

Status of “Innovation Ecosystem & Technology Transfer in Sri Lanka”

APCTT Workshop 8-10 July 2019, Ghaziabad

Eng. J A Ajith D Jayasuriya

Research Fellow

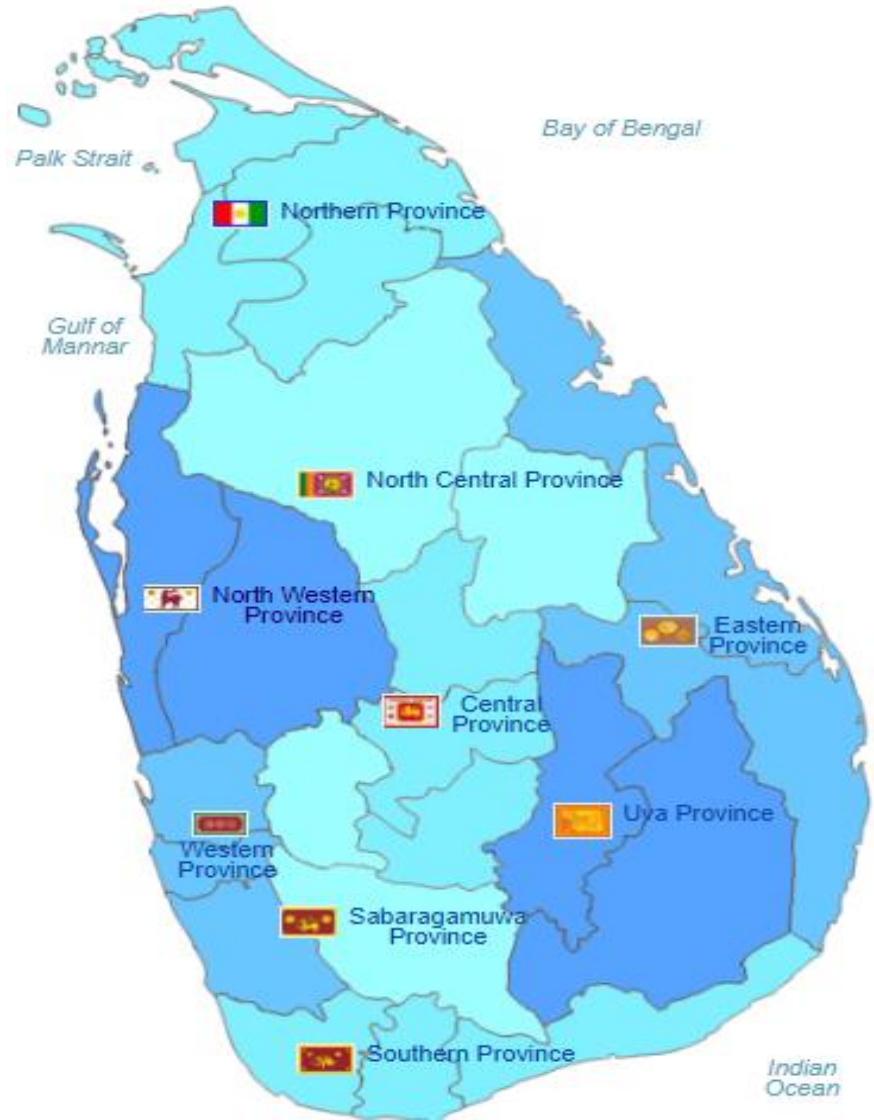
National Engineering Research & Development Centre of Sri Lanka



Sri Lanka in brief !

- ❖ Area is 65,000 square kilometers
- ❖ Population is 20 million
- ❖ Tropical country; adequate rain and sunlight available
- ❖ 9 provinces and 24 Districts
- ❖ 340 local authorities
- ❖ Commercial capital is Colombo in Western province



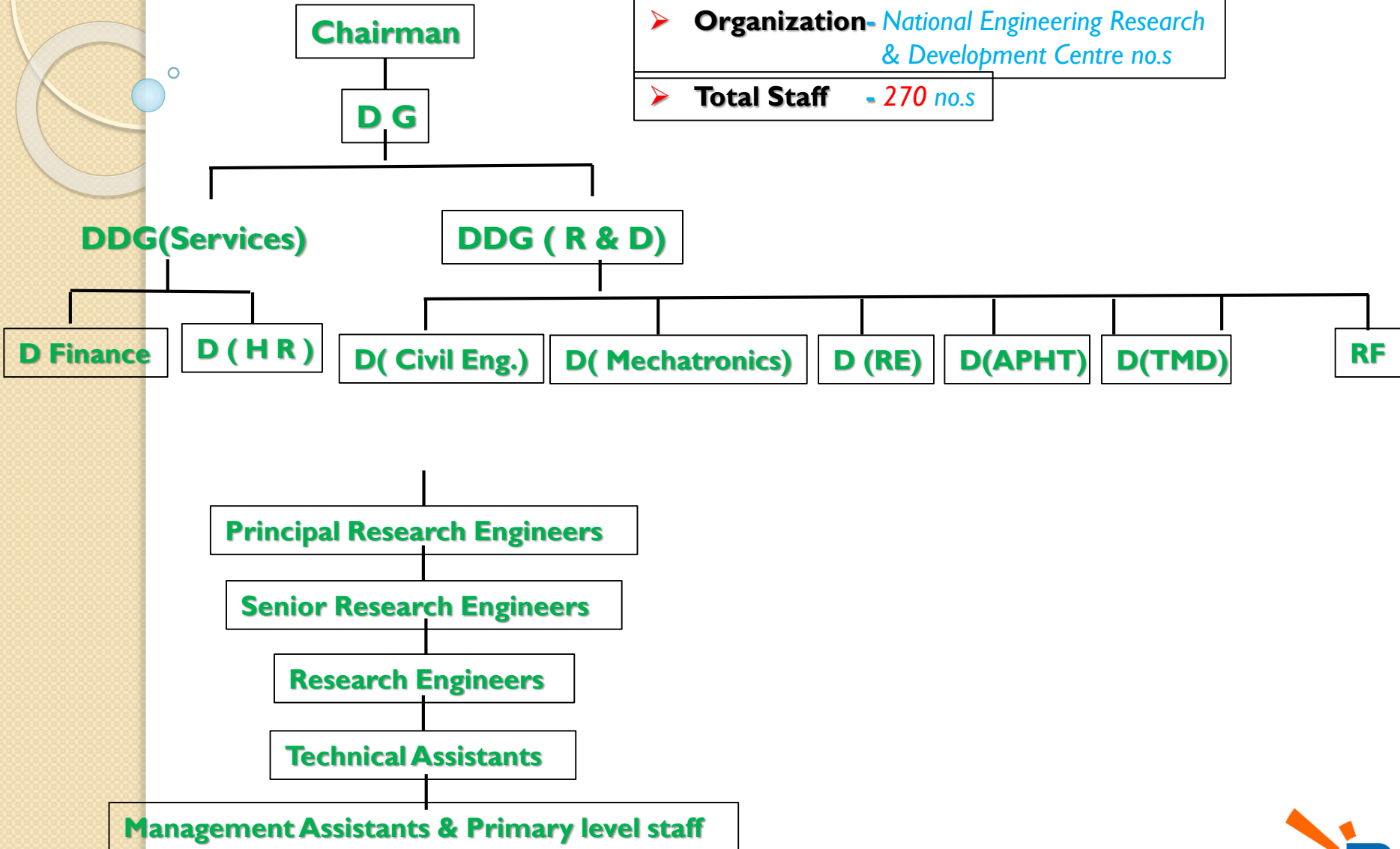


My Organization

➤ **Ministry** – Science, technology & Research

➤ **Organization**- National Engineering Research & Development Centre no.s

➤ **Total Staff** - 270 no.s



Contents

- R & D Management in Sri Lanka
- R & D Institutional Framework
- Funding for R & D
- Technology Transfer & Commercialization



R & D Management in Sri Lanka in Govt. Sector

- Mainly we have nineteen R & D institutions and 9 universities
- Projects are based on
 - 1) Solutions for industrial related issues
 - 2) Catering for needs (new products, processes or improvements)
 - 3) Research work coming out by the own interests of the researchers



R & D in private sector

- Many companies operate their own laboratories(specially export oriented companies)
- To maintain quality assurance
- And for process improvements



R & D Institutional Framework

- 1) Agricultural based R&D institutions 11
- 2) Industrial based R&D institutions 03
- 3) Natural science, medicine etc 05

Most of the institutes are under Ministry of S & T

4) 9 universities out of total 14 engages in R & D with teaching has priority; curiosity driven nature with students assistance



National Science and Technology Commission (NASTEC)

Has been mandated to advise the government on policies and plans for the development of Science and Technology and its application for economic growth and improvement of the efficiency and the competitiveness of the industry, agriculture and services.



R & D need survey by NASTEC

- National Research Development Framework(NRDF)
- NRDF provides guidance on key research areas and requirements
- Provides 10 thrust areas





The Democratic Socialist Republic of Sri Lanka

National Research and Development Framework (NRDF)



National Science and Technology Commission
Ministry of Science, Technology and Research

CONTENTS

Message from the Hon. Minister of Science, Technology and Research	5
Foreword	7
Executive Summary	9
Section A: Focus Areas, Issues, R&D Needs and Interventions	11
01 : Water	13
02 : Food, Nutrition and Agriculture	21
03 : Health	31
04 : Shelter	43
05 : Environment	49
06 : Energy	63
07 : Mineral Resources	79
08 : Textile and Apparel	85
09 : Information Communication Technology and Knowledge Services	99
10 : Basic Sciences, Emerging Technologies and Indigenous Knowledge	107
Section B : Recommended List of Research, Policy Studies and other Interventions	115
Appendix I : Consultation Panels	14

R & D requirements (as in budget proposals 2019)

- Methodologies to reduce post harvest losses in agriculture and fisheries
- Design of an affordable house of 1500sq.ft
- Value addition to local medicinal plants



Arthur C Clarke Center for Modern Technology (ACCMNT)

- Has a core competence in electronic and communication
- Deals with space technology



1st satellite developed by Sri Lankan engineers was launched into orbit from International Space Station (ISS)



Launched into orbit on 17/06/2019

Raavana-I was designed by Tharindu Dayaratne who is an Electrical and Electronics engineer of the University of Peradeniya together with Dulaani Chamikaa Vithanage who is a graduate of the Asian Technological Institute in Thailand. They built this satellite while studying space engineering at the Kyushu Institute of Technology in Japan.



Sri Lanka Inventors Commission

Vision

“Prosperity through
Inventions and
Innovations”

Mission

“Be the leading
catalyst in bringing out
innovative capability of the
nation. Be a forerunner of the
facilitation process in
converting ideas in to
practical applications.”



Functions of SL Inventors' commission

- Various competitions are conducted at school level, open level etc and finally island wide winners are awarded to encourage innovations
- Supports for start ups
- Directs inventors to develop their innovations to appropriate research centres



National intellectual property organization (NIPO)

- Has a TISC centre to facilitate inventors for finding relevant information
- All together there are 10 TISC centres (including 5 universities)

It is intended to establish 22 TISC centres islandwide

Sri Lanka Institute for Nano Technology(SLINTec)

- Sri Lanka Institute of Nanotechnology (SLINTEC) is a recognized pioneer in Nanotechnology and Advanced technology research in Sri Lanka. Being the first public-private research institute in Sri Lanka, it has made significant progress over the past seven and a half years.

Industrial Technology Institute (ITI)

- Former Ceylon Institute of Scientific and Industrial Research (CISIR) that was set up in 1955
- Has successfully obtained 47 patents in areas of food products, rubber products, paints, distillation of essential oil etc.
- Only about 15 of them have successfully been commercialized after the technology was provided on all lump sum payment basis
- Industrial services on commercial basis



National Engineering Research & Development Centre(NERDC)

- Established in 1974
- Deals with R & D work in all engineering fields
- Separate divisions for Renewable Energy, Agriculture Engineering and Post-Harvest Technology, Energy Management, Electronic & Electrical Engineering, Manufacturing with CNC, Civil engineering Divisions and Techno Marketing Division



National Engineering Research & Development Centre

- R & D work undertaken in all engineering disciplines
- Industrial services are conducted
- Assistance provided for development of innovations (technology incubator facility is there)
- Links are there with other sister organizations
- Working with “Vidatha” programme of Ministry of Science & technology
- Assistance provide for start ups



Product development



Rubber Research Institute

- Rubber Research Institute of Sri Lanka is the oldest research institute on rubber in the world and is the nodal agency in Sri Lanka with the statutory responsibility for research and development on all aspects of rubber cultivation and processing for the benefit of the rubber industry.



Rubber Research Institute

- The Institute promotes collaborative research with other National Institutes and Private Sector Organizations. The Institute has eleven Research Divisions and five Service Divisions.



Tea Research Institute

- TRI was first established in 1925 as an arm of the Planters' Association of Ceylon, in order to enrich the tea industry through professional research findings. The institute had its early beginnings in Nuwara Eliya town with a representative nucleus of staff undertaking research in make-shift laboratories with very modest equipment and then transferred to the present location, the St. Coombs Estate in Talawakelle, in December 1929.
- Gradually TRI spreads into all tea growing areas of the country by establishing regional centres in Passara (Uva region), Kandy (Mid country region), Ratnapura (Low country region), Galle (Galle district), and Deniyaya (Matara and Hambantota districts). The two estates, St. Coombs in Talawakelle and St. Joachim in Ratnapura, which are operated under TRI, provide facilities to undertake research in cultivation and processing while making some earnings to the institute.



Funding for R & D

The three major R&D funding agencies in Sri Lanka are

1. National Science Foundation of Sri Lanka (NSF)
2. Sri Lanka Council for Agricultural Policy (CARP)
3. National Research Council (NRC)

Apart from that industries fund for carrying out specific projects



National Science Foundation in Sri Lanka

The major aims of the grants are to promote scientific and technological research in Sri Lanka, to provide training for young scientists, to provide an opportunity to obtain postgraduate qualifications and to promote human resources development in Sri Lanka.



National Science Foundation

Key functions

- Awarding Technology Grants
- National Nanotechnology initiative
- Awards for excellence
- Technology Foresight
- Intellectual property awareness & protection
- Facilitating technology transfer mechanisms



Sri Lanka Council for Agricultural Policy (CARP)

- Provides financial support primarily for selected applied and adaptive research projects in the National Agriculture research institutions, Universities and private sector institutions.
- The program is essentially aimed at increasing agricultural production commodities and in enhancing value of marketability of such product



National Research Council (NRC)

- provides grants to researchers of public scientific R &D organizations, Universities
- The council does not prioritize research themes but evaluate feasibility and the reasonable chances of the work leading to original publishable or patentable findings



National expenditure by source of funding in 2015

Source of Funding	Recurrent	Capital	Total	As a% of GDP
Government	6181.5	918.0	7033.5	0.063
	(51.9 %)	(7.7 %)	(59.6 %)	
Private	3736.6	362.3	4099.9	0.037
	(31.4 %)	(3.0 %)	(34.4 %)	
Foreign	133.7	42.7	176.4	0.002
	(1.1 %)	(0.4 %)	(1.5 %)	
Other	400.8	127.5	528.3	0.004
	(3.4 %)	(1.1%)	(4.4 %)	
Total	10453.6	1450.5	11904.1	0.106
	(87.8 %)	(12.2 %)	(100.0 %)	



Technology Transfer mechanisms

- Islandwide “vidatha” programme
- Concept of Prof. Tissa Vitharana



Ministry of Science & Technology

- Ministry has a separate division for TT
- Under this islandwide mechanism is there, called ‘Vidatha’ programme for technology dissemination and self employment creation
- Initiated year 2000 ; at present 268 centres
- STO, Field coordinator, computer operator and an assistant



Functions of Vidatha resource Centres

(VRCs)

- Technology need assessment
- Appropriate technologies are selected
- Equipment are purchased to the centre
- Demonstrations conducted with the assistance of umbrella organizations
- Hands on training provided
- Entrepreneurships created



Other functions of VRCCs

- S & T Special projects for rural community
- Awareness and exhibitions on Energy, Environment, productivity etc
- Science Popularization
- Capacity building of Vidatha staff
- Establishment of New VRCCs



Licensees for technologies

- Another important component of technology transfer is the manufacturing and marketing of machinery and equipment required by the SMEs. This function is done by the technology licensees who are trained to manufacture such items by the Research Institutes.



University/ Industry Partnership

- The Universities are now encouraged to engage in applied research as compared to the earlier emphasis on teaching. The new trend is for the industries to setup specialized laboratories in the University to encourage research that can be of use to their own industry. This has several advantages, as they are not only valid but commercially viable too.



Web based Technology Transfer

- The present process of technology transfer by visiting experts is quite costly due to transport and time spent. Therefore efforts are being made to use broadband communications to conduct live interactive training and demonstration sessions from a central place to several “Vidatha” Centres simultaneously
- Cut down travel costs while sharing expertise



Needs for successful commercialization

- A thorough and detailed feasibility study prior to commercialization
- Selection of competent business partners with strong entrepreneurial spirit
- Adequate financial resources (specially equipped finance institution to act as intermediary to link research and industry or venture capital funds)
- Continuous upgrading of technology and
- Measures by the government to protect new ventures if necessary.



Thank You