



ENVIRONMENTAL
FOUNDATION
(GUARANTEE) LIMITED

*COMMENTS ON “REPORT ON SUSTAINABLE
SRI LANKA - VISION AND STRATEGIC PATH”*

ENVIRONMENTAL FOUNDATION (GUARANTEE) LIMITED

October 2018

Presidential Expert Committee,
Report on Sustainable Sri Lanka - Vision and Strategic Path,
Presidential Secretariat,
Galle Face,
Colombo 01

Dear Experts,

Comments on Report on Sustainable Sri Lanka - Vision and Strategic Path

In response to the website notification that appeared on the above mentioned subject, the Environmental Foundation (Guarantee) Ltd (EFL) hereby forwards comments on the same.

The comments below present general feedback as well as concerns related to specific, selected themes

1. General comments

The report, is extremely vast and covers a wide range of present-day issues and provides recommendations. However, the report fails to identify the effective Implementation of the recommendations provided therewith. Upon the perusal of this report, one would expect a supplicating action plan or a sense of direction as to how the various issues identified, in times to come are to be grappled with paving the way forward for Sri Lanka to facilitate the expected outcome, as opposed to being a mere reminiscence of our contemporary standing.

Remedies, measures and implementation provide all possible interventions, but the report doesn't identify the primary bodies that are responsible for the implementation, whether the identified bodies have the capacity for implementation and how the progress will be monitored. The report would have been of higher value if cost benefit analysis (including those of ecosystem services) was integrated and only the feasible options in local context are provided, rather than long lists of all possible interventions to address the issues.

Further, habitat destruction through deforestation and resulting conflicts between human-wildlife management have not been addressed to an adequate extent to provide reasonable and feasible mitigation measures will create a significant relief for both parties.

1.1 Under-representation of persons with disabilities

Persons with Disabilities (PWDs) in Sri Lanka have been frequently excluded from the development discourse. It is evident that in the Sustainable Sri Lanka Report, reference and acknowledgement of the issues faces by PWDs are not addressed. The inclusion of PWDs as a marginalized minority in Sri Lanka needs to be addressed and it is vital that each development strategy/ sector is analyzed from a disability perspective. Disability is referred

to in various parts of the SDGs including Goal 4, Goal 8, Goal 10, Goal 11 and Goal 17. Given that the exclusion of PWDs from Sri Lankan society has been a long standing issues that goes unaddressed, more attention can be given to ensure that disability sensitive recommendations are made in each thematic area.

1.2 Legal limitations in implementation

Given the existing administrative structure of Sri Lanka, substantive of the recommendations seems rather ambitious. As counteractive legislation and amends to existing legislation is mandatory, which as of now is a tedious process. Comprehensive Constitutional reform, altering the existing administrative frame work would be an optimistic starting point. The report refers to Constitutional reform and the judiciary under Social Justice (Page 110). It is submitted that the legal framework and its application to the SDGs should be given due weightage in a separate section as it intersects with economic rights, environmental rights, educational rights etc.

There is overall lack of clarity in identifying national laws and applicable international Conventions that should be used to address issues identified in the report. Particularly, reference to Environmental Conventions and standards would be useful to guide the Government in implementing the recommendations stated in the report.

2. Specific comments on selected sections

EC3. Environment

3.1. Summary

Landless peasants have encroached on state land, causing a decline of forest cover to 29% today (pg. 19).

It should be noted that, it's not only landless peasants that have encroached on Protected Areas, but government entities, industries etc. as well, for various development projects. Examples of such instances would be the road constructed within the Wilpattu National Park by the Sri Lanka Navy during the war (now being used as a public road), Ambewala Factory built inside the Hakgala Strict Nature Reserve, Proposed Aquaculture Park within the Vidathalathivu Nature Reserve by the Department of Fisheries and Aquaculture, housing projects within the Marichchikatti-Karadikkuli, Vilaththikulam and Veppal Forest Reserves by the local government etc. These have created and are currently causing more negative and greater impact on the environment compared to 'landless peasants' and therefore this aspect should be considered when designing long term sustainable policies for the country.

3.2. Key Action Recommendations (pg. 20)

Below recommendations should also be given priority to ensure environmental protection,

- Systematic reduction and elimination of single-use plastic items from the country
- As a short term solution to curtail fossil fuel based emission pollution through transportation; emission testing to be made mandatory for state owned vehicles such as CTB buses, Police vehicles etc. as is applicable for privately owned vehicles in the country.

S1. Agriculture and Food

1. Providing an early warning message or distributing the message should be addressed. Although the section 2 refers to “develop institutional arrangements to speedily respond to early weather warning signals”, the distribution of this message, targeted recipients of this message and the time taken to send an early warning on extreme events have not been identified. Since this is not the same as an early warning of a *landslide* it might not be instant, requiring prolonged action. Necessary measures (including capacity building and training) should be conducted for the responsible authorities and communities prior to setting up early warning system.

2. In addition to the development of new drought tolerant crop varieties, attention should be given to improve existing crop varieties that can be used as a drought tolerant crop through better agricultural practices and to distribute them to the farmers for a lower price (similar to a fertilizer subsidy), and to educate the farmers to adopt traditional practices to conserve moisture in the soil and to implement rain-water harvesting methods. Although, rain-water harvesting can be costly for individual farmers, developing a rain-water harvesting structure for the entire community with proper support from government or non-governmental agencies can be used for efficiently using water during drought.

4. Is there a criterion for the farmers who are getting these subsidies? There were and will be issues related to identify farmers who are eligible for such subsidies and proper monitoring of the subsidies distribution should be implemented. One of the issues of subsidy is its availability for selected crop types, such as paddy and vegetables. If farmers are receiving a subsidy for paddy and none for vegetables, there will be potential issues related to farmers selling the same fertilizer to vegetable farmer for a higher price and profit, which will create irregular distribution of fertilizer. Subsidised fertilizers also lead to the overuse of fertilizer leading to environmental pollution. To overcome such issues, different land use types (agriculture related) in different areas around the country in relation to the subsidy programme and information on the number of farmers, and income levels of farmers should be identified through existing or new data. Further, the farmers should be well educated on the use of correct doses of fertilizer and to integrate fertilizers with organic fertilizer and to reduce synthetic material.

5. Mechanization of agriculture is a key component in national and international food production. Since there is an existing issue related to the availability of labour and cost for labour and the reluctance of younger generations to involve in agricultural sector. Mechanization can be costly since the costs of purchasing such machinery are quite expensive and unaffordable for a local. But mechanization of agriculture with government support can be used to address the labour issue.

And another aspect of the labour issue is including women in the agriculture sector. Although a significant amount of women are already in the agriculture sector, improving rural women societies to be involved in the agriculture sector can be used to mitigate the effects from migration to urban areas for higher paying jobs.

Supplying solar water pumps for micro irrigation methods like drip irrigation should be done with implementation of restoring existing water sources such as canals, streams and tanks or lakes. Existing methods to improve and conserve soil moisture content can be adapted and farmers can be educated in adapting such methods where those practices are not in use.

6. Farmers should be connected with governmental and non-governmental organizations, authorities that are capable of strengthening farmer community to improve agricultural output in different regions. With existing projects and plans, implementing water conservation methods and to rehabilitate irrigation tanks should be carried out.

7. Connecting farmers with stakeholders in private sectors can be used to improve food production and to achieve a constant supply of fresh produce via different farmers throughout the year under agreed prices and reducing price changes by adding the middleman to the supply chain. Connecting farmers with private buyers for exporting products such as dehydrated fruit producers, a change in the farmer practices to improve crop quality can be also achieved through organic farming. Organic farm produced have a better acceptance within international markets compared to farm produce grown with synthetic farm inputs.

8. Use of technology to distribute messages such as the early warning message of extreme weather conditions and short term weather patterns should be implemented with the support of providing necessary equipment to farmers or farmer community in a village and provide necessary knowledge in operating equipment to take necessary actions. Also, using technology such as GIS technology can be used to demarcate crop production areas with the support of the farmers and can be used to maintain information on farm inputs and harvest during each season.

9. Marketing strategies to create awareness using different media (social media, TV and radio advertising) on the contents of food products and effects and benefits are already existing methods. Although, benefits of organic farming and how to conserve methods are being distributed as information through newspapers, it is used less in TV and radio shows etc. Best way to educate the consumer is through what the consumers are mostly relying on for gathering information or news such as internet, TV or radio or newspapers.

S2. Education

For the education sectors, the development team for Vision 2030 have made an active effort to address core shortcomings in the education sector. In particular, the team have made a concentrated effort to evaluate in detail the various stages of education, Early childhood care and education (ECCE), General / School education, Technical and vocational education and training and Tertiary and university education. The present status, issues, problem areas; likely economic, social and environmental impacts; and remedies, measures and implementation for all four classified stages of education is further evaluated. This approach to evaluate the sector at all its stages is positive – since ultimately for the sustainable paradigms to be effectively implemented a holistic approach is imperative. Below, comments are shared to further improve the robustness of Vision 2030, in particular for the stages of Early childhood care and education (ECCE), General / School education and Tertiary and university education.

Early Childhood Care and Education (ECCE)

Concern is raised about the gap in the level of opportunity available in ECCE between rural and urban children. Policy is required to be developed and implemented to bridge this divide, since if Vision 2030 is to be realised all children across the country should receive and equitable beginning. It is established, that the basis of an individual's personality, values and attitudes that will help form the thought processes of the human being is developed very early on. Therefore, an ECCE that incorporates and cultivates an interest for nature can be a powerful mechanism in initiating a sustainable society and environment for all Sri Lankans.

General (school) Education

The writers of the report, provide a strongly worded critique of the general educational system, which is commendable, since this recognises the need for an overarching restructuring of the schooling system in the country.

Since, general schooling is compulsory in the country, this is a period when attainment of the values, ethics and practices of sustainability can be formed – which would allow for the sustainable development of the country socio-economically.

A recommendation, to achieve Vision 2030, is to incorporate environment and science as a compulsory component of the educational curriculum. Highly recommended, is that an effort is made to incorporate this compulsory module which should be inclusive of assessments from Grade 1 to Advanced level. If environment and science is given this due recognition, it would immediately elevate the importance of the subject matter in society, politics and economics and would be a reflection of the pressing challenges of current times. This due recognition in turn would help address grave national concerns in regards to other sectors, for example, the disposal of non-degradable solid waste, in efficient energy development and in-efficiency in the transportation sector. Since, an educated and informed population will be able to steer and encourage positive change in the formulation and implementation of national policy and importantly become agents of responsible and sustainable consumption practices.

Tertiary and University Education

An expansion of the tertiary education sector will allow for a larger cohort of the population to be suited to be professionally cable of addressing the challenges arising due to a changes in the global climate and environment. To ensure that Vision 2030 can be achieved, investment and encouragement to pursue R&D is necessary. Since innovative solutions are becoming a key way to enhance and achieve sustainable practices and manage the increased incidence of crisis's (e.g. flood management). For this R&D sector to develop, an environment that encourages free thinking and innovation is necessary.

S3. Energy

2.1. High Cost of Electricity Generation

2.1.1. Present Status, Issues and Problem Areas

Although the cost of electricity has decreased since Norochcholai Coal Power plant has been in operation, it is not necessarily the least economic cost, as required by the Electricity Act of 2013. When externalities of operating a coal power plant, which include environmental damages are considered in the costing, alternatives such as LNG are just as competitive. This was also highlighted by PUCSL when proposing the LTGEP 2018/2037.

Operating a coal power plant has drastic long-term negative social and environmental impacts which should be strongly considered when considering future energy options. The impacts of Norochcholai coal power plant (NCP) continue to negatively impact air quality, health of neighboring villages, ground water resources and water quality.

2.1.2. Likely Impacts and Consequences of Problems

When comparing LNG with coal, the environmental gains of using LNG far outweigh coal. Although they are both non-renewable sources, LNG produces 40 percent fewer greenhouse gas emissions compared with black coal¹. Waste generated from the energy generation process of coal creates fly ash and bottom ash which create hazardous waste that Sri Lanka is not equipped to manage. NCPP is in the process of building a wind barrier for the coal and ash yard at the cost of LKR700 million. The environmental impacts of using LNG and waste generated from the process is far less impactful.

2.1.3. Remedies, Measures and Implementation

When developing the long term generation expansion plan, there has been much dilemma over the pricing used by both CEB and PUCSL in calculating the least cost of energy production. If possible we would strongly recommend the plan be reviewed by international, unbiased experts, to determine the correct costing to determine the least cost plan for the final LTGE plan.

2.4. Inappropriate Generation Mix and Need for Lower Cost Generation

2.4.3. Remedies, Measures and Implementation

The environmental impacts of operating diesel or coal power plants are very severe. We strongly recommend the CEB to consider LNG and renewable energy sources as means of balancing the environment, economic and social impacts. It has been understood that when taking economic costs of coal power plants including all externalities, the cost of LNG becomes highly competitive.

The CEB trade unions claim that the country will stand to lose billions of rupees annually by shifting to gas from coal for electricity generation. The validity of these statements could be verified by working out the levelized cost for the two cases – coal power plants and gas power plants for different prices as shown in the Table. Any new coal power plant will incur an additional cost for the transmission line and the jetty. The key inputs are the capital cost and the prices of fuel. Their current values are sourced from searching the internet and given in the Table.

The data for O&M costs are taken from the CEB's LTGE Plan. Two extreme prices of fuels based on past data are assumed for each fuel under case 1 and case 2. The economic component was worked out based on a study conducted in Europe but adapted to SL situation. It is seen that when the cost of externalities is included, the cost of generation from gas is cheaper than that from coal for all prices of coal and gas. The gain is of the order

¹ Q+A-How do emissions from LNG and coal compare?, 10 May 2011, Reuters. (<https://www.reuters.com/article/australia-lng-emissions/ga-how-do-emissions-from-lng-and-coal-compare-idUSL3E7FS0HG20110510>)

of LKR 10-20 billion annually depending on the prices of the fuels rather than losses as claimed by CEB trade unions. Even if externalities are not included, generation from gas could be cheaper than generation from coal under average conditions. It may go up only when coal price is very low and gas price very high which is not the average situation. At current prices of USD/t 100 for coal and USD/MBtu 10 for LNG, there is a LKR 5.8 billion gain annually without adding the economic component and LKR 17 billion gain annually with this component added. Hence, the statement that a gas power plant will cost more is totally incorrect.

Plant Type	Unit	Super Critical ST		Combined Cycle GT	
		Case 1	Case 2	Case 1	Case 2
Case		Trinco	Trinco	Kerawapāliya	Kerawapāliya
Location		Trinco	Trinco	Kerawapāliya	Kerawapāliya
Plant capacity	MW	600	600	600	600
Fuel		Coal	Coal	Gas	Gas
Specific plant cost	USD/kW	2,500	2,500	1,000	1,000
Total plant cost	MUSD	1,500.00	1,500.00	600.00	600.00
Total overnight cost	MUSD	1,777.95	1,777.95	681.24	681.24
Life of plant	Years	30	30	30	30
Discount rate	%	10	10	10	10
Annuity Factor II		0.1061	0.1061	0.1061	0.1061
Unit cost of coal (CF)	USD/t	60.00	100.00		
Unit LNG cost (CF)	USD/MBtu			6.00	10.00
Net calorific value	kcal/kg	6,000	6,000	12,000	12,000
Cost of coal unloading jetty	MUSD	105	105		
Cost of coal transfer	USD/t	5.00	5.00		
Annual cost of coal jetty	MUSD/y	11.14	11.14		
Cost of transmission line	MUSD	206.00	206.00		
Cost of LNG terminal	MUSD			250.00	250.00
Annual cost of terminal	MUSD/y			26.52	26.52
Plant Factor	%	80	80	80	80
Annual elect output	GWh/y	4,205	4,205	4,205	4,205
Efficiency (LHV)	%	40	40	60	60
Annual fuel consumption	kt/y	1,506.74	1,506.74	502.25	502.25
Specific cost of coal jetty	USD/t	7.39	7.39		
Specific cost of LNG terminal	USD/MBtu			1.00	1.00
Total specific cost of fuel	USD/t	72.39	112.39	7.00	11.00
Annual capital cost	MUSD	210.46	210.46	72.27	72.27
Annual fuel cost	MUSD	109.08	169.35	186.22	292.68
Annual O&M cost	MUSD	44.60	44.60	21.32	21.32
Specific cost of generation	UScts/kWh	8.66	10.09	6.65	9.19
Total annual generation cost	MUSD	364.13	424.40	279.80	386.27
	BLKR	55.71	64.93	42.81	59.10
Specific cost of externalities	UScts/kWh	2.78	2.78	1.03	1.03
Total annual cost of externalities	MUSD	116.89	116.89	43.31	43.31
Generation cost with externalities	UScts/kWh	11.44	12.87	7.68	10.22
Total economic generation cost	MUSD	481.03	541.30	323.11	429.58
	BLKR	73.60	82.82	49.44	65.73

Source: Ratnasiri, J. The Island, 11.01.2018

2.6. Raising the Share of Renewables

2.6.3. Remedies, Measures and Implementation

The best option for ensuring energy security and retain the drain of foreign exchange amounting to about 20-25% of the entire import bill on oil and coal is to develop our own indigenous sources. The CEB, instead of working towards this target with innovation, attempts to be pessimistic looking only at barriers and hurdles without making any attempt to surmount those barriers. One option that could be easily developed that is technically feasible and economically viable that will provide livelihood to many rural families is the adoption of dendro power. Unfortunately, in the current CEB Plan, provision has been made only to add 5 MW of dendro power plants (DPP) each year beginning 2019 up to 2037 except in 2026, 2032, 2034 and 2036. With all the unutilized or under-utilized land available in the country, there is much scope to add DPP to a higher degree, which will lead to a win-win situation saving much needed foreign exchange, saving carbon emissions, eliminating pollution created by coal power plants and providing livelihood to rural people.

2013 the Electricity Act was amended by Act No 31 of 2013, where by the clauses 43 of the Act no 20 has been amended which according the English version of the act purported to require all Non-Conventional Renewable Energy (NCRE) projects be subject to tendering, except those projects which have received Cabinet Approval or has received a permit from the SEA at a date prior to the date of publication of the amendment in 2013 August 2. Since January 2016 CEB has blocked all NCRE projects and no projects have been processed by the CEB since then.

A bill to amend the Electricity Act, No. 20 of 2009 has been proposed by the Ministry of Power and Energy on 17 August 2018 which proposed an amendment to Section 43 which addresses issue of tendering. We hope this will ease the implementation on renewable energy projects.

2.9. Large Investment Need for Infra-Structure Development in the Power & Energy Sector

2.9.2. Likely Impacts and Consequences of Problems

The cost of renewable energy is reducing significantly over time. Solar has seen a reduction of 80% since 2010². The myth of coal being the least cost for energy production no longer stands true. Based on lessons learnt from the operation of Norochcholai coal power plant, the social and environmental cost is extremely higher and continues to increase over the life span of the plant. This includes the costs of dust barriers, compensations, testing procedures, data collection and monitoring.

2.11. Environmental and Social Concerns - Carbon Emissions

The introduction of high efficient super critical coal power plants has been proposed in the LTGEP 2018-2037. Based on the maintenance and operation of the existing NCCP, the technical capabilities available in the country may not be able to maintain the proposed super critical plants. Units 1 and 2 at NCCP have faced consistent failures since operations

² Production Cost Of Renewable Energy Now 'Lower' Than Fossil Fuels, 24 April 2018, Gaurav Sharma, Forbes

began. Failures of FGD and ESP release above permissible levels of SO_x and fly ash into the atmosphere, violating mandatory EPL requirements. NCPP has not been issued as EPL since June 2017 due to its failure in complying with the license requirements.

The option of LNG should be considered before considering more coal power plants in the future.

S4. Health

Sri Lanka has a universal care system that extends free healthcare to all citizens, which has been a national priority. The health system in Sri Lanka is enriched by a mix of Allopathic, Ayurvedic, Unani and several other systems of medicine that exist together. Of these systems allopathic medicine has become dominant and is catering to the majority of the health needs of the people. As in many other countries Sri Lanka's health system consists of both the state and the private sector. The Ministry of Health provides a wide range of rehabilitation health care.

2.1.2. Overcrowding in City Hospitals

Patients who are in need of beds are greatly inconvenienced and stressed, further contributing to the worsening of their medical condition and mental state. It affects the dignity of the patient as well. Overcrowded wards have many consequences: patient safety as falls from beds, mixing up of patients' blood reports with other tests and loss of medical records. It can also lead to anger and frustration among both patients and staff leading to aggressive behavior and even physical confrontations.

2.1.3 Ageing Population

The aging population will increasingly put pressure on health systems with the rise of chronic cancer, diabetes and cardiovascular diseases etc. Older people have a need for more health monitoring and treatment than younger people and the pattern and causes of their illness are different. They need extraordinary care and geriatric treatments that are expensive. Therefore, the provision of long term health care is a most serious issue, which is not addressed clearly in the report.

2.1.4 Changing Disease Patterns Requiring New Adaptations

More attention given to continuity of care due to chronic of conditions such as diabetes, hypertension, ischemic heart disease, stroke, chronic kidney disease and mental health problems which are of high prevalence. In this matter need to provide proper community education as well.

2.2. Remedies, Measures and Implementation

- Needs to be provide general facilities such as laboratory services, Ambulance services & Pharmacy for Peripheral and Rural hospitals.
- Promoting healthy lifestyles and broadening the use of clinical preventive services are critical to preserving the health of aging people and reducing healthcare costs and long term care needs.
- The Health Ministry need to be made arrangements to offer research facilities and advice on various diseases.
- Needs to be carry out family planning, information and education and the integration of reproductive health into national strategies and programs for further reduce Maternal and Infant Mortality Rates.
- The government health sector need to think about the quality of service and enhancement of health infractions. (Eg- drug storage, usage of medical technology etc.)
- Increasing hospital efficiency by allocating resources in the proper manner.

S5. Marine Resources

1. Current Status

Sri Lanka is currently ranked as 146th among the 221 countries based on their Ocean Health Index for 2017³. The rank should be changed from 158 to 146.

2.1. Marine Pollution

2.1.2. Remedies, Measures and Implementation

Coastal water pollution

- Although 60-80% coastal water pollution originates from land based sources, sea-based sources are also important for consideration. So, it is needed to emphasise that coastal pollution due to sea-based human activities, such as improper disposal of burned oil, grease and hydrocarbon waste, bilge water, fish offal. Most of our fishery harbour waters are highly polluted with chemical, oil and organic contaminants. Fish handlers use these polluted harbour water for washing fishes. So, consumption of these contaminated seafood can cause serious health effects on consumers. Coastal water pollution is high in adjacent outer harbour areas as well when compared to non-fishery harbour areas.
- Identification of key pollutants also is important as these pollutant may be varies in different localities.
- Proper monitoring programmes should be initiated to identify direct and indirect sea-based coastal water pollution sources.

³ <http://www.oceanhealthindex.org/region-scores/annual-scores-and-rankings>

- Tight regulations should be implemented to reduce fishery harbour based chemical, oil and organic pollution and microbial contamination.
- Adequate facilities need to be developed for proper disposal of burned oil, grease, chemicals, bilge water, fish offal, etc at fishery harbour premises.

Special attention should be given to sea-based sources for the coastal water pollution.

Eutrophication

- Studies show that severe eutrophication conditions are in our fisheries harbours due to various reasons such as improper dumping of fish offal⁴.
- Under this section it is mentioned that “establish central treatment facilities”. This need to be described. Where these central treatment facilities are going to be established, what type of waste waters are expected to be treated, and what is the plan for these processes to ensure long term proper functionality. Most of our treatment plants are not properly functioning and are not maintained at required standards.
- Measure and monitor nutrient loading. - this need to be described with details, i.e. where should the monitoring take place and how they can be monitored.
- Improper agricultural related practices, such as excessive use of fertilizers, and disposal of organic effluent from industries are some main land based sources for eutrophication in coastal areas should be addressed too.
- Laws/regulations/policies should be effectively implemented to reduce land based nutrient load entering to ocean.
- Special attention need to be given for sea-based sources, such as organic waste from harbour areas, which lead to coastal eutrophication.

Ocean warming and acidification

- Direct and indirect impacts on mangroves, seagrass beds, and coral reefs need to be addressed.
- Existing law should be effectively implanted to prevent adverse impact on seagrass beds by destructive fishing practices such as bottom trawling.
- Low carbon emission technologies should be promoted to reduce emission of carbon in to atmosphere.

Marine Debris

- The Vision 2030 has only given attention on land based marine debris. But, sea-based marine debris also need to be considered.

⁴ Niroshana, K. H. H., Asanthi, H. B., & Kumara, P. B. T. P. (2013). An assessment of water quality and pollution in Puranawella fishery harbour, Dewinuwara, Sri Lanka. *Journal of the University of Ruhuna*, 1(1).

- Identification of marine debris as a separate entity is important and these entities need to be ranked/categorized according to their impact on marine ecosystems.

Shipping and fisheries-based waste

- The vision 2030 has only addressed an issue of some solid waste (unusable nets and other fishing gears) in fishery harbours, but other types of waste also are critical and need to be addressed.
- Develop adequate waste (solid, liquid, organic) receiving facilities for multiday boats in all fisheries harbours. These waste may be unusable fishing gears, burned oil and grease, fish offal, etc.

Coastal erosion

- Reefs play a critical role in wave attenuation thus protect shoreline from coastal erosion. So, attention should be given for reefs when decisions making to control coastal erosion.
- Implementation of reef based solutions for reduction of coastal erosion should be promoted by protecting existing reefs and restoring degraded reefs.

2.2. Sustainable Utilization, Governance, Resilience and Research

2.2.2. Remedies, Measures and Implementation

Less resilient and more fragile ecosystems

Awareness programs from the school level to community level need to be conducted to make clear understanding of the importance of the healthy marine ecosystems. The socio-economic benefits derived from healthy marine ecosystem need to be highlighted for fisheries communities. Fishermen and public should be educated on existing laws and regulations for protection of marine ecosystems. Citizen science projects should be promoted for conservation of marine and coastal ecosystems.

Marine Protected Areas

The incorporation of socioeconomic and sociological factors into management plans is a fundamental for the success of marine protected areas. So, it is crucial that active community involvement in management decision making process from the initial stage to final planning process. Also, suggestions from the community participation should be incorporated to management plans.

Fishermen and public should be educated on existing laws and regulations of marine protection areas. Fishermen and public are often unaware about rules and regulations of MPAs.

Limited skills, capacities and competencies among managers

Effective coordination and cooperation between public private partnerships would be beneficial to overcome the resource limitations.

2.3. Marine Resources

2.3.2. Remedies, Measures and Implementation

Dwindling fish resource

Banning of all type of illegal fishing gears and identification of banning a total ban of imports of illegal fishing gear and material are valuable. However, several illegal fishing gears which are already banned are still being used by fishermen. Regular monitoring and law enforcement should be performed without political influence.

Lack of scientifically collected reliable fish catch data on marine living resources

Economically important fish stocks should be periodically assessed and closely monitored.

S6. Transport

2.3.1. Improving Access and Making Mobility Affordable for all

Improving access is not sufficient unless it is safe. Women and children should be able to feel safe regardless of the time of the day they travel.

2.3.3. Building Sustainable Physical Environment and 2.3.4. Protecting the Natural Environment

Special attention should be given to prevent road flooding. Many roads get flooded even with small amount of rainfalls. Proper drainage systems need to be maintained and should use porous pavements and other environmental friendly methods as much as possible to reduce damages from natural disasters. All the road developments should specially consider the ecological impacts that are caused by development.

2.3.6 Making Employment Fulfilling and Productive

Under the “current status” section, it had been mentioned that the “unemployment among school leavers with as many as 700,000, mostly three wheelers, in operation.” All of them are youth force which the country has. Skilled labor force is gradually decreasing now. If that trend continues, the economy of the country is at significant risk without suitable work

force for many occupations. The vision 2030 has not address this issue even though it identifies this matter.

2.4.1 Managing Motorization

If taxes will be charged for road use and levied on the basis of charging for road space used and its competing economic value through road user charges levied electronically in urban areas where traffic levels need to be controlled, it should also be applicable to all the vehicles without an occupational discrimination. And road use taxes should be applied after the improvement of public transport and during the peak hours.

2.4.2 Making Bus Transport the Backbone of Mobility

Number of buses and routes need to be increased. Also, short distance efficient and regular bus route system need to be introduced in order to reduce the city traffic and to reduce the number of 2 and 3 wheelers in the cities.

S7. Urban development and physical planning

The statistics and the introduction prove to be useful, however, an alternative presentation of statistics would have facilitated easy comprehension.

Reiterating what has been mentioned above this thematic area, fails to mention the requisite implementation methodologies. Furthermore, the report has been unsuccessful in taking into consideration the practical discrepancies of their recommendations, as it is more inclined to be theoretic as opposed to being practical as the suggestions are vague and fails to capture the contemporary requirements, which might result in compromising significant conservation laws.

The suggested railway system and reference to past development plans give a trivial insight into urban development. Besides these two references it can be suggested that a lot more details on 'how to' and 'what to' precisely needs to be mentioned.

S8. Water

Water management aspect has been addressed – but “public – private participation should be encouraged in the areas with high return on investments like commercial agriculture agro/eco-tourism, mini hydro and inland fisheries etc.” (pg. 215). However, in the absence of proper planning and monitoring mechanism, which is the common case in the country, mini hydro power projects are causing implacable tunnelling of hills, choking of streams,

conversion of streams into dry ditches, resulting in species loss and create long term socio-environmental impacts.

Water management should also assess water storage options for sustainable water management, especially as means of regulating floods during high rainfall seasons. The country is increasing number of dams across rivers as means of storing the excess water – however the ecological impacts dam construction have not been addressed.

End of comments.

Yours Faithfully,

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