

A STUDY OF THE NATIONAL INNOVATION SYSTEM OF SRI LANKA

By

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Department of Management of Technology

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Declaration

I hereby certify that this dissertation entitled “A Study of the National Innovation System of Sri Lanka” is entirely my own work and it has never been submitted nor is it currently being submitted for any other degree. I also hereby give consent for my dissertation, if accepted, to be made available for photocopying and for interlibrary loans, and for the title and summary to be made available to outside organizations.

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Abstract

National Innovation System (NIS) can be defined as a network of elements which include public, private and academic sector whose interactions and collaborations will induce the creation and use of knowledge for national economic benefit.

The purpose of this research was to identify the existence of the NIS along with its efficiency, effectiveness, strengths and weaknesses in Sri Lanka.

Literature review revealed that measuring the NIS is complex due to the large number of elements involved with no single accepted methodology to study it. The various measurement techniques such as the European Innovation Scorecard (EIS), World Bank Knowledge Assessment Methodology (KAM), Organization for Economic Co-operation and Development (OECD) Science, Technology and Industry Scoreboard, Triple Helix and Innovation Chain aim to identify the strength of the innovation system, the S&T capability and interrelationship between S&T institutions of a region or a nation.

Innovation systems of six countries segregated into developed, developing and newly industrialized countries were studied. The countries studied were Australia, Finland, South Korea, Malaysia, India and Thailand. The study revealed that a central governance of S&T across the nation is vital for the success of any NIS.

A combination of methodologies which included EIS, KAM, Triple Helix, Innovation Chain and Porter's Diamond Model were adopted to study the NIS. Data collection was through interviews with 14 experts in the government, academic and industrial sectors. Secondary data was from published data available in the annual reports, journals and the internet.

The research revealed that the NIS of Sri Lanka is greatly compromised right from the very early stages of education. Low number of science based schools and exam oriented curriculum have failed to induce innovative thinking among Sri Lankan children. Further, competition for entrance into S&T universities has forced potential students to move to other fields of study.

Higher education institutes and government research institutes also suffer setbacks. Lack of funds, lack of infrastructure and advanced equipment, lack of qualified

human capital, low level of recognition and appreciation of researchers, difficulties in getting approval and resistance to change are serious concerns that need to be addressed immediately. This has led to decreased number of research projects done causing underutilization, demotivation and lack of coordination among existing researchers.

Industrial sectors contribution to S&T development has also remained low with the exception of a few sectors like Information and Communication Technology (ICT) and the apparel sector. Increasing cost of operations, lack of government incentives for Research and Development (R&D) and poor implementation of Intellectual Property (IP) laws to protect ownership have discouraged industries to partner with government research institutes and universities for joint R&D ventures.

Lack of a coordinating body for research and innovation and the lack of a governance structure for S&T have caused R&D to be performed in an ad-hoc manner with no national goal or strategy in mind. This has resulted in duplication of work at many government institutes with similar objectives but based under different ministries.

These findings indicate that the government's role in the national S&T development needs to be improved and immediate measures should be taken to overcome existing weaknesses. Based on the findings, it is recommended that the government prioritize S&T development in its path to economic development. Initiatives to increase funds for S&T development in state research and academic institutes are vital. Further, laws should be strengthened to protect local innovations and S&T policies enforced should be implemented.

The S&T community in the country is aware of these issues and has proposed a 5 year strategy plan for science, technology and innovation to be implemented. Adequate actions are necessary by the government to implement this strategy plan to make Sri Lanka the “Wonder of Asia”.

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Abbreviations

3G	Third Generation
A/L	Advanced Level
ACCIMT	Arthur C. Clarke Centre for Modern Technologies
AEA	Atomic Energy Authority
AI	Agricultural Instructors
AICTE	All India Council for Technical Education
ARC	Australian Research Council
BAA	Backing Australia's Ability
BCC	B.C.C. Lanka Ltd
BCS	British Computer Society
BERD	Business Enterprise on R&D
BOI	Board of Investments
BOO	Build, Operate and Own
BOT	Build, Operate and Transfer
BPO	Business Process Outsourcing
CAGR	Compound Annual Growth Rate
CARP	Council of Agricultural Research Policy
CBSL	Central Bank of Sri Lanka
CCB	Coconut Cultivation Board
CCSL	Chamber of Commerce, Sri Lanka
CCST	Coordination Committee on Science and Technology
CDA	Coconut Development Authority
CEB	Ceylon Electricity Board
CIS	Community Innovation Survey
CISIR	Ceylon Institute of Scientific and Industrial Research
CPD	Continuing Professional Development
CRI	Coconut Research Institute
CSSL	Computer Society of Sri Lanka
CSTACI	Commonwealth State and Territory Advisory Council on Innovation
DAEO	District Agricultural Extension Officers
DAPH	Department of Animal Production and Health
DOASL	Department of Agriculture Sri Lanka
EEZ	Exclusive Economic Zone
EIS	European Innovation Scoreboard
EMBnet	European Molecular Biology Network
EPZ	Export Processing Zones
EU	European Commission
FCRDC	Fruit Crops Research and Development Centre
FCRDI	Field Crops Research and Development Institute
FDI	Foreign Direct Investment
FMRC	Farm Machinery Research Centre



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FRU	Food Research Unit
GDP	Gross Domestic Product
GERD	Gross Expenditure on R&D
GSLI	Global Services Location Index
HEI	Higher Educational Institutions
HORDI	Horticultural Crop Research and Development Institute
IBMBB	Institute of Biochemistry, Molecular Biology and Biotechnology
IBRD	International Bank for Reconstruction and Development
ICT	Information and Communication Technology
ICTA	Information & Communication Technology Agency
IDB	Industrial Development Board
IESL	Institution of Engineers, Sri Lanka
IFS	Institute of Fundamental Studies
IIF	Innovation Investment Fund
IIFF	Innovation Investment Follow-on Fund
IIP	Information Infrastructure Program
IP	Intellectual Property
IPR	Intellectual Property Rights
IPS	Institute of Policy Study
IT	Information Technology
ITI	Industrial Technology Institute
JAAF	Joint Apparel Association Forum
KAM	Knowledge Assessment Methodology
KIST	Korean Institute of Science and Technology
KTFL	Kalubowitiyana Tea Factory Limited
KVS	Krushhi Viapthi Sevaka
LGN	Lanka Government Network
LSE	Large Scale Enterprises
MDC	Malaysian Development Corporation
MDCCI	Matara District Chamber of Commerce & Industries
MEXT	Ministry of Education, Culture, Sports, Science and Technology - Japan
MI	Ministry of Information
MIC	Ministry of Industry and commerce
MLRCDA	Ministry of Livestock & Rural Community Development
MoSTI	Malaysia Science, Technology, and Innovation Ministry
MoU	Memorandum of Understanding
MRI	Medical Research Institute
MSC	Multimedia Super Corridor
MST	Ministry of Science and Technology
MTEC	Metal and Materials Technology
MTISED	Ministry of Traditional Industries and Small Enterprise Development
MTR	Ministry of Technology and Research
MVTT	Ministry of Vocational & Tertiary Training
MYA	Ministry of Youth Affairs



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NAB	National Apprenticeship Board
NAITA	National Apprentice and Industrial Training Authority
NARA	National Aquatic Resources Research and Development Agency
NARS	National Agricultural Research System
NASTEC	National Science and Technology Commission
NCSRDC	National Council for Scientific Research and Development
NEC	National Education Commission
NEDA	National Enterprise Development Authority
NERDC	National Engineering, Research and Development Centre
NGO	Non-Governmental Organizations
NHMRC	National Health and Medical Research Council
NHRC	National Health Research Council
NHRDC	National Human Resource Development Council
NIA	National Innovation Agency
NIBM	National Institute of Business Management
NIC	Newly Industrialized Countries
NIE	National Institute of Education
NIPM	National Institute of Plantation Management
NIPO	National Intellectual Property Office
NIS	National Innovation System
NITC	National Information Technology Council of Malaysia
NITESL	National Institute of Technical Education of Sri Lanka
NRC	National Research Council
NSF	National Science Foundation
NSTDA	National Science and Technology Development Agency
NSTIC	National Science, Technology and Innovation Council
OECD	Organization for Economic Co-Operation and Development
OSTI	Office of Science and Technology Innovation
PACE	Policies, Appropriability and Competitiveness for European Enterprises
PDP	Plantation Development Project
PMSEIC	Prime Minister's Science, Engineering and Innovation Council
PPP	Public Private Partnership
PVIC	Plant Virus Indexing Centre
R&D	Research and Development
RBI	Ruhunu Business Incubator
RDD	Rubber Development Department
RGS	Research Grant Scheme
RRDI	Rice Research and Development Institute
RRI	Rubber Research Institute
RRS	Rice Research Stations
RTO	Research Technology Organization
S&T	Science and technology
SBIR	Small Business Innovation Research
SCPPC	Seed Certification and Plant Protection Centre



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SITRA	Finnish National Fund for R&D and Innovation
SLAAS	Sri Lanka Association for the Advancement of Science
SLAAS	Sri Lanka Association for the Advancement of Science
SLASSCOM	Sri Lanka Association of Software and Service Companies
SLBFE	Sri Lanka Board of Foreign Employment
SLEMEA	Sri Lanka Electronic Manufacturers and Export Association
SLIIT	Sri Lanka Institute of Information Technology
SLINTEC	Sri Lanka Institute of Nanotechnology
SLRMEC	Sri Lanka Rubber Manufacturing & Export Corporation
SLTB	Sri Lanka Tea Board
SME	Small and Medium Enterprises
SPEndP	Smallholder Plantations Entrepreneurship Development Program
STMIS	S&T Management Information System
STPC	Science and Technology Policy Council
STPII	Second National Science and Technology Policy
STPRD	S&T Policy Research Division
T&V	Training and Visit
TAF	Technology Acquisition Fund
TEKES	National Technology Agency of Finland
TePP	Technopreneur Promotion Program
TRCSL	Telecom Regulatory Commission, Sri Lanka
TRI	Tea Research Institute of Sri Lanka
TSF	Tea Shakthi Fund
TSHDA	Tea Small Holdings Development Authority
TVET	Technical and Vocational Education and Training
UGC	University Grants Commission
UI	University Industry
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization
UoM	University of Moratuwa
USA	United States of America
USDA	United States Department of Agriculture
USPTO	United States Patent and Trademark Office
VC	Vidatha Centres
VRI	Veterinary Research Institute
VTA	Vocational Training Authority
VTT	Technical Research Centre of Finland
WEF	World Economic Forum



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