



## TECHNOLOGY FORESIGHT FOR SRI LANKA

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Broadly, “foresight” has the meaning of capability to insight into possible future affairs and being prepared for the substantial responses that may require challenging interventions. This is different from prediction, prophecy, and planning. It is difficult to predict the future, as it has not happened yet, however, those who want to create the future, can have a vision for it and work towards achieving it. The development of foresight involves identifying the future that is being intended to create, identifying future challenges, gathering and organizing evidences and apply strategically for decision-making. One of the main objectives of Technology foresight is to create a strong impact on industrial competitiveness, wealth creation and quality of life.

A review has been carried out on the legislative framework established in the country for science and technology development and management. Three acts of parliament, namely, the National Planning Council Act (No. 40 of 1956), the Science and Technology Development Act (No. 11 of 1994) and the National Research Council of Sri Lanka Act, no. 11 of 2016, have a direct relationship and responsibility for the science and technology development of the country.

The analysis reveals that the legislative framework for science and technology development in the country is very strong and powerful. A strong emphasis has been given to advising the Government, planning, forecasting, providing future directions, establishing strategies to facilitate research, contributing to economic growth, improving the quality of life, developing human resources and funding research. Now a question lies to us whether all of this has happened the way it was expected and fulfilled the National interest. If so, why the technological development in the country is lagging compared to other countries? For Sri Lanka to overcome the economic crisis, a rapid development is needed. For this purpose, Technology foresight, diffusion of technology and technology commercialization are of great importance The future can be shaped by the actions of people. Now it is the time to plan and shape up for the future.

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### INTRODUCTION.

Any Nation has to have the capability to respond to global changes and create the future they want. In doing so, the nation has to have foresight. Foresight is long-term future. The attention to solving immediate problems by a narrow focus and fulfilling personal agenda carrying out business as usual is the opposite of foresight.

However, we can recall some of the activities initiated by organizations with global concerns who have foreseen future scenarios. Actions against climate change, and millennium development goals of UN are some of them.

Technology foresight' is a term that is being widely used by researchers, policy-makers and industrialists around the world (Martin B R (2010)). However, still, we have not heard in Sri Lanka much about Technology foresight nor simple foresight. Broadly foresight has the meaning of capability to insight into possible future affairs and being prepared for the substantial responses that challenging implications may require Miles et.al (2016). This is different from prediction, prophecy, and planning. It is difficult to predict the future, as it has not happened yet, however, those who want to create the future can have a vision for it and work towards achieving it.

The development of foresight involves identifying the future that is being intended to create, future challenges, gathering and organizing evidence and applying it strategically for decision making Miles et.al (2016). One of the main objectives of foresight is to create a strong impact on industrial competitiveness, wealth creation and quality of life (Georghiou L 1996).

### HISTORICAL BACKGROUND

Consciousness about time, the concept of calendars etc., are evidence to prove that foresight was in existence in ancient civilizations. It is believed that the foresight in its modern form started after the Second World War. However, (An Overview of Future Studies). The establishment of the State Commission for the Electrification of Russia is a good example. Intending to create a self-sufficient industrial economy, Russia established a State Planning Commission in the year 1921 (An Overview of Future Studies). Similar type of planning took place in Italy and Germany during the great depression in 1930s.

After the Second World War, many future studies took place in France, compared to other countries in the Western World (Miles et.al 2016).

In the UK, an advisory body reporting to the Cabinet Office was set up "to survey current scientific developments and to advise the Council on work which showed commercial and economic promise for the medium to long term". The body was called the Council for Applied Research and Development and was set up in early 1983 by Martin B R (2010). The objective of the study was:

1. to analyse attempts made in France, Germany, Japan, and the United States over the last 20 years to identify emerging areas of strategic research that at the time showed long-term promise of leading to significant commercial benefits;
2. to examine the role, if any, that these forecasts played in promoting such developments;



3. to evaluate retrospective studies tracing back the scientific origins of significant technological innovations to determine whether one could have predicted the subsequent economic impact of the preceding research.

### **DISTINCTION BETWEEN FORECASTING AND FORESIGHT**

Forecasting is a probabilistic statement with a certain degree of accuracy (inaccuracy) about the future or things that might happen in future according to historical events. For example, knowing the trend of the GDP growth of a country, one can forecast certain achievements which might be realistic to a certain degree of accuracy based on past evidence.

Coates (1985) defines foresight as a process by which one comes to a fuller understanding of the forces shaping the long-term future which should be taken into account in policy formulation (Coates JF 1985), planning and decision-making". More elaborated description can be found in (UNDP 2018), as "Foresight is the umbrella term for methodologies and approaches that take volatility, uncertainty, complexity and ambiguity as their starting point, explore possible and probable futures, including a preferred one, and generate insights and 'cross-sights' that enable transformative actions in the here and now"

A Google search carried out by the author on 10th May 2022 revealed that there is not a single document which contains the keyword foresight in any of the government publications in Sri Lanka.

### **TECHNOLOGY ENHANCEMENT IN CHINA**

China initiated a 15-year "Medium- to Long-Term Plan for the Development of Science and Technology." in the year 2006. Preparation for the plan began in 2003, involving more than 2,000 participants. The team identified critical problems and research opportunities across 20 different areas (Cao et al., 2006)" The government invested 2.5% of its increasing gross domestic product in R&D by 2020, up from 1.34% in 2005.

The main objectives of the project are (Cao et.al 2006):

- become an "innovation-oriented society" by the year 2020,
- a world leader in science and technology (S&T) by 2050.
- developing capabilities for "Indigenous innovation"
- raise the contributions to economic growth from technological advance to more than 60%;
- limit the dependence on imported technology to no more than 30%.
- become one of the top five countries in the world in the number of invention patents granted to Chinese citizens,
- Chinese-authored scientific papers to become among the world's most cited.

China is the world's second-largest economy, however, by 2050, Chinese economy is expected to be 150% larger than the size of the economy of the United States. China is executing a multi-decade plan to transfer technology (Brown M and Singh P 2018). China is laying a foundation for future innovations for commercial and military applications that can be identified as critical future technologies (Brown M and Singh P 2018).

### **LEGISLATIVE FRAMEWORK FOR SCIENCE AND TECHNOLOGY DEVELOPMENT AND FORESIGHT IN SRI LANKA**

A review has been carried out on the legislative framework established in the country for science and technology development and management. Table 1 provides a summary of the key activities assigned to institutions established under their respective Acts of Parliament



**Table 1- summary of Act of parliament relating to planning and development of science and technology**

Act no	advise the government	provide directions/pl an/forecast	establish strategies/ facilitate research	concerning economy	improve quality of life	develop human resources	fund research
No. 40 of 1956 [9]	y	y	y	y			
No. 11 of 1994 [11]	y	y	y	y	y	y	y
No. 11 of 2016 [12]			y	y	y	y	y

The legislative framework for science and technology development in the country is systematic and very powerful. The National Planning Council Act (No. 40 of 1956) is one of the very first such initiatives. The main function of the commission as per the act was to advise the Cabinet on the planning of agriculture, industry, commerce, education, housing, health and social services, public utilities, and all other matters on the national economy. The Department of National Planning is the predecessor of the National Planning Council.

A number of institutions such as the National Science and Technology Council, the National Science Foundation, the Council for Information Technology of Sri Lanka, the Industrial Technology Institute and the Arthur C. Clarke Institute for Modern Technologies come under the Science and Technology Development Act (No. 11 of 1994).

The National Research Council (NRC) can be identified as a key player in science and technology development. The council was established under the Act, No. 11 of 2016.

The four Acts of Parliament and the institutions established under each Act have been delegated responsibilities that include advising the government, planning, forecasting, providing future directions, establishing research strategies, contributing to economic growth, improving quality of life, developing human resources, and funding research.

This raises the question of whether these actions have been carried out as expected and have truly served the national interest. If they have, then why is the country's technological development still lagging behind compared to other nations?

## DISCUSSION

There is a strong linkage between the knowledge, technology transfer and foresight. A Nation has to have a national policy and strategy to enhance the quality of life of people. In doing so, science and Technology play a major role. Having policies and strategies is not sufficient, there has to be mechanisms in place to operationalize them.

It is essential to identify the current and future needs of the local industry. Research efforts should be concentrated on priority areas with clear objectives and defined targets. Collaboration between government agencies, academia, and industry is crucial to support and facilitate the growth of private sector industries.



For Sri Lanka to overcome the economic crisis, a rapid development is needed. For this purpose, Technology foresight, diffusion of technology and technology commercialization is of great importance.

Further, it is necessary to partner with foreign industry to form international research collaborations to make new products and commercialise them. Future can be shaped up by actions of people. Now it is the time to plan and shape up for the future.

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