



National Position Paper on Horizon 2020 Societal Challenges

Sri Lanka

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1. Executive Summary

1.1. Background

This paper details a situational analysis on societal challenges in Sri Lanka discussed under the 07 broad themes identified by Horizon2020.

1.2. Methodology

A combination of methodologies was adopted for this study. The first was a content analysis approach on available policies that address issues relevant to the 07 societal challenges. Secondly, 11 semi-structured interviews were carried out with experts in each area of societal challenges. Finally, 06 focus groups were conducted with several experts who have the knowledge and experience in one / several areas of social challenges. The interviews and focus groups were recorded and analysed using thematic analysis to derive the key issues and priority areas under each societal challenge.

1.3. National priorities

Health, demographic change and wellbeing

- Effective research and knowledge transfer activities for diagnosis and prevention of diseases;
- Improving coordination and collaboration amongst different sectors and the development of integrated systems;
- Capacity building of health personnel for effective intervention and control programmes;
- Tackling the growing burden of NCDs and addressing regional disparities in health indicators and access;
- Addressing the care and well-being of the ageing population.

Food security, sustainable agricultures, marine and maritime research and the bio-based economy

- Addressing the lack of standards / quality of agricultural produce by ensuring and maintaining quality and standards during the production, packaging and transportation of food products. This would help make the produce more appealing, particularly to global markets;
- Improving the quality of life of farmers and fishermen;
- Identification of new crops and appropriate areas for cultivating different types of crops for improved yields and quality of produce;
- Use of new technologies and making better and more effective use of existing data and technologies for sustainable agriculture and fisheries.

Clean and efficient energy

- To achieve 100% electrification through expanding the distribution network; developing the low and medium voltage network, development of the electricity distribution network in the North and East, and improving the delivery system related infrastructure with long term, committed investment to ensure accessibility to all;
- To achieve an affordable, reliable and sustainable energy supply through increasing electricity generation capacities, petroleum refining and storage capacities, investment in renewable energy technologies and for the maintenance of critical infrastructures. Finally, maximising these investments through policy by facilitating localised solutions to promote energy efficiency;
- To prioritise viable renewable energy resources through resource identification and planning.

Smart, green and integrated transport

- To develop the road network through establishing high mobility inter-regional expressways, capacity enhancement and repair of national highways, and achieving all weather roads on the entire road network;
- To achieve 100% rural accessibility and connectivity through the repair of national, provincial and rural roads and rural road upgrading;



- To ensure accessible, regular modes of transport to rural areas and in general, improving existing public transport services;
- To improve network capacity (via enhancing greater rural to urban movement) and removal of network gridlock through improvement, reconstruction or construction of bridges;
- To establish missing safety regulations, supported by strict enforcement and policing.

Climate action, resource efficiency and raw materials

- To increase green cover through forest cover conservation, expansion and watershed management, creation of biodiversity parks in urban areas and enforcement of laws;
- To ensure comprehensive yet integrated policy making to safeguard natural resources and ecosystems including non-energy and non-agricultural raw materials;
- The integration of climate change adaptation to national disaster risk reduction and management policies;
- To promote the value of ecosystem services for economic growth and DRR through research and computation.

A changing world: inclusive, innovative and reflective societies

- Need for more bottom-up approaches in policy making, allowing the policies to be better informed by practice and incorporating indigenous values and knowledge into policies;
- Promoting gender inclusivity by empowering women and allocating greater decision-making capacity and authority;
- Upgrading human capital through science and technology education;
- Making ICT more accessible, for example by further reducing costs and making content available in both Sinhala and Tamil languages;
- Developing a common platform enabling information / knowledge sharing between different parties.

Secure societies: protecting freedom and security of the country and its citizens

- Restoration of independent institutions and creation of law and order by removing corruption and political influences in policing and judicial processes;
- Removing the state control of media and implementation of right to information;
- Capacity improvements to improve the accuracy of disaster forecasting, and to make the infrastructure of the country more resilient through the use of appropriate designs, correct use of materials, site selection, etc.

1.4. Opportunities of mutual interest for collaboration with the EU

The research conducted highlights several opportunities of mutual interest for collaboration with the EU. In relation to “food security”, technology and knowledge transfers from the EU can help in achieving increased productivity and quality standards (particularly in relation to packaging and transportation) of agricultural and fish produce. This would, in turn, aid in the creation of new international markets for local produce, thereby enhancing the quality of life of farmers and fishermen. Furthermore, such technology and knowledge transfers would also be beneficial for the EU, as they would serve to establish a new import market for agricultural and fish produce for the region (which could be further supported by schemes allowing preferential access to the EU market), supporting food security. Opportunities also exist for developing interdisciplinary research on areas such as diagnosis and prevention of diseases, and biotechnology. Development of human capital through Science and Technology education and skills development will create opportunities by boosting the high technology exports sector and attracting foreign investments. In relation to “secure societies”, opportunities exist for capacity building in relation to disaster forecasting and making the critical infrastructure stock more resilient. Finally, a recommended case-study is the “Food for Work” programme (initiated by the Ministry of Economic Development) which cross-cuts four critical societal challenges through providing dry rations or cash for maintenance of water tanks; “food security” as it provides an alternative source of nourishment or income, and achieves safe water resource management; “innovative societies” as it facilitates knowledge and skills transfer, both at the ministry level and with the engaged individuals; “secure societies” due to the protection



of critical infrastructures and “climate action” as it can ultimately be considered a climate change adaptation measure.



2. Introduction

This national position paper is a brief summary of Sri Lanka's policy and interests concerning the seven thematic societal challenges identified under the EU's Horizon 2020 research programme. The paper contains a clear statement of Sri Lanka's position on the topic and clear reasoning, also suggesting priorities for action concerning the issues under consideration.



3. Context of this position paper

3.1. CASCADE project

This national position paper is an output of the CASCADE project (Collaborative Action towards Societal Challenges through Awareness, Development, and Education) that aims to provide the foundation for a future International Cooperation Network programme targeting South Asian Countries, which will promote bi-regional coordination of Science & Technology cooperation.

The EU, whilst representing only 7% of the world's population, is responsible for 24% of world expenditure on research, 32% of high impact publications and 32% of patent applications, making it a world leader in research and innovation. However, over the past few decades, new key players have emerged within the international landscape shifting the previously dominant position held by the EU towards emerging economies.

The EU recognises a need to strengthen internationalisation through strategic policy action. The need for linkages with Asian countries has been highlighted given the region's rapidly growing research and innovation capacities and the urgency to address global challenges. South Asia, in particular, is home to more than 40% of the world's absolute poor, but will contribute nearly 40% of growth in the world's working-age population in the coming decades.

CASCADE is an opportunity for raising awareness of the potential for EU-Southern Asia cooperation and stimulating regional and international participation. With the active contribution of South Asian countries, the endeavour will be to pave the way for more advanced, inclusive and innovative societies.

CASCADE is led by Professor Dilanthi Amaratunga at the Global Disaster Resilience Centre at the University of Huddersfield, UK. She can be contacted on d.amaratunga@hud.ac.uk for more information on the CASCADE project. Further details on the project can also be obtained by visiting the project web site: <http://www.cascade-inconet.eu>

3.2. Horizon 2020

The project coincides with the launch of Horizon 2020, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. Running from 2014 to 2020 with a budget of just over €70 billion, the EU's new programme for research and innovation is part of the drive to tackle global societal challenges, and create new growth and jobs. International cooperation in research and innovation is an essential element for meeting the objectives of Europe 2020. Recognising the global nature of producing and using knowledge, Horizon 2020 builds on the success of international cooperation in previous framework programmes and is fully open to participation from third countries.

The 18 month CASCADE project is led by the University of Salford from the UK but targets and has the participation of all seven South Asian countries specified in the call: Afghanistan, Bangladesh, Bhutan, Maldives, Nepal, Pakistan and Sri Lanka.

During the project, the team will:

1. compile a regional position paper that identifies global challenges and research priorities;
2. map and develop an inventory of national and regional stakeholders related to global challenges;
3. raise awareness on research & innovation priorities for fostering cooperation and towards building mutual understanding on how to address common global societal challenges.



3.3. Methodology

The work carried out as part of the development of this national paper was divided into two phases. Phase 1 consisted of a policy analysis and Phase 2 of the study was carried out using semi-structured interviews and focus groups. During phase 1, a content analysis approach was carried out to analyse available policies in each area of the societal challenges to identify the current context, gaps and key informants. During the 2nd phase of the project, 11 semi-structured interviews were carried out with experts in each area of social challenges. In addition to that, 06 focus groups were conducted with 33 experts from all 07 areas of societal challenges. All the interviews and focus groups conducted were recorded and analysed using thematic analysis to come up with the overall findings of the project. The experts chosen for the aforementioned approaches, i.e. interviews and focus groups, were either from academia, research institutes, non-governmental organisations and government organisations (e.g. policy makers or from local authority). To maintain consistency with the approaches adopted, guidelines and templates were used for all these approaches, i.e. policy analysis guidelines / templates, interview guidelines / templates and focus group guidelines / templates.

4. Thematic societal challenges

4.1. Health, demographic change and wellbeing

Background

- Sri Lanka has a well-established public healthcare system. The Government of Sri Lanka spends more on health sector development (i.e. around 5% of total government expenditure during the recent past) compared to other South Asian countries. Sri Lanka has very low infant and neonatal mortality rates (11.3 infant deaths per 1,000 live births)¹ as well as high life expectancy levels (76 for females and 70 for males)³, which are above the regional norms. The Maternal Mortality Ratio (MMR) of 3.4/10,000 live births in 2008 was an exceptional achievement for a developing country. The country has an ageing population that is increasingly feminised^{2,3}. In 2011, the percentage of 65+ was 6.3% of the total population. According to standard population projection figures, the female population at ages 60 and above is likely to grow from 1,408,800 in 2011 to 2,001,200 in 2021 (i.e. a 42% increase)³.
- Health, demographic change and wellbeing were highlighted as critical challenges for the country, particularly due to the need for addressing NCDs (including injuries and mental health problems), welfare of the ageing population and raising awareness on reproductive health matters of vulnerable groups.

Current position

- Sri Lanka's disease burden is shifting towards non-communicable diseases (NCDs) which are chronic and high cost. There is also a significant increase in Chronic Kidney Diseases (CKD) with unknown aetiology.
- In relation to infant mortality rates, Sri Lanka has low neo-natal mortality rates (which are related to endogenous factors), however, there is still room for improvement in the post neo-natal mortality rates (which are related to socio-economic factors).
- Lack of awareness on sexuality and reproductive health has exposed the youth in particular, to relatively high reproductive health risks. The culture and social attitudes also mean that the attention given to addressing the problems of teenage pregnancies and illegal abortions is low. Lack of awareness in reproductive health issues related to older women (such as pre and post-menopausal health issues) have also left this group vulnerable.
- There is currently a lack of attention given to men's health, which could also be attributed to the prevalent culture and social attitudes within the country.
- There are disparities between the actions recommended in policies and their implementation at the grass-roots level.
- The most critical challenges for Sri Lanka under this challenge area were identified as the growing burden of NCDs (including injuries and mental health problems), providing health and social care for the elderly, and raising awareness of reproductive health matters of vulnerable groups. In fact, NCDs such as Ischemic Heart Disease (13.1%), Neoplasms (10.1%), Pulmonary Heart Disease and Diseases of the Pulmonary Circulation (10.1%), Cerebro-Vascular Disease (9.2%), and Diseases of the Intestinal Tract (7%) have become the leading causes of death in the country.
- Moreover, the lack of effective research and knowledge transfer activities was highlighted as a crucial issue in relation to diagnosis and prevention of diseases.
- Despite continuing improvements, maternal morbidity and equity in access to services across the country, especially in conflict-affected, poor and plantation areas, need more attention. In addition, the dry zone is experiencing particularly high fertility rates due to the increased colonisation of these lands.
- The elderly, physically and mentally disabled, and youth were identified as particularly vulnerable groups when it comes to health related issues. For instance, these groups are more vulnerable to reproductive health related issues as they are not adequately covered by existing policies.

- In terms of income groups, it was interesting to note that high income groups were emphasised as being more affected by health related challenges compared to low income groups. This was due to the lower income groups being more closely linked with and monitored by the public healthcare system. The higher income groups are particularly vulnerable to NCDs.
- Men's health was also highlighted as requiring special attention, as they are in an inferior position in relation to health compared to women due to their behaviour patterns.
- In addition, the estate sector is another societal segment critically affected by many of the aforementioned problems.

Actions taken by the Government

- The main goals of the government health policies according to *Mahinda Chintanaya* include: increasing the life expectancy and quality of life by reducing preventable deaths; focusing of services for vulnerable groups / communities; improving the provision and quality of patient care; development of human resources; improving efficiency, effectiveness and accountability within the health sector; promotion of health through information, education and communication⁴.
- The Ministry of Health, in association with the Ministry of Finance, has also prepared a *Medium Term National Health Development Plan (2013 – 2017)* with a view to identifying all major health development activities in line with the *Mahinda Chintanaya* policy and to streamline them in a rational manner.
- The *Health Master Plan* provides the policy and strategic framework for the development of an innovative health system by the year 2016. Accordingly, a number of policies and strategies have been developed, targeting different demographic groups such as the *National Strategic Plan on Maternal and Newborn Health 2012 – 2016*, *National Policy and Strategy on Health of the Young*, *Sri Lanka National Migration Health Policy*, etc.
- *The Nutrition Policy* provides a platform for inter-sectoral coordination to accelerate efforts to achieve optimum nutrition for every Sri Lankan⁴.
- *The Maternal and Child Care Programmes* have been implemented nationally as an integral component of the state health care system. There are also widely accessible preventive and primary health care strategies including the treatment of minor infections. These actions have helped to bring down the aforementioned maternal and infant mortality rates.
- There are also considerably high levels of expenditure on health campaigns focusing on sexually transmitted diseases (Rs. 61.4 Mn), malaria (Rs. 397 Mn), leprosy (Rs.50.3 Mn), respiratory diseases (Rs.407.8 Mn) and filariasis (Rs. 28.5 Mn)⁵.

Recommendations

- Capacity building for health personnel and a health promotion knowledge management system are needed for the development of effective intervention and control programmes.
- Effective programmes need to be geared particularly towards the illiterate or less-educated youth on comprehensive, life skills based, gender sensitive, reproductive health education.
- The rising ageing population means that there is a need to overcome social stigma (for instance towards elderly day care centres and caregivers) and investment in provision of care and social activities for the ageing population.
- Links between universities (i.e. academia) and government should be developed and strengthened to support the transfer of knowledge.
- Pure research (other than technological transfers) also need to be promoted especially to facilitate disease prevention and diagnosis. This is particularly relevant to addressing the prevalent CKD epidemic within the country.
- Coordination and collaboration needs to be improved amongst different sectors involved in the provision and promotion of healthcare. Integrated systems are particularly necessary in developing effective prevention programmes, for example in combating recurring epidemics such as Dengue.

¹ United Nations Development Programme (UNDP), 2012. Millennium Development Goals: Eight Goals for 2015. Available at; <http://www.undp.org/content/srilanka/en/home/mdgoverview/> [Accessed 10 December 2013].



²¹ De Silva, W.I., 2007. A population projection of Sri Lanka for the Millennium, 2001, 2101: trends and implications. Colombo: Institute for Health Policy.

³Gunasekera, H.R., 2008. Life Tables for Sri Lanka and Districts, 2000 – 2002, Colombo: Department of Census & Statistics.

⁴Ministry of Healthcare and Nutrition, 2010. *National nutrition policy of Sri Lanka*. Colombo: Ministry of Healthcare and Nutrition.

4.2. Food security, sustainable agricultures, marine and maritime research and the bio-based economy

Background

- Sri Lanka is traditionally an agricultural economy. However, the contribution of the agricultural sector to the GDP has declined since 2008 (when it comprised 12.1% of the GDP to 11.2% of GDP in 2011)⁵. Tea, coconut and rubber remain the country's main agricultural exports, as they have since the colonial days. Even though the country's staple food is rice, Sri Lanka only contributes 0.54% to the world's paddy production.
- Sri Lanka's high biodiversity includes a diverse array of ecosystems and species. However, forest cover has continued to decline steadily from 33.2% of the total land area in 2000 to less than 30% in 2011.
- As an island nation, Sri Lanka has a great opportunity to promote sustainable fisheries. The sustainability of the fisheries sector has been identified as a primary concern for the country's economic development. The country's marine fisheries resource base has a total extent of 538500 km² and is rich in species diversity⁶. At present, Sri Lanka's fisheries sector accounts for 1.8% of GDP. Around 262,530 active fishermen engage in marine and inland fisheries, while 986,410 households depend on the income gained through fishing and related activities. The sector generated Rs. 26,363 million (USD 206 m) of revenue from the growing export market during the year 2012⁵. Despite the above, the country is still dependent upon imports for both dried (41,000 MT or Rs. 8,935 Mn) and other (31,000 MT or Rs. 8,548 Mn) fish produce.
- Food security was highlighted as a critical societal challenge due to the high prices of essential food items as well as the high reliance on imports.

Current position

- Currently, the country has no long term policies in place in relation to food security. The prices of food items within Sri Lanka are quite high. Moreover, the country is also highly reliant on imported food items.
- Even though a large proportion of the country's population are farmers (the employment in the agricultural sector is 32.9% of total employment⁵), the contribution of the agricultural sector to the country's GDP is comparatively low compared to developed countries. There is a very low diversification of crops within the country as the general tendency within the farming community is to imitate and follow what everyone else is doing.
- In relation to sustainable agriculture, concerns were raised regarding the difficulties faced by farmers in obtaining good quality seeds as these now need to be bought from foreign companies.
- Due to the rising demands on water, the amount of water available for agricultural purposes is also reducing.
- The country is also facing a shortage of farmers which has resulted in an estimated 50,000 acres of unused or abandoned farm land. At present, a large proportion of the farmers are part-time farmers, with many of the educated leaving the profession. The sector is adversely impacted by the general notion that farmers require no formal education or knowledge. This, as well as the visible changes to the demographic structure in agricultural areas, were highlighted as contributing factors to the current shortage of farmers within the country.
- Furthermore, the land available for agricultural purposes has gone down due to the increasing population. There is also concern over the reducing sizes of farming lands, as the larger lands get divided up as they are handed down from one generation to the next. Hence, there is a need to improve the efficient use of available land. Currently, there is a lack of awareness of and access to equipment and technologies which could result in improved productivity levels.

- Crop yields in certain traditional cultivation areas have reduced due to several social and environmental factors (e.g. climate change implications). Furthermore, there is a general resistance to change from traditional crops to new, more popular varieties which are in higher demand in international markets. However, most of this resistance, it was emphasised, does not originate from the farmers themselves, but from a smaller segment that enjoys financial benefits from the status quo.
- In Sri Lanka, the task of ensuring food safety is conducted in an ad hoc manner, with tasks being dispersed to a number of government agencies and departments (such as the Department of Agriculture, the Consumer Affairs Authority, the Sri Lanka Standards Institute, Atomic Energy Authority, Sri Lanka Customs – Quarantine Department, and the Ministry of Health) based on their respective areas of expertise.
- There is also no recognised, agreed upon method of maintaining standards with regard to pesticide usage. Sri Lanka is yet to prescribe a national list of Maximum Residue Levels (MRLs) (i.e. the upper legal levels of concentration for pesticide residues in or on food or feed, based on agricultural practices to ensure the lowest possible consumer exposure). It was highlighted that, at present, people are unable to consume vegetables with the assurance that they are pesticide free. Further certain traditional vegetables, which are generally grown without the use of pesticides, have lost their popularity with the younger generations.
- Even though there are forestry and land laws in place, most of these were noted to be impractical when it comes to practical implementation.
- The increasing incidence of illegal fishing is a critical issue affecting the sustainability of fish stocks in Sri Lankan waters. The illegal practices, such as bottom trawling, often used by illegal fishermen, cause serious damage to the healthy fish stocks and adversely affect the livelihoods of local fishermen.
- There is also dispersed responsibility in relation to coastal management with a number of government agencies that share different responsibilities.
- There are several critical issues identified for the Sri Lankan under this challenge area. Firstly, there is a need to improve the standard / quality of agricultural produce developed in the country leading to a larger contribution to the GDP from this sector.
- Addressing the high price of agricultural and other food produce within the country is another critical issue.
- The quality of life of farmers is also low, with the majority being just above the poverty line. The result is that they are heavily susceptible to even the smallest of market shocks or adverse weather conditions and are highly dependent upon government subsidies and other assistance. This is also a key problem that threatens the food security of the country.
- Another critical challenge is the effective implementation of the policies that are already available. There is a tendency in the country to develop policies once a problem arises, however little attention is given to the sustainability of these policies and ensuring these are implemented at ground level.
- Accessibility to healthy and safe food is also a critical concern.
- The poor are mostly affected by issues relating to food security and safety. This is because of the lack of education levels, awareness and low purchasing power of this segment. However, the poor and the rich alike are affected by the issues of not partaking in a balanced, nutritious diet.

Actions taken by the Government

- The *National Agricultural Policy* aims to achieve food and nutrition security of the nation whilst increasing employment opportunities, income and living standards of the farming community through the adoption of technically feasible, socially acceptable, economically viable and environmentally sustainable agricultural production technologies and marketing. Similarly, the *Plantation Policy* endeavours to increase the productivity, profitability and sustainability of the corporate and small holdings sector of the plantation industry through the establishment of Private-Private Partnerships, encouraging the production of “green products” and improvement of profitability, while promoting the well-being of the plantation communities.

- The main objectives of the *Fisheries and Aquatic Resources Act* are the management, conservation, regulation and development of the fisheries and aquatic resources of Sri Lanka. Seven management areas were declared under the Act for the management of fisheries resources through community participation.
- Efforts have also been undertaken by the government to reduce 'food miles' (i.e. the distance food products need to travel from production to consumers).
- The "Food for Work" programme initiated by the Economic Development Ministry promotes a sense of ownership for critical infrastructures and safe water resource management. The programme provides dry rations or cash provisions for locals to maintain the critical infrastructures of water tanks during the dry season. Technical expertise is provided by the partner institution, the Ministry of Irrigation, to ensure building standards are met and also to prevent sedimentation (which affects the water quality and flow).
- All natural forests in the country are set apart for the conservation of soil, water and biodiversity and no extraction of timber has taken place since the moratorium of logging in natural forests was imposed in 1990. All natural forests, as well as forest plantations, are currently managed using the Forest Management Plans prepared based on the principles of Sustainable Forest Management. The Forest Department has been involved in community forestry activities (such as the Farmers Woodlot Programme, Village reforestation Programme, Joint Forest Management Programme, Home Garden Development Programme) engaging local communities in decision making, planning, and implementation of various forestry activities.
- The *Control of Pesticides Act* has been developed indicating that food crops should not contain pesticide residues in excess of levels as "may be prescribed".
- The *Ministry of Fisheries and Aquatic Resources* is promoting active coordination with related institutions to introduce new technology for the development of the fisheries industry and the establishment of an IT-based extension service. The latter is intended to support local and foreign funded projects, community development programmes and disseminate the results of scientific studies and research to the fishing community.
- A *Coastal Resources Management Project* is carried out by the Ministry in conjunction with the Asian Development Bank (ADB) with the objective of establishing integrated management of coastal resources to improve their sustainability.
- As part of the policy goal of increasing high tech value added exports from 1.5% to 10% of GDP, the Ministry of Technology and Research aims to establish centres of excellence to promote multi-disciplinary research in several areas including biotechnology. Already, biomass has been focused upon, through local R&D, establishing the suitability of *Gliricidia* as a plantation crop. The Ministry of Science and Technology has identified biotechnology as a thrust area for development and local funding agencies, such as the National Science Foundation (NSF), the Council for Agricultural Research Policy (CARP), and the National Research Council (NRC), have funded research in biotechnology.

Recommendations

- In order to advance the productivity of the country's agricultural sector, most appropriate areas for cultivating different types of crops should be identified and promoted. So far, many of the attempts to relocate farmers have been hindered by politicians who are concerned with losing their voter base.
- The possibility for increasing the number of seasons per year when paddy fields are cultivated (from the traditional two seasons per year) also needs to be explored.
- Promoting sustainable agricultural practices within the country requires a radical societal transformation and cannot be effectively achieved solely by providing financial incentives (for instance, removing fertiliser subsidies as a means of promoting organic farming has not been highly effective). The attitude of farmers needs changing so that they adhere to the recommendations given at policy level. On the other hand, the policy development process should also take into consideration the input from appropriate stakeholders and experts. The need for more bottom-up policy making is especially highlighted to incorporate inputs from ground level into policies.



- There is a need to conduct research on sustainable agricultural practices (both traditional and new) and dissemination of knowledge. Research should also address the demystification of certain issues (e.g. 'organic fertiliser is always good') and explore the impacts of climate change on the local agricultural sector.
- In order to address the decreasing forest cover, there is a need to implement forest replanting programs in areas that are currently under cultivation that have been identified by the National Building Research Organisation in areas such as; Nuwara Eliya and Ratnapura.
- Actions should also be taken to make better and more effective use of shoreline data already available from various sources such as the Royal Dutch Meteorological Institute, Indian satellites, etc. to improve the productivity and safety of fishing activities, ultimately leading to bringing down the fish prices within the country.
- An overarching independent body supported by an effective legal framework and a proper education policy should be implemented to ensure food safety for the country. A proper testing system is needed to ensure the standard of food delivered to the public is satisfactory. A national list of acceptable pesticides/chemicals and associated MRLs should be developed in harmonisation with the codex standards and worldwide best practices. This should be complemented by investments in equipment and human resources to enhance the testing and conformity assessment capabilities of both private and public sector institutions and testing laboratories to enforce regulations. The farmers should also be provided with awareness on the proper, safe ways of using fertiliser.
- Conflicts within the existing policies in relation to some of the above recommendations should also be corrected. At present, the government has recommended that fertilisers should only be used after soil testing. This recommendation is, however, undermined by the subsidies placed on fertilisers.
- A platform for knowledge sharing in relation to the aforementioned should be developed and promoted, encouraging both public and private sector agencies to share research and information.

⁵Central Bank of Sri Lanka, 2013. Economic and social statistics of Sri Lanka 2013. Colombo: Statistics Department, Central Bank of Sri Lanka.

⁶Ministry of Fisheries and Aquatic Resources Development, 2013. Statistics. Available at; <http://www.fisheries.gov.lk/content.php?cnid=ststc> [Accessed 2 January 2014].

4.3. Clean and efficient energy

Background

Energy policy is “comprehensive” but “weak in implementation”. It is not subjected to fragmented policy making as it is housed within one institution and is well-established.

Sri Lanka’s present primary energy supply is based on 1) Biomass 2) Petroleum oil (imported) and 3) Hydroelectricity⁷. Gross primary energy supply is 378 PJ (2000) – 415 PJ (2008). Access to electricity (% population) is 85 - 94% (2009 - 2012)⁸ and 76.6 % (2009 - 2010)⁹. Electricity consumption per capita is 354 kWh/y (2000) – 416kWh/y (2008).

Sri Lanka has abundant renewable energy resources with 58.8% of primary energy in 2012¹⁰; 7-10% (2009 – 2012)⁸. Renewable energy (RE) production began in 2000. In 2012, RE production for Hydro was 3291.41 GWh; Wind was 2.32 GWh; Biomass 22.17 GWh; and Off-grid Nonconventional was 18.26 GWh. However there was a decrease in electricity generation through hydropower, 45 - 41% (2009 – 2012)⁸. Non-renewable energy production consists of Thermal with 8416.47 GWh; 48-49% (2009-2012). Overall energy losses are 18.77% (2012) with losses in transport and distribution amounting to 1192.05 GWh (2012). Therefore, overall gross generation (GWh) is 9,882 (2009) – 11,801 (2012)⁸.

This is a critical societal challenge because of unreliable hydropower, reliance on coal has meant costs for energy (fuel and electricity) are one of the highest in the SAARC region and efficiency is critically undermined by maintenance and connectivity issues. This is compounded by average expenditure outweighing average earnings in Sri Lanka. However, high electricity costs may be attributed to higher reliability than other South Asian countries (less regular power outages)¹².

Current position

Overall issues consist of: 1) Continued reliance on a few key energy resources without promotion or investment in diverse, available and abundant renewable energy resources. 2) Inadequate and weakly enforced resource management or conservation (particularly water for energy). 3) Energy productivity is undermined by maintenance and connectivity issues leading to high distribution losses. Furthermore fluctuations or poor quality energy supply causes high technological machinery to shut down affecting related industrial outputs.¹⁰

Critical issues highlighted were, 1) Certain areas are still marginalised such as the North and East which still lack electrification and areas which are dependent on seasonal supply of water (i.e. require energy to pump water). Thus, particular areas which require energy for other means apart from electricity require localised solutions.¹³ 2) Locally developed renewable energy projects are disadvantaged as commercial loans are secured (up to 60-70% of project is funded) without any government incentives, whereas foreign investors are provided soft loans with 2-3% interest. In addition, no tariff agreement has meant renewable energy projects being halted mid-development.

Particular segments of society affected were observed to be from all income brackets and differentiated in economic terms, industry and business affected. ⁶ The geographical variance was observed as the following; 1) NE is marginalised due to a lack of access and availability of local energy resources.¹² 2) The densely populated Western Province requires more energy and access to the electricity grid. ¹¹



Actions taken by the Government

Through the *National Energy Policies and Strategies* (2008)(Under Revision) the expectation is to achieve a minimum in NCRE generation of 10% (2015) and 20% (2020); the Under Base Load Forecast NCRE is potentially 28% (2008).

The current position is to achieve 100% electrification through expanding the distribution network; developing the low and medium low voltage network; the development of electricity distribution in the North and East (Rs. 4550 Mn and 4270 Mn projects); achieve 100% rural electrification through the *Lighting Sri Lanka programme* and *Grama Shakthi programme* to replace harmful kerosene-based lighting with renewable energy technologies in areas where the national grid extension is not feasible⁸.

It is expected that energy security will be ensured through increasing electricity generation capacities, petroleum refining and storage capacities and improving delivery systems related to infrastructure with investments of Rs. 32,581 – 91,318 Mn (2009 – 2012). 1) There is continued reliance on thermal power generation with expenditure of Rs. 2592 Bn for the importation of crude oil and refined petroleum (2005-2012; Rs. 109 Bn through Long term Generation Plan, CEB (2011 – 2025) ⁸ 2) Sri Lanka reduced the system losses by 10.67% compared to the world average rate of 14% (2012) ⁸.

It is expected to establish a world class national research and innovation eco-system by 2015, through dynamic technology transfer platforms for wealth creation via the Techno-Entrepreneurship Initiative and establishment of a national cadre of researchers to organise skilled personnel in the science and technology sectors.

Recommendations

- To create the foundation for proactive, efficient and informed policy making through the promotion of diversity within central government and / or capacity building of local government authorities; problem identification with data collection; technology transfer for selecting local contextually appropriate solutions; skills for planning development and attracting funding.¹²
- Prioritisation of strategies and resource identification. For example, investment in waste to energy technologies and resource identification, such as production of biomass chips through quality control and certification.¹²
- To achieve affordable, reliable and sustainable energy through investment in renewable energy technologies, establishing a self-generation scheme and facilitating localised solutions such as offsetting between day and night electricity usages.¹¹
- To promote market uptake of innovative energy practices and technologies by establishing policies to facilitate linkages between R&D institutions, universities and industry, implement Intellectual Property Policy supported by a National Centre and Patents Pool.

⁷ Ministry of Environment, 2011. *Second National Communication on Climate Change of Sri Lanka: Submission to United Nations Framework Convention on Climate Change (UNFCCC) Secretariat*. Democratic Socialist Republic of Sri Lanka: Climate Change Secretariat, Ministry of Environment, 2011.

⁸Department of National Planning, 2013. *Mahinda Chinthana Vision for the Future: Investment Strategy 2014 – 2016*. Democratic Socialist Republic of Sri Lanka: Ministry of National, Department of National Planning, 2013.

⁹Department of National Planning (2013)

¹⁰ Sustainable Energy Authority, 2012a. *National Energy Management Plan 2012 – 2016*. Sri Lanka: Sustainable Energy Authority, Ministry of Power and Energy, 2012.



¹¹Sustainable Energy Authority, 2012b. Sri Lanka Energy Balance 2012 (in original units) at <http://www.info.energy.gov.lk/>

4.4. Smart, green and integrated transport

Background

Transportation of both people and goods is highly reliant on the public road system. The quality road infrastructure index has improved from 63rd (2008/2009) to 48th (2012/2013) and road density (km/km²) is 1.74 ranking 5th globally (2011).⁸ There has been an investment of Rs 713 Bn for road network development (2005 – 2012) focusing on high mobility inter-regional expressways, capacity enhancement and rehabilitation of national highways, thus the road network handles 95% of traffic. National highways consisting of trunk and main roads convey 80% of traffic.⁸ However scarce safety regulations for motorists has meant that the estimated number of road traffic deaths was 13.7% (per 100,000 population) and by type of road user was 67.5% for all vehicles and 32.5% for pedestrians in 2010.¹⁵

It remains an important societal challenge due to scarce safety regulations, ensuring accessible, regular modes of transport to rural areas and improving existing public transport services. It is not a critical societal challenge, due to extensive, committed funding towards effective and strategic improvement of road networks and associated infrastructures through long term policies at all levels, but remains an important one.

Current position

The overall issues are as follows: 1) Transport policy is uncoordinated due to a lack of land use planning e.g. non-motor transport is linked to city design but city design is housed under a different ministry causing unintegrated transport network routes and “ad-hoc” coordination. 2) Lack of public confidence due to a lack of available public transport modes (particularly with the bus system). 3) During policy making there is a tendency for quick decisions without foresight. It is required for effective policies; firstly, the allocation of time for impact and secondly, preparedness within planning for these effects. 4) No policy mandate, a general lack of awareness and public engagement for resource efficient, environmentally conscious transport.

The critical issues have been highlighted as, 1) Existing Colombo City transport system does not accommodate increasing public demand with decreasing quality of public transport. 2) Existing road capacity cannot accommodate this current demand including the outer-city vehicle population (entering from 6 corridors). 3) Public consultations do not provide scientific information, thus there is poor public buy-in. 4) Transport solutions are not localised due to funding being driven by foreign external consultancy (e.g. “Park and Ride” concept (outer-city) to mitigate vehicle emissions failed in Sri Lanka as it did not capture the social aspect).

In addition, better mobility has been impaired by singular networks of transport modes and no decentralisation of government agencies (i.e. requires travelling to Colombo). Transport issues have been observed to affect all incomes and classes. However geographically, transport issues are observed as follows: 1) Public infrastructure issues tend to be associated around cities 2) Vehicular related air pollution in urban areas 3) High congestion in the capital city of Colombo; and 4) Lack of public transport availability in rural areas and public transport modes in North and East.

Actions taken by the Government

To facilitate enhanced employment through network capacity improvement (via greater rural to urban movement) such as: 1) Widening 30% of single or intermediate lane national highways to dual or multi-lane standards 2) Rehabilitation of 3600 km of national highways 3) Completed high mobility inter-regional expressways (860km) to connect growth centres through Western (43.%), Southern (11.5%), Central (9.8%) and North Western (9.6%) regions; 121 km is completed, 64km is ongoing and 94 km is



committed. 4) Removal of network gridlock through reconstruction of 300 bridges on national highways and improvement or construction of 1000 rural bridges.²

To achieve 100% rural accessibility through the following projects 1) “*Maha Neguma*” (Rural road upgrading and rehabilitation), “*Gama Neguma*” and *Rural Centric Road Connectivity Programme* (for easy access to 1000 villages through provincial roads and national highways)² 2) Connecting 1000 Grama Niladhari Divisions through the rehabilitation of national roads (800km), provincial (1500km) and rural (4000km) roads.² 3) To achieve all weather roads on the entire road network by 2016 including upgrading rural roads to all-weather roads. ²

To improve congestion in Colombo metropolitan areas, the *Master Plan* (Colombo Metropolitan Region) 2015 – 2035 (Under Formulation) the *Colombo Metropolitan Plan* and one-way traffic measures were developed and implemented respectively.

Urban Transport National Transport Policy focuses on improvement of mass public transport systems.⁷ Feasibility studies are being conducted to implement Mass Rapid Transit (MRT) or large infrastructures at the earliest convenience.

Improving air quality through vehicular emission control in the *Haritha Lanka Programme* via the objectives of “Clean Air Everywhere” and “Cities for Health and Prosperity”.

Towards improving road safety regulations, WHO implemented road safety programmes alongside *UNISDR Decade of Action Plan* (2011 – 2021) with the University of Moratuwa and the Police Department. In 2011, the road safety lead agency was established. ¹⁵

Recommendations

- In policymaking: 1) Committed funding and prioritisation through sustainable assessment tools, consideration of timeframe and resource availability for long term policies. 2) To give relevant authorities more autonomy (supported by capacity building and consultation) to increase public confidence (e.g. Pradeshiya Sabhas which are responsible for rural development lack technical expertise to implement outlined tasks). 3) Further provision of capacity building and technical expertise to ensure the correct institution is enabled to make the correct decision. 4) New feasibility studies to enhance knowledge transfer.
- Prioritisation in policy making should be driven by outcomes as opposed to outputs, facilitated by linking key positive indicators to policy outcomes.
- To develop new knowledge and technologies for transport requires 1) standardisation for research and 2) fostering Public Private Partnerships and private sector financing to developing innovative transport initiatives and technologies. The cycle from pure research to marketing should be supported through local certification and standardisation measures, to be upheld to international regulations and benchmarks.

4.5. Climate action, resource efficiency and raw materials

Background

Forest coverage reduced from 49% in 1920 to 29% in 2013; The forest area has decreased from 19,628 (sq.km) in 2004 to 18,454 (sq.km) in 2011. ⁸ Air temperature has increased by 0.45C (assuming the rate of increase of 0.2C/decade in Sri Lanka) resulting in an increased consecutive number of days in the Dry and Intermediate Zones with an increased number of warm days and nights. ⁸

Climate related disasters affect 96% of the population: Floods affect 48% and have cumulatively affected 8.5 million people (2010 – 2012 estimated damage due to flooding was Rs. 111,534 Mn). Droughts affect 44%; Extreme wind affects 6.5%. Boosting of the disaster management sector following IOT led to systems and capacity building which has shifted risk reduction and response by government and stakeholder groups– pioneering work in risk reduction for hazard assessments and strategic environmental assessments, hazard profiles, etc.

Overall, this is a critical societal challenge because Sri Lanka is a small island and is subjected to regional climatic weather patterns and this is further compounded by exposure to nine hazards.

Current position

The overall issues observed were as follows: 1) Natural resources are under pressure by Government driven fast track development (particularly infrastructure). Thus environmental conservation has been de-emphasised (as viewed to be in conflict with development) leading to a lack of disaster risk reduction (DRR) and environmental concerns in infrastructure and development policy. Ultimately, in the Sri Lankan context, disaster risk is extremely high, as compounded by rapid development and climate change issues. 2) A violation of protected areas and lack of natural resource or ecosystem management due to weak enforcement of regulations and deficient transparency. 3) Despite mandatory EIAs for development, as responsibility lies with the client, this can lead to improper assessment.

The critical issues highlighted were: 1) Not having an “enabling environment” i.e. the right information to make critical policy making decisions on all societal issues which reflects back to capacity (e.g. conflicts between approving agencies and use of sustainable raw materials in housing construction). 2) The issue of retaining resource personnel or “brain drain” (i.e. graduates and professionals leaving Sri Lanka) due to lack of capital; information resources (databases) facilities or collaborative opportunities for research. Social Factor: The “disabled and poor are the beginning” but ignoring “the wider synergies and economy of Sri Lanka” such as land-use changes and supply and demand chains impacts all individuals at a macro-level. E.g. Central hill landslides affect water storage through reduced ground filtration, affecting downstream flow, decreasing power generation (economic), irrigation (economic) and drinking water (social) with extended issues such as an insufficient water supply leading to conflicts (social).

The geographical distribution of climate issues were described as follows, 1) “In this country, the question has a different connotation due to the connectivity”. Furthermore it is beyond a certain segment or segments of society being affected, as at the time of a disaster, communities located in geographically and economically vulnerable areas are affected but eventually this impacts at a macroeconomic level through social, economic and development losses. E.g. If there is an impact at the centre of the river network, this will affect the coastal areas as Sri Lanka is connected by 103 river basins, and vice versa as the coast is an influential economic driver.

Actions taken by the Government

To achieve 35% (from current 29.38%) green cover in the medium term by forest cover conservation and expansion and watershed management, through district-wise green cover targets (2014 – 2015), creating green belts in every village, establishing mangrove plantations, conversion of pine plantations to native



species, planting in water basin catchment areas, forest boundary demarcation and enforcement of laws, and biodiversity parks in urban areas.⁸

It is currently mandatory to have environmental impact assessments (EIAs) for development. Following the 2004 tsunami, pioneering work in disaster management meant strategic environmental assessments were mandated and there has been an emphasis on ecosystem-based disaster risk reduction (DRR) by universities and non-governmental organisations. Climate change adaptation has been integrated with DRR within several policies (particularly the *Comprehensive Disaster Management Programme 2014 - 2018*) and projects.

Comprehensive and integrated policy making is evident, as for instance, the forestry sector focuses on a green economy and the Ministry of Land & Land Development has created key legislation for the conservation of water resources. Furthermore, the updating of the national sustainable development agenda for *Green Lanka Strategy and Action Plan* included many agencies' involvement. Finally the *Comprehensive Disaster Management Programme (2014- 2018)* has elements of integration.

Capacity building for eco-innovation is observed as follows: 1) National Science Foundation (NSF) Research Grants and the Coordinating Secretariat for Science, Technology and Innovation (COSTI) promotes collaborative research, and 2) *Environmentally Friendly Solutions (E-friends) Fund* to provide technical assistance and local cost loans within industry.

Recommendations

- To enable the transition towards a green economy through 1) Research and computation to promote the most viable alternatives in the long term to influence policy makers. 2) Promoting the value of ecosystem services (through environmental conservation) for the economy and DRR needs to be concentrated, to create more employment and sustainable growth (with impacts on energy efficiency, resource efficiency and raw materials). Dependence on hard and artificial structures need to be alleviated in favour of a prevalent, ecosystem-based, with climate change adaptation measures. 3) Promoting eco-innovation through PPPs, tax incentives or funding to garner the support of leading private companies in this area.
- Capacity building of Sri Lankan agencies, researchers, media for 1) data collection as a basis for informed decision making and 2) establish good monitoring systems for the environment to enable preparedness and early warning (e.g. chemical contamination upstream and river flows are affected by land use patterns, sea levels rise, groundwater extraction is not replenished which eventually causes drought, therefore early warning is required).
- Strict enforcement of regulation and transparency, coupled with grassroots awareness schemes for ensuring the cooperation of small-scale tourism operators and neighbouring (particularly farming) communities to conserve both coastal and land-based natural resources and ecosystems.

4.6. A changing world - inclusive, innovative and reflective societies

Background

- Sri Lanka has reached gender parity in primary education with the 'ratio of girls to boys in primary education' reaching 100% in 2009/10. In secondary and tertiary and collegiate education, the proportion of girls to boys exceeds 100%. However, the first quarter of 2011 Labour Force Survey data shows that male labour force participation was 66.2%, while it was 33.2% for females. Although the unemployment rate has reached a value of 4.3%, female unemployment still remained high as 6.7%, while it was 3.0% for males¹⁵.
- Sri Lanka's gross expenditure on R&D as a percentage of GDP is less than 1%. Expenditure on basic, applied and developmental research by the state, educational institutes and the private sector show that there is a poor R&D and innovation culture in the private and industrial sectors. Unlike in most developed countries, where most of the R&D expenditure comes from the private sector (approx. over 65%), the proportion of R&D expenditure by the private sector in Sri Lanka is only 8% (71.8% is borne by the state sector)^{16, 17}.
- Sri Lanka has 06 cultural properties included in the World Heritage List and 13,106 sites were registered at state or local level as cultural heritage sites. 75% of the income of the Central Cultural Fund is spent on heritage. Around 200 professional staff are employed in heritage protection, conservation & presentation protection and related measures.
- Challenge 06, together with challenge 07, were highlighted as critical societal challenges faced by Sri Lanka due to the more adaptive nature of the issues discussed under these two challenges. It was noted that these adaptive aspects are often overlooked when developing projects and strategies in Sri Lanka and only the technical aspects are highlighted. There are also comparatively high levels of information available on the technical areas, which is not the case in relation to adaptive issues. Addressing these adaptive challenges requires long term programmes.

Current position

- In relation to inclusive societies, interviews highlighted that there is a lack of gender sensitivity in many of the development projects under way within the country. There is a disparity between the percentage of women engaged in higher education and the percentage in labour participation. Even though educated, a relatively smaller percentage of females go into the labour force due to the traditional 'social roles' imposed by society.
- There is a lack of available facilities and access to them for the disabled (e.g. wheelchair access for critical buildings).
- Despite the high literacy levels within the country, the science and technological (S & T) knowledge of the people is low. The country also suffers from compartmentalised knowledge systems. Information is often scattered between several organisations or institutions. In some instances, the knowledge is purposely not shared (for example, due to fears of misuse), whereas in other instances, there are no systems in place to support knowledge sharing.
- The low proportion of R&D expenditure by the private sector has significant implications for the rate of commercialisation of research.
- In terms of cyber safety at a personal level there is a lack of awareness, particularly amongst the youth, on the safe usage of social media.
- Making the shift 'from post-war to post-conflict era' by exploring and addressing sources of conflict is a critical issue that the country needs to address urgently.
- Language barriers (most of the information is available in English only), access and to some extent, cost, were highlighted as key issues impeding ICT literacy amongst the public.
- Socially marginalised groups include plantation sector residents (particularly those without permanent addresses or identity cards), refugees returning from India, internally displaced persons and others such as the Adivasi, Ahikuntaka, Kaffir etc.

- The ageing population is also affected by social isolation with many facing 'empty nest syndrome'. They are also faced with difficulties in gaining and maintaining employment due to the relatively low retirement age levels.
- In terms of geographical areas, Hambanthota and Monaragala, which are the poorest areas of the country, have been traditionally more affected. However, this is now slowly changing with the high levels of development programmes taking place in these areas.
- In terms of innovative societies the non-English speaking people and the older people are more affected when it comes to the uptake and effective use of ICT.

Actions taken by the Government

- *The Social Integration Policy* developed following the decades of conflict in SL, and identifies Ethics, Education and Empowerment as the pillars of social integration. The policy calls for 'Access for everyone'. It is guided by the rights-based approach, highlighting the significance of rights and responsibilities of rights-holders and duty-bearers to enhance social justice and inclusion. The policy framework accords special provisions to empower target categories, which have been previously excluded due to their gender, age, physical and mental vulnerabilities, and social marginalisation.
- *The Education for Peace Policy* addresses some critical intercultural issues currently faced by Sri Lanka; such as, intercultural disharmony, ethnic conflict, lack of cross-cultural understanding, lack of tolerance, discrimination, a negative attitude towards differences, superiority of the majority, segregation, and mutual fear and extremism.
- Sri Lanka has accepted the importance of non-discrimination against women and has developed national plans of action to realise gender equality, incorporating the *UN Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW)*.
- Work is also underway to develop a formal ICT Policy for Government, setting standards for implementation and management of ICT within government entities and a national ICT policy describing the manner in which ICT will contribute to development. Efforts have been made to make IT/ the internet more accessible, for instance by removing duty charges on computers and phones and bringing down the cost of the internet and telephones.
- An ICT agency has also been established providing an effective national apex body to address ICT literacy and cyber safety related issues.

Recommendations

- Promoting innovative societies by promoting research and knowledge transfer activities within universities and other institutes and making more effective use of available technologies to gain economic and societal benefits. There is a need for a common platform enabling information and knowledge sharing between different parties.
- ICT literacy should be promoted amongst the rural, non-English speaking and the older communities by further reducing costs, making more content available in Sinhalese/Tamil and raising awareness on what is available and how to access it. Awareness should also be raised amongst the general public on making the most use of resources that are already widely available such as smart phones.
- The top-down only processes in formulating and conducting development programmes need to be revised to improve the participation of different segments of society allowing the policies to be better informed by practice. Indigenous values / knowledge should be incorporated into policies in order to allow the policies to better reflect ground level realities.
- To promote gender inclusiveness, women need to be properly (and not just symbolically) empowered, especially by giving them decision making powers.

¹⁵UNFPA, 2012. Sri Lanka Population Situation Analysis. Available at; <http://unfpa.org/psa/wp-content/uploads/2012/11/Sri-Lanka-Population-Situation-Analysis.pdf> [Accessed 5 January 2014].

¹⁶ Ministry of Technology and Research, 2010. Science, Technology and Innovation Strategy for Sri Lanka 2011-2015. Colombo: Ministry of Technology and Research.



¹⁷ UNESCO, 2013. UNESCO Country Programming Document for Sri Lanka 2013–2017. Available at; <http://unesdoc.unesco.org/images/0022/002242/224243e.pdf> [Accessed 15 February 2014].

4.7. Secure societies - protecting freedom and security of the country and its citizens

Background

- Following the end of the civil war, Sri Lanka now faces a new set of challenges in relation to secure societies (such as the emergence of other extremist groups, the creation of ethnic divisions and communal violence, the growth of organised crime and non-traditional threats through technology driven new media, including social media).
- There are also increased levels of attention on cyber security (e.g. the establishment of the Computer Emergency Readiness Team which is mandated to protect the nation's information infrastructure) as well as implementation and management of ICT within government entities.
- Frequency of occurrence of natural disasters is in an increasing trend, which may be attributed mainly to un-planned development, environmental degradation, human intervention and climatic changes, etc.
- 'Secure societies' is a critical societal challenge for Sri Lanka as ensuring the freedom and security of people has impacts on all the other challenge areas.

Current position

- There is an apparent disregard for law and order at all levels within the country. Those with political power and connections that are engaged in crimes and malpractices are often not punished resulting in a general loss of faith in the police and judicial system. A major problem in relation to ensuring the security and freedom of people is the recurring occasions of 'intimidation and harassment of civilians'.
- In relation to human trafficking, a report commissioned by the United Nations Office on Drugs and Crime (UNODC) states that in Sri Lanka, men, women and children are trafficked primarily for labour, commercial sexual exploitation, including domestic child sex tourism. There are also growing concerns about trafficking for employment to the Middle East, Singapore and other countries for jobs in domestic work, construction and factory employment. The demand for cheap labour for dirty, dangerous and demeaning jobs has been identified as fuelling trafficking in countries like Sri Lanka.
- Despite people's physical freedom being ensured with the conclusion of war, there are threats to their 'freedom of expression'. For instance, restrictions have been placed on accessing certain blogs and websites from within the country and there is evidence of fear of 'getting into trouble' hindering the free expression of opinions.
- Although early warning systems for Tsunamis have been successfully implemented and tested, the country is still struggling with accurately forecasting disasters, especially in relation to floods.
- Disaster resilience of the country's infrastructure is affected by the lack of importance placed on conducting proper environmental assessments before undertaking development projects. One example of this is the resettlement of people in flood plains in the Eastern region as part of war rehabilitation programmes.
- Whilst the public in general is affected by the aforementioned issues in relation to secure societies, war widows (who are unsure of their status), the poor, and the disabled were highlighted as particularly vulnerable groups.
- The previously war-torn areas are particularly affected by the issues due to a lack of freedom due to military involvement.

Actions taken by the Government

- Sri Lanka has entered into the *SAARC Convention on preventing and combating trafficking in women and children for prostitution*. Sri Lanka is currently on the Tier 2 Watch List for failing to provide evidence of increasing efforts to combat severe forms of human trafficking, particularly in the area of law enforcement and has not ratified the 2000 UN Trafficking in Persons Protocol.
- *The Education for Peace Policy* addresses some of the issues related to secure societies such as the lack of protection of the rights of others; the lack of knowledge of and respect for human rights and children's rights; the increase in violent behaviour and gun culture; the acceptance of violence as normal because of media coverage.



- Legislations have been put in place addressing e-transactions and computer crimes. The Information and Communication Technology Agency (ICTA), Sri Lanka CERT|CC and Sri Lanka Standard Institute (SLSI) are working in collaboration to offer an Information Security Management Systems (ISMS) certificate for all government organisations in the next 2 years. *The Electronic Transactions Act* has been developed with the aim of promoting public confidence in the authenticity, integrity and reliability of data messages, electronic documents, electronic records and other communications.
- Disaster management has been incorporated into the *National Local Governments Policy* giving the local governments the responsibility and authority to address issues related to disaster management within their areas. The country has also ratified the *Hyogo Framework for Action (HFA)* addressing disaster resilience and has also developed a “hazard map” in collaboration with different parties.
- Effectively addressing disaster management within the country requires around 60 agencies to work together. A common platform has been introduced to facilitate information sharing between these various parties. There is potential for this platform to now be expanded to other areas requiring information sharing as well.
- Actions are also underway to introduce minimum requirements to Building Codes in order to make the built environment more resilient. Even though this would result in a rise in the initial capital costs of construction, there will be overall benefits in the long run.

Recommendations

- As the rule of law is highly important for the security of citizens, the restoration of independent institutions and the creation of law and order within the country, the removal of corruption and political influences in policing and judicial processes is a necessity.
- Removing the state control and influence of media and implementation of the right to information legislation.
- Citizens should also be educated so that they are able to elect the 'right' people.
- Further actions are also needed to promote and raise awareness on cyber safety and security.
- The country should also endeavour to keep the internet freely and openly available to the public.
- Improved stakeholder input is necessary in delivering more effective, user-friendly social infrastructures.
- Improve the poor track record of forecasting disasters through capacity improvements.
- Capacity of both the public and private sectors in the construction industry needs to be improved to address issues such as using appropriate designs, correct use of materials, site selection, etc. in order to make the infrastructure stock more resilient.

5. Summary

A recurring theme that emerged throughout both the interview and focus group inputs was that Sri Lanka has “enough policies” in relation to almost all of the seven societal challenges. It was found that the effective implementation (including monitoring and evaluation) of these available policies and strategies was lacking within the local context. Thus, this requires capacity building of relevant authorities and strengthening of governance structures for effective and informed decision making in several of the societal challenges. Furthermore, in policy making to provide committed funding and prioritisation through sustainable assessment tools, consideration of time frame and resource availability is needed for effective, sustainable long term policies.

Within the Sri Lankan context, challenges 06 and 07 represent more adaptive challenges which are often overlooked when developing projects and strategies. Herein, the need for bottom-up approaches in policy making, upgrading human capital through science and technology education, developing a common platform for knowledge sharing, restoration of independent institutions and enforcing laws by removing corruptive and political influences in policing or judicial processes and capacity improvements for disaster forecasting and infrastructure resilience emerged particularly as critical issues.

In relation to challenge 01 of “health” addressing, inter alia, NCDs (including injuries and mental health problems), capacity improvements for diagnosis or prevention of diseases, the care and well-being of the ageing population and development of more collaborative and integrated systems were identified as critical issues.

With respect to challenge 02 “food security”, sustainable agriculture or fisheries: addressing the lack of quality standards in the production, packaging and transportation of agricultural produce; identification of new crops and most viable areas for cultivation; and the use of new technologies and or increasing efficiency of existing technologies are vital in the local context.

The major priorities in relation to challenge 03 of “energy” is to achieve energy security through an affordable, reliable and sustainable energy supply via increasing electricity generation capacities, petroleum refining and storage capacities and improving efficiency of delivery related infrastructure. Furthermore, it is necessary to achieve 100% electrification through expanding the national grid and utilising renewable energy technologies where required. Similarly within challenge 04 of “transport” the priorities are to improve the network capacity and to achieve 100% rural accessibility, which is evident through numerous active policies and large scale initiatives.

However, in the focus groups and interviews conducted, it was found there was consensus on divesting from thermal energy resources to renewable energies, and within challenge 05 of “climate action”, the promotion of ecosystem services for economic growth and disaster risk reduction, due to Sri Lanka’s diverse abundance. Thus, there is a need to prioritise resource identification and planning for integrated policy making. Achieving disaster resilience is a major priority (within challenge 05) since disaster risks in Sri Lanka is compounded by rapid development and a range of climatic disasters (both periodic and chronic). Strong policies are in place but require consolidation through the implementation of effective preparedness plans at all levels for all disasters.

In general, achieving innovation was cross-cutting multiple societal challenges but was particularly applicable to challenges 03, 04, 05 and 06. Thus, to develop innovative knowledge practices and technologies in Sri Lanka, standardisation for research is required, fostering Public Private Partnerships and private sector financing, together with the establishment of local certification and standards to achieve a competitive, international end product.



The research also brought to light several opportunities of mutual interest for collaboration with the EU. These include: technology and knowledge transfers from the EU for increasing the productivity and quality standards (particularly in relation to packaging and transportation) of agricultural or fish produce; developing interdisciplinary research on areas such as the diagnosis or prevention of diseases and biotechnology; development of the human capital through S&T education and skills development; capacity building in relation to predicting disasters and making infrastructure more resilient. The paper previously highlighted how the aforementioned can bring ‘mutual benefits’ for both Sri Lanka and the EU.

A recommendation of mutual interest for collaboration with the EU is the “Food for Work” programme which cross-cuts societal challenges 02, 05, 06 and 07. Primarily in relation to the critical societal challenge 02 of “food security”; the “Food for Work” programme initiated by the Economic Development Ministry promotes a sense of ownership for critical infrastructures and safe water resource management. The programme provides dry rations or cash provisions for locals to maintain the critical infrastructures of water tanks during the dry season. Technical expertise is provided by the partner institution of the Ministry of Irrigation to ensure building standards are met and also to prevent sedimentation settling (which affects the water quality and flow). In turn, creating a knowledge and skills transfer to the individuals employed by the programme. This programme is implemented across the dry zone and is overseen by Samurdhi (a civic society organisation) officers ensuring it is a people-centred programme (reflective of challenge 06). Thus, this programme cross-cuts four critical societal challenges; “food security” as it provides an alternative source of nourishment or income and safe water resource management; “innovative societies” as it facilitates knowledge and skills transfer, both at the ministry level and with the engaged individuals; “secure societies” due to the protection of critical infrastructures and “climate action” as it can ultimately be considered a climate change adaptation measure.