc.govmu.org/English/Pages/default.aspx](http://rgsc.govmu.org/English/Pages/default.aspx)
4.5. Challenges facing the STI sector

The various new reports and initiatives indicate that much is done to bolster STI in Mauritius. With a background as a biodiversity scientist, the president of the country highlights that STI can provide answers to various threats and challenges and yet has never been centre stage in our decision-making processes. One of the consequences to this oversight has been brain drain. Many talented Africans have left to greener pastures in the west. The need to provide an enabling environment, and to prevent this drain of talent, is high on government agenda. In Mauritius, the government is enacting policies and providing incentives like a 10-year tax holiday for those who return. Research priorities are also a challenge because they are determined outside of the African continent, meaning that, for example, there is significant funding for research in HIV and AIDS, malaria and tuberculosis but there is not enough money being spent on research in tropical diseases. Additionally, to date, there is no STI policy to specifically drive the sector.

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<table>
<thead>
<tr>
<th>Actor/Player</th>
<th>Role and Area of Development</th>
</tr>
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| Technology Mauritius (UTM) | continuing professional education aimed at ongoing capacity building for increasingly technology-driven and enterprise-based developments.  

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5. Conclusion

Mauritius has been able to begin harnessing its potential to become one of the leading countries in Africa with regard to the knowledge society. Politically, Mauritius is strong – particularly when compared to its position amongst other African countries. Mauritius was given an overall governance score of 79.9 out of 100. This score puts the country considerably higher than the average score in Africa of 50.0 and higher than the Southern African regional score of 58.3. Mauritius’ highest score was in Human Development, for which it scored 83.7, while its lowest scoring category was a score of 76.0 in Participation and Human Rights.  

Life expectancy in Mauritius is 75.6 years while the fertility rate is 1.75 children per woman and 63.8% of the population use contraceptives. The country also has a low HIV/AIDS prevalence. These are all indications of strong social progress, which is a key element of building a knowledge society.

The Mauritian economy grew by 3.7% in 2015 – slightly more than the 3.6% recorded in 2014, and is projected to grow by 4% in 2017 on the back of stronger domestic and external demand. Mauritius is faced with constraints that hinder further growth of its economy primarily precipitated by an erosion of its preferences in the international community in sugar and textile sectors, general dismantling of subsidies worldwide and the rapid emergence of low-cost competitor nations across the world.

The country has consistently been earmarked as a good and competitive place to do business – something that was made perceptibly clear when the World Economic Forum’s Global Competitiveness Report ranked it first amongst Sub-Saharan African countries for doing business. These conditions are due, in part, to strong infrastructure, an efficient goods market and a dynamic and young workforce. Mauritius has attracted more than 32,000 offshore entities, many aimed at commerce in India, South Africa, and China. Investment in the banking sector alone has reached over $1 billion. These are all indications that Mauritius’ financial economy is moving from strength to strength and is therefore a very good place in which to invest.

With regard to the ICT sector in Mauritius, initiatives to create an information society revolve around the instilling of a “technology temper” in Mauritians to bring about increased adoption and usage of ICT, ICT-enabled knowledge networking among citizens, and generally accepting ICT as a stream of professional persuasion at par with others.

Mauritius is also well connected to the rest of the world via satellite and through the South Africa Far East (SAFE) submarine cable providing high bandwidth international connectivity. Telecommunication rates are revised on a regular basis to facilitate the growth of ICT and boost the competitiveness of Mauritius as a destination for ICT activities. In addition to this, there are many worthwhile ICT initiatives that aim to integrate ICT into Mauritian society. However, the ICT sector faces serious challenges including that the speed of connectivity in the country remains erratic; there is not enough government support to help SMEs integrate ICTs into their businesses; and the country still requires heavy investment in education and infrastructure to help the industry move forward.

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up the value chain.\textsuperscript{177} If the country is able to take advantage of the aforementioned positive aspects of the ICT sector and build on them, targeting the challenges in the process, a knowledge society is certainly within reach.

Mauritius’ education system shows positive signs of working towards a knowledge society. State-owned secondary schools are all equipped with a minimum of ten computers; private schools seek out grant funding for instructional technology. Textbooks are free to all primary school students.\textsuperscript{178} There are also programmes and initiatives aimed at introducing ICT literacy into schools and the new national Curriculum Framework specifically notes that all teachers will be provided with technological skills to manage ICT and social networks, and to adopt ICT-mediated learning.\textsuperscript{179} However, challenges that the education system will need to overcome in order to strive toward a knowledge society include connectivity problems and access to online learning remains rare.\textsuperscript{180} Moreover, the World Bank has noted that the quality and relevance of higher education needs to be addressed to give Mauritius the critical mass of expert scientists it needs to fulfill its ambitions.\textsuperscript{181}

Although there are no STI policies in the country, some efforts are being made to grow the STI sector in Mauritius. Mauritius is investing in a collaborative research and development grant scheme to promote innovative ideas and commercialize them to create jobs, and ultimately, wealth. Bodies like the MRC, FARC, and CBRR are all contributing to research and STI and there are programmes and scholarships aimed at human resource development. However, there is still much work to be done in the sector and challenges include a brain drain where skilled scientists are leaving the country. The response to this has been to offer a ten-year tax holiday to scientists returning to the country, although more can be done to bolster STI development. Ultimately, if concerted efforts are made by Mauritians to contribute to sectors such as STI, ICT, and education in particular, progress towards the knowledge society will be effective.

\begin{itemize}
\item\textsuperscript{178} StateUniversity.com. (no date). Mauritius-Educational System-Overview. Op cit
\item\textsuperscript{179} Republic of Mauritius. (2016). Inspiring Every Child – Nine Year Schooling. Op cit
\item\textsuperscript{181} Planetearth. (no date). Mauritius as Africa’s science and technology hub. Op cit
\end{itemize}
6. References


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Rajiv Gandhi Science Centre. (no date). About the Centre. Retrieved June 6, 2017 from http://rgsc.govmu.org/English/AboutUs/Pages/About-the-Centre.aspx


About GESCI

The Global e-Schools and Communities Initiative (GESCI) is an international non-profit organisation founded on the recommendation of the *United Nations Task Force on Information Communication Technology* (ICT). GESCI was established in 2003 at the first World Summit on the Information Society.

The United Nations ICT Task Force identified education as an area in critical need of development, and one where ICT has the potential to make a positive impact. Initially GESCI was headquartered in Dublin, Ireland, and in 2011 moved its headquarters to Nairobi, Kenya.

GESCI’s mandate is to assist governments in the socio-economic development of their countries through the widespread integration of technology for inclusive and sustainable knowledge society development.
Assessment of Knowledge Society Development in Mauritius June 2017

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www.gesci.org

Partners