Policy Analysis in Prioritising Societal Challenges- the Case of Sri Lanka

Champika Liyanage,
Grenfell-Baines School of Architecture, Construction and Environment, University of Central Lancashire
(email: CLLiyanage@uclan.ac.uk)

Kanchana Ginige,
Global Disaster Resilience Centre, University of Huddersfield
(email: k.ginige@hud.ac.uk)

Dilanthi Amaratunga,
Global Disaster Resilience Centre, University of Huddersfield
(email: d.amaratunga@hud.ac.uk)

Richard Haigh,
Global Disaster Resilience Centre, University of Huddersfield
(email: r.haigh@hud.ac.uk)

Abstract

The 30-year war ended in Sri Lanka in 2009. Country is now heading towards local, regional and national development through the development of infrastructure and services. However, there are obstacles along the way in achieving the required development targets set by the different levels of governments. These obstacles, for the purpose of this paper, can be identified as 'societal challenges'. According to the largest ever research and innovation programme of the European Union named as Horizon 2020, there are seven areas of societal challenges, i.e. Health, demographic change and wellbeing; Food security, sustainable agriculture and forestry, marine and maritime and inland water research, and the Bioeconomy; Secure, clean and efficient energy; Smart, green and integrated transport; Climate action, environment, resource efficiency and raw materials; Inclusive, innovative and reflective societies; and Secure societies. According to the EU, these seven societal challenges that need to be addressed for a country to prosper and move towards development. However, especially for a developing nation like Sri Lanka it is difficult to address these seven challenges all at once. It should happen as a systematic approach on a long-term basis. The paper, in this context, intends to investigate, of the seven challenges, which is/are the critical societal challenge(s) to be addressed first in the case of Sri Lanka. This is investigated using a questionnaire survey. Addressing the challenges needs to happen as a top-down approach. One of the first steps towards that is the implementation of effective policies. Therefore, the main focus of the questionnaire survey is to assess the availability and effectiveness of policies in relation to addressing the societal challenges. The survey was conducted among 54 Sri Lankan experts on the seven areas of challenges.

The findings reveal that secure societies is the most critical challenge to be addressed followed by climate action. According to the policy analysis, ‘health, demographic change and wellbeing’ is identified as the challenge, which has the highest number of related policies whilst the inclusive, innovative and reflective societies have the least.

It is further revealed that the correlation between the availability of policies and their effectiveness are not always linear.

Keywords: Societal Challenge; Policy Analysis; Questionnaire survey; Sri Lanka

1. Introduction

By 2050, the world population may reach nine billion people, and two fifths of that population will be over 50 years old. Three quarters of the global population will live in cities, and over 60% will live in small households - alone or with just one other person. These profound demographic changes will take place in the course of just a few decades. In this context, Horizon 2020, the biggest European Union (EU) Research and Innovation programme aims to solve some of society’s biggest challenges, from ageing populations to the need for clean energy, and keep Europe’s economy competitive over the long term. It mainly focuses on the following seven societal challenges:

1. Health, demographic change and wellbeing
2. Food security, sustainable agriculture and forestry, marine and maritime and inland water research, and the Bioeconomy
3. Secure, clean and efficient energy
4. Smart, green and integrated transport
5. Climate action, environment, resource efficiency and raw materials
6. Europe in a changing world - inclusive, innovative and reflective societies
7. Secure societies - protecting freedom and security of Europe and its citizens

Within the context of societal challenges, the EU has initiated a strategic policy action under the Horizon 2020 scheme to strengthen international collaboration and to address these societal challenges with other countries. This is important not just in order to develop stronger linkages with emerging research and innovation hubs in Asia, Latin America and Africa, but also to benefit from new opportunities presented through international cooperation in Science, Technology and Innovation in a proactive manner [1]. However, Annerberg et al. [2] noted that there is a need for further enhancing international cooperation activities focused on ‘engaging with partners outside of Europe on equal terms and in programmes and activities of high mutual interest' and also highlighted the need for linkages with Asian countries given the region's rapidly growing research and innovation capacities and the urgency to address global challenges. In particular, there are poor levels of focus on the South Asian region.

South Asia, which is home to more than 40% of the world's absolute poor, will contribute nearly 40% of the growth in the world's working-age population over the next several decades [3]. Given this, an FP7 project on 'Collaborative Action towards Societal Challenges through Awareness, Development, and Education – CASCADE' was initiated to identify and prioritise societal challenges of mutual EU-Southern Asian interest as the basis for future bi-regional cooperation.

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 project attempts to pave the way for more advanced, inclusive and innovative societies. This paper is based on some of the findings relating to this project. Although the project focused wholly on South Asian Region, this paper will focus on the context of Sri Lanka. The discussions on the paper will be three-fold, firstly, an in-depth introduction to the societal challenges is provided. Secondly, the methodology adopted for the policy analysis is explained. Finally, the findings obtained from a policy analysis; finally, conclusions are presented to summarise and deduce the overall situation with regard to societal challenges in the context of Sri Lanka.

2. Societal challenges in Europe

This section provides an overview of the seven key societal challenges of Europe identified under Horizon 2020 scheme.

2.1 Challenge 1- Health, Demographic Change and Wellbeing

With decreases in some causes of death and also due to advances in preventive healthcare and socioeconomic and living conditions, significant improvements in the health of the European population were visible in recent decades [4]. However, with a rapidly ageing population, maintaining the improved health and wellbeing conditions have become an increasing burden in Europe [5];[4]. Brain disorders and diseases such as antimicrobial resistance have been identified as critical challenges which cost billions to EU society [5]. Therefore, the need of investing in research and innovation in the area to provide better health for all is significant.

2.2 Challenge 2- Food Security, Sustainable Agriculture and Forestry, Marine and Maritime and Inland Water Research, and the Bioeconomy

Europe has a very stable food security environment compared with the other regions of the world, which is placed second among the six regions ranked in the 2014 Global Food Security in terms of all three core areas assessed by the index: Affordability, Availability, and Quality & Safety [6]. Yet, Europe faces major challenges with its food production, consumption, processing, storage, recycling and disposal of biological resources because of the increasing population, decreasing fossil and food resources, increasing environmental pressures and climate change [5].

A transition is needed towards an optimal and renewable use of biological resources and towards sustainable primary production and processing systems to tackle these challenges and the bioeconomy has been identified as the key to this shift.

2.3 Challenge 3- Secure, Clean and Efficient Energy

With few energy reserves of its own, the EU has to import over half of its energy requirements making it the world's largest energy importer, consuming one fifth of the planet's reserves [5]. High energy consumption results in energy-related emissions which account for almost 80% of total greenhouse gas emissions in the EU that in turn contribute to global warming.

In this context, it is essential for EU to shift towards a reliable, sustainable and competitive energy system. Demonstrating its commitment towards this shift, the European Union decreased its CO2 emissions by 1.6% in 2012 compared to 2011 [7]. However, in order to make a steadier transition, the EU needs to further tackle challenges such as increasingly scarce resources, growing energy needs and climate change.

2.4 Challenge 4- Smart, Green and Integrated Transport

Transport is a significant sector for sustainable wealth and prosperity of Europe. However, the transport systems and practices in Europe are not sustainable [5]. They are over relying on fossil fuels for power, a resource which is environmentally unfriendly and also will become scarcer. Although the total amount of energy consumed throughout the world has remained relatively stable since 1973, consumption in the transport sector has increased by 23%, with the largest increase coming from road transport [8]. In 1998 in UK only, 42% of the country's energy cost was linked to the transport sector only on its direct energy consumption, i.e. vehicle operation [8]. Accordingly, Horizon 2020 aims to improve the conditions involved and achieve a European transport system that is resource efficient, climate and environmentally friendly, safe and seamless for the benefit of all citizens, the economy and society.

2.5 Challenge 5- Climate Action, Environment, Resource Efficiency and Raw Materials

Natural resources such as raw materials, water, air, biodiversity and terrestrial, aquatic and marine ecosystems in Europe are constantly under pressure from climate change, urbanisation, pollution, overexploitation of resources [5]. It is estimated that heat-related deaths could reach about 200 000 per year in Europe by 2100 if climate change adaptation actions were not implemented whilst the cost of river flood damages could be more than EUR 10 billion a year [9]. In this context, activities supported by Horizon 2020 aims to help increase European competitiveness, raw materials security and improve wellbeing whilst assuring environmental integrity, resilience and sustainability.

2.6 Challenge 6- Europe in a Changing World - Inclusive, Innovative and Reflective Societies

Europe faces critical challenges in reducing inequality and social exclusion, overcoming the economic and financial crisis and tackling unemployment. An estimated 80 million people are at risk of poverty in Europe whereas 14 million young people are not in education, employment or training in the region [5]. Horizon 2020 programme aims at fostering a greater understanding of Europe, by providing solutions and support inclusive, innovative and reflective European societies with an innovative public sector in a context of unprecedented transformations and growing global interdependencies.

2.7 Challenge 7- Secure Societies – Protecting Freedom and Security of Europe and its Citizens

Ensuring the security of its citizens is one of the primary obligations of European states. In fulfilling the obligation, fighting crime and terrorism, protecting the citizens against natural or man-made disasters, providing effective cyber-security and protecting borders against illegal trafficking have been identified as the main issues to be tackled [5]. For example, the number and impacts of disasters have increased in Europe in the period 1998-2009 and the increase can be explained to a large extent by higher levels of human activity and accumulation of economic assets in hazard-prone areas [10]. Therefore, undertaking research and innovation activities needed to protect citizens, society and economy of the EU as well as its infrastructures and services, prosperity, political stability and wellbeing are critical in the region.

3. Methodology

CASCADE is an 18-month project, which ended in March 2015. The project had the participation of all seven South Asian countries (except India) including Afghanistan, Bangladesh, Bhutan, Maldives, Nepal, Pakistan and Sri Lanka.

The work carried out as part of the CASCADE project was divided into three phases. Phase 1 consisted of a policy analysis, Phase 2 of the study was carried out using semi-structured interviews and focus groups; and Phase 3 of the study was based on a stakeholder analysis. This paper presents the some of the findings obtained during Phase. During Phase 1 of the project a questionnaire survey was administered during a major Horizon 2020 Launch event targeted for the South Asian region by the EU. The participants of the event were either academics who have knowledge on societal challenges, experts on different areas of societal challenges or policy makers/government officials who are responsible in addressing these societal challenges within the South Asian region. The questionnaire was distributed to all 146 participants who attended the event, however, received only 67 responses back (33.5%). Of the 67 respondents, 54 (80.6%) were from Sri Lanka (see Table 1); one of the main reasons for this could be that the event was held in Colombo, Sri Lanka, thus there was, obviously, a high participation from there. Due to the low response rate from other countries, the findings presented in this paper are only based on the context of Sri Lanka.

Table 1:Distribution of respondents from targeted South Asian Countries

Country	Frequency	Percentage
Afghanistan	2	3.0
Bangladesh	1	1.5
Bhutan	1	1.5
Hong Kong	1	1.5
Maldives	3	4.5
Nepal	1	1.5
Pakistan	1	1.5
Sri Lanka	54	80.6
Thailand	1	1.5
United Kingdom	2	3.0
Total	67	100.0

The purpose of the questionnaire survey was to find answers to the following key questions (close-ended):

1. What is/are the areas that pause a main challenge for your country as a whole? Please rank the answer using 1 to 7 (1 for the biggest challenge and 7 for the least challenge).
2. Are there any policies available in the following areas of societal challenges? If the answer is 'Yes', please rate the level of effectiveness of these policies according to a 6-point likert scale, i.e. 1 – Very high level of effectiveness, 2 - High level of effectiveness, 3 – Medium level of effectiveness, 4 - Low level of effectiveness, 5 – Very low level of effectiveness, 6 – Not effective.

Before presenting the findings with regard to Questions 1 and 2 above, it is worthwhile carrying out a demographic analysis of the respondents to identify any bias, if any, in the survey sample.

3.1 Demographic characteristics of respondents

Table 2 shows the sector the respondents work. It is revealed that about 83% of the respondents are from the academia, whilst others are either industry experts (9.3%) or policy makers/government officials (7.4%). This shows that the expertise of the academia will be reflected in the responses heavily. This will also affect the final results. On a positive note, since a majority of the respondents are from academia, it can be assumed that most of the findings will be based research evidence. Thus, it could be assumed that the final results will be more valid and reliable.

Table 2: Sector of the respondents

Profession		**Frequency**	**Percentage**	
Academic		45	83.3	
Non Academic	**Private**	5	9.3	16.7
	Public	4	7.4	
Total		54	100.0	

With respects to respondents' experience, Table 3 provides a summary of years of professional experience. More than half of the respondents (51%) have high level of experience in the subject area/s (i.e. more than 10 years of experience); and about ¾th of the respondents (76.5%) have more than 5 years of experience. This implies that the responses are not based on mere assumptions, but are based on valid and reliable evidence based on their years of experience.

Table 3: Respondents' level of experience

Experience	**Years**	**Frequency**	**Percentage**
Low level experience	< 5	12	23.5
Medium level experience	5-10	14	25.5
High level experience	>10	28	51.0
Total		54	100.0

Table 4 provides an overview of the respondents' main expertise with regard to each and every area of societal challenge. This shows that majority of them (25.9%) have the knowledge and expertise on Challenge 1. The results, therefore, may have slight bias towards Challenge 1. However, the questions in the questionnaire were asked to reduce this bias in some ways, as this, i.e. majority of participants could come a particular area of challenge, was anticipated during the questionnaire design. Except Challenge 1, (moreover) similar number of respondents exists in all the other challenges (5 – 8 respondents). Given this, it could be assumed that there will be no major variations in the responses.

Table 4: Respondents' area of work

Challenge	**Area of work**	**Frequency**	**Percentage**
1	**Health, demographic change and well-being**	14	25.9
2	**Food Security, sustainable agricultures, marine and maritime research and the bio-based economy**	6	11.1
3	**Secure, clean and efficient energy**	6	11.1
4	**Smart, green and integrated transport**	5	9.3
5	**Climate action, resource efficiency and raw materials**	8	14.8

6	**Inclusive, innovative societies**	8	14.8
7	**Secure Societies**	7	13
Total		54	100.0

4. Findings and discussions

The 30-year war ended in Sri Lanka in 2009. Country is now heading towards local, regional and national development through the development of infrastructure and services. However, there are inherent obstacles in achieving the required development targets set by the different levels of governments. Effects of climate action affect most part of the Sri Lanka, Colombo in particular, faces frequent flash flooding due to heavy rainfall. Sri Lanka is mainly an agriculture-based economy and the climate change severely affects the agriculture in the country. Indian Ocean tsunami of 2004 also affected coastal communities in parts of Sri Lanka. Remoteness and high transport costs also constitute severe economic disadvantages to the country. Likewise many areas of societal challenges are very much pertinent to the Sri Lankan context. However, addressing all challenges at once is impossible due to many reasons. Lack of funds/resources could be one of the main reasons; thus, substantial investments are needed for reconstruction and rehabilitation of infrastructure in the post-war era. Even on occasions where funds are available, the lack of institutional capacity often results in poor mobilisation and management funds. Lack of institutional capacity means that there are inadequacies in terms of 'accountability and transparency of institutions' needed to prevent the misuse of funds [11]. Further reasons include, inter alia, lack of access to technological developments and innovative solutions.

Given all the reasons mentioned above, addressing the societal challenges need to happen in a step-by-step approach. For that, priority areas of challenges need to be identified as one of the first steps of post-war recovery. The main purpose of this questionnaire survey, as mentioned in the previous section, was therefore to, 1) identify main societal challenges in the context of Sri Lanka, and 2) availability of policies in addressing these challenges (and their level of effectiveness). The findings according to these two key areas are given below in sub-sections.

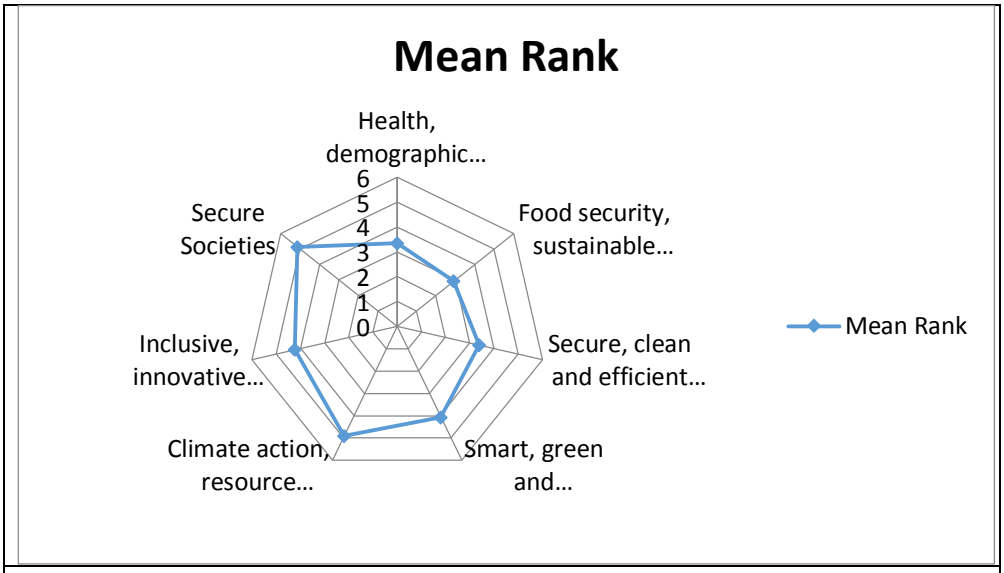
4.1 Question 1 - Main challenges

In order to understand the ranking of the challenges in the context of Sri Lanka, the Kendall's W Test is computed and is presented in Figure 1 below. According to Figure 1, the biggest challenge appears to be 'Challenge 2 - Food Security' with a mean value of 2.92. Although Sri Lanka is primarily agriculture-based, the contribution of the agricultural sector to the GDP is declining gradually, highlighting the need to develop a sustainable, competitive agriculture sector. To add to the issue of declining agriculture, all natural forests are continuing to decline as well. Food safety is another issue under Challenge 2, as it happens in Sri Lank in an ad-hoc manner, with responsibility being dispersed to a number of government agencies and departments.

Therefore, a need exists in relation to formulating an overarching independent body (e.g. Food Safety Authority). The 2nd biggest challenge according to the Kendall's test is 'Challenge 1 – Health'. In the context of Sri Lanka, the main challenges faced by the health system include the growing burden of Non-Communicable Diseases (e.g. diabetes, mental health problems) and providing rehabilitation and long-term care, especially for the elderly.

Lack of awareness on health matters has exposed certain number of vulnerable groups to relatively high health risks as well. There is a lack of coordination and collaboration amongst different sectors in the provision/promotion of healthcare, as well as insufficient leadership, support and authority given in relation to health promotion to provincial governments. In terms of critical challenges, Challenge 1 is followed by 'Challenge 3 - Secure, clean and efficient energy' with a mean value of 3.4; 'Challenge 4 - Smart, green and integrated transport with a mean value of 4.06; and 'Challenge 7 - Inclusive, innovative societies with a mean value of 4.23.

As revealed in Figure 1, secure societies ranked the lowest with a mean value of 5.14. This shows that 'Challenge 6 - secure societies' is not a critical challenge in the post-war context of Sri Lanka. This is followed by 'Challenge 5 - Climate action' with mean value of 4.91, which means Challenge 5 is the 2nd least critical challenge. This could be due to the fact that, although climate change adaptation is critical to any country, it has been notably integrated in some of the rapid developments of Disaster Risk Reduction (DRR) programmes in Sri Lanka, especially after the Tsunami occurred in Dec 2004.



Test Statistics	
Kendall's W[a]	.152
Chi-square	44.595
df	6
Asymp. Sig.	.000

Figure 1: Kendall's W Test for Mean Rank

During the Kendall's W Test statistical significance of the aforementioned rankings were also developed. The Chi-square statistic (44.595) depicted above shows that there is a significant difference in this ranking. This result implies that the result is statistically significant at less than 1% (Asymp. Sig = .000). Also, the Kendall's Coefficient of Concordance .152 shows that the

result is random with less degree of unanimity as its closer to zero than one. If the test statistic W is 1, then all the survey respondents have been unanimous, and each respondent has assigned the same order to the list of concerns but if W is 0, then there is no overall trend of agreement among the respondents, and their responses may be regarded as essentially random.

Intermediate values of W indicate a greater or lesser degree of unanimity among the various responses [12]. This may be due to the variations in demographic characteristics discussed in the previous section. The respondents come from different sectors (i.e. academic, governmental, and private), different years of experiences, and also work in different areas of work. In order to establish whether there is a significant impact of the respondent's area of work on the ranking of the challenges, a cross tabulation was carried out. The result of the Chi-square (of the cross tabulation) shows that, of all the challenges, it is only those working in the area of 'Challenge 1 – Health' had a significant difference in their ranking of the challenges. This is given in Table 5 with a Chi-square statistic of (70.2) $p < 0.001$.

Table 5: Area of work vs. ranking of Challenges - Chi-square test

Challenge/Area of work	**Test statistics**		
	Chi-square	**df**	**Sig**
1	70.2	36	.001*
2	43.173	36	.191
3	30.332	36	.735
4	39.933	36	.300
5	32.734	36	.625
6	31.138	36	.699
7	37.933	36	.381

* Chi-square significant at .01 level

A cross-tabulation test was also carried out in comparing the sector the respondents work against ranking of challenges. In Table 6, the results of the Chi-square test (of the cross tabulation) shows that, at 95% confidence interval, the impact of the sector the respondents work on ranking the challenges is not statistically significant for challenges 1, 3, and 4; while it is statistically significant for challenges 2, 5, 6 and 7. The implication here is that sector of the respondents does have some effect when ranking challenges.

Table 7: Experience vs. ranking of challenges - Chi-square test results

Challenge	**Test statistics**		
	Chi-square	**df**	**Sig**
1	7.317	6	.292
2	16.252	6	.012
3	5.412	6	.492
4	3.590	6	.732
5	14.887	6	.021

6	12.767	6	.047
7	13.896	6	.031

A cross-tabulation test was also carried out to compare level of experiences of the respondents against ranking of challenges. Tables 7 shows the result of the Chi-square test (of the cross tabulation). As shown in the Table, for all the challenges, the p values of all Chi-square statistics are > .05, which means that the results are not statistically significant. This implies that level of experience of respondents does not impact when ranking the challenges.

4.2 Question 2 - Policy Availability

In the questionnaire, the respondents were asked whether there were available policies that provide solution to the societal challenges, and if they have any, how effective these policies are in providing solutions. Table 8 summarizes the results with regard to the above. According to the Table, a higher percentage of the respondents attest to the fact that there are sufficient policies available to address societal challenges, with the exception of challenge 6 (Secure Societies). More than half of the respondents (about 54%) agreed that there are not any policies available for challenge 6. Given that challenge 6 is the least critical challenge (as discussed in the above section), perhaps it may not be a priority area as yet in terms of policy development. Challenges 1 (Health) and 2 (Food security) are ranked the highest in terms of policy availability. Nearly 91% of the respondents agreed that there are many health related policies available to address challenge 1, yet according to the ranking of challenges (Question 1), it is one of the main challenges in the context of Sri Lanka. Overall results of policy availability showed a (somewhat) positive correlation between the availability of policies and ranking of main challenges. This may mean that, for example, although a large number of policies exist covering many areas of Health (e.g. communicable diseases, non-communicable diseases, elderly care, maternity care, health of infants, etc.), it still remains a critical challenge due to problems exist in implementation or collaboration and coordination between different areas of healthcare. The same applies to challenge 2, i.e. a lot of policies are available, yet it still is the biggest challenge in the context of Sri Lanka.

Table 8: Policy availability in each area of societal challenge

Challenge	**Ranking of Main Challenges (Question 1)**	**Policy availability**			**Policy Effectiveness***		**SD**
		Yes (%)	**No (%)**	**Ranking**	**Mean value**	**Ranking**	
1	2	91.1	8.9	1	3.45	1	1.472
2	1	83.3	16.7	2	3.77	2	1.309
3	3	72.5	27.5	4	4.07	5	1.385
4	4	51.3	48.7	6	4.29	6	1.338
5	6	64.3	35.7	5	3.86	3	1.332
6	7	46.2	53.8	7	4.31	7	1.335

7	5	77.5	22.5	3	4.02	4	1.388

* 1 – Very high level of effectiveness, 2 - High level of effectiveness, 3 – Medium level of effectiveness, 4 - Low level of effectiveness, 5 – Very low level of effectiveness, 6 – Not effective.

In terms of level of effectiveness of policies (see Table 8), there was also a positive correlation between policy availability and policy effectiveness. For example, challenges 1 and 2 had the most positive results in terms of effectiveness of policies. However, even though the two challenges, comparatively, are the most effective in terms of policies (in terms of addressing the challenges), mean values (3.45 and 3.77 respectively for challenges 1 and 2) depict that the level of effectiveness leans more towards medium-low level of effectiveness. Challenge 6, as usual, was ranked the lowest in terms of effectiveness of policies with a mean rating of 4.31 (low-very low level of effectiveness); and Challenge 4 (transport) was not that far off either.

Overall results imply that, although policy availability is not an issue for many challenges, lack of strategies and effective action plans may have led to low levels of policy effectiveness. Further, the main issues in addressing the societal challenges lie with the relevance, implementation and impact of the policies. Moreover, since Sri Lanka is a developing country, low level of policy effectiveness could be down to lack of resources in policy implementation. Therefore, the policy makers need to develop a strategic approach together with appropriate institutional arrangements in addressing the issues aforementioned.

5. Conclusions

Within the Sri Lankan context, challenges 2 (Food security) and 1 (Health) were identified as the biggest societal challenges. Interestingly, the questionnaire survey findings also reveal that there is abundance of policies in addressing these two challenges and also other areas of societal challenges. However, the main issue lied with ‘effectiveness’ of policies. Herein, strategic approaches need to be taken by the policy makers in effective implementation (including monitoring and evaluation) of these available policies. This requires capacity building of relevant authorities and strengthening of governance structures for effective and informed decision making in several of the societal challenges. Apart from the policy makers, community levels should also be encouraged in the participation of development and implementation of policies. Government collaboration with private sector will also be needed to address funding/resource issues. Effective partnerships with the EU and other developed countries are needed through long term research and exchange programmes such as Horizon 2020. Sri Lanka should collaborate with SAARC (South Asian Association for Regional Cooperation) to build multi regional interaction of policy framework. If these measures are put in place, the barrage of challenges would be adequately resolved within the context of Sri Lanka.

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