5. The National Physical Plan 2050

5.1 The Spatial Structure

5.1.1 The Objective underlying the proposed spatial structure is to provide (the Government of) Sri Lanka with a strategic development trajectory which will enable to achieve a well-planned and sustainably developed physical environment, pleasing and adored both by its citizens and the outsiders alike. The trajectory is formulated adhering to the four guiding policies set out in Section 1.4, and with a view towards geographically and sectorally balanced development.

5.1.2. The proposed spatial structure is given in figure 5.1.2. The spatial structure presents the most preferred scenario, among many other possibilities considered, to promote, regulate and to coordinate future physical developments, executed by different state and private sector organizations and individuals indistinct spatial entities over the three time horizons set out in the Section 1.2 above.

The overall land use pattern in the island is expected to transform into the state shown in the figure by 2050. The configuration is based on the findings of the detailed studies and in line with the guiding policies indicated in Section 1.4. Therefore, the structure proposed herein, shall be viewed as a live image of a spatial process, evolving through the effectuation of the four guiding policies in responding to the emerging demands and needs of ongoing economic and social developments, rather than a static end-state, conventionally understood by a plan of this nature.

The spatial structure is combined with sector specific strategies, mentioned in the forthcoming sub-sections. Each strategy highlights strategic development interventions in specific spatial entities that would support the envisaged pattern of growth, making the best use of the existing potentials, while demoting physical developments in locations where such developments are inappropriate due to sensitivity, safety and the need for conservation.

In the proposed scenario, a major share of physical developments is expected to be concentrated into four ‘Development Corridors’, two ‘Metro Regions’ and nine ‘Main Cities’, which have been identified as the most strategic locations for key investments expecting to deliver accrued benefits.

The Central Fragile Area, the Coast Conservation Zone, and Agricultural, Eco and Forest Reserves which cover nearly a third of the land area, shall receive equal attention for conservation, and will be devoid of large scale physical development interventions. In addition to those, it also proposes the locations, most appropriate and advantageous in terms of reaching the development goals of the Government of Sri Lanka, mentioned in Section 1.4 above, for major residential developments, industrial establishments, commercial and other urban land uses.
5.1.3 The 'Central Fragile Area' shown in the figure 5.1.3, is the geographic entity that consists of the lands with sensitive natural ecosystems, highly vulnerable to landslides and play a crucial role in sustaining water resources. A major portion of these areas are located above 300 meters from mean sea level and cover the upper catchments of all major rivers of the island. The identified areas fall within the current administrative districts of Kandy, Nuwara Eliya, Kegalle (all areas) and Matale, Ratnapura, Monaragala, Galle, Matara, Kalutara and Colombo (identified DS Divisions). The list of Divisional Secretariat Divisions is given in the annexure 01.

The physical developments in these lands shall be guided with stringent regulations and comprehensive guidelines, enforced and monitored by the agencies responsible for the development and conservation of these areas. The National Building Research Organization (NBRO) has already declared this area under the title ‘Landslide Prone’ districts, and guidelines are being developed for the construction activities carried out in this area. This will partially support the conservation of geological profiles, hydro systems and the development density.

Since a major portion of the physical developments are associated with increasing urbanization trends, ‘planned urban development’ is not an option, but a necessity for all localities in this area. This is possible through the integrated Urban Development Plans prepared and implemented for all existing and emerging urban areas, declared under the provisions of the Urban Development Authority Law of 1978.

The conservation of critical land resources in these zones shall also be supported by a depopulation strategy. A larger share from the next generations (2020-2050) of the populations of these areas shall be attracted into the proposed economic development zones by means of more attractive employment opportunities, affordable housing and more beneficial and vibrant living environments.

In addition to the conservation of lands a well-organized and coordinated tree planting/re-forestation program is essential for a long term conservation of the water resources in the area. The implementation of the REDD+ Sri Lanka National REDD+ Investment Framework and Action Plan (2017) will provide adequate support for this purpose.

5.1.4 The ‘Coast Conservation Zone’, shown in figure 5.1.4, includes the area for which boundaries have been delineated by the Coast Conservation Department under the provisions of the Coast Conservation Act No. 57 of 1981. Even though a large quantum of physical developments of Sri Lanka has been taking place in this zone, conservation of the lagoons, estuaries, swamps, riverine environments and other sensitive environments is important because of the eco services that they provide, the attractions they have and the economic activities associated with them. The list of Divisional Secretariat Divisions which encompasses these areas are given in the annexure 02.

The Coast Conservation Department is adequately equipped with powers to carry out conservation functions in these areas, and a national level Coast Conservation Plan is already being developed. In addition to that the Geological Surveys and Mines Bureau plays a role in controlling mining activities and the Central
Environmental Authority is empowered to regulate activities that impact the coastal environmental systems, while integrated urban development plans will support to have least destructive physical developments for tourism, fisheries, recreation and port related activities. However, the existing enactments by the Coast Conservation Department, Central Environmental Authority and the Urban Development Authority shall be strictly enforced in these areas.

5.1.5. An ‘Agro Conservation Zone’, shown in figure 5.1.5, is the geographic entity with lands that are predominantly used for agricultural purposes, as defined by the Agrarian Services Act No. 58 of 1979 and Rubber, Coconut and any other type of Plantations which are situated away from the main urban concentrations proposed in this report.

The most important DSD division in terms of % of total land extent of different agricultural crops are shown in annexure 03. In addition, the list of enactments related to the agro conservation zone is depicted in annexure 04.

5.1.6. The ‘Water Conservation Zones’ shown in figure 6, include the areas those can have an impact on the long existing water cascading system, which includes Large tanks, supplementary tanks, sedimentation tanks and small scale village tanks along with their watersheds and the feeding canals, located mainly within the dry zone of the island. Even though almost all areas have these water systems, the administrative districts given in annexure 05 are of critical importance with this regard. The list of enactments related to the Water Conservation Zone are shown annexure 06.

The physical developments associated with these water bodies and their water catchment areas shall be strictly regulated by the respective Divisional Secretaries, in coordination with the relevant Local Authorities.

5.1.7. The ‘Eco Conservation Zone’ given in figure 5.1.7, is an entity with wetlands, catchments of irrigation tanks, streams and reservoirs, and the sanctuaries declared by the Wildlife Conservation Department, under the provisions of the Fauna and Flora Protection Ordinance, No 2 of 1937, and subsequent amendments. A ‘Forest Conservation Zone’ includes any area declared as a reserved forest by the Forest Conservation Department, under the provisions of the Forest Ordinance No 16 of 1907 and its amendments. The Available Laws and Policies related to the Eco Conservation Zone are shown annexure 06.

5.1.8. A ‘Development Corridor’ is a contiguous linear geographic entity, which connects a series of major and minor agglomerations of economic activities, a variety of secondary and tertiary sector industrial developments that mutually support the sustenance of each other through forward and backward links, clusters of urban facilities that support a
Figure 5.1.5: Agro Conservation Zone

Figure 5.1.6: Water Conservation Zone
relatively large concentrations of people who live, work and patronize the facilities within, and benefited by interconnected networks of physical, economic and social infrastructure.

The Development Corridors given in figure 5.1.8 are expected to make the largest contribution to the National Economy, mainly by means of value addition to both local commodities as well as import-export based global supply chains, capitalizing upon the three international ports in Colombo, Trincomalee and Hambantota and the small ports in Oluwil and Jaffna, international airports in Katunayake, Mattala and Hingurakgoda (to be developed), the expressways and improved high speed railway links. They thus, shall be the main sources to attract investments and to provide employment opportunities.

Out of the total population in Sri Lanka in 2050, at least sixty percent (60%) is expected to be concentrated within these Development Corridors, identified within the proposed spatial structure. Such concentration is mandatory to meet the thresholds of viability for the investments on specific infrastructure and high-end urban facilities and to have the critical mass required for their sustainability.

5.1.9 The East-West Development Corridor, is proposed between the Colombo and Trincomalee districts. In order to capitalize upon the advantages of the two major ports in Colombo and Trincomalee, the transport infrastructure and the favorable living conditions, a reasonably higher share of the future population (approximately 35-40%) of Sri Lanka shall be settled in lands that fall within the proposed East-West Development Corridor.

The spatial extent of this corridor is defined approximately as the area within the first 10 kilometers (highest concentration), and 10-20 kilometers (medium concentration) and 20-30 kilometers (moderate concentration) from the proposed expressways and highways.

In this Development Corridor, the Colombo Metro region, which is the conurbation of several urban areas around Colombo, will be the largest concentration of settlements and expected to be home for around three and a half million (3,500,000) residents. The other major concentrations are proposed in five Metro Regions centering Negombo (600,000), Dambulla (500,000) and Trincomalee (1,000,000), along with a series of ‘Cities’ in Beruwala, Kalutara-Matugama, Panadura-Horana, Mirigama-Warakapola, Polgahawela, Alawwa, Ibbagamuwa, Galewela and Kantale., whose resident populations may vary between 100,000-200,000 and ‘Small Towns’ which will have relatively smaller concentrations (Table 02).

The area earmarked for this Corridor is constituted of 71 Divisional Secretary Divisions (Table 01) and 12.3% (8069 km2) of the total land extent of the country.

5.1.10 The Northern Development Corridor, is expected to accommodate a residential population of more than a million (1,200,000). The low population growth rate experienced by this region can be increased to a moderate annual average growth rate of 1.2 percent to result in this number by 2050 (Table 02).

Jaffna Metro Region and Kilinochchi are expected to be the epicenters of the agglomeration of this corridor. With the available restrictive environmental conditions and the possibility of providing infrastructure, Kilinochchi is expected to have a higher growth than the other areas in this corridor. This Corridor consists with 15 Divisional Secretary Divisions (Table 01) and 2.9% (1925 km2) of the total land extent of the country.
5.1.11. The Southern Development Corridor, with the prevailing annual average rate of growth of 1.0 percent is expected to reach a residential population of more than one and a half million (1,700,000) (Table 02).

The corridor will be developed centering on the Metro Regions at Galle, Matara and Hambantota, Main Cities at Tangalle, Embilipitiya and Tissmaharama, and ‘Small Towns’ which will have relatively smaller populations. The existing rate of growth shall continue to reach the numbers by 2050.

The Southern Corridor consists with 32 Divisional Secretary Divisions (Table 01) and 3.4% (2221 km²) of the total land extent of the country (Table 02).

5.1.12 The Eastern Development Corridor, is expected to have a residential population of more than one million (1,200,000), which can be achieved with a little increase of its present rate of growth to 1.0 percent (Table 02).

Batticaloa is proposed to be developed as a Metro Region with a population of 300,000, and Valachahenai, Kalmunei, Ampara, and Akkareippatu are proposed to be Cities with populations varying between 250,000 to 100,000, along with a set of ‘Small Towns’ which will have relatively smaller concentrations. This included 29 Divisional Secretary Divisions (Table 01) and 4.6% (3021 km²) of the total land extent of the country (Table 02).

5.1.13. A ‘Metro Region’ is a geographic entity with a relatively larger agglomeration of economic activities, secondary and tertiary sector employment and a population around an urban area, characterized either by a single node or several nodes of urban facilities. Within this policy, a ‘Metro Region’ shall be an indication of an area with a minimum population of 500,000, and a net residential population density between 1000 - 5,000 persons per square kilometer.

Kandy Metro Region is proposed to facilitate a population of seven hundred thousand (1,000,000) (Table 02). The area identified for proposed Metro Region in Kandy presently accommodates a population of 680,000, but this is likely to grow beyond the expected number, if additional measures will not be taken to attract its future populations in to other areas.

The Kandy Metro Region consists with 8 Divisional Secretary Divisions (Table 01) and 0.7% (430 km²) of the total land extent of the country (Table 02).

Anuradhapura Metro Region is expected to facilitate a population of five hundred thousand (500,000) within the respective areas of its direct influence. The present population in the area identified for Anuradhapura Metro Region is 311,000, which is expected to grow at an increased annual average growth rate of 1.6% to achieve the targeted numbers (Table 02).

The Anuradhapura Metro Region consists with 8 Divisional Secretary Divisions (Table 01) and 2.5% (1670 km²) of the total land extent of the country (Table 02).
5.1.14 A ‘Main City’ is a relatively larger concentration of economic activities, urban facilities and residential population, and serves as the higher order service Centre to a reasonably larger land area. Within this policy, a ‘Main City’ shall be defined as an area with a minimum population of 100,000, and a net residential population density between 100 - 500 persons per square kilometer.

The following locations are proposed to be developed as independent medium scale urban facility locations with populations varying between one and two hundred thousand (100,000-200,000) (Table 02):

1. Mannar,  
2. Mulaitivu,  
3. Vauniya,  
4. Puttalam,  
5. Polonnaruwa,  
6. Nuwara Eliya,  
7. Ratnapura,  
8. Mahiyanganaya  

These ‘Main Cities’, shown in figure 5.1.8, are expected to contain a larger share of the future urban growth excluded from the Development Corridors and the two Metro Regions, which otherwise will be scattered all over the island within the next 20 years. They shall collectively accommodate up to 2.6-2.7 million residents within their areas of influence. However, out of them Nuwara Eliya and Ratnapura may need to divert their excess populations into elsewhere in future due to their fragile environmental conditions.

5.1.15 Tertiary Agglomerations of around two hundred medium and small scale towns in both designated and non-designated urban areas, are expected to have less than 50,000 people in each of them, and to support the basic needs of settlements scattered in the rest of the island.

5.1.16 The Implementation of the spatial structure shall be assured by the following actions taken by the relevant agencies:

a. Investment on strategic projects that will generate more attractive employment and business opportunities (mainly in the manufacturing and service sector) for the next generation entering the labor force, at locations proposed by this plan.

b. Increasing the availability of land/houses and urban infrastructure (especially water supply and public transportation) at affordable prices at locations identified for residential developments within the proposed urban agglomerations.

c. Providing high performing social infrastructure (especially primary and secondary schools, high quality health services and recreation facilities) associated with the main urban areas proposed in this plan.

Main Cities

5.2 The Urban Development strategy

5.2.1 The Objective

The urban development strategy is to regulate and promote the urban areas with comprehensive development guidelines. The urban development plans prepared by the Urban Development Authority and other development agencies shall strictly take the following aspects in to consideration.

5.2.1.1 Attractive and Livable Conditions

The conditions within the urban areas must be conducive for living, working and entertainment. The tropical climate conditions prevailing within most of the urban areas shall be handled with adequate sensitivity. Positive characteristics such as the bright day light, constant temperature and humidity conditions, etc, as well as the harsh sunny and heavy rainy weather conditions shall be responded with appropriate measures of planning and urban design in order to provide appealing and livable atmosphere.

5.2.1.2 Safe and Secure Localities

The safety from external forces such as the floods, landslides, sea erosion as well as internal issues such as the frequent road accidents, public nuisance, wide spreading epidemics, etc, shall be addressed at the planning of urban areas. Safe environments also include special attention paid to children, disabled and senior citizens. Security from theft, burglary, crimes and terrorist attacks shall be provided through both physical and non-physical measures.

5.2.1.3 Smart and Convenient Facilities

The ease of access to various information related to day to day operations, reliability of public services provided by various institutions, and the convenience of using urban facilities makes an urban area ‘smart’. The advancements in information technology may assist to provide fast and reliable information through smart devices, but the delivery depends largely upon the persons and the systems in place. Even though a major contribution for such systems shall be non-physical, the physical environments shall be planned and designed to enable the commendable use of such systems, when provided with the required versatility.

5.2.1.4 Green and Sustainable Environments

The selection of the most appropriate lands, safe and reliable construction methods, saving of water both in construction and in operations, effective use of renewable energy, use of appropriate materials in optimum quantities, response to thermal conditions, use of efficient devices, etc, shall be made compulsory for all constructions in order to assure environmentally sustainable and ‘Green’ developments.

5.2.2 Improved Public Transport modes that assures efficient, affordable and reliable service shall be identified as a key factor for the improvement of livability in urban areas. Therefore, strategic investment program in reorganizing mode-integration and systematizing the operations along with the state-of the-art passenger services for the improvement of public transportation throughout the island with a special emphasis on the urban agglomerations proposed in section 5.1.15 shall be implemented by 2025.

Since the residential populations within most of the Metro Regions and Cities, except Colombo Metro Region, will not exceed a million, heavy investments on high tech transportation solutions for local passenger transportation may not be economically
viable. In most of the urban areas, local passenger transportation needs can be best
catered by improving the existing bus services until 2030. However, the operations need
to be heavily regulated, buses and the waiting facilities must provide the required comfort,
and smart services such as e-ticketing and information display need to be provided to
make the services more efficient, cost effective and attractive to passengers.

In the proposed Development Corridors, the railway shall be given priority because it is
the most economically viable and environmentally sustainable inter-city mode for both
passenger and goods transportation.

5.2.3 High Quality Utilities shall be provided in order to boost urban development, strategic
investments. To this end the augmentation of the existing water supply projects,
improvement of drainage, introduction of underground sewer, enhancement of the
electricity network, and the introduction of fire services, shall be provided as priorities
within the period 2020-2030 for the areas identified for the development of Metro Regions
and Cities of the Development corridors, the two independent Metro Regions and the Nine
Main Cities, on priority basis.

Throughout the proposed Development Corridors, improved inter-connected water supply,
gas and electricity distribution networks, fed by multiple sources located at different
points, shall be implemented in order to maintain an uninterrupted, consistent and
regulated supply for all activities within them.

5.2.4 Augmented Social Infrastructure is essential in order to enhance the attraction of the
future generations of the population to those selected urban areas for residential and
employment purposes the provision of high quality education, health, communication and
recreation facilities is proposed.

It is observed that almost all areas, identified to be promoted as Metro Regions and Main
Cities, already have adequate education and health facilities. The immediate requirement
is to invest on the improvement of the quality and the capacities of the existing facilities,
rather than the establishment of new facilities. Yet, in some urban areas, the schools and
hospitals located within core areas shall be relocated to alternative locations within close
proximities, in order to avoid issues related to crowding, traffic congestion, user safety,
etc., with adequate considerations on the appropriateness of their existing locations for
such facilities.

5.2.5 Improved Pedestrian Spaces shall be given priority in all urban development programs
to make the urban areas more attractive. Strategic interventions such as the improvement
and regulation of their pedestrian environments shall be proposed in all development
plans. Walking can be regarded as the best solution for most of the issues presently
apparent in Sri Lankan urban areas such as traffic congestion, unauthorized parking,
accidents, etc. As a priority measure, pedestrian friendliness shall be considered as the
main objective of future urban plans, instead of the present dominance given to vehicular
movement. The pedestrian areas shall be suitable for the tropical weather conditions
available and appropriate designs shall be devised accordingly.

5.2.6 Increased and Improved Recreation Facilities at the local level, shall be provided to
cater the increasing rate of urbanizing lifestyles of the inhabitants. This is a necessity for a
healthy nation and to reduce heavy costs on providing health services.

The general standard is to have one hectare of open space for 1000 persons, which is
hardly met in present urban development schemes. Nevertheless, provision of large
extents of lands for open recreation facilities is a challenge amidst the
scarcity of land and the pressure for developments in urban areas. Yet, innovative
approaches such as the opening of canal reservations, river banks, marshy areas and
beach fronts along with reasonable facilities and maintenance of them will enable to
overcome the difficulties in providing public open spaces. Parallel to that providing wider
road spaces at neighborhood levels to be used as makeshift children play areas and
gathering spaces will work as an alternative way of providing public open spaces and also
to strengthen ‘neighborhood’ or ‘lane’ communities.

5.2.7 More Space for Physical Developments shall be made available in order to support the
intense developments in selected urban areas by means of more appropriate Floor Area
Ratios (FAR), higher densities and mix developments, yet, regulated within
comprehensive development guide plan required instead of the currently adopted activity
based zoning. The Development Plans prepared by the Urban Development Authority for
the identified Urban Areas of the said Development Corridors, Metro Regions and the
Main Cities, shall consider appropriate methods based in densities and the floor area
ratios demanded by the economic activities appropriate urban forms, environmental
learning capacities, infrastructure availability and the populations envisaged in those
locations.

5.2.8 A wider Choice of Employment Opportunities shall be provided as a measure to
generate increased number of direct and indirect employment opportunities in such
locations providing lands and other infrastructure required for appropriate type of
industries.

5.2.9 Smart Facilities is a requirement for the improved connectivity of people and locations
both locally and internationally in all urban areas. To this end high quality communication
infrastructure is a requirement. The ongoing concept of Smart Cities is a progressive
initiative in this regard. Owing to the rapid advancements in information technology and
digital infrastructure, in near future the relative costs of providing smart facilities will be
justifiable in the light of benefits such as the convenient access to information, automated
public services, more transparency in governance, etc., that they can provide.

In that context, fully fledged smart environments are proposed to be established along all
four economic corridors, metro regions and the main cities during the period 2020-2025.
This can be extended into other areas thereafter.

5.2.10 Green Built Environments shall be the theme of all physical developments. In order to
ensure environmentally sustainable development within urban areas, the green building
practices are proposed to be made essential for all physical developments, including
buildings, roads, recreation facilities, etc. by 2020.

As general policies the following are proposed to be adopted as strategic projects in the
planning and implementation of all urban developments:

1. Establishment of urban scale collective rain water harvesting facilities such as open
ponds, underground reservoirs, etc at identified strategic locations, implemented by the
National Water Supply and Drainage Board in coordination with Urban Development
Authority and the Local Authorities.
2. Solar fields installed in the appropriately built roof tops in selected localities, implemented by the Sustainable Energy Authority and the Ceylon Electricity Board.

3. Community based waste management initiative that includes source management, sorting, collection and recycling in all condominium and neighborhood developments, implemented by the Provincial Waster Management Authorities, in coordination with the Local Authorities.

4. Minimum un-built open area requirement and space for green cover strictly regulated and maintained within urban areas as specified in respective urban development plans.

5. The Green Building certification process implemented by the Urban Development Authority be extended to all categories of developments to facilitate this initiative.

6. An island wide programme to shade main streets and major public spaces of all urban areas with trees of endemic species, implemented by the Urban Development Authority.

7. Strict implementation of Green Procurement guidelines for all projects, purchase of equipment and devices involved in urban development activities.

5.3 Transportation Development

5.3.1 The Objective

This is to act as a complimentary element to the National Transport Policy which was approved by the Cabinet of Ministers in 2009 and the same is being updated by the Ministry of Transport and Civil Aviation, the following objectives are proposed by the this plan:

5.3.1.1 Pro-active approaches

Connectivity, accessibility and mobility are among key factors that influence the proposed land use and the settlement distribution pattern. Therefore, transportation planning should work hand in hand with land use planning, in order to expect a healthy land uses as well as sustainable transportation infrastructure development. Sustainable transportation planning which is based on the three pillars, namely: to avoid, to shift and to improve, shall adopt pro-active policy approaches that support not only to turn future land use and the settlement distribution in desired direction, but also support to encourage modal shift from private to public and to improve efficiency and reliability, rather than mere responses to the present demand trends, and ineffective investment on transportation infrastructure.

5.3.1.2 Optimization of the available infrastructure

Both passenger and goods transportation modes and the related infrastructure involves heavy investments, which under the current economic conditions will add to debt burden on Sri Lanka’s economy for next twenty to thirty years, and therefore, optimization of the utility of the available transport infrastructure with minimum additions, is the most viable option to provide transport infrastructure.

5.3.1.3 Investment on economically feasible projects

With the fast evolving technology and the changing lifestyles of the people, the travel behavior as well as the modes of passenger and goods transportation are likely to change within the period envisaged in this plan, and therefore, in a transforming situation all investments bear some levels of risks of not providing the best utility and not yielding the expected benefits. Therefore, investment decisions for transportation developments need to follow comprehensive feasibility studies before they are turned into projects.

5.3.1.4 Selection of environmentally sustainable modes

Transportation sector is identified as one of the major contributors to Greenhouse Gas emissions in Sri Lanka. In order to comply with the permitted emission levels and for a sustainable conservation of the environment the minimization of the use of private vehicles and the promotion of the public transportation shall be the policy in future developments. Out of the available modes rail transportation shall be the first in the priority order.

5.3.1.5 Introduction of modern technology for efficiency and comfort

Even though economic viability is a concern, the safety and reliability are important in all modes of transportation. Therefore, the introduction of the state-of-the art technology available to improve the efficiency, such as the automation of vehicles, electronic ticketing, inter-modal integration, etc., and the user comfort shall not be compromised at any cost in the development of both passenger and goods transportation.

5.3.1.6 Equality and Equity in investments

There shall be equal consideration on the inter-regional connectivity as well as the first and last-mile connectivity. Heavy investments on large scale infrastructure at inter-regional level transportation infrastructure, with no due regard for local and city level transportation development will not bring in the required benefits to the nation. At the same time, due consideration shall be there for the order of priority: The Pedestrian, The Cyclist and the Motor Vehicles. It is unfortunate to note that the current road development projects pay less attention to the pedestrian and the cyclist, despite the emphasis given in the transportation policy.

5.3.2 Rail Transportation

Out of the all transportation modes available, the rail transportation was studied to be the most economical for inter-regional goods and passenger transportation as well as for urban mass transportation. Most of the areas identified for future urban agglomerations are already accomplished with railway connections and the related facilities. Therefore, in the four Urban Corridors, railways are expected to be the most attractive among all modes in future. In order to meet such expectation, a remarkable improvement in the available rail network is essential.

The electrification of the rail between Aluthgama and Veyangoda, and Colombo and Negombo by 2025, are already proposed by the current Railway Improvement Master Plan. These projects will complement the proposed East-West Development Corridor. In order to move further, this electrified railway is proposed to be extended up to Kurunegala before 2030. The current Railway Improvement Master Plan also proposes a rail link between Kurunegala and Habarana, via Dambulla. This proposal is highly commendable in the light of the proposed corridor development scenario. This length, along with the available rail link from Habarana to Trincomalee shall be improved by 2030 with an electrified, high speed train service to enhance the connectivity among locations within the proposed East-West Development corridor.
In order to facilitate the developments in the Southern Development Corridor the existing rail services from Aluthgama to Matara need to be improved. As per the available proposal this service can be extended from Matara to Hambantota by 2030.

In the Northern Urban Corridor rail services shall be intensified between Kilinochchi and Kankasanthurai by 2025. If the said new connection between Kurunegala and Habarana can be supplemented with an additional connection between Habarana and Anuradhapura the existing connection with Polgahawela via Mahawa will be sufficient to cater to the demand until 2030 and thereafter.

In the Eastern Corridor, rail services between Valachchenai and Batticaloa need to be improved, while the existing connection with Habarana will be able to meet travel demands until 2030. In order to improve connectivity within this corridor, an extension of the same line up to Ampara via Kalmuneli is proposed to be established by 2025.

The other sections of the available network and the services in them shall also be improved in order to facilitate inter-regional transportation needs. In addition to the available network, new railways are proposed: between Kurunegala and Kandy (by 2025), between Hambantota and Polonnaruwa, via Wellawaya and Mahiyangana (by 2030), with a possible link to existing line at Badulla; between Colombo and Hambantota via Rathnapura and Embilipitiya (by 2030); between Ampara and Wellawaya (after 2030); However, the electrification of these lines may not be an immediate requirement, owing to the heavy investments involved and the level of services expected out of them.

In addition to the above developments, an augmentation of the available railway infrastructure, such as the additional lines to the existing lengths and improvements to the existing lines are essential to improve the efficiency of the railway transportation. A few projects are already under the consideration by the Department of Railways, which includes adding lines between Colombo and Ragama, Colombo and Homagama, Colombo and Moratuwa, etc.

Another area that needs immediate attention of the authorities is the improvements to the passenger services. This includes the modernization of the facilities in railway stations with comfortable facilities, better waiting areas, smart environments in them, etc, while, the modernization of the services in for commuters such as e-ticketing, on-line reservation, personalized services, train tracking possibilities, etc. Such improvements, along with the improved efficiency of the services, are likely to make a dramatic shift of passengers from road based modes to railway.

5.3.3 Road Infrastructure

It is observed that the public road length maintained by the Government, both at Central and Provincial level exceed 30,000 kilometers. In terms of road density Sri Lanka is at a reasonably higher position compared to other nations in the region. Yet, the necessary improvements and timely maintenance of these roads, specially the provincial roads, has not been at a satisfactory level. In spite of the facts that road transportation serves for more than 90% of the transportation demand, and it is the most convenient and most flexible option specially for the first and the last mile connections, maintenance of the increasing extents of road infrastructure has throughout been a costly affair to the economy. Under such circumstance, prioritization of the road infrastructure development and the optimization of the utility of the available infrastructure are essential for an economical and sustainable road transportation strategy.

Roads Development

Expressways are relatively more expensive developments, but can facilitate fast communication between locations. The Southern Expressway, Colombo–Katunayake Expressway, Outer Circular Highway, and the ongoing projects those connect Matara to Hambantota, and Colombo to Dambulla via Kurunegala will facilitate the connectivity and the speedy movements between the locations within the proposed Development Corridors.

The movement patterns and the projections expected within the future urban development, settlement distribution, industrial locations, tourism promotion and the other related developments, scenarios proposed in this Plan, indicates that the already available set of expressways and the currently implemented expressway projects, namely the Colombo-Hambantota and the Colombo-Dambulla and the last phase of the Colombo Outer Circular Highway, will be adequate to meet the large scale road infrastructure requirements until 2030. The need for further extensions to the expressways shall be assessed based on the demand patterns likely to arise after 2030. Instead, rapid improvements to railway services, as indicated in the previous section, along with highly integrated, connected and improved local bus services, and the upgrading of the existing inter-regional highway facilities will be able to adequately serve for travel demands and goods transportation until 2030, and in turn to support the proposed physical development pattern.

However, in order to improve inter-regional connectivity and to facilitate speedy access, the existing highways that connect the proposed metro regions and the main cities shall be improved and maintained on priority basis. The identified ‘priority highways’ are Hambantota-Wellawaya- Batticaloa (A2), Negombo-Puttalam (A3), Dambulla-Trincomalee (A6), Dambulla-Jaffna (A9), Kandy–Puttalam (A10), Habarana – Polonnaruwa-Batticaloa (A11), Trincomalee-Puttalam (A12), Medawachchiya-Mannar (A14) and Markulambu-Mullaitivu (A34). In these connections (and the other highways) a main problem frequently noted is the bottle-necks formed in the urban areas that they run through. The ribbon developments taking place along the highway, that becomes the ‘Main Street’ at the locations of these urban areas, often result in congestion and slowdown in main flows. This problem cannot be addressed only through road development or traffic engineering, but has to be addressed through comprehensive integrated urban development plans and pro-active urban development strategies implemented at the local level.

At the Provincial and Local levels, the upgrading, timely maintenance and the optimum use of available road spaces rather than the construction of new roads, except for compelling reasons, shall be policy for road development.

5.3.4 Aviation

The National Civil Aviation Policy for Sri Lanka (2016) highlights the future direction and positioning of Sri Lanka as a leading aviation and transport hub in the South Asian Region, transforming the country into a superior air service provider while connecting to the wider world aviation network. It also identifies that timely modernizing Air Traffic Management (ATM) and upgrading and expansion of Airport Infrastructure are critical to cater for growth in traffic and to ensure efficient use of airspace and airports.

With the increasing affluence of the Sri Lankan society, improved business environment and the development of tourism industry, there will be an upward demand for airport and aviation facilities. It is already predicted that with the increasing air traffic and passenger volumes, the carrying capacity of the existing Bandaranayake International Airport (BIA) at
Katunayake will reach maximum within a short period. Therefore, plans are already underway for the expansion of landing facilities, passenger terminals and cargo handling facilities. In order to internalize the positive impacts of the increased use of the BIA, the area surrounding Katunayake airport is proposed to be developed with all facilities required for a modern Aero-City. This may be the catalyst for the proposed Negombo – Katunayake Metro Region within the East-West Development Corridor.

In addition, the Mahinda Rajapaksha International Airport (MRIA) at Mattala is a facility that cannot be neglected because of the heavy investments made on it, and the potential that it gains owing to the strategic location that Sri Lanka is positioned within the international air traffic routes. In order to get any benefit and to avoid deterioration it needs to start operations at the earliest.

These two airports will be able to support the international travel requirements in near future. Yet, if the prevalent business development trends continue more air travel demand can be expected within next ten years and a need for a third international airport will arise. In such context, complying with the envisaged pattern of the physical developments, and optimizing the available resources, out of all options available, Hingurakgoda air strip will be the best candidate to get the upgrading to an international airport. Since it is located within a close proximity to the main infrastructure proposed within the main East-West Development Corridor, Hingurakgoda airport will be able to serve all needy areas with appropriate connections.

The National Civil Aviation Policy identifies that the development of aerodromes in underserved or remote regions brings job creation, economic activity, greater connectivity and social integration to national economy. Accordingly, parallel to the development of BIA and the MRIA, the demand for domestic air travel too can be expected to increase. In order to cater to the demand, the existing domestic airports at Ratmalana, Ampara, Trincomalee, Puttalam, Palali and Anuradhapura are proposed to be developed with necessary passenger and cargo handling facilities. However, these developments need to follow comprehensive travel demand analyses and feasibility studies. The proposed infrastructure configurations - 2050 are shown in Figure 5.3.4.

5.4 Physical Infrastructure Provision

5.4.1 Objective

The utilities and services are critical for a planned development of human settlements, comfortable living and efficient functioning of economic activities. The physical infrastructure such as the pipe borne water supply, storm water drainage networks, public sewer, liquid and solid waste collection and disposal systems, etc., required to provide such utilities are therefore, plays a major role in realization of the envisaged pattern of development. With that in view, the following objectives are set forth in support of the proposed spatial and settlement strategies.

5.4.1.1 Convenience to the Users and Service Providers

The level of accessibility to the user to the utilities as well as the ability to reach them by the service provider are critical in successful provision of respective services. The settlement pattern makes a direct implication with this regard.
5.4.2 Water Supply and Drainage:
The water is a critical commodity for three purposes: the domestic and industrial uses, agriculture and irrigation, and sustainability of natural ecosystems.

The domestic and industrial demands in urban areas are presently catered by the National Water Supply and Drainage Board. A number of water supply and drainage projects are already being implemented by the National Water Supply and Drainage Board aiming to cater to targets of 2020 horizon, but most of them are at the local and regional scale. In addition to them, a National Level Water Resource Management project is essential to provide safe, sufficient and sustainable water supply for future physical developments. In such a project the following features shall be integrated:

As stated earlier, in order to assure optimum utility and the appropriate use of resources, as well as to support the proposed settlement pattern, the best option would be the networks of interconnected water supply schemes in the proposed Development Corridors. Such networking facility will support a long range service through a trans-basin diversion of water into the demand areas and thereby overcome the supply issues emerging from source inadequacy, source tapping difficulties and the seasonal fluctuations of flows at the sources. Even though reduction in rainfall is predicted, it is observed that the prudent management of the available water resources in the rivers will enable to meet the demands projected up to 2030 (and beyond) in the given development scenario with a few alternative sources.

Out of the main water sources available, Mahaweli River, Kalu Ganga River and Kelani River will be able to provide the quantity of water that is required to meet the demand generating from the main Development Corridor between Colombo and Trincomalee until 2030, with the support of an inter-connected trans-basin service network as proposed above. The demand emerging from the Southern Corridor needs to be catered to with the water available in Gin Ganaga and Nilwala Ganga Rivers in a similar trans-basin networked service.

However, new sources will have to be explored for the Northern and the Eastern urban corridors as the rivers in those areas may have scarcities to provide water to meet demands throughout. The proposed ‘River for Jaffna’, (Arumugam Proposal, 1965) which is under consideration by the Government of Sri Lanka, has high potential to provide the Northern Development Corridor to flourish with innumerable benefits as well as to support agro based developments in the North.

The water for agricultural purposes are managed by the Irrigation Department. It is recorded that the lands cultivated with water from major and minor irrigation schemes are over one million hectares, and out of the total food production of Sri Lanka, more than sixty-five (65%) is from these lands. In order to ensure food security, preservation of the traditional agriculture and to conserve the ecosystems associated with them, the said National Water Resource Management project shall include measures towards demand management and guiding the optimum use of water for irrigation and other agriculture related activities.

The sewerage disposal needs will have to be addressed on local basis. As per the numbers, projected in the proposed settlement distribution strategy given in Section 5.2, new underground sewers with other ancillary installations will be necessary by 2030 for main agglomerations in areas such as Sri Jayawardanepura, Kaduwela, Peliyagoda, and other towns along the Corridors.
Wattala, Kollonnawa, Maharagama, within Colombo Metro Region, and the identified core areas of Negombo, Ragama, Gampaha, Mirigama, Kurunegala, Dambulla, Trincomalee, Kandy, Polladduwa and Kataragama, are critical for the development of the national economy and the provision of energy and transport services. The National Physical Planning Policy & the Plan – 2050

5.4.3. Energy

The exiting plans pertaining to this sector such as the Long Term Generation Expansion Plan-2018-2037 (Draft) by Ceylon Electricity Board, Electricity Supply 2020 And Beyond Challenges And Recommendations published by the Public Utilities Commission of Sri Lanka, and Towards an Energy Secure Sri Lanka; Sustainable Energy Programmes 2015 – 2025; published by the Sri Lanka Sustainable Energy Authority, The Energy Sector Development Plan For A Knowledge-Based Economy 2015 - 2025 by the Ministry of Power & Energy Sri Lanka, the Petroleum Exploration Development Plan (2017) by the Petroleum Resources Development Secretariat; and Petroleum Resources Act No. 26 of 2003: show that adequate attention has already been received by the energy sector. In conformity with the aims and objectives mentioned therein, and to meet the physical development targets of this Plan, the following spatial strategies are proposed.

The said report on 'Electricity Supply 2020 and Beyond: Challenges and Recommendation' recommends short-term, medium-term and long-term solutions to ensure long-term energy security in a sustainable manner. According to the report, the Sri Lankan power system had total installed capacity of approximately 4054 MW by end of year 2016 with a total dispatching capacity of 3538 MW. The maximum demand recorded in 2016 was 2453 MW and total generation was 14250 GWh. Generation expansion planning is a part of the process of achieving the above objectives. In order to meet the increasing demand for electrical energy and to replace the thermal plants due for decommissioning, new generating stations need to be installed as and when necessary.

Petroleum Resources Development Secretariat (PRDS) plans to move forward with a strategic oil and gas exploration and development plan prioritizing with a list of short, medium and long term Foreign Direct Investment (FDI) projects taking into consideration the emerging business models, newly introduced procurement methods, market potential and national benefits provisions, etc. with the purpose of adding extra value to the economy through capacity building of national human resources and technological advancement of the country through the participation of international Contractors/Operators in upstream petroleum operations in Sri Lanka.

Petroleum Resources Act No. 26 of 2003 is the governing legislation for petroleum exploration and development in Sri Lanka. The Petroleum Resources Development Committee (PRDC) established under this Act is responsible for implementing the provisions of this Act, and the Petroleum Resources Development Secretariat (PRDS) is responsible for the administration and regulation of all exploration and production activities in Sri Lanka.

The larger share of the demand for both electricity and petro-based fuels will also be from the Development Corridors. With the settlement pattern, industrial developments and transportation infrastructure, proposed in the Spatial Strategy indicated in the Section 5.1 above, it can be expected that more than half (50%) of the future national demand will be concentrated to the East-West Development Corridor.

In that context, the looped continuous service network along the East-West Development Corridor, similar to what is proposed for water supply, is proposed to ensure a regular and non-interrupted provision of electricity, petroleum and gas supply which are critical for the promotion of these main development areas. In addition to the augmentation of the existing systems, new Petroleum and LNG terminals, and power generation plants at Trincomalee, and within close proximity to Colombo (Keravalapitiya), will support the electricity, liquid fuel and gas supplies to the entire island through a continuous channel. Similar establishments at appropriate locations in the other Development Corridors shall be considered towards 2030, in order to provide necessary utilities. To accommodate these installations, the traces of proposed expressways and railways in the main Development Corridors, shall also be considered as ‘Utility Corridors’.

Sri Lanka Sustainable Energy Authority’s (SLSEA) Energy Management Action Plan (2016-2020) is to achieve 20% energy generation from renewable sources by 2020 and this is an achievable target. This may be increased to 30-40% by 2050, but whether the entire energy demand can be met with renewable sources by 2050 is debatable. Yet, since Sri Lanka has determined to meet the emission targets set out by international agreements and protocols, and also to ensure clean energy provision, roof top solar fields are proposed to be mandatory by urban development regulations in all residential, commercial and institutional developments targeting to meet minimum of 20% of the energy demanded by respective urban areas. Ground area solar fields are also proposed within close proximities to all Metropolitans areas and Main Cities.

However, a comprehensive programme is essential to be developed now to manage the waste likely to be generated from the solar uses in the near future. The promotion of CIGn installing shall be put with side programme.

A few large scale hydro-power generation stations are proposed by the Ceylon Electricity Board in Athurugiriya, Kithulathal, Broadlands (Hatton), and Malwala (Ratnapura), all within the Central Fragile Area, identified by this Plan. Since this Plan suggests a depopulation strategy for these sensitive areas, these projects can be well
accommodated, subject to comprehensive studies on the impacts that they will have upon
the natural environmental assets.

5.4.4. Waste Management

Efficient solid waste management schemes are essential to support the envisaged
physical and economic development scenario. The areas with proposed urban
agglomerations are expected to accommodate industrial, commercial, health and other
service facilities, in addition to the large residential populations expected in them.

The projects that are being implemented such as the Waste-to-Energy plants in
Kerawalapitiya, Boralsegamuwa and Kandy, the Large Scale Sanitary Land Fills at
Aruwakkalu will be taking most of the waste generated within next decade, once they will
commence their operations in 2020. In that context, a centrally managed system that
includes collection, transportation and disposal, supported by modern technological
interventions, operated through a National Level Waste Management Authority is
proposed to be established for the areas that fall within the four Development Corridors,

Owing to the relatively lower volumes of solid waste expected to be generated with the
ongoing promotional programmes and the lower populations expected in them, the other
areas will be able to manage with the conventional recycling, composting and sanitary
landfilling.

With the increasing awareness programmes on Reduction, Reduce and Reuse (3R), the
generation and quantities coming into disposal may decrease, but the current socio-
economic developments indicate the need to have effective policies, instruments and
methodologies to handle non-conventional waste such as electronic waste, clinical waste,
etc. The proposal for disposal of such categories of waste is beyond the scope of this
Plan, but when well researched and effective disposal methods are developed, approprate locations for facilities required to accommodate them could be identified within
the spatial framework provided by this Plan.

5.5 Social Infrastructure Provision

5.5.1 Objective

Provision of Social Infrastructure is a critical requirement for human settlement
development and related economic development. Among different types of social
infrastructure required for the successful implementation of the envisaged human
settlement development pattern, education, health and administrative services are the
most crucial for which successive governments have been paying special attention. The
recent policy developments in these sectors such as ‘the Nearest School–The Best
school’ (Langiama Pasela – Hondama Pasela), ‘Compulsory Secondary Education’,
‘Tertiary Education for all’, ‘Prevention of Non Communicative Diseases through
Physically Active Nation’, Decentralized Administration, E-Governance, etc., have direct
implications on the physical development of the island.

In that background, the following common objectives are set forth for the provision of
education, health and administrative infrastructure.

5.5.1.1 Convenience to the Public

Similar to the physical infrastructure, the convenience to the users as well as the service
providers is an important factor that needs to be considered in the selection of the
locations for installation of social infrastructure facilities such as schools, hospitals,
administrative offices, etc. In every occasion these facilities shall be planned as close as
possible to main access roads, urban centres and within close proximity to each other.

5.5.1.2 Strategic Investments for Optimum Utility

It can be observed that education, health and administrative infrastructure are well
distributed throughout the island. Even though the demand on education and health are
concentrated to specific facilities and locations, future investment on social infrastructure
shall ensure the improvement and augmentation of the existing facilities, rather than
establishment of new facilities. In planning for investments, the maximum utility of the
facility shall be ensured through comprehensive feasibility analysis.

5.5.1.3 Economical Operations and Sustainable Use

It is frequently stated that most of the investments in social infrastructure do not bring in
credible returns to the economy. A well-organized hierarchy of the service, the locations
and the coverage of communities at different levels, usually minimize the waste and enable
to optimize the cost and the use. At the same time, the upcoming automated
service provisions, e-learning, e-consultancy, etc., can be used to provide more efficient
and less costly services.

5.5.2 Education

A radical change in the education policy is necessary to overcome the current regional
Education disparities observable in Primary and Secondary education.

Currently, the primary education facilities are well located covering the entire island, and
within the reach of maximum 02 km even in rural areas. The same facilities in those
locations can well serve the expected settlement distribution pattern with minimum
additions and augmentation. Yet, the qualities of those facilities are not commendable in
all locations. A vast disparity is observed between the ‘popular’ schools and the other
schools. If the Government’s ‘the nearest school’ policy is to become a reality, a
remarkable investment on primary education infrastructure is essential within next ten
years. This may include the reorganizing of school buildings, spaces for curricular and co-
curricular activities, sanitary facilities, teacher accommodation facilities and utilities. In
order to relieve the undue pressure built upon ‘popular schools’ the primary schools may
have to be separated from the secondary schools at any cost.

The Government’s ‘Compulsory Secondary Education’ policy will be able to be effectuated
with the wide spread of Secondary Schools available within close proximities to the main
urban areas. It is noted that the current locations of the secondary schools are within a
range of maximum fifteen (15) kilometers from all reasonably densely populated areas
and thus, cover the entire island, with a satisfactory mobility of the students. Similar to the
primary schools, the disparities noticeable among ‘urban’ and ‘non-urban’ schools shall be
eradicated within next ten years for a better educated future generation and a fair
distribution of education facilities among all schools is essential towards that end. The
currently evident undue interferences from various parties into schools’ matters may lead into a more sustainable use of Secondary Education.

The tertiary education is increasingly in demand. The available state universities and the non-government degree awarding institutions may need to increase their capacities to cater to the emerging demand. For the establishment of new universities and other institutions as well as for the expansion of the existing ones, the agglomerations identified within this plan are proposed. Most of the major urban areas do have universities and other tertiary education facilities, but for future establishments and extensions the location within close proximities to Mirigama, Dambulla, Mahiyangana, Wellawaya and Puttalam shall be considered, both as means to create positive externalities and thereby to boost local economies, and to get those educational institutions to be served by the readily proposed infrastructure.

Vocational training will be high in demand, provided the existence of the need for technically qualified labour force to engage in future employment opportunities. It is observed that all Metro Regions and Main Cities identified in the Section 5.2 of this report, already have Technical and Vocational Training Institutes. The facilities in those locations shall be improved to provide state-of the art vocational training for the emerging labour force.

5.5.3 Health
Similar to the education infrastructure, the health sector facilities too is well covered through the entire island by maintaining a hierarchical structure and appropriately located within reasonable range of reach from all areas of the island. The quality and the state of infrastructure needs improvements for better services.

Deviating from the current administrative district based distribution, Dambulla, Embilipitiya, Mahiyangana and Wellawaya hospitals shall be upgraded to higher grade facilities (equal to General Hospital) in order to serve the envisaged settlement distribution pattern. At the same time, in addition to Colombo, four National level health establishments are proposed at Trincomalee, Anuradhapura, Matale, Ampara and Kilinochchi.

5.5.4 Administration
Administration services play a significant role in attracting people and activating urban areas. The current administrative divisions and the hierarchy can be observed as descending from the British Introduced administration structure. This may need a change within next ten years for the betterment of the proposed settlement development strategy. This Plan proposes to shift the current District Administrative functions from Matale to Dambulla, from Badulla to Wellawaya and from Jaffna to Kilinochchi respectively, in near future, in order to discourage further agglomerations in the current locations because of their low carrying capacities, and to promote attractions in the new locations.

5.6 Industrial Developments

5.6.1 The Objective
Development of manufacturing sector has been at the focus of many consecutive governments in Sri Lanka, and Industrial Development Policies have been formulated on several occasions in the past. Several institutions, Industrial Estates, Exclusive Export Processing Zones and Industrial Clusters have been formulated and are in operation. Still, under the current situation, most of them operate in isolation and a comprehensive policy to guide industrial developments is yet to be formulated. Therefore, as guiding principles to address the physical development concerns in a future industrial development policy, the following objectives are suggested:

5.6.1.1 More leverage on Knowledge Base and Value Adding
It is widely accepted that the knowledge and innovation based industries and value adding industries will be the thrust areas of future economic development in Sri Lanka. Capitalizing upon the educated high quality labour force along with the strategic geographic positioning of the island, and exploiting the opportunities provided by the technological advancements and the emerging geo-political affairs, industries associated with Information Technology, Nano Technology, Genetic Technology, Aero Technology, Bio– Medical Technology, etc., and innovative value additions shall be given high priority.

5.6.1.2 Promoting Non-polluting industries
Manufacturing Industries contribute the largest share to Greenhouse gas emissions. The modern innovation based industries can lead to ‘Zero Emission’ status, by adopting efficient housekeeping and automation strategies.

However, Sri Lanka will not be able to totally free from heavy and lightweight manufacturing industries until 2050. Therefore, such industries shall still remain maintaining the permitted emission levels, adopting non-polluting technologies, standard industrial practices, etc. The manufacturing industries shall be promoted to adopt emerging concepts such as the ‘systems symbiosis’, ‘Industrial Ecology’, ‘Eco-industrial parks’, etc, in the planning and designing of them.

5.6.1.3 Best use of the available port infrastructure
Industrial locations highly depend upon the availability of infrastructure. The large scale assembling and yard facilities, associated with imports and exports shall gain the advantages of the main sea ports in order to minimize the transportation costs and impacts on the environment. Other large scale industries shall be concentrated into designated areas for the efficient and economical provision of environmental infrastructure, integration of services to the establishments, and to avoid negative externalities resulting from them.

5.6.1.4 Preserving traditional Industries
Traditional industries and domestic industries shall be preserved and supported for long term sustenance. They need to be addressed through a separate policy strategy along with the other factors associated with them, notwithstanding the objectives of the National Physical Planning Policy.

5.6.2 Concentration within Development Corridors:
In order to ensure the settlement distribution pattern, the main employment generating major industrial developments are proposed to be concentrated within the proposed Development Corridors. The East- West Development Corridor can trigger future economic development in Sri Lanka by exposing it to numerous opportunities provided through the two sea ports located in Colombo and Trincomalee. Making best use of the available transport infrastructure, available land and the human resources, a larger share of industrial activities and thus, a large quantum of future employment opportunities can be generated within this Corridor.
With the available and proposed infrastructure and land availability, the locations identified for Manufacturing Sector industries are Horana, Ragama, Ekala, Byagama, Katunayake, Mirigama, Alawwa, Kurunegala, Ibbagamuwa, Dambulla, and Trincomalee. These locations already have designated Industrial Estates which can be expanded to accommodate demands for manufacturing industrial establishment up to 2030.

Depending on the availability of water resources, large scale industrial developments are also proposed in other three Development Corridors, mainly associated with the sea port developments at Hambantota, Ampara and Kilinochchi.

### 5.6.3 Special Zones for Innovation Based Industries

The innovative industries which can be regarded as the booster of the economy of Sri Lanka are proposed to be accommodated within close proximities to the existing Universities for the mutual benefits of research and development. Colombo Tech-city project which is underway can be a catalyst for such developments in the Western region. Similar Techno-Park developments are proposed within close proximities to Kurunegala (associated with the Wayamba University), and Trincomalee (associated with the Eastern University).

### 5.6.4 Processing and Value Adding Industries

Related to agriculture and non-conventional plantations, farming and fisheries, large scale value adding industrial developments estates are proposed in Colombo- Negombo area, Mirigama, Kurunegala, Dambulla, and Trincomalee in the Main Development Corridor, Kilinochchi in the Northern Development Corridor, Embilipitiya and Hambantota in the Southern Development Corridor and Ampara in Eastern Development Corridor. In addition to them, Anuradhapura, Vauniya, Mannar, Mahiyangana and Wellawaya will be the other locations those could accommodate large scale agro based processing and value adding industrial developments.

### 5.6.5 Containing Heavy Industries closer to Ports

For heavy industries and assembling plants the vicinities of Trincomalee and Hambantota sea ports are the best identified locations. Since a majority of the high-tech, large scale industries within the foreseeable future will be based on imported materials, and they will be mostly targeting to be exported to external markets, they will naturally be benefited by locating close to ports. Heavy industries shall not be located at internal locations in order to ensure environmental conservation and to prevent other negative consequences.

Supporting the port-proximity policy, the logistics related industries will be able to thrive at locations between Colombo-Negombo area, Trincomalee - Kanthalare area and Hambantota- Suryawewa area.

### 5.7 Agriculture and Plantations

#### 5.7.1 Objectives

In spite of the relatively lower contribution expected from the agriculture and plantations to the future economic development of Sri Lanka, the important goals of food security, resilience to climate change effects, and the conservation of bio diversity necessitates a due regard for these sectors in the formulation of physical development planning policies. Therefore, the following strategies are proposed with the objectives of self-sufficiency in essential food items, conservation of critical environmental resources, and preserving long lived traditions and their continuity for future generations.

In a National and Sectoral Level Plan prepared for the development of Agriculture and Plantations the following shall be given due consideration:

**Low human engagement**

In the light of food security and preservation of traditional framing culture, due consideration shall continue on this sector. However, since the population directly engaged in agriculture is expected to reduce from the present thirty percent (30%) to twenty percent (20%) by 2030, rapid modernization and technological interventions, but without compromising the traditional practices, is important. While there is a need for the formation of modern farmer communities, technology improvement, training and service proving programmes implemented by respective authorities, such activities shall be supported as part of the regional extensions of proposed Metro Regions and the Main Cities.

**Effective use of land**

According to statistics, the total land extent under cultivation, both paddy farming and the highland cultivations is around one million seventy thousand (1.7 million Ha), which is close to one quarter (25%) of the total land extent. The statistics also show that cultivated lands have been increased over last decade by about 15%. This figure draws attention to two serious concerns: The first is that the additional land for agriculture is supplied essentially from forest areas and reserves, which is not a positive sign. The second is that the food production within the same period is not proportionate with the increase, and lead to the question of productivity. Therefore, a mechanism for the allocation and close monitoring of agricultural lands, effectuated at the Divisional Secretariat levels, is essential for the benefit of the entire nation.

**Conservation of agricultural lands in urban areas**

The agricultural lands, including paddy fields and plantations, in urban areas are increasingly demanded for physical developments. Even though agricultural uses are not economically viable in urban settings, the respective Urban Development Plans shall evaluate the non-market based benefits that they provide such as the continuity of the eco-system services, drainage, reduction of urban heat island formation and the maintenance of wind corridors, need for public open spaces, unique natural beauty of the locations, etc.

**High quality plantations**

Even though the conventional Tea, Rubber and Coconut plantations were the main contributors to foreign earnings, their role is gradually becoming insignificant in the light of other non-conventional exports. The current issues pertaining to Tea and Rubber Plantations such as the shortage of labour, competition emerging from other producers, sinking markets due to alternatives, etc. do not warrant Sri Lanka to continue those plantations in the same traditional phase. Instead, high quality production can only be promoted.

**Reforestation of the Central Fragile Area**

Due to the environmental issues associated with high elevation Tea plantations, and also due to the need for conservation of the Central Fragile Area, this Plan proposes to transform the non-performing plantations into non-commercial forest plantations and non...
conventional export-crops. It is proposed to reduce the extents of land used for Tea Plantations in the elevations above 300 meters to 01% between 2020-2050. The low country plantations may remain, but with stringent regulations to ensure the use of appropriate lands.

5.7.7 Urban forests
The agricultural lands and the rubber plantations within the proposed Development Corridors may be demanded for alternative developments in future. Even though they will not be highly productive, they shall be thoroughly evaluated case by case in terms of their contribution to the sequestration of carbon emissions, reducing atmospheric temperature, and the aesthetically pleasing environments they provide, as against the market value of such lands, and then put into most effective uses through the Development Plan prepared for respective local areas. In general, at least sixty percent (60%) of these lands in urban environments are proposed to be preserved to meet the National Forestry improvement targets as set by the UN REDD Programme (2016).

5.7.8 Preserving Coconut plantations
The coconut plantations will need to be protected to a large extent as the demand is unlikely to sink until 2030. The fragmentation and the conversion of the estates need to be addressed with proper alternative economic measures. The current policy of approving the fragmentation of plantations less than ten acres need to be revisited in this regard.

5.8 Fisheries

5.8.1 Objectives
The Ten Year Development Policy Framework of the Fisheries and Aquatic Resources Sector 2007 – 2016(2007) is the existing plan for fisheries sector development. It provided strategies and actions needed in support of the following sector policies in order to achieve targets.

- Improve the nutritional status and food security of the people by increasing the national fish production
- Minimize post-harvest losses and improve quality and safety of fish products to acceptable standards
- Increase employment opportunities in fisheries and related industries and improve the socio-economic status the fisher community
- Increase foreign exchange earnings from fish products
- Conserve the coastal and aquatic environment.

The National Fisheries Sector Development Strategy 2010-2013 was a short term plan for fishery sector development. The areas focused in the strategy are as follows:

- Increased annual per capita fish consumption of 21.9 kg by 2013;
- Increased local fish production. It has been targeted to double the national fish production of the base year by 2013;
- Established price competitiveness by means of promoting marketing;
- Adopt measures for fisheries social development through fisheries development;
- Implementation and management of fisheries sustainably by using novel techniques and responding to international treaties on Law of the Sea.

The period of validity of these plans have already lapsed by now, but an assessment on the accomplishments of the objectives is yet to be reviewed and a new plan is yet to be developed.

In a future plan for the development of the fisheries sector in Sri Lanka, the following items shall be given due consideration:

5.8.2 Improvements to existing infrastructure
The existing coastal and off-shore fishing infrastructure including the main fisheries harbors, boat anchoring points, collection centers storage and the training facilities well covers the entire coastal region of the island. Yet, they shall have immediate and heavy improvements in order to modernize the fisheries sector as well as to uplift the quality of life of the communities engaged in fishing. New establishments can be considered only after 2030.

5.8.3 Space for post harvesting management, processing and value addition
In order to support efficient management of the fish harvest and, add value to fish harvests, necessary facilities such as the processing plants, packaging units and cold storage facilities shall be provided in major centres such as Colombo, Negombo, Beruwala, Trincomalee, Galle, Matara, Tangalle, Hambantota, Jaffna, Mannar, Mullativu, Batticaloa, Oluvil and Kalpitiya.

5.8.4 Development of the Inland fishing
The inland fishing shall be developed with major reservoirs, but the limitations in inland fish breeding activities shall be well considered before selection of such locations.

5.9. Digital Infrastructure

5.9.1 Objective
At a time that the entire world is transforming into an internet and smart era, Sri Lanka too has to equip its national, regional and local systems of planning, administration, public relations, communications, internal and international affairs with state-of-the art digital infrastructure.

While a few national level initiatives and programmes are already in place, the following are specially noted for their importance for the implementation of the National Physical Planning Policy.

5.9.2 Spatial Data Infrastructure
Spatial information is a fundamental requirement for all levels of planning, implementation monitoring and enforcement. With the advancement of technology, spatial information in digital form is in great demand for fast, reliable, precise and cost-effective applications in all type of work. Currently several state sector organizations use digital spatial information, but unfortunately these databases are designed and maintained for specific purposes by individual organizations. They are not widely shared for reasons such as the authorship, inflexibility, bureaucracy, etc. A national level authority for collection and updating, verification and cording, dissemination and coordination of spatial information is a timely need of the nation to fast move towards all of its development goals.

The National Spatial Data Infrastructure (NSDI), initiated by the Ministry of Digital Infrastructure and implemented through Information and Communication Technology
Agency (ICTA) is of great value. The NSDI will be able to provide a digital platform for a variety of spatial information, generated and updated by different institutions, for a wider range of uses for multiple tasks by different agencies, in a standard and custom made formats. It will avoid the duplication, reduce costs, increase the reliability and the uniformity of information, leading to synergy between different development programmes. Therefore, strengthening the NSDI is hereby mentioned as a priority requirement of the day.

5.9.3 Personal Data/Identity Infrastructure
Parallel to spatial information, digital personal information too has become a need of the day to formulate efficient, cost effective and accelerated service delivery to all citizens in all sectors including health, education, social welfare, banking, security, income tax and capacity building.

The current electronic national identity card implemented by the Department of Personal Registration can be regarded as a commendable beginning, but it has to fast advance into ‘digital identity process’ to better serve both the public interest and the government objectives. The developed ‘digital identity’ may lead to a biometric data base that will be widely shared by different agencies with required confidentiality, statutory arrangements and security measures to provide medical and health services, attainment in education, defence related purposes and access to public services. Such data base, instituted, operated and maintained by the Department of Registration. Even though a high capital instrument will be required to install the system, it will drastically reduce the costs annually borne by the Government on public service delivery and increase the efficiency of the agencies.

5.10 Other Policies and Plans Available
It is observed that the following National Level Policies and Detail National Level Plans are either published or being prepared. These plans were studied at the formulation of the Guiding Policies and the preparation of this National Physical Planning Development Plan. They are mostly in conformity with the National Physical Planning Policies, set out in the Section 03 of this report. Therefore, the following can be considered as corresponding sector specific policies or plans at the implementation of this Plan.

5.10.1 An action plan for Air Quality Management - Clean Air Action Plan 2025
prepared by the Resources Management Centre (ArMAC).

5.10.2 National Biodiversity Strategic Action Plan (NBSAP) 2016-2022
Produced by Biodiversity Secretariat, Ministry of Mahaweli Development and Environment, with Technical Assistance from IUCN, International Union for Conservation of Nature, Sri Lanka Country Office. (May 2016) (Figure 5.10.1.b)

5.10.3 National Climate Change Policy (2012) and National Disaster Management Policy(2010)
Prepared by the National Disaster Management Plan (NDMP) 2013-2017 by Disaster Management Centre

5.10.4 National Policy on Elephant Conservation – 2006
Prepared by Ministry of Mahaweli Development and Environment

5.10.5 The National Policy on Wild Life Conservation – 2000
Prepared by Ministry of Mahaweli Development and Environment

5.10.6 National REDD+ Investment Framework and Action Plan (NRIFAP) 2017

5.10.7 Sri Lanka Tourism Strategic Plan (2017-2020)
Prepared by Sri Lanka Tourism Development Authority

5.10.8 National Policy on Mineral Resources
Drafted by the NASTEC with the objectives to manage and strengthen the mineral sector of Sri Lanka for its optimal potential, promote value addition to mineral resources of the country, ensure environmental management within the sustainable development framework of Sri Lanka while balancing the needs for social and economic development.

5.10.9 Telecommunication and Digital Infrastructure
Fiber optic network plan of Sri Lanka Telecom PLC

5.10.10 The National Housing policy (Revised in January 2019)
Prepared by the Ministry of Housing, Construction and Cultural Affairs

In addition to already published National Housing Policy, the intervention of the government agencies to provide affordable housing in suitable areas for low-income and middle-income groups in a competitive manner with the private sector is essential to achieve a good social mix in urban areas.

5.11 Policies and Plans in Need
At the same time, it is also observed that the following areas need National Level Policies and Plans in order to support the development envisaged in this Plan.

5.11.1 Ocean Resources Development and Marine Pollution Prevention
It is noted that most of the resources that will benefit Sri Lanka’s economic development are in the ocean space and in order to effectively and sustainably use them a National Policy and a Plan is a requirement.
At the same time, their reliability depends upon the long term sustenance of such resources. The marine pollution due to shipping related activities, illegal fishing methods, coastal pollution, disposal of land based waste, mining, etc. is a major threat to their long existence and sustainable use. The need for a Marine Pollution Prevention Policy is highlighted in this context.

5.11.2 Labour Resource Development
The human resource is one of the critical components for the National Development of any nation. Yet, it is noted that the use of human resources is not effectively managed. While there is a serious labour shortage in all categories of a few high-paying sectors (eg: Construction, Manufacturing, Electronics, Information Technology, etc), there is an equally serious excess labour in informal activities (eg: Three Wheeler operations, street vending, etc). This clearly shows a timely need for a National Level Human Resource Development Policy and a Plan, integrated with the Education Development Plan.