

# **INSTITUTION BUILDING FOR TECHNOLOGY INNOVATION IN DEVELOPING COUNTRIES**



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# **SRI LANKA AT A GLANCE**

- **An Island in the Indian Ocean South of India (7-N, 81-E)**
- **The size of West Virginia ( 25,000 sq miles)**
- **Population of 19M, same as that of NY State (30% Urban)**
- **Per Capita GNP - \$833 (USA - \$33,800)**
- **Adult Literacy - 92%**
- **Infant Mortality - 17 per 1000 Live Births**
- **Life Expectancy - 72 Years**
- **Three Official Languages - Sinhalese, Tamil, English**
- **Major Ethnic Groups -**
  - **Sinhalese 74.0% Tamils 18.1% Moors 7.1%**
  - **Others 0.8%**
- **Major Religions -**
  - **Buddhists 69.3% Hindus 15.5% Muslims 7.5%**
  - **Christians 7.6% Others 0.1%**

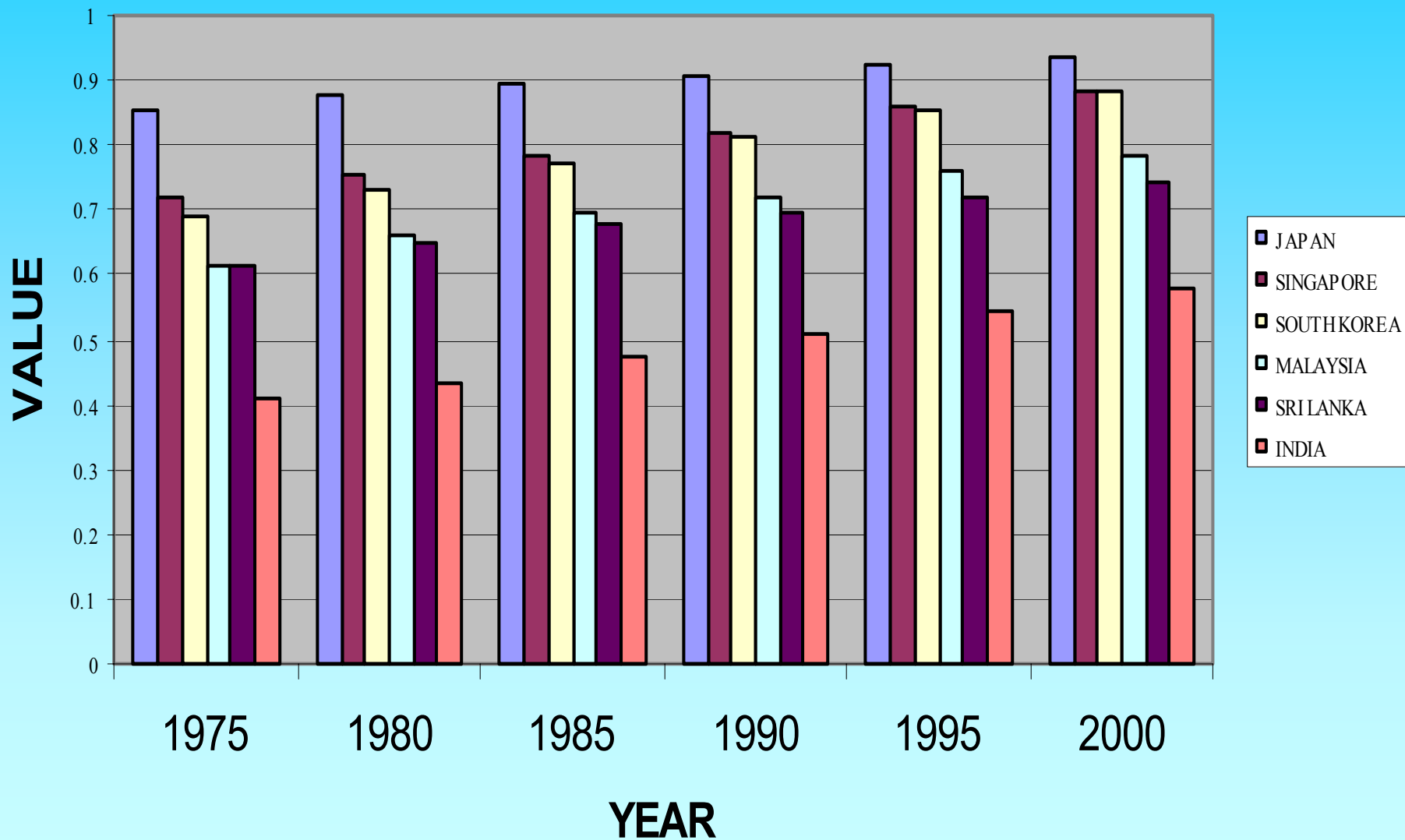
# **SRI LANKA'S TECHNOLOGICAL INNOVATIONS OF THE PAST**

- **Emphasis placed on knowledge and the importance attached to learning.**
- **The temple was the centre of learning and also the repository of knowledge. Buddhist Centres such as Mahavihara (200BC), Abhayagiriya (100BC) and Aluvihara (100AD) were engaged in the documentation of the country's history and the edition and commentary of Buddhist scriptures.**
- **There were also ample examples of the use of Technology. Recorded history of Sri Lanka backed by archaeological findings confirm the existence of**
  - **a hospital at Mihintale that included surgery (800AD).**
  - **Irrigation networks consisting of man made reservoirs, valve pits, water raising mechanisms and low gradient canals (yoda ela 100AD),**
  - **dams across rivers placed at scientifically optimal location**
  - **(Maduru Oya Dam 600AD) and**
  - **the Kingdom of Sigiriya(600 AD) with its rock fortress together with its much appreciated rock paintings and hydraulic systems.**

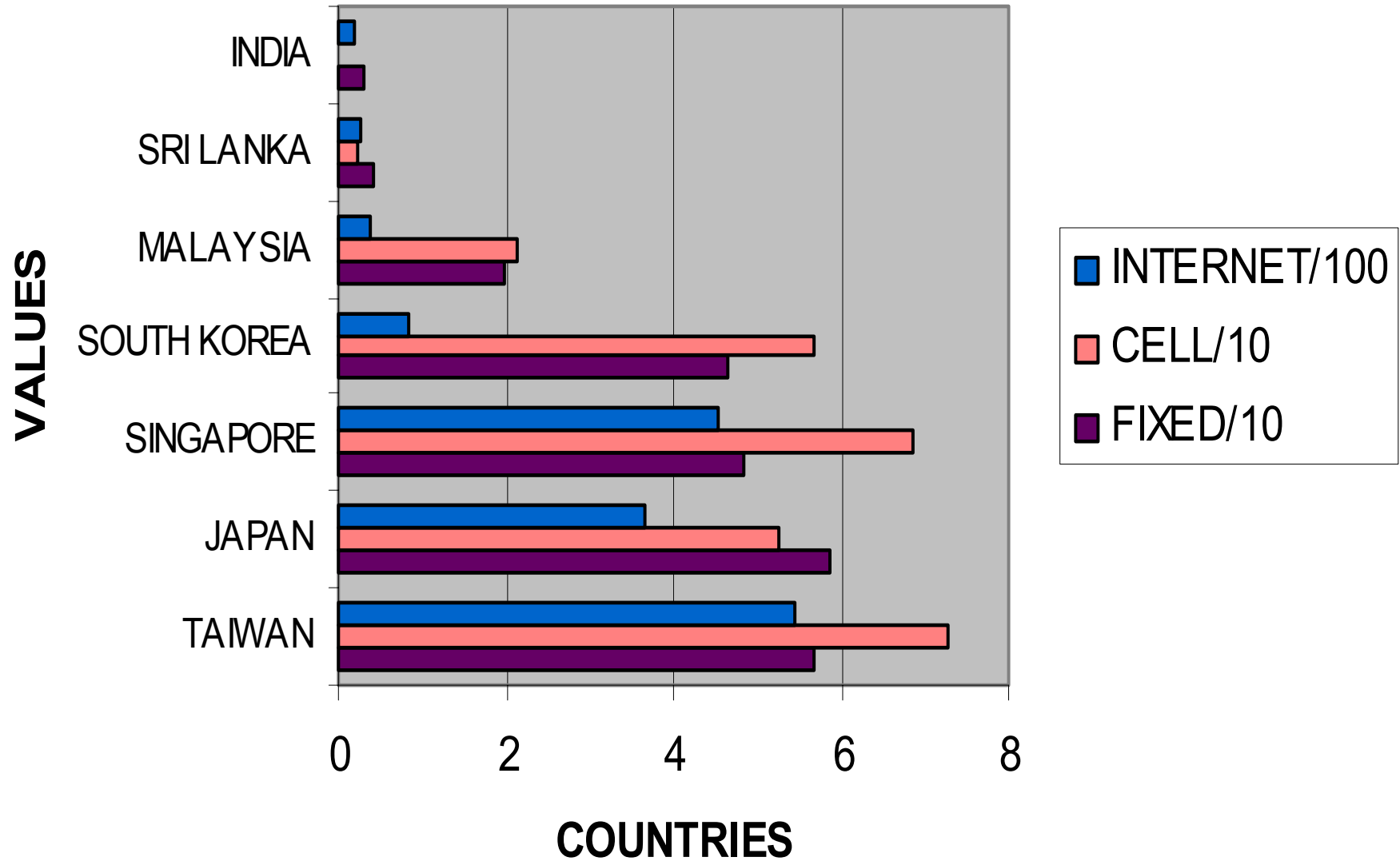
# **SRI LANKA AND OTHER COUNTRIES IN THE REGION**

- **JAPAN**
- **SINGAPORE**
- **SOUTH KOREA**
- **TAIWAN**
- **MALAYSIA**
- **INDIA**

# HUMAN DEVELOPMENT INDEX



# TELECOM PARAMETERS



# **JAPAN**

- **POST WAR DEVELOPMENT**
- **POST WAR ASSISTANCE**
- **ADAPTATION OF TECHNOLOGY**
- **TRADITION OF VALUE FOR EDUCATION, TECHNOLOGY & QUALITY**
- **POLITICAL STABILITY**

# **SINGAPORE**

- **POST WAR DEVELOPMENT**
- **VISION OF LEADER**
- **POLITICAL STABILITY**
- **EXPLOITING STRATEGIC LOCATION**
- **USE OF ENGLISH AS UNIFYING LANGUAGE**
- **SMALL POPULATION**
- **USE OF FOREIGN EXPERTISE & INVESTORS**



# **SOUTH KOREA**

- **DEVELOPMENT AFTER KOREAN WAR**
- **POST WAR ASSISTANCE**
- **EMPHASIS ON S&T DEVELOPMENT**
- **FOLLOWED EXAMPLE OF JAPAN**
- **POLITICAL STABILITY**

# **TAIWAN**

- **POST WAR DEVELOPMENT**
- **MILITARY NEED**
- **NEED TO SURVIVE AGAINST GIANT NEIGHBOR**
- **FOLLOW JAPANS SUCCESS**
- **POLITICAL STABILITY**
- **STRATEGIC LOCATION**
- **USE OF DIASPORA**

# **MALAYSIA**

- **DEVELOPMENT AFTER SEPERATION**
- **POLITICAL STABILITY**
- **VISIONARY LEADER**
- **OIL REVENUE**
- **ADVANTAGES OVER SINGAPORE**
- **INFLUENCE OF SINGAPORE**
- **USE OF FOREIGN EXPERTISE**
- **ATTRACTED INVESTORS**

# **INDIA**

- **VISIONARY LEADERS**
- **POLITICAL INSTABILITY**
- **POLICY OF SUPPORTING HEAVY INDUSTRY AND S&T RESEARCH**
- **LARGE SCALE MIGRATION**
- **INITIATIVES OF DIASPORA & INDUSTRY**
- **LARGE LOCAL MARKET**
- **QUALITY EDUCATION**
- **LARGE NUMBERS OF SKILLED HR**
- **KNOWLEDGE OF ENGLISH**
- **NEEDS OF LOCAL INDUSTRY**

# **SRI LANKA**

- **NO EXPERIENCE OF WAR PRIOR TO 1983**
- **NO VISIONARY LEADERS**
- **POLITICAL INSTABILITY**
- **NEGLECT OF ENGLISH**
- **COMPLACENCY**
- **LACK OF ENTREPRENEURSHIP**
- **SMALL LOCAL MARKET**
- **LACK OF NATURAL RESOURCES**
- **STARTEGIC LOCATION**

## **SOME PAST EVENTS OF INTEREST**

- **JAPAN USES RICE CULTIVATION PRACTICES OF ANCIENT CEYLON ( WATER MANAGEMENT ) SEVERAL CENTURIES BACK.**
- **LEE QUAN YU OF SINGAPORE WANTS TO OVERTAKE CEYLON (1960'S)**
- **SOUTH KOREA MODELS KIST ON THE CEYLON INSTITUTE OF SCIENTIFIC AND INDUSTRIAL RESEARCH (1960'S)**
- **SINGAPORE USES MANY SRI LANKAN LECTURERS & TEACHERS IN DEVELOPING THEIR UNIVERSITIES & SCHOOLS**

# **TECHNOLOGY INNOVATION BASED ON NEED**

- **MILITARY REQUIREMENTS**
- **SUPPLY TO GLOBAL MARKET**
- **IMPORT SUBSTITUTION FOR LOCAL MARKET**
- **SELF SUFFICIENCY IN FOOD**
- **EXPLOITATION OF STRATEGIC LOCATION**
- **NEED TO PROTECT AGAINST POWERFUL NEIGHBORS**

# **PLAYERS IN TECHNOLOGY INNOVATION**

- **THE STATE**
- **THE PRIVATE SECTOR**
- **STATE & PRIVATE INDUSTRIES**
- **NGOS**
- **R&D INSTITUTIONS & UNIVERSITIES**
- **PROFESSIONAL ASSOCIATIONS**
- **DONOR AGENCIES**



# **LOCAL R&D INSTITUTIONS**

- **PLANTATION RESEARCH INSTITUTES (TEA, RUBBER, COCONUT, RICE, MINOR EXPORT CROPS, INDUSTRIAL TECHNOLOGY)**
- **POLICY RESEARCH INSTITUTE**
- **MEDICAL RESEARCH INSTITUTE**
- **UNIVERSITY INSTITUTES, FACULTIES & CENTERS**
- **PRIVATE SECTOR R&D FACILITIES**
- **R&D UNITS OF STATE ORGANISATIONS ( e.g. CENTRAL BANK, MOPA, IFS)**
- **INTERNATIONAL AGENCIES ( IUCN )**

# **INSTITUTES WITH SOME SUCCESS IN TECHNOLOGY INNOVATION**

- **TEA**
  - TEA RESEARCH INSTITUTE, INDUSTRY
- **RICE**
  - RICE RESEARCH INSTITUTE
- **CIVIL ENGINEERING**
  - STATE ENGINEERING CORPORATION
- **NATURAL PRODUCTS**
  - INDUSTRIAL TECHNOLOGY INSTITUTE, INDUSTRY
- **BIO TECHNOLOGY**
  - UNIVERSITIES, INDUSTRY
- **AYURVEDIC DRUGS**
  - INDUSTRY INITIATIVES
- **APPROPRIATE TECHNOLOGY**
  - NATIONAL ENGINEERING RESEARCH & DEVELOPMENT CENTRE, NGO'S
- **INFORMATION TECHNOLOGY**
  - UNIVERSITY OF COLOMBO

# **FAILURES**

- **HYDRO ELECTRIC POWER GENERATION**
- **RE-FORESTATION**
- **IMPORT SUBSTITUTION**
- **LARGE SCALE INDUSTRIES**

# **REASONS FOR SUCCESS**

- **LEADERSHIP**
- **VISION**
- **SUPPORT STATE**
- **POLITICAL PATRONAGE**
- **LOCAL NEEDS**
- **INDUSTRY INITIATIVES**
- **DONOR SUPPORT**

# **REASONS FOR FAILURE**

- **LACK OF VISION & LEADERSHIP**
- **POLITICAL INTERFERENCE**
- **STATE POLICIES**
  - **CONTROL**
  - **MONOPOLIES**
  - **IRRESPONSIBLE DECISIONS**
- **INDUSTRY ATTITUDES**
  - **INTEREST IN ONLY SHORT TERM BENEFITS**
  - **INABILITY TO INVEST IN TECHNOLOGY**
  - **DEPENDENCE ON STATE SUBSIDIES**
- **LACK OF ENTREPRENEURSHIP**
- **LACK OF VENTURE CAPITAL**
- **LACK OF POWERFUL S&T LOBBY**
- **DONOR POLICIES**

# **WHAT IS LACKING**

- **VISION**
- **LEADERSHIP**
- **LONG TERM POLICIES & PRIORITIES**
- **SUSTAINABILITY**
- **ATTRACTION & RETENTION OF HUMAN RESOURCES**
- **CRITICAL MASS OF EXPERTISE & PEER COMMUNICATIONS**
- **PARTNERSHIPS**
- **FUNDING, VENTURE CAPITAL & RISK TAKERS**
- **SUPPORTING RESOURCES**
- **MECHANISMS TO EXPLOIT BRAIN DRAIN**

# **A CASE STUDY OF INSTITUTION BUILDING**

**THE UNIVERSITY OF COLOMBO  
HAS OVER THE YEARS FOUGHT  
THESE ISSUES AND HAS EVOLVED  
AN INSTITUTE THAT HAS OVERCOME  
SOME OF THE PROBLEMS**

# **MILESTONES**

- **COMPUTING COURSES INTRODUCED (1967)**
- **STATISTICS LINK WITH UNIV OF READING (1974)**
- **CONSULTANCY SERVICE (1974)**
- **SPLIT PhD PROGRAMS (1976)**
- **REGIONAL TRAINING PROGRAMS (1984)**
- **DEPT OF ST & CS (1985)**
- **INSTITUTE OF COMPUTER TECHNOLOGY(1987)**
- **UG AND PG PROGRAMMES IN COMPUTING (1989)**
- **EXTERNAL DEGREE PROGRAM (2000)**
- **DEPARTMENT OF COMPUTER SCIENCE (2000)**
- **NEW DEGREE PROGRAMS (2002)**
- **INDEPENDENT SCHOOL OF COMPUTING (2002)**



# UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING



[www.ucsc.cmb.ac.lk](http://www.ucsc.cmb.ac.lk)

Established on 01.09.02 as a Center of Higher Learning  
by merging the Institute of Computer Technology (ICT)  
and the Department of Computer Science (DCS)

- **DEPARTMENTS**

- Information Systems Engineering
- Computation & intelligent Systems
- Communication & Media Technologies

- **CENTERS**

- Advanced Digital Media Technology
- E-Learning
- Computing Services
- External Examinations
- Professional Development

## **STAFF (51)**

- 12 - Ph.D
- 02 - M. Phil
- 14 - M.Sc
- 01 - MBA
- 06 - PG Dip
- 16 - B.Sc

**16 of the above are engaged in research towards their Ph.D**

## **PROGRAMMES**

- **Undergraduate**
  - 3 year & 4 year Internal degrees
  - 3 year External degree
- **Postgraduate**
  - M.Sc in Advanced Computing
  - M.Sc in CS
  - M.Sc in IT
- **Research**
  - M.Phil
  - Ph.D

# **OTHER ACTIVITIES**

- **R &D**
- **E-LEARNING**
- **DIGITAL MEDIA TECHNOLOGY**
- **REGIONAL COURSES**
- **CONSULTANCY & TRAINING**
- **INCUBATORS**
- **GRADUATE TRAINING PROGRAM**
- **RADIO & TV PROGRAMS**
- **MULTI PURPOSE COMMUNITY TELECENTRES**
- **OPEN SOURCE FOUNDATION**

# CONCEPT

- **STILL A STATE UNIVERSITY BUT DOES NOT RELY ENTIRELY ON STATE FUNDING**
- **HIGH STANDARD OF TRAINING & RESEARCH**
- **EFFICIENTLY RUN LIKE THE PRIVATE SECTOR.**
- **LEADING CONSULTANCY AGENCY**
- **PROVIDES RESOURCES TO REST OF UNIVERSITY (e.g. CAMPUS NETWORK)**
- **GENERATES OWN FUNDS ( EXTERNAL DEGREE & CONSULTANCY & TRAINING )**
- **HAS BUILD UP A CRITICAL MASS OF QUALIFIED STAFF**
- **RECOGNISED AS A NATIONAL CENTRE OF EXPERTISE ( e.g. BY THE PUBLIC, STATE AGENCIES, JUDICIARY)**
- **PARTNERSHIPS WITH UNIVERSITIES IN SWEDEN, AUSTRALIA, UK, USA, JAPAN**
- **SUPPORT FROM JAPAN, SWEDEN, ADB, UK, NORWAY**

**THANK YOU!**

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