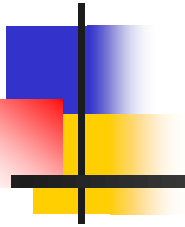
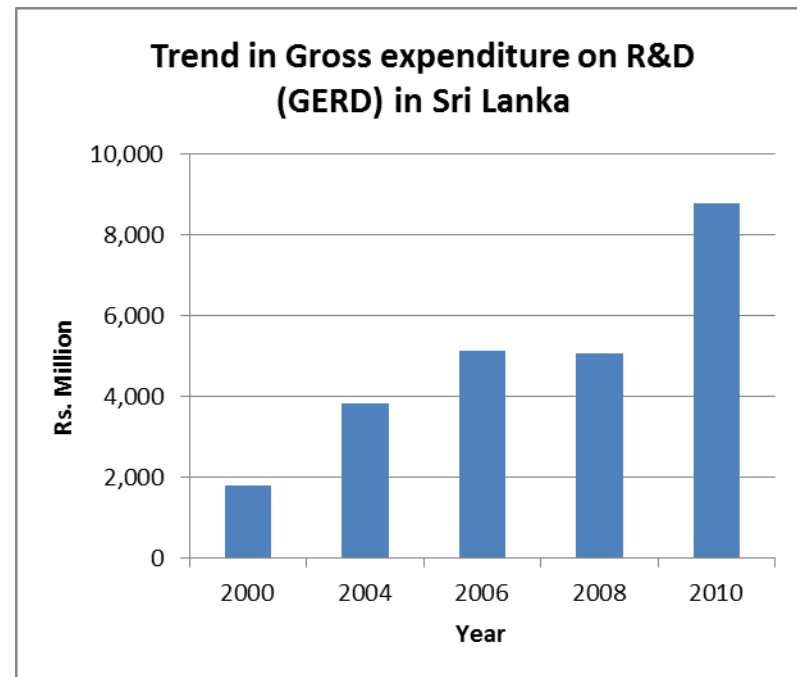
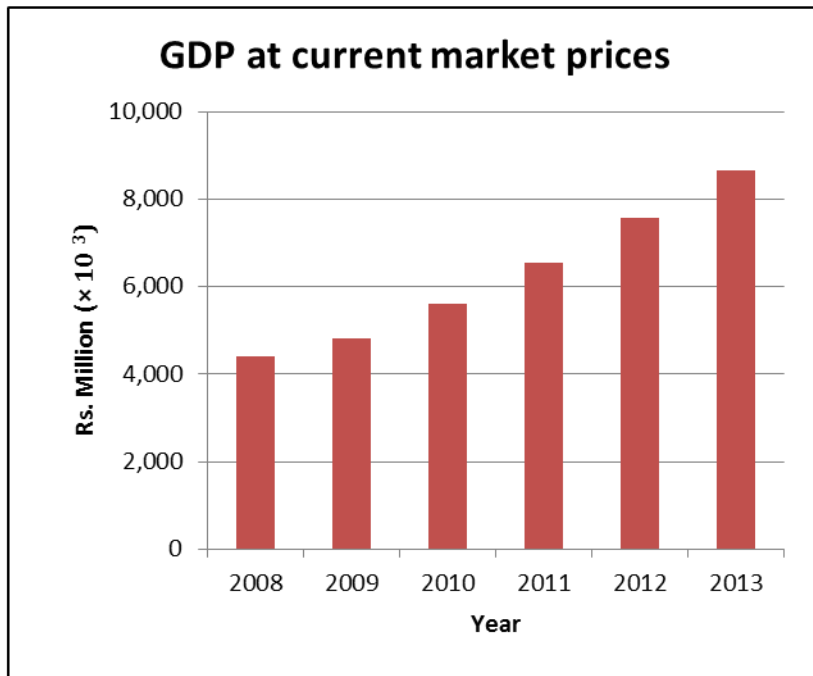


Recent STI Based Sustainable Development Initiatives in Sri Lanka



Muditha Liyanagedara
National Science and Technology Commission

STI and Economic Development





STI and Economic Development

- Developed and advanced nations today achieved that status by **consciously** incorporating S&T for economic wealth creation
- They were able to choose applications of a major S&T field for investment; e.g. electronics, biotechnology, ICT
- Sri Lanka is yet to choose applications of what S&T field/s will create wealth for us.
- Some of the focused areas given in the list to be presented have been selected in the light of the experience described above



Recent STI Approach Initiatives for Development

- National Science and Technology Policy-2009
 - S&T and Innovation Culture
 - Capability in S&T for National Development
 - Human Resource Base
 - R&D
 - Technology Transfer
 - Natural Resources and Environment
 - Indigenous Knowledge
 - Innovations and Intellectual Property Rights
 - Quality and Performance of S&T Institutions
 - S&T and Human Security



Recent STI Approach Initiatives for Development

- Science, Technology and Innovation Strategy for Sri Lanka -2010
 - Science Technology and Innovation for economic development
 - world-class National Research and Innovation Eco-System
 - Towards a knowledge society
 - Ensuring sustainability
- National R&D Investment Framework -2015-2020 (2014)

National R&D Investment Framework- 2015-2020



- The Ministry of Technology and Research took an initiative to identify two groups of focused areas with two **embedded** intentions;
 - To enhance the quality of life of the people (5 focused areas)
 - To boost the economic wealth creation in the country (5 focused areas)
- Ultimate reach- Sri Lanka, a Scientifically and Technologically Advanced Nation



Focused Areas

- **Water**
- **Food and Agriculture**
- **Health**
- **Shelter**
- **Environment**



**To Improve Living
Conditions**

- **Mineral Resources**
- **Energy**
- **Textile Industries**
- **Software Industry and
Knowledge Services**
- **Emerging Technologies,
Basic Sciences and
Traditional knowledge**



**For Economic Wealth
Creation**



Possible R & D Interventions on Focused Areas

- **Policy Studies**
- **Pure and Applied Research**
- **Innovations , Commercialization and Assurance of IP Rights**
- **ICT Activities**
- **Application of Nanotechnology**
- **Application of Biotechnology**
- **Harnessing Indigenous Knowledge**
- **Testing, Standardization and Accreditation**
- **Capacity Building**
- **Popularization**



Our Approach

- Identification of STI needs for development through:
 - Brainstorming within the Ministry
 - Expert group consultation
 - Wider group consultation
 - Presentation to the scientific community
- Awareness raising among stakeholders



Water

- According to the current statistics the water quality in Sri Lanka is deteriorating at an increasing rate. It is believed that the chronic kidney disease has a relationship with the quality of water. Further, there are problems related contamination of water with fluorides and heavy metals.
- Sub areas through which S&T interventions occur
 - prevention of water pollution,
 - development of low cost water purification technologies,
 - Investigating into root causes of water borne diseases,
 - waste water management and water conservation



Food and Agriculture

- The food safety and the quality of food has become a serious issue today due to the presence of harmful ingredients. Rigorous quality standards and reliable testing procedures needed be developed soon. Uncontrolled use of agrochemicals and chemical fertilizer are believed to be the root cause of many health issues. Therefore revisiting our agricultural practices and converting them to more environment friendly without compromising the yield is very much needed.
- Sub areas through which S&T interventions occur
 - Food safety and the quality of food
 - Uncontrolled use of agrochemicals and chemical fertilizer
 - Post-harvest losses
 - Revisiting the current agricultural practices



Health

- Controlling and eradication of communicable and non-communicable diseases.
- Manufacturing of common drugs in western medicine within the country
- Upgrading Aurvedic and indigenous medical systems
- Identification of active ingredients in herbal medicines scientifically and manufacturing them according to an established scientific procedure.
- Problems related to nutrition



Shelter

- Cost of construction is becoming increasingly unaffordable for many. The ever increasing cost of construction materials and labor cannot be reversed in the current economic environment. Therefore, developing low cost construction technologies is the best alternative to make housing affordable. Low cost building materials, construction techniques and designs are the areas of interest in this regard.
- Sub areas through which S&T interventions occur
 - Development of novel low cost construction methods
 - Development of low cost building materials
 - Development of energy efficient architectural designs



Environment

- Issues related to environment are ever increasing due to human activities and climate changes. Considering climate change is a phenomenon difficult to control measures are needed to be developed to mitigate and/or to adapt to their impacts. Measures are to be taken to manage waste minimizing environmental degradation. Proactive measures are needed to manage new form of wastes such as electronic wastes before they become irreversible damages to the environment.
- Sub areas through which S&T interventions occur
 - Climate change mitigation and adaptation
 - Pollution prevention and control
 - e-waste management
 - Protection of biodiversity



Minerals

- Sri Lanka is blessed with many natural resources and amidst them some of the natural mineral resources such as graphite, ilmanite and quartz are the world best. We export them either with no or very little value addition though Sri Lanka has the capability to do so. It is necessary to carry out carry out necessary R&D activities related for value addition immediately. A program should be launched for the exploration of mineral resources both on the land and in the sea.
- Sub areas through which S&T interventions occur
 - Mineral exploration in land and ocean
 - Value addition through product development



Energy

- Energy has become one of the most decisive factors in Sri Lanka's socio-economic development. During 2012 the electricity consumption itself in the industry sector has increased by 4.9% due to the growth in the sector. The situation is similar for other forms of energy such as fossil fuels.
- Sub areas through which S&T interventions occur
 - Indigenous energy resources and technologies
 - Energy efficiency improvements, conservation and management



Textile Technology

- Garment industry has been one of the leading foreign exchange earners of Sri Lanka. Though the industry has grown up quantitatively in producing finished garments, related industries such as cloth and yarn manufacturing never came up.
- Sub areas through which S&T interventions occur
 - Fashion design, product and process innovation
 - Textile material innovation
 - Technical textile etc.



Software Industry and Knowledge Services

- Sub areas through which S&T interventions occur
 - Software industry
 - Knowledge services
 - Bioinformatics
 - Geophysical data processing



Emerging Technologies and Basic Sciences

- There are several new technologies that are playing an increasingly important role in today's technology driven world.
 - Nanotechnology,
 - Biotechnology,
 - Satellite Technology,
 - Space Technology,
 - Microelectronics and Robotics,
 - Mechatronics and
 - New materials
- These technologies given birth to many new industries contributing towards the economic development of many nations.



Emerging Technologies and Basic Sciences (Contd)

- Technology and Basic Sciences are interwoven in an inseparable way as today's basic sciences and mathematics will give birth to tomorrow's technology. Therefore any society that is hoping to reap the benefits of technology for economic and other gains should invest in basic sciences in terms of research and capacity building.

Expected Goals to be Achieved

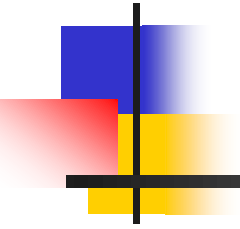
	Focused Area	Goals
1.	Water	Ensure the availability of safe drinking water, water for other domestic purposes and for agriculture
2.	Food and Agriculture	Facilitate building a healthy nation through environmental friendly agriculture
3.	Health	Provide improved access to reliable healthcare
4.	Shelter	Make available cost effective, eco-friendly housing for middle and low income families
5.	Environment	Ensure a safe and pleasant environment through minimizing pollution and formulating proper disaster preparedness plans.
6.	Natural Resources	Increase export earnings at least by 10% of GDP by value addition
7.	Energy	Meeting the future energy demand through efficient use of energy and promoting alternative energy sources while continuing search for local fossil fuel reserves.
8.	Textile Technology	Perform value addition through R&D to compete and sustain in the international market
9.	Software Industry & Knowledge Services	Create an environment conducive for ten-fold growth of software industry & knowledge services.
10.	Emerging Technologies and Basic Sciences	Make use of basic sciences and “emerging technologies” for rapid economic growth.



Expected Investment

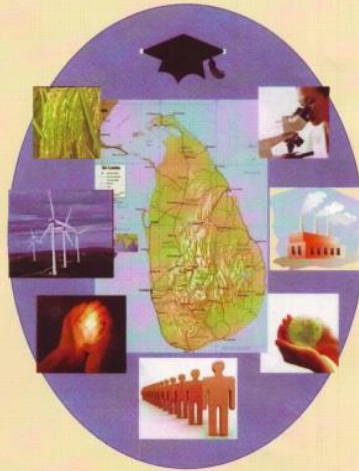
- Total expected investment – Rs. 50 billion
 - 2015 – Rs. 05 billion
 - 2016 – Rs. 07 billion
 - 2017 – Rs. 12 billion
 - 2018 – Rs. 12 billion
 - 2019 – Rs. 08 billion
 - 2020 – Rs. 06 billion

Thank You





THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA



NATIONAL SCIENCE AND TECHNOLOGY POLICY

NATIONAL SCIENCE AND TECHNOLOGY COMMISSION
MINISTRY OF SCIENCE AND TECHNOLOGY

Science, Technology & Innovation Strategy for Sri Lanka



2011-2015



Ministry of Technology and Research
August 2010



NATIONAL RESEARCH AND DEVELOPMENT INVESTMENT FRAMEWORK

BACKGROUND AND JUSTIFICATION

MINISTRY OF TECHNOLOGY AND RESEARCH