Policy Paper for Mainstreaming Green Jobs into National Policies

Consultancy Report
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Summary

This policy paper is an outcome of an external collaboration agreement between the International Labour Organisation (ILO) Colombo Office and Consultant, Dr. L.P.Batuwitage, for mainstreaming green jobs into the National Policies in Sri Lanka. The ILO is working with its tripartite constituents (Government, Employers and Workers) to develop their capacity to integrate green jobs into sustainable development policy planning and related agendas. The objective is to facilitate transition to a greener economy that will trigger shifts in the labour markets and create demands for new skills and re-skilling programs, while providing social protection and financial schemes in particular for the most exposed workers and businesses.

Green jobs are defined by the International Labour organization (ILO) as ‘Direct employment in economic sectors and activities, which reduces their negative environmental impact, ultimately resulting in levels that are sustainable. Specifically these are ‘decent’ jobs and need to ensure that technology changes do not impact adversely on the workforce working towards this transition’.

Ample policies and national programmes are currently available in the country to support a green economy and thereby green jobs. While many significant achievements have been made as a result of these efforts, the overall progress is not up to the expected levels. The most significant deficiency in the whole process is failure to address the challenges and problems focusing on a systems perspective integrating “policies, regulations, knowledge management models, technical aspects, incentives & disincentives, supply of skilled human resources and prudent investments”, at an appropriate scale within the framework of sustainable development. Absence of or deficiencies even in one of the above basic tools will have negative impacts in achieving the desired outcomes. Therefore an effective, dynamic and sustainable coordination mechanism is necessary to monitor the progress, evaluate the performance and identify the right mix of policy tools necessary to make significant progress both at horizontal and vertical levels in the country.

Deficiencies in the skilled human resource base in the country to support a green economy has been recognised as a significant lacuna in greening the economy while there is an increasing trend of youth unemployment and underemployment compared with the other age groups, even though overall unemployment is decreasing. It is significant to note that there is a well structured ‘Technical and Vocational Education Framework/System’ available in the country. Systematic mainstreaming of green concepts into the University Education, Technical and Vocational Education and Training, and School Education Systems in an integrated manner will create remarkable opportunities to create new green jobs (new skills) as well as transformation of existing jobs into green jobs (re-skilling) in accordance with the market demand.

Key sectors were considered both in the context of production and consumption in the policy analysis. School Education, University Education, Technical and Vocational Education and Training, Media and Communication were considered common to both production and consumption.

Considering the strengths and opportunities available in the country, six main policy recommendations with a total of twenty-six components were proposed under four thematic areas viz: ‘Strengthening of University Education, Technical and Vocational Education and Training, and School Education systems’; ‘Strengthening of nine key exiting programmes’; ‘Strengthening of the Legal Policy Framework’; and ‘Enhance Dialogue at National/Provincial/District/ and Local Levels’.

In developing these recommendations, every attempt was made to follow a systems approach where the proposed National Human Resources and Employment Policy, Technical and Vocational Education Policies, Higher Education Policies, Environmental Policies, Industrial Policies, and Labour related policies would be mutually responsive and supportive. High level coordination and collaboration of policy makers will speed up the process of mainstreaming green jobs into the national development agenda. Linkages of the ‘Green jobs policy coordination mechanism’ with the key existing national coordination mechanisms are also proposed to ensure accountability and sustainability of the mainstreaming process.

Collaborative efforts of the respective Ministries directly responsible for the development of green jobs, other Sectoral Ministries, and Employers and Employees Federations can provide highly conducive opportunities to promote Green Jobs and thereby develop a skilled human resource base to support the sustainable and equitable development of the country.
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<th>Description</th>
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<tr>
<td>AAT</td>
<td>Association of Accounting Technicians of Sri Lanka</td>
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<tr>
<td>ATI</td>
<td>Advanced Technical Institute</td>
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<tr>
<td>CEA</td>
<td>Central Environmental Authority</td>
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<tr>
<td>CGTTI</td>
<td>Ceylon German Technical Training Institute</td>
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<tr>
<td>CBT</td>
<td>Competency Based Training</td>
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<tr>
<td>CEB</td>
<td>Ceylon Electricity Board</td>
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<tr>
<td>CIEDP</td>
<td>The Committee on Integration of Environment and Development Processes</td>
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<td>CEPOM</td>
<td>Committee on Environmental Policy and Management</td>
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<tr>
<td>COTs</td>
<td>Colleges of Technology</td>
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<td>CP</td>
<td>Cleaner Production</td>
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<td>CPTs</td>
<td>Cleaner Production Technologies</td>
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<tr>
<td>DTET</td>
<td>Department of Technical Education and Training</td>
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<tr>
<td>ESTs</td>
<td>Environmentally Sound technologies</td>
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<td>EIA</td>
<td>Environmental Impact Assessment</td>
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<td>GCE (A/L)</td>
<td>General Certificate of Education (Advanced Level)</td>
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<td>GCE (O/L)</td>
<td>General Certificate of Education (Ordinary Level)</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
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<tr>
<td>HNDE</td>
<td>Higher National Diploma in Engineering</td>
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<tr>
<td>NDES</td>
<td>National Diploma in Engineering Science</td>
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<tr>
<td>NDT</td>
<td>National Diploma in Technology</td>
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<tr>
<td>NIBM</td>
<td>National Institute of Business Management</td>
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<tr>
<td>ILO</td>
<td>International Labour Office</td>
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<tr>
<td>MoE</td>
<td>Ministry of Environment</td>
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<td>MEA</td>
<td>Multilateral Environment Agreements</td>
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<td>MVTT</td>
<td>Ministry of Vocational and Technical Training</td>
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<tr>
<td>NAITA</td>
<td>National Apprentice and Industrial Training Authority</td>
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<tr>
<td>NGRS</td>
<td>National Green Reporting System</td>
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<tr>
<td>NCPC</td>
<td>National Cleaner Production Centre</td>
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<tr>
<td>NCSD</td>
<td>National Council for Sustainable Development</td>
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<tr>
<td>NEAP</td>
<td>National Environmental Action Plan</td>
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<tr>
<td>NEP</td>
<td>National Environmental Policy</td>
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<tr>
<td>NITESL</td>
<td>National Institute of Technical Education of Sri Lanka</td>
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<td>NVQ</td>
<td>National Vocational Qualifications</td>
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<td>NEA</td>
<td>National Environmental Act.</td>
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<td>NHREP</td>
<td>National Human Resources and Employment Policy</td>
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<tr>
<td>NIE</td>
<td>National Institute of Education</td>
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<td>NYSC</td>
<td>National Youth Service Council</td>
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<td>PAC</td>
<td>Project Advisory Committee</td>
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<tr>
<td>RPL</td>
<td>Recognition of Prior Learning</td>
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<tr>
<td>RESCP</td>
<td>Resource Efficient and Cleaner Production</td>
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<tr>
<td>SLIDA</td>
<td>Sri Lanka Institute of Development Administration</td>
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<td>SLIATE</td>
<td>Sri Lanka Institute of Advanced Technological Education</td>
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<tr>
<td>SWM</td>
<td>Solid Waste Management</td>
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<tr>
<td>SCP</td>
<td>Sustainable Consumption and Production</td>
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<tr>
<td>SPC</td>
<td>Sustainable Production and Consumption</td>
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<tr>
<td>TVEC</td>
<td>Tertiary and Vocational Education Commission</td>
</tr>
<tr>
<td>TVET</td>
<td>Tertiary and Vocational Education and Training</td>
</tr>
<tr>
<td>UGC</td>
<td>University Grant Commission</td>
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<tr>
<td>UNEP</td>
<td>United Nations Environmental Programme</td>
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<tr>
<td>UNIVOTEC</td>
<td>University of Vocational Technology</td>
</tr>
<tr>
<td>VET</td>
<td>Vocational Educational and Training</td>
</tr>
<tr>
<td>VET</td>
<td>Vehicle Emission Testing</td>
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<tr>
<td>VTA</td>
<td>Vocational Training Authority</td>
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<td>VTE</td>
<td>Vocational Training and Education</td>
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Policy Paper for Mainstreaming Green Jobs into National Policies

1. Introduction

This Report on Mainstreaming Green Jobs into National Policies in Sri Lanka was prepared by the consultant in fulfilment of the External Collaboration Contract entered into with the International Labour Office (ILO), Colombo, on 3rd February 2012.

In the course of this consultancy three Reports were prepared outlining the methodology, and interim outcomes of the consultancy process. Discussions were held with the subject matter specialists, and the draft proposals were reviewed by the Project Advisory Committee (PAC) on 18th of May 2012. The present report is the outcome of consolidation of two interim reports while also taking into consideration the responses and comments by subject matter specialists and by the Project Advisory Committee that met on 18th May 2012.

At the outset, it is necessary to define ‘Green Jobs’. ILO defines ‘Green jobs’ as ‘Direct employment in economic sectors and activities, which reduces their negative environmental impact, ultimately resulting in levels that are sustainable. Specifically these are ‘decent’ jobs and need to ensure that technology changes do not impact adversely on the workforce working towards this transition.

Mainstreaming would imply (a) ensuring that individuals that are entering the workforce at every level are sensitized and adequately equipped to perform in their jobs recognising the green concept; and (b) those already engaged in economic development activities assimilate and adopt relevant green practices. In this process the employment and socio-economic policies should accompany appropriate labour and social protection measures that prepare the workforce in transition.

In developing recommendations, every effort was made to follow a systems approach where the proposed National Human Resources and Employment Policy, Vocational Training and Skilled Development Policies, Higher Education Policies, Environmental Policies, Industrial Policies, and Labour related policies are mutually responsive and supportive.

Following the Introduction in Chapter 1, Chapter 2 presents the Country profile. Chapter 3 includes the Key sectors considered in the review of existing policies. Chapter 4 presents the National Policy Frameworks that support application/engagement of Green Jobs while Chapter 5 covers the National Policies directly related to Green Jobs. Chapter 6 presents the Frameworks of Education, Technical and Vocational Training. Gaps to achieve mainstreaming of green jobs are presented in Chapter 7. Chapter 8 includes the Policy recommendations to promote green jobs and Chapter 9 presents Conclusions.

2. The country profile

Sri Lanka is a tropical island located in the Indian Ocean lying 29 km off the south- eastern part of the coast of India. The country has a total area of 65,610 km². The Population of Sri Lanka stands at 20,869 (2011–midyear) million with a growth rate of 1.0 per cent (2010)\(^1\). Age distribution of the population (in millions): 0-14 yrs. – 5,488; 15-64 yrs. – 14,065, and 65 years and over 1,316. The population density stands at 329 inhabitants per square kilometre (km\(^2\)) in 2010. There is a sharp difference in the

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\(^1\) Central Bank of Sri Lanka (Annual Report 2011 and Economic and Social Statistics of Sri Lanka 2011)
distribution of population in the country among its 9 provinces, with the highest population density being in the Western Province (1,632) where both the administrative capital and the commercial capital are located (Census and Statistics, Central Bank of Sri Lanka, 2011). The second highest population density (482) is in the Central Province. The average literacy rate is 91.9 percent, with male literacy rate of 93.2 and female literacy rate of 90.8 percent (Annual Report of Central Bank 2011).

According to the Labour Force Survey of the second quarter of 2011, the estimated economically active population (or labour force) was about 8.3 million, of which 64.8 percent were males and 35.2 percent were females. Out of the economically inactive population, 30.8 percent were males and 69.2 percent females. The total number of employed persons was estimated at 7.9 million in the second quarter of 2011, of which 42.7 percent (male 44.8/female 38.5) were engaged in service sector, 33.7 in agriculture sector (male 31.6/female 37.9) and 23.6 (male 23.6/female 23.6) in industry sector. Comparatively, a higher percentage of both public and private sector employees are engaged in non-agriculture activities. More employers were also seen in the non agricultural sector. However, contributing family workers are more concentrated in the agriculture sector.

Unemployment rate by the level of education is also a significant indicator in the green job potential analysis. Unemployment rate in the second quarter of 2011 was 4.2 percent, of which 2.7 were males and 7.0 were females. Of 4.2 percent unemployed, the highest unemployment rate was reported from the GCE (A/L) and above, which was about 7.8 percent (male 4.4/female 11.6). This shows unemployment of educated females is more acute than educated males. At GCE O/L, unemployment rate was 5.8 of which 3.5 were males and 10. 5 were females. Below GCE O/L the unemployment rate was 2.7 of which 2.1 were males and 4.0 were females. In 2011, 60.1 percent of students were eligible for university education of which admission as a percentage of eligible was 15.5. Among the employed, underemployment is also an issue to be considered in the social development process. Multiple knowledge management and skills development models can help to stimulate both top-down and bottom-up approaches in promoting green jobs along with the economic growth.

The country has achieved a strong GDP growth rate of 8.3 percent in 2011 (in 2006:7.7, 2007:6.8, 2008:6.0 and 2009:3.5, 2010: 8). This strong growth rate achieved after the 30-year long internal conflict has a high potential to develop green jobs that would make economic growth more environmental friendly and sustainable. GDP Growth by sector accounts for: Agriculture 11.2 percent (Agriculture 9.9 Fishing 1.3); Industry 29.3 (Mining and quarrying 2.5, Manufacturing 17.3, Electricity, Gas and Water 2.4, Construction 7.1); and Services 59.5 (Wholesale and Retail Trade 23.6, Hotels and Restaurants 0.6, Transport and Communication 14.3, Banking Insurance and Real Estate etc. 8.8, Ownership of Dwellings 2.6, Government Services 7.1, Private services 2.3).

The government has identified the following two major economic challenges in the path of economic development where application of Sustainable Production and Consumption through mainstreaming green jobs into economic development will be of vital importance.

(i) Ensuring growing economic prosperity in the country and ensuring the benefits of the developments will filter down to all Sri Lankan people

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2 Sri Lanka Labour Force survey is designed to measure the levels and trends of employment, unemployment and labour force in Sri Lanka by the Department of Census and Statistics. This survey is being conducted quarterly since the first quarter of 1990.
3 General Certificate of Education (Advanced Level)
4 General Certificate of Education (Ordinary Level)
(ii) Laying the foundation for long-term sustainable development.

Sri Lanka has developed many significant policies and taken proactive measures for environmental conservation. Sri Lanka has also performed considerable well in terms of providing decent jobs to its formalised workforce. Its rigid regulatory framework in fact has stringent measure in respect of rights and freedoms at work. However, the country continues to encounter several challenges in conserving the environment while pursuing a course of high economic growth. It also faces challenges in giving practical effect to some rights at work. Therefore, mainstreaming green jobs into the national policies is an indispensable strategy to achieve sustainable and equitable development throughout the country.

The concept of Green Economy is emerging worldwide as a requirement to address the present multiple global crisis situations related to finance, economics, energy, fuel, food, and the wider environment. Internationally, a Green Jobs initiative was launched by ILO through a partnership established in 2007 with the United Nations Environmental Programme (UNEP), the International Trade Union Confederation, and the International Organisation of Employers (who joined in 2008), with the firm belief that green jobs is integral to green development, and their coherent policies and effective programmes leading to a green economy cannot ignore the concept of green jobs and decent work for all.

In order to address the deficiencies and inabilities to make progress in this endeavour, it is imperative to focus on ecologically sound systems perspective with appropriate scale and promote sustainable production as well as consumption within the framework of sustainable development without compromising rights at work.

3. Key sectors considered in the review of existing policies

The following key sectors were identified in the review of existing policies considering both production and consumption sides aiming at promoting green growth strategies in the country within the framework of sustainable and equitable development. Education & Training was considered as common to both production and consumption sides.

(I) Sectors relating to Production


(II) Sectors relating to Consumption

- Purchasing, Usage, Disposal, and Waste Management.

(III) Sectors relating to Education and Training


There is a high potential of mainstreaming green jobs into these sectors under the ‘Natural Resource Management’ and ‘Pollution & Waste Management’. In the economic sector; ‘development, transformation and substitution of green jobs’ are equally important to ensure that the economic development is sustainable and environmentally sound throughout the development cycle. It is also necessary to ensure that the green jobs developed, transformed and substituted are decent, socially acceptable, promote social justice and support equitable development. Mainstreaming of these
conditions in the curricula of the education systems is of vital importance both in theory and practice.

4. National Policy Frameworks that support application/engagement of Green Jobs

The National Policy Framework that supports promotion of green jobs is consistent with the provisions made in the Constitution of Sri Lanka including the implementation of the Multilateral Environmental Agreements to which Sri Lanka is a Party.

4.1 Specific Constitutional Provisions and main national policy frameworks

Article 27(14) of the constitution of Sri Lanka (1978) provides an overarching broad framework that has a strong link to green jobs. This article recognizes that “The State shall protect, preserve and improve the environment for the benefit of the community”. The Constitution mandates that this responsibility is shared with the community by stipulating a corresponding article stating that “It is the duty of every person in Sri Lanka to protect nature and conserve its riches” (Article 28(f)). In addition, Article 12 “Right to equity”, and the Article 14 which guarantees a number of rights in the work place including “the Freedom to engage by himself or in association with others in any lawful occupation, profession, trade business or enterprise” (14-(1) (g), and Articles 27 “Directive Principles of State Policy” and 28 “Fundamental duties” have strong relevance to green jobs. Article 11 of the Constitution which prohibit cruel, inhuman and degrading treatment are relevant to this issue as does Articles 12 (1) and 12 (2) which prohibit discrimination and guarantees equal treatment before the law. Arbitrary arrest and detention is also guaranteed under Article 13 and is relevant to ensuring decent working conditions. Green jobs which also support decent working conditions are necessary for the effective implementation of all these provisions.

Apart from constitutional guarantees there is a plethora of laws which complement the fundamental law of the country. Amongst them the Trade Union Ordinance, the Employment of Women, Young Persons and Children’s Act and the Children and Young Persons Ordinance, the Shop and Offices Act and the Factories Ordinance are directly relevant for jobs to become decent. The Occupational Safety and Health (OSH) Act which is in the pipeline and which is expected to become law within the course of this year, will bring value addition to the legal framework for green jobs in Sri Lanka. These Acts do regulate hours of work and holidays for shop and office employees and factories as well. The legislation provides for ensuring health and safety at work prescribing minimum standards for in relation to lighting and ventilation; suitable and sufficient facilities for meals; sanitary and washing facilities within the confines of the workplace or factory, giving them limited scope to access the majority of workers who remain in the field and particularly those in the informal sector. These would fall within the purview of the Ministry of Labour and also of the Ministry of Health through their public health inspectorate. To date compensation for workers under the Workmen’s Compensation Act too, only cover workers in factories and industries.

Up to a few decades ago; the traditional practices of environmental management were inclined and focused primarily upon natural resource management, as significant pollution problems had not surfaced at that time. These traditional practices were changed after the enactment of the National Environmental Act (NEA) in 1980, covering both natural resource management and pollution control. The Central Environmental Authority (CEA) was established in 1981 under NEA, as the enforcement arm for the provisions of the Act. This Act was amended several times to accommodate emerging trends of environmental pollution and natural resource degradation and is the avenue through which many new regulations are promulgated.
In addition to NEA, there are several other important laws and institutions for supervising, regulating, and enforcing environmental management practices in the country in the different sectors.

The Coastal Conservation Act has powers to protect the coastal zone and the marine environment. In addition to that, the Marine Environmental Protection Act, the Merchant Shipping Act, and the Ports Authority Act have specific provisions for protection of the marine environment. Recently, the Fauna and Flora Protection Ordinance relating to the functions of the Department of Wildlife Conservation, the Forest Ordinance, the Marine Environmental Protection Act and the Mines and Mineral Act were amended to empower the concerned institutions to take action to bridge the gaps and loopholes in the previous provisions. The amendment to the Urban Development Act introduced provisions to include control of pollution and improvement of environmental quality as a component in the urban development planning.

The mining sector is regulated by the Mines & Minerals Act No. 33 of 1992 as amended by Act No. 66 of 2009. This sector is specifically important in relation to depletion of natural resources, social justice as well as occupational health and safety (OHS) of workers. The act is restrictive in terms of serving the workers and their interests. The amendment of 2009 considerably strengthened the environmental safeguards and police powers to halt illegal operations. Sand mining too is on the rise but working conditions in sand mines, whether legal or illegal are much to be desired. Apart from damage to the environment, miners are in one of the worst forms of employment as they lack state-of-the-art equipment and are forced to remain in water for a dangerously lengthy period of time that results in problems related to ear, nose and throat (ENT), and other health challenges that impact on their long term health. Many youth tempted to sand mining as it brings in ‘quick’ money often dropping out of formal school, leading to under-employment in the long term.

Under the 13th amendment to the constitution, North Western Provincial Council enacted a separate statute (North Western Environmental Statute No12 of 1990) under which the North Western Environmental Authority was established for environmental management of the area under its purview. The Western Province has enacted a separate statute for solid waste management (Waste Management Statute No 01 of 2007) under which a Waste Management Authority was established for the Western Province. The Authority is authorised to develop guidelines in respect of activities within their mandate and has potential to include guidelines for issuance of contracts, OSH equipment and other subjects that support the assurance of decent work in the sector.

Establishment of the Ministry of Environment (MoE) in 1990 provided more impetus for development and implementation of national polices, strategies and action plans in environmental management in the country. The MoE is charged with the responsibility of facilitating sustainable development through the promotion of sound environmental management. This mandate makes the MoE responsible for monitoring and reporting the status of the environment periodically based on which new policies and strategies are developed to address unresolved and emerging issues.

Since its establishment, MoE designed a formal comprehensive environmental policy framework through National Environmental Action Plans (NEAPs) to address multi-sectoral correlated issues in the national development agenda in a sustainable manner. Since then five NEAPs were developed by 2009. The project based approach followed in the first NEAP was changed to a program based approach subsequently which led to the establishment of comprehensive multi-sectoral coordinating mechanisms. Since 2009 more attention was paid to the implementation of the Haritha (Green) Lanka Programme and its National Action Plan.
In 2003 a National Environmental Policy (NEP) was developed recognizing the complex nature of environment and natural resource management in the light of socio-economic-ecological problems which have a political significance. The objective of the NEP is “Protection and conservation of the integrity of the nation’s environment and natural resources through ecologically sustainable development, with due recognition of the contribution of natural resources to economic development and to the quality of life.” The NEP also recognized the importance of the life cycle management and application of cleaner production principles as basic principles of the national policy.

The National Action Plan for Haritha (Green) Lanka Programme, which was introduced in 2009 by the National Council for Sustainable Development (NCSD) and the Ministry of Environment, is the most comprehensive and latest framework to encompass many national and sectoral policy interventions and has high relevance to green jobs (see section 8.3 of Chapter 8). The Development Policy Framework of the Government of Sri Lanka (Mahinda Chinthana – Vision for the Future 2010) published by the Department of National Planning of the Ministry of Finance and Planning also provides national development policies and goals which reflect a potential for green jobs in the journey of transformation to a sustainable national development with a strategy to bridge regional disparities for social justice.

The National Green Reporting System (NGRS) launched in June 2011 under the Haritha (Green) Lanka programme promotes integration of environmental protection measures into socio-economic development processes while encouraging self monitoring and reporting of performance. The reporting system requires industries and service sector organisations to be accountable to both internal and external stakeholders on their organisational performance in achieving sustainable development, and to report their performance voluntarily to the Ministry of Environment through fifty (50) reporting indicators categorised under economic, environmental and social aspects, moving beyond mere compliance with the normal environmental regulations.

All of these provisions can be directly used to promote various types of Green Jobs as increasing demand for natural resources and generation of waste and pollution underscore the urgent need for the creation of a wide range of jobs, additional tools and mechanisms to more effectively promote sustainable development in Sri Lanka.

### 4.2 Multilateral Environment Agreements (MEAs) signed by Sri Lanka which promote Green Jobs for their effective implementation

Almost all the major MEAs were ratified by Sri Lanka. Effective implementation of these MEAs needs green human resources at all levels. The following table presents the MEAs ratified by Sri Lanka which reflect a heavy potential to promote green jobs under natural resources and pollution management sectors. Even though the MEAs were categorised into two broad categories for clarity, it is noted that all these MEAs are inclusive and mutually supportive.

#### Table 1: Multilateral Environmental Agreements/Conventions (MEAs) ratified by Sri Lanka directly related to natural resource management

<table>
<thead>
<tr>
<th>MEAs directly related to Natural Resource Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Plant Protection Agreement for Asia and Pacific Region 27.02.1956, Ratified - 27.02.1956.</td>
</tr>
</tbody>
</table>

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6 According to the recent government policy, 8% annual economic growth is expected in the next six years as against the present growth of around 6%.
Table 2: Multilateral Environmental Agreements/Conventions (MEA’s) ratified by Sri Lanka directly related to pollution management

<table>
<thead>
<tr>
<th>MEAs directly related to Pollution Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treaty banning nuclear weapons tests in the atmosphere, in outer space and under water (1963), Ratified – 05.02.1963.</td>
</tr>
<tr>
<td>Treaty on principles governing the activities of states in the exploration and use if outer space including the moon and other celestial bodies (1967), Ratified - 18.11.1986.</td>
</tr>
<tr>
<td>The Convention Concerning the Protection of Workers Against Ionising Radiations 22.06.1960 Ratified - 18.06.1986.</td>
</tr>
<tr>
<td>The Convention on the Prohibition of the Development, Production, Stockpiling and use of Chemical</td>
</tr>
</tbody>
</table>
5. National Policies directly related to ‘Green Jobs’

In Sri Lanka, numerous policies are available to support green growth. For effective implementation of these policies, a skilled human resource base is an essential prerequisite. To fulfil this objective, creation or development of new jobs that are green, transformation of existing jobs into green jobs at various levels, and substitution of existing jobs with green jobs as appropriate are necessary based on the expected outcome of the policy. It must also be understood that green jobs do not automatically constitute decent work always as some of environment friendly jobs, especially in the waste sector, are in fact dirty, dangerous and difficult to perform. The challenge therefore is to convert these jobs into cleaner, decent and quality jobs that contribute to workers’ safety and health as it cleans and preserves the environment.

Among many other national and sectoral policies available to address specific issues and programmes in various sectors related to green growth, the following are significant conducive policy instruments which have a high potential of mainstreaming green jobs to ensure their effective implementation at National, Provincial and Local Authority Levels.

5.1. Policies

- National Cleaner Production Policy and Strategy (2005).
- Sectoral Policies of Cleaner Production developed in accordance with the National CP Policy for Health (2007), Tourism (2008), Fisheries (2008) and Agriculture (2012).
- National Energy Policy to reach a minimum level of 10% of electrical energy supplied to the grid to be from natural renewable energy by 20157.
- Energy Labelling Policy.
- Policy on Transparent Resource Allocation Process to encourage public-private partnerships to promote renewable energy.
- Policy to promote organic farming.
- The proposed Sri Lanka National Human Resource and Employment Policy (2012)8

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7 It is expected to increase this target to 20% to achieve by 2020 (The Development Policy Framework of the Government of Sri Lanka (Mahinda Chinthana – Vision for the Future 2010) published by the Department of National Planning of the Ministry of Finance and Planning.
5.2 Supportive legislation/regulations gazetted

- National Environmental Act (NEA).
- National Environmental (Protection and Quality) regulations.
- Prescribed activities for which a License is required.
- National Environmental (Procedure for approval of projects).
- Specific State Agencies which have been designated as Project Approving Agencies (EIA).
- Hazardous Waste Regulations.
- Regulations prohibiting the manufacture (in country use), sale or use of polythene or any polythene product of twenty (20) microns or below in thickness.
- Ozone depleting substances and Natural Environmental (Ambient Air Quality) regulations.
- National Environmental (Noise Control) regulations.
- National Environmental (Prohibition of the use of equipment for exploration, mining and excavation of sand and gem) regulation.
- Waste management Statute of No. 01 2007 of the Western Provincial Council.
- Coast Conservation Act.
- Forest Ordinance.
- Fauna and Flora Protection Ordinance
- Marine Environmental Protection Act.
- Control of Pesticide Act.
- The Factories Ordinance as amended
- The Shop and Office Employees Act as amended.
- The Workmen’s Compensation Act
- The Industrial Disputes Act
- The Termination of Employment and Work Act
- The Wages Ordinance

The amendment in July 2011 to the Control of Pesticide Regulations (sales and supply) under the Control of Pesticide Act, no 33 of 1980 is of special significance as it affords an approach directly creating green jobs by prohibiting to: sell or offer for sale any restricted or general pesticide without a technically qualified person.

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8 The proposed Sri Lanka National Human Resource and Employment Policy is aiming at women and men enjoy full, decent and productive employment with higher incomes in conditions of freedom, equity, security and human dignity and thereby cover the social aspects of employment. It focuses on economic prosperity. However the principles of green jobs is not specifically included in the text of the policy document.
5.3 Supportive Guidelines

- Technical guidelines developed by CEA for solid waste management (2005).
- Code of Practice for Energy efficient Buildings.

5.4 National Action Programmes currently in operation

- National Green Reporting System introduced in June 2011 (under the Haritha Lanka Programme) to encourage industry and service sectors to become green.
- The Green Rating System developed by the Green Building Council of Sri Lanka in January 2012 for the built environment taking up the challenge to create sustainable buildings for the future.

5.5 Coordination/implementation mechanisms

- National Council for Sustainable Development (Chaired by the President of Sri Lanka).
- Ten National Coordinating Committees under the 10-Missions of the Haritha (Green) Lanka Programme.
- National Co-coordinating Committees for the Implementation of the MEAs ratified.
- Environmental cells in the Project Approving Agencies under the National Environmental Impact Assessment system.
- Sustainable Energy Authority under the Ministry of Power and Energy.
- The National Cleaner Production Centre under the Ministry of Industries.
- Environmental Impact Assessment (IEA) Inter-Agency Coordination Meeting

There are other national policies related to green jobs such as National Forestry Policy (1995), Fauna and Flora Protection Ordinance (1937), National Fauna and Flora Conservation Policy (2000), Soils Conservation Policy etc., and related legislation that were in existence even before the development of the National Environmental Policy. The policy instruments mentioned above are some key overarching policies related to green jobs that will provide support directly to the concerned sectors while also reaching out to other related sectors at national, provincial and local authority levels providing potential expansion of the labour market sectors. Attention, involvement and commitment at all levels for implementation of these policies would create a win-win situation in all sectors. Such linkages and collective efforts are necessary to create and increase the demand for different types of green jobs throughout the country. Ministry of Labour and Labour Relation is planning to strengthen legislation by moving beyond the Factories Ordinance to cover a wider area to safeguard the interest of the workforce. The proposed Employment Policy which integrates green jobs, if implemented, will provide opportunities for youth to enter into a green world of work.

The National Cleaner Production Policy requires application of Cleaner Production (CP) principles at all levels aiming at achieving sustainable development, enhanced environmental quality, improved eco-efficiency, improved living standards and poverty alleviation (Ministry of Environment (2005). Sectoral
CP Policies specifically includes provisions related to their sectoral development, resource efficiency, pollution prevention and management aiming at facilitating sustainable development.

Implementation of the National Air Quality Management Policy (2000) and the Vehicle Emission Testing Programme (2005) are supported by the National Environmental (Ambient Air Quality) regulations and National Environmental (Air Emission, Fuel and Vehicle Importation) Standards.

National Bio-safety policy (2005) sets the overall framework in which adequate safety measures will be developed and put into force to minimize possible risks to human health and the environment while extracting maximum benefits from any potential that modern bio technology may offer.


The National Climate Change Policy (2011) provides guidance and direction for all the stakeholders in the country to address the adverse impacts of climate change efficiently and effectively. The Policy contains a vision, mission, goal and a set of guiding principles, followed by broad policy statements under Vulnerability, Adaptation, Mitigation, Sustainable Consumption and Production, Knowledge Management, and General Statements. Collaborative action at all levels is necessary to transform this policy into a meaningful set of actions to meet the challenges of climate change.

6. Education, Technical and Vocational Training

6.1 General

Education and Vocational Training plays a vital role laying a solid and stable foundation for the development of a skilled human resource base in the country. Figure 1 shows the inter-linkages of education and training systems through which a systematic green human resource development base could be developed/enhanced to support a knowledge based economy.

![Knowledge for Right Choices](image)

**Figure 1: Linkages of Educational Systems to support a knowledge based economy.**

The sections 6.2 to 6.5 briefly outline key institutional structures that can be used in mainstreaming green jobs in the development agenda through Education, Technical and Vocational Training.
6.2 School Education and its linkages to Green Jobs

The present government policy direction for education (Mahinda Chinthana – Vision for the Future - 2010) spells out that Sri Lanka will move towards a quality and student friendly education system which contributes to a knowledge economy and provides the required skills and virtues to face the emerging needs of a modern global knowledge economy.

Among the other policies presented in that document under education, the following two policies can be specifically used to speed up the existing and proposed strategies in mainstreaming green jobs into the national development agenda.

• Technology learning will gradually be introduced into every student’s basic educational curriculum to provide them with required skills and virtues to face the emerging needs in the future economic milieu.

• Career study programmes will prepare students for the job market or further studies and enable them to explore a wide range of career options. These programmes will be developed and implemented in the education system with the assistance of the private sector, professionals and industries.

At present technology subjects are offered in the secondary cycle of education system covering Practical and Technical Skills – from Grade 6 to 13 under the following areas (NIE).

• Practical and Technical Skills – Grade 6 to 9
• Agriculture & Food Technology – Grade 10, 11
• Fisheries & Food Technology – Grade 10, 11
• Design & Technology – Grade 10, 11
• Arts & Craft – Grade 10, 11
• Home Economics – Grade 10, 11
• Hard Technology – Grade 12, 13
• Soft Technology – Grade 12, 13
• Agriculture Science – Grade 12, 13
• Home Economics – Grade 12, 13

Technology Stream for Grades 12 and 13

A new stream called the Technology Stream has been added at the GCE (AL) stage recently. Environment related topics were included in the syllabi of subjects of the Technology Stream namely: Agriculture Science, Hard Technology subjects (Grade 12), Civil Technology subjects (Grade 13), Bio-resource Technology (Grade 13), Agro Technology (Grade 13).

This system can be improved to enhance the quality and diversity of the secondary education enabling students to have more access to technological and vocational education and training programmes that can be designed to cater to current and emerging job/labour markets. Mainstreaming the economic, social and environment concepts (triple bottom-line) of Green Jobs in secondary education is an opportune entry point from which an incremental build up of knowledge on green jobs is seen.

The new GCE (AL) Technology Stream also provides a great opportunity for linking education to the expanding area of green jobs. At present students from this stream are not eligible to qualify for admission to the university science-based faculties. By a minimal effort students of this stream can be converted to form an important source of candidates for green jobs. The recent Report on the ‘Evaluation
of the Current Status of Environmental Education in Sri Lanka’, developed by the Ministry of Environment observed that the concept of sustainable development occurs explicitly in the syllabuses of subjects in this stream. The concept of cleaner production now only implicit in the syllabuses could be emphasized to meet the requirements for green jobs.

Table 3 below shows the success rate of those who sat GCE O/L and GCE A/L Examinations if success rate to be gauged by this ability to ultimately enter the university system. Tables 4 and 5 shows student Enrolment (% of the official age group) in 2005 and 2010. The very large numbers of students who leave the formal education system and are seeking employment at different stages in the secondary education, right up to the GCE(AL) as seen from these statistics, indicate the extent of the potential clientele for education and training for green jobs.

Table 3: Performance of students at (GCE O/L and A/L)

<table>
<thead>
<tr>
<th>Category and Year</th>
<th>2005</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>GCE A/L (percent qualified for university entrance)</td>
<td>59.2</td>
<td>60.3</td>
</tr>
<tr>
<td>GCE O/L (percent qualified for GCE A/L)</td>
<td>47.7</td>
<td>52.5</td>
</tr>
</tbody>
</table>


Table 4: Enrolment (% of the official age group)

<table>
<thead>
<tr>
<th>Range</th>
<th>2005</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-5 year pre school children</td>
<td>58</td>
<td>67</td>
</tr>
<tr>
<td>5 year children</td>
<td>90</td>
<td>98</td>
</tr>
<tr>
<td>Primary net enrolment</td>
<td>95</td>
<td>98</td>
</tr>
<tr>
<td>Lower secondary enrolment</td>
<td>82</td>
<td>90</td>
</tr>
<tr>
<td>Upper secondary enrolment</td>
<td>45</td>
<td>50</td>
</tr>
<tr>
<td>Post-lower-secondary enrolment in vocational training</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>Technical training enrolment after upper secondary school</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Number of students (Higher education) per 10,000 population</td>
<td>140</td>
<td>200</td>
</tr>
</tbody>
</table>


Table 5: Student enrolment in 2010

<table>
<thead>
<tr>
<th>Grades</th>
<th>Number of Students (Government Schools) 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Students (Grade 1-5)</td>
<td>1,672,809</td>
</tr>
<tr>
<td>Lower Secondary (Grade 6-9)</td>
<td>1,220,123</td>
</tr>
<tr>
<td>Upper Secondary (Grade 10-11)</td>
<td>610,492</td>
</tr>
<tr>
<td>Advanced Level (Grade 12-13)</td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td>98,223</td>
</tr>
<tr>
<td>Arts</td>
<td>228,497</td>
</tr>
<tr>
<td>Commerce</td>
<td>109,928</td>
</tr>
<tr>
<td>Total</td>
<td>3,940,072</td>
</tr>
</tbody>
</table>

Source: Ministry of Education (2012)

The above tables show the need for introducing a variety of technology learning opportunities to prepare students for career-focused study programmes to suit emerging job markets offering them an opportunity of exploring a wide range of carrier options at different levels of education.

6.3 University Education and its linkages to Green Jobs
In Sri Lanka there are 15 State Universities, 3 Campuses and 17 Higher Education Institutions which focus on undergraduate and post graduate courses (UGC). Undergraduate enrolment in the state universities were 68,768 students in 2009 (excluding the Open University) while the post graduate enrolment was 7714 (excluding the Open University).

There are several other private, government and semi-government institutions which provide undergraduate degree courses and limited post graduate courses such as Institute of Technological Studies, Sri Lanka Institute of Information Technology (Guarantee) Limited, Sri Lanka Institute of Development Administration, National Institute of Business Management, Aquinas College of Higher Studies, National Institute of Social Development, National Institute of Fisheries and Nautical Engineering, Institute of Surveying and Mapping.

There are professional institutions that provide courses in engineering and technical streams. The Institution of Engineers Sri Lanka conducts a course approximately five years duration equivalent to a degree course to enable those desiring to pursue further studies in the field of engineering. This qualification is recognized by the government of Sri Lanka and the Private sector for employment as an engineer.

As indicated in section 5, the country needs Responsive agents to sensitize, to promote and to make the population fully aware of Cleaner production, Environmentally sound technologies and Sustainable production and consumption (CPTs/ESTs/SPC); and Responsive, qualified and capable agents to develop/adapt/adopt/transfer Green Technologies and to provide technological and non-technical services to promote implementation of SPC.

The universities have recognised the importance of integrating the subject of environment into the course curricula. The course curricula are formulated by the universities independently as autonomous institutions and some universities provide specialised post graduate courses in the subject of environment. This trend has to be scaled up and also extended to cover all the universities to ensure that their entering the job market through the universities are sensitized to the demands of green development so providing green human resources at the higher education level. Due recognition should be given to make the green jobs decent in this process.

### 6.4 Technical and Vocational Education and Training and their linkages to Green Jobs

The technical education system in Sri Lanka is very wide in structure and its composition. In general there are no focused environmental education systems in the technical education sector except in few institutions. However the strong complex technical education network available in the country can well be used to mainstream green jobs in the national development agenda linking to the school and university education systems (see fig.1).

There are many technical and vocational institutions operated by public and private sector institutions. The Ministry of Youth Affairs and Skills Development is in overall charge. Under this ministry, the following institutions provide a wide coverage of technical and vocational training predominately under craft and lower technical levels. An inclusion of modules on workers’ rights as human rights should be included to empower these trained graduates as they aspire to secure decent work.

- The Department of Technical Education and Training (DTET 1893) administers a network of 38 training centres including the recently upgraded 9 Colleges of Technology (COTs). The annual intake of DTET network in 2011 was 10,161 students.
• National Apprentice and Industrial Training Authority (NAITA - 1971) through 47 centres. The annual intake in 2011 was 3728 students.
• Vocational Training Authority of Sri Lanka (VTA - 1995) with a network of 246 training centres. The annual intake in 2011 was 13,775 students.
• National Youth Service Council (NYSC) with 42 centres. The annual intake in 2011 was 3982 students.
• Ceylon German Technical Training Institute (CGTTI). The annual intake in 2011 was 1490 students.
• Sri Lanka Institute of Printing. The annual intake in 2011 was 474 students.
(Source: TVEC 2012).

In addition to the above vocational and training institutes, there are several specialized training institutions operating under different sector-specific ministries catering to the sectoral skills needs in telecommunication, construction, textiles and Garments, Gems & Jewellery, Forestry, Wild Life, Health, Social services etc. There is also the pervasive non-formal mode of traditional on-the-job training at crafts-person level provided privately by master crafts-persons.

This widespread nature is an essential feature of technical education in view of the large number of technical skill specialities and levels of skill required island wide. *It is estimated* (in 2007) that there were about 65,000 students enrolled in about 5000 training institutes in Sri Lanka belonging to government, private and non-governmental organizations* (Evaluation of the Current Status of Environmental Education in Sri Lanka (2011 – unpublished) . Many of these institutions were established from time to time to cater for new and emerging labour markets.

Sri Lanka Institute of Advanced Technological Education (SLIATE) is one of the leading educational institutions in Sri Lanka for higher education and is a statutory body coming under the purview of the Ministry of Higher Education. SLIATE was established in 1995 focusing on fostering Advanced Technical Education at a post secondary level. It is mandated to establish an Advanced Technical Institute (ATI) in every province for both Engineering and Business Studies. At present it manages and supervises 12 separate Advanced Technical Institutes and 6 Sections housed in the Technical Colleges under Department of Technical Education and Training to conduct the courses of Higher National Diplomas and National Diplomas. Each institute has a Director and each section has an Academic Coordinator (www.sliate.net.html)

In addition to that, the following institutions provide Diploma level Engineering Education:

• National Diploma in Engineering Science (NDES) a four year full time course conducted by the Institute of Engineering Technology, Katunayake (1985) to train middle level engineers regarded to different fields (under NAITA). (Intake in 2011 359 students).
• National Diploma in Technology (NDT- 1960), is a 3-year fulltime Course conducted by the Institute of Technology, University of Moratuwa (under UGC – University Grants Commission).
• Higher National Diploma in Engineering (HNDE-1996), is a 3½ years full time course conducted by the Sri Lanka Institute of Advanced Technological Education (SLIATE), at Colombo 15, to provide middle level engineering training under the Ministry of Higher Education.
• The Open University also provides Diplomas in Engineering Education (UGC - 1978).

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Integrating the concepts of green development and green jobs as an essential component of technical education will ensure a wide outreach of these concepts amongst the future labour force and all the above existing systems can be used to produce highly skilled and empowered green human capital in the country.

The National Cleaner Production Centre (NCPC) established through the support of UNIDO in 2002, under the Ministry of Industrial Development (currently Ministry of Industry and Commerce), is another institution that can be used to promoting green jobs in the country. NCPC was established to assist industries to operate more efficiently with minimum harm to the environment. Cleaner Production (CP) also known as Resource Efficient and Cleaner Production (RECP) is the tool promoted by NCPC to assist industries to achieve this goal. The key services of NCPC in Sri Lanka includes: information dissemination and awareness creation; professional training; in-plant assessments and demonstrations; policy advice; and the promotion of environmentally sound technologies. The organisation structure and the number of employees of the NCPC are significantly small compared to the other large-scale governmental training institutes mentioned above.

There are professional bodies that provide vocational training in the field of accountancy and large numbers enrol in these institutions. The Association of Accounting Technicians of Sri Lanka (AAT) is a professional accountancy body established in 1987 which conducts Accountancy Examinations at Technician Level. There is a high potential for creation of and transformation to green jobs through these types of professional institutions, especially in the field of environmental (green) accounting because of the growing trend of student enrolment in the accounting/business management field. Providing them with adequate knowledge on international labour standards as a human right is also imperative to include social justice in this field.

In view of the diversified technical and vocational education and training facilities available in the country, considerable benefits would be derived by developing a comprehensive strategy to mainstream green jobs into the existing technical and vocational education systems.

Tertiary and Vocational Education Commission (TVEC) established in 1990 is the Apex body in the vocational training sector responsible for policy formulation, coordination, planning and development and maintenance of standards through registration and accreditation of Vocational Training Institutions.

The National Institute of Technical Education of Sri Lanka (NITESL) established in 1998 has a mandate for trainer training and, development of curricula and training materials. In 2010 this institution was transformed as UNIVOTEC (University of Vocational Technology) to provide training up to degree level in vocational and technical education.

It is expected that the above two mechanisms would provide a wide framework to accommodate the unskilled work force in the country and facilitate their skills development from craft level up to degree level. To facilitate this process a National Vocational Qualifications (NVQ) Framework has been developed.

6.5 National Vocational Qualifications (NVQ) Framework and its linkages to Green Jobs

The Ministry of Vocational and Technical Training (MVTT) introduced the National Vocational Qualification (NVQ) framework in 2005 to facilitate a skilled human resource development base in Sri Lanka.
The NVQ system seeks to resolve the perceived mismatch between training offered and the requirements of the labour market, the duplication of training provided by institutions and the lack of consistent training standards and delivery. Under the NVQ framework, all institutions providing vocational training courses must be registered with the Technical and Vocational Education Commission (TVEC) and acquire accreditation of individual training courses in order to conduct nationally recognized vocational training and provide NVQ certificates. NVQ is a unified qualification system, common to anywhere in Sri Lanka (Ministry of Youth Affairs and Skills Development).

The NVQ framework has four main pillars: Tertiary & Vocational Education Commission (TVEC), Vocational Training Institutions, Trainees, and Industry. Interlinks among the four pillars facilitate exchange of information on industry requirements, technological advancements in industry, and labour market requirements while also helping in the effective monitoring of the training institutes. The TVEC plays a major role as a monitoring and overall coordinating body in the framework, similar to the function of the University Grants Commission in relation to the universities. Apart from monitoring, identification of occupations to incorporate into the framework, registration/accreditation of vocational training institutes, conducting researches on the framework and allied areas and final preparation of NVQ certificates are some of the other activities that have to be performed by the TVEC. Any vocational training institution that expects to offer NVQ should register with TVEC and also the particular course should be accredited.

This mandate can well be used to integrate environmental and labour concerns into the tertiary and vocational education system in the country both in the public and private sectors with effective monitoring and performance evaluation systems. The output will be creation/development of green jobs, improvements in the application of green concepts in existing green jobs and substitution of green jobs and a socially just transforming of existing jobs into green jobs.

The NVQ system facilitates the updating and review of National Skill Standards and other training methodologies taking advantage of technological advancements in the world. National Skill Standards are developed with the help of Industry experts and as such the updates are directly applied to the system. Therefore the trainees are able to receive updated technology to enhance their skills. NVQ is not only a training certificate but also confirms the skills of the certificate holder. Therefore the Industry preferably attempts to recruit more NVQ holders for their workplace.

The NVQ framework consists of seven (7) levels of instruction. NVQ levels 1 to 4 are for craftsmen designation and successful candidates are issued with National certificates. NVQ levels 5 and 6 are Diploma level, whereas Level 7 is for a degree equivalent qualification.

The NVQ level 1 to 4 are currently implemented in all public and private sector vocational training institutions in Sri Lanka. The NVQ level 5 & 6 are conducted in nine selected Technical Colleges of the Department of Technical Education & Training, covering all nine provinces - one in each. The NVQ level 7 which is to be the degree equivalent is expected to conduct at the only University of Vocational Technology in Sri Lanka (UNIVOTEC).

Since the system has upward laddering to get more qualification, the trainees are encouraged to seek higher NVQ qualifications. The Industry could consider their salary structures based on the NVQ laddering system, to secure promotions.

The NVQ with National Skills Standards/Competency Standards (NSS) are offered through Competency Based Training (CBT) and assessments in accredited training courses or through the Recognition of Prior Learning (RPL) assessments for those who have already acquired competencies through informal learning.
or industry practice. NSS specify the skills, knowledge and attitudes applicable to a particular occupation; as well as standards of performance of a competent worker in context or range in which the work take place. NVQ is a document that specifies the industry requirements. National CBT Curricula for NSS consist of three main documents: a Curriculum outline, a Trainer’s guide and Trainee guides for teaching and learning purposes. The RPL mode of getting NVQ qualification has to be channelled through the National Apprentices & Industrial Training Authority (NAITA) (Ministry of Youth Affairs and Skills Development).

So far the NVQ system has covered 45 occupations in various vocational training institutions including those in the private sector and they offer the NVQ qualification up to level 4 for a range of occupations, and diplomas at level 5 and in eleven different areas, and to a degree at level 7. All assessments for NVQ are done by licensed assessors impartially.

In 2008 the workers involved in solid waste management have acquired NVQ certification under the category of Waste Management Operation Assistant after going through the RPL system. Earlier there was no recognition for this category in the labour force. Through the NVQ system a competent skilled resource base can be developed in the Solid Waste Management Sector up to level 7 based on the competency of the employees in this sector. A module to ensure sector-specific occupational safety and health has been introduced as teaching material to facilitate instruction in local languages. Such initiatives should be replicated for teaching of other green technology.

7. Gaps to achieve mainstreaming of green jobs

It is evident that there are various existing policies in the country to promote green jobs at various levels. Many initiatives have also been taken to promote resource efficiency, cleaner production, sustainable production and consumption, greening industries etc. which are directly related to greening the economy and thereby demanding green jobs. However, in the absence of proper monitoring, evaluation and reporting systems it is difficult to quantify the progress.

7.1 Importance of focusing on systems perspectives in policy implementation

The most significant deficiency in the process is failure to address the problems in a systems perspective. After extensive research work made by the author on this issue, nine requisites (external forces) were identified and are being built upon as sustainable Production and Consumption (SPC) is being implemented in Sri Lanka at different scales by various stakeholders (see Fig. 2). As indicated in section 2 of the report, key sectors were identified in the review of existing policies considering both production and consumption sides aiming at promoting green growth strategies in the country within the framework of sustainable and equitable development.
Figure 2: Systems perspective of implementation of a Sustainable Production and Consumption Model with key external forces

R & C - Responsiveness and Collaboration for SPC
CP – Cleaner Production
EST – Environmentally sound technology
SP – Sustainable Production
Source: Batuwitage 2011

Absence of or deficiencies in one of these nine requisites (external forces) will have negative impacts on achieving the desired outcomes. To the degree that the external forces are negative or positive, the effects on the production and consumption would be negative or positive, thereby, affecting the responsiveness and collaboration needed to achieve the desirable outcome. Sustainability of production and consumption will be high with positive effects and low with negative effects having positive or negative impacts on ecosystems.

In addition to this operating system, it is necessary to establish “An effective implementation mechanism”, “An effective mechanism/s to link with existing and proposed systems” and “Performance indicators” to complete the SPC cycle. Such a model helps in understanding, identifying, specifying and prioritising the forces and actions to be addressed via appropriate policy or procedural changes, within the context of a sound monitoring mechanism. (Batuwitage 2011). All these activities need a skilled human resources base at all levels to achieve the desired outcomes.

7.2 Gaps in interagency/stakeholder coordination to evaluate the effectiveness of the national policies

This section presents some lessons learnt from innovative coordinating mechanisms used for interagency coordination for progress monitoring based on which decisions could be made to bridge gaps.
A comprehensive inter-ministerial coordinating mechanism was developed and used by the Ministry of Environment for the implementation of the 3rd National Environmental Action Plan in (NEAP3) 1998. This inter-ministerial coordinating mechanism was named the “Committee on Environmental Policy and Management (CEPOM)” mechanism. The main objective was to integrate environmental policy and management issues into the other development sectors. Accordingly, nine CEPOMs were established to cover the sectors recognised in the NEAP3.

The new mechanism was used as a strategic approach to facilitate sharing the responsibility with other ministries and with line agencies in addressing environmental issues in Sri Lanka. The remarkable feature of this mechanism is that the Chairpersonship of the CEPOMs was offered to the Secretaries of the Sectoral line Ministries, with the Secretary of the MoE appointed as the Co-Chair. This strategy improved the shared responsibility to implement the decisions made by these committees with improved collaboration of other sectors and thereby, it strengthened the effectiveness of the implementation of NEAP. It was expected that this mechanism, in turn, would facilitate integration of environmental concerns into the development process with a better understanding of economic and social development scenarios.

An apex body was established above the CEPOM structure with the chairmanship of the Secretary of the Ministry of Finance with a view to integrate the sectoral policies, to facilitate development of national policies related to cross cutting issues and to facilitate mobilisation of financial resources for implementation of the entire NEAP. The Secretary of the Ministry of the Environment was the Co-chair. This committee was named “The Committee on Integration of Environment and Development Processes (CIEDP).” It was generally expected that CEPOMs would meet quarterly and that the CIEDP would meet bi-annually.

Some significant achievements were made by this system. However, frequent governmental changes occurred, the different priorities in their portfolios, and more attention of short-term strategies of economic development posed many challenges for continuation of the CEPOM mechanism.

The lessons learned from this well-functioning system, at the initial stage, were that robust mechanisms with skilled manpower resources with adequate resources are necessary for continuation of this type of programme with sound monitoring and reporting mechanisms that are regularly utilized (Batuwitage 2011).

The coordinating mechanism of the Haritha (Green Lanka) programm was developed taking some lessons learnt during the implementation of the CEPOM mechanism (see fig 3).

---

10 There were frequent governmental changes within a limited period of their establishment from November 2000 to October 2001, from January 2002 to February 2004 and from May 2004 to April 2008.
The coordination mechanism referred in Figure 3 was decided to secure political support at highest level for implementation of the Haritha (Green) Lanka programme. The perception was, that the monitoring and implementation part of the Green Lanka programme should be the responsibility of appropriate line ministries, while overarching policy making and overall monitoring should be the prime responsibility of the NCSD which is chaired by the head of the state thereby ensuring that the system functions effectively (Batuwitage 2011).

The Ministry of Plan Implementation was supposed to keep a track of the progress of the Haritha Lanka Programme and report to the NCSD. However with the government change (same government but the portfolios of the Ministries were changed), there was no separate ministry titled Ministry of Plan Implementation and as such at present the Ministry of Environment, being the secretariat to the NCSD,
monitors the progress. A strong institutional mechanism is necessary to ensure the effectiveness of the HL programme and to link to the finance ministry to bridge resource gaps.

8. Policy recommendations that promote green jobs

8.1 General

As indicated in chapters 4 and 5, various specific policies are currently in place to promote green jobs at various levels in Sri Lanka. In the absence of integrated and periodical monitoring, evaluation and reporting systems, it is difficult to quantify the overall outcome of the existing policies. However there are significant success stories that can be further improved and up scaled creating numerous green job opportunities across the country. Effective periodical monitoring and reporting systems are necessary to evaluate the performance of the existing policies and programmes to help identify the right mix of policy instruments and other infrastructure necessary to bridge the gaps in the journey towards a green economy.

While rapid economic growth has become imperative to improve human wellbeing in the country, deficiencies in skilled human resources, especially in regard to the modern environmentally sound technologies and knowhow, are seen as constraints in greening the economy. Multiple knowledge management and skills development systems built upon new scientific discoveries/evidences are necessary to help stimulate bottom-up as well as top-down approaches for mainstreaming environmental aspects in the national development agenda systematically, and to address the present and emerging environmental challenges.

In this chapter, specific policy recommendations are proposed in order to clearly understand the expected outcome by all stakeholders and to be more focused during implementation. These recommendations can be broadly categorised into 4 groups.

Table 6 shows the framework of recommendations that includes these 4 groups. All the recommendations are presented with key performance indicators and other related key information to facilitate decision making.

Table 6: Framework of recommendations

<table>
<thead>
<tr>
<th>Main Recommendation – Key Areas</th>
<th>Sub – Components</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strengthening of the University Education, Technical and Vocational Education and Training, and School Education Systems</strong></td>
<td></td>
</tr>
<tr>
<td>R1 Technical and Vocational Education and Training</td>
<td></td>
</tr>
<tr>
<td>R2 University Education</td>
<td>R2.1, R2.2</td>
</tr>
<tr>
<td>R3 School Education</td>
<td></td>
</tr>
<tr>
<td><strong>Strengthening of some key existing programmes</strong></td>
<td></td>
</tr>
<tr>
<td>R4.1 Haritha (Green) Lanka Programme</td>
<td>R4.1.2, R4.1.3</td>
</tr>
<tr>
<td>R4.2 National Green Reporting System</td>
<td></td>
</tr>
<tr>
<td>R4.3 Vehicle Emission Testing Programme</td>
<td></td>
</tr>
<tr>
<td>R4.4 Use of Bio-Engineering Methods to prevent river bank erosion</td>
<td></td>
</tr>
<tr>
<td>R4.5 Promotion of sustainable use of bio-energy systems</td>
<td></td>
</tr>
<tr>
<td>R4.6 Promotion of Solar Energy</td>
<td></td>
</tr>
<tr>
<td>R4.7 Implementation of the Climate Change Adaptation Plan (2012)</td>
<td>R4.7.1, R4.7.2</td>
</tr>
<tr>
<td>R4.8 Solid Waste Management</td>
<td></td>
</tr>
<tr>
<td>R4.9 Solid Waste Management Authority of the Western Province</td>
<td>R4.9.2.1, R4.9.2.2</td>
</tr>
<tr>
<td><strong>Strengthening the legal policy framework to promote green job opportunities</strong></td>
<td></td>
</tr>
<tr>
<td>R5 Strengthening the legal policy framework</td>
<td>R5.1, R5.2</td>
</tr>
</tbody>
</table>
Enhance dialogue at National/Provincial/District and Local authority levels

| R6 Enhance dialogue at vertical and horizontal levels | R6.1, R6.2, R6.3 |

8.2 Recommendations

8.2.1 Strengthening of the University Education, Technical and Vocational Education and Training, and School Education systems

R1. Recommendation 1

Develop and implement a Vocational Educational and Training (VET) Plan for mainstreaming ‘environment’ in the economic and social development sectors.

Main Process

The main process includes: (i) Identification of available and emerging occupation categories/areas that require general and specific vocational and technical skills (ii) Quantification (iii) Development of standards for each quantified occupation category/area (iv) Curriculum development for each standard (v) Training of Trainers (vi) Establishment of Training Centres (vii) Conduct training (viii) Monitoring and Evaluation.

In this process, it is evident that new and additional skills will have to be developed in the areas of standards development, curriculum development, training of trainers, and monitoring and evaluation. VET plan should recognise these requirements too. Initially, external (international) assistance may be necessary for certain specialised occupation categories/areas. Due recognition and attention should be given to make the green jobs decent in this process. Appropriate labour and social protection measures should be included to strengthen employment and socio-economic policies in the mainstreaming process.

Key sectors and prioritisation

Key sectors

(I) Sectors relating to production


(II) Sectors relating to consumption

Purchasing, Usage, Disposal, and Waste Management.

Among the key sectors identified, priority sectors and areas should be identified based on the environmental issue/s to be addressed and the availability of resources locally to conduct the training programmes. This process can be gradually scaled up and spread out to cover the entire environment spectrum in all sectors.

Specific provisions in the National Human Resources and Employment Policy (NHREP)

The following aspects included in the NHREP provide guidance in this process:
• Effective human resource planning implies that sufficient human resources, with the right mix of talent are available in appropriate locations, performing their jobs when needed.

• At present Sri Lanka lacks comprehensive information in regard to human resource requirements. It is on the basis of reasonable accurate projections about how many skilled workers of different categories the country requires to meet current and emerging needs that arrangements could be made to supply the high quality human resource requirements. All relevant authorities will be encouraged to undertake studies of the human resource requirements in all key categories during the NHREP period.

• Despite the very low rate of unemployment at the national level, some segments of the population such as the youth, women, and the educated experience high levels of unemployment.

• About 65 percent of the workers are estimated to be in the informal sector. Informal occupations are clearly subject to quality limitations. Yet as a large proportion of jobs are created by the self-employed and small scale employers. Helping these enterprises to grow and be more efficient can promote national economic growth and creation of new employment opportunities. Sri Lanka is moving from a factor driven economy towards an efficiency driven economy leading to an innovation driven economy.

• Productivity improvements of the workforce are considered to be pivotal to increase employment and incomes. Adoption of technological innovations is essential to improve the productivity of the workforce. The NHREP sees technology adoption and research as catalysts for human resource development and employment creation.

• High quality higher education, vocational and on-the-job training are considered as the primary platforms for the development of high quality skills.

Table 7: Expected output and key performance indicators for recommendation 1

<table>
<thead>
<tr>
<th>Output</th>
<th>Key performance indicators</th>
</tr>
</thead>
</table>
| Availability of Responsive agents to sensitize, to promote and to make the population fully aware of Environmentally sound technologies and Sustainable production and consumption practices (ESTs/SPC). | In relation to the output:  
  • Number of existing institutions/organisations registered in the TVEC system and occupations covered;  
  • Number of new institutions/organisations registered in the TVEC system and occupation categories covered;  
  • Number of additional institutions/organisations registered in the TVEC system and occupation categories covered. |
| Availability of Responsive, qualified and capable agents to develop/adopt/adopt/transfer Green Technologies and to provide technological and non-technical services to promote implementation of Sustainable Production and Consumption (SPC). | In relation to the output:  
  • Number of existing institutions/organisations registered in the TVEC system and occupations covered;  
  • Number of new institutions/organisations registered in the TVEC system and occupation categories covered;  
  • Number of additional institutions/organisations registered in the TVEC system and occupation categories covered. |
| Availability of Suppliers of green human resources to promote and support the implementation of SPC. Green human resources imply skilled human resources with adequate capacity to integrate SPC in the economic and social developmental | In relation to the output:  
  • Number of existing institutions/organisations registered in the TVEC system and occupations covered;  
  • Number of new institutions/organisations registered in the TVEC system and occupation categories covered;  
  • Number of additional institutions/organisations registered in the TVEC system and occupation categories covered. |
programs at all levels. registered in the TVEC system and occupation categories covered.

**Improved demand** from the identified sectors for vocational skill development and training.

- Number of sectors covered;
- Number of industries/service sector organisations joined the training programmes;
- Number of training courses conducted;
- Enrolment and number of trainees trained;
- Annual trend of enrolment.

**Recommendation 2**

**R2 Strengthen the University Education System for mainstreaming ‘environment’ into the economic and social development sectors.**

The universities have recognised the importance of integrating the subject of environment into the course curricula in general. The course curricula are formulated by each university independently and some universities provide specialised post graduate courses in the subject of environment. This trend has to be scaled up and also spread widely to cover all the subjects at different levels in all the universities to facilitate a holistic knowledge based economy and thereby producing green human resources at higher education levels. Multiple knowledge management models have to be developed to cater to the present market systems with sufficient knowledge to meet the present and emerging environmental and economic challenges.

Under the University Education system, two types of recommendations were made. Type 1 is directly related/linked to universities. Type 2 is a combination of university, and technical and vocational education.

**R2.1 Recommendation 2 - component 1**

**All the universities to establish ‘Environmental Units’ in their universities as a coordinating body to liaise with the government institutions and other stakeholders including the business community on environmental issues where assistance of the universities is necessary.**

These Environment Units should have strong links with the other Faculties/Departments of the university. It is the mandate of these units to disseminate information to all the Faculties/Departments of their respective universities on the present and emerging environmental issues that need their involvement. A system should be developed within the university to coordinate with all the Faculties/Departments and create an enabling environment to provide services in an integrated manner while directly linking with the most relevant Faculties/Departments to address specific issues including curricula development, review, and research activities. This approach will enable the respective universities to identify gaps in their education systems/curricula and take timely action to bridge the gaps.

**Table 8: Expected output and key performance indicators for Recommendation 2.1**

<table>
<thead>
<tr>
<th>Availability of Responsive agents to sensitize, to promote and to make the population fully aware of Environmentally sound technologies and Sustainable production and consumption</th>
<th>Key performance indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>In relation to the output:</td>
<td>• Number of Universities having ‘Environmental Units’ and ‘A coordinating mechanism’ with all Faculties/Departments;</td>
</tr>
</tbody>
</table>

25
practices (ESTs/SPC).

<table>
<thead>
<tr>
<th>Availability of Responsive, qualified and capable agents to develop/adapt/adopt/transfer Green Technologies and to provide technological and non-technical services to promote implementation of SPC.</th>
<th>Number of causes/cause units' that have covered environmental issues in the university curricula; • New and additional employment opportunities created; • Number and the type of involvements by the universities with other stakeholders.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability of Suppliers of green human resources to promote and support the implementation of SCP. Green human resources imply skilled human resources with adequate capacity to integrate SPC in the economic and social developmental programs at all levels.</td>
<td>Number of causes/cause units’ that have covered technical issues in the university curricula; • Sectors covered; • New and additional employment opportunities created; • Number and the type of involvements with other stakeholders by the universities.</td>
</tr>
<tr>
<td>Improved demand from the identified sectors for higher education and training</td>
<td>Annual trend of enrolment and completion; • New and additional employment opportunities created.</td>
</tr>
</tbody>
</table>

### R2.2 Recommendation 2 – component 2

Establish a National Environmental Centre to support and enhance the activities of the University of Vocational Technology (UNIVOTEC) for Integration of Environmental Education in the Tertiary and Vocational Education Systems in Sri Lanka.

### Relevance

The UNIVOTEC has been established in 2008 by Act of Parliament with a vision to be the leading university providing technical and vocational education for all with aspirations to achieve Professional and Technological excellence.

Its Mission is:

- to provide services in human resources, curriculum, learning resources development, research and consultancy;
- to achieve professional excellence with ethical rectitude; and
- to liaise with global TVET sector, academic community and industry.

The main objective of the UNIVOTEC is to provide progressive upward movement to the students in the technical education and vocational training system, based on their aptitudes and abilities, to acquire university education.

The specific objectives of the UNIVOTEC are: to provide pedagogical training up to degree level for trainers serving in the technical and vocational education sector and industry; to provide courses of study for middle level technical personnel, with qualifications acceptable for admission to degree level; and to provide courses of study for those with National Vocational Qualifications to upgrade their competencies and acquire degree level qualifications; and to provide extension courses on continuous professional development.
Based on this mandate, the UNIVOTEC can be the lead body for the following functions:

- Develop training material on environmental aspects in the TVET;
- Provide laboratory/workshop facilities for teaching/learning activities on environmental studies;
- Research and development in the TVET sector;
- Create different units of incubators for environmental studies in the TEVT where such incubators could serve to produce and support youth who are willing to become entrepreneurs in environmental management;
- Train lecturers on environmental oriented TVET subjects at various levels; and
- Form a network with the other government and private sector institutions including other universities and higher educational institutions with a view to periodically evaluate the performance of the human resource development in the Tertiary and Vocational Education Systems in Sri Lanka.

The UNIVOTEC shall:

- Closely Liaise with the other universities and exchange views to disseminate information on knowledge gaps and in the tertiary and vocational educational sector to secure an effective human resource base in the country with sufficient skills to address the current and emerging environmental and economic issues together;
- Closely Liaise with the other tertiary technical training and education institutions and exchange views to disseminate information on knowledge gaps and in the tertiary and vocational educational sector to secure an effective human resource base in the country with sufficient skills to address the current and emerging environmental and economic issues together; and
- Closely Liaise with the Ministry of Education and exchange views to disseminate information on knowledge gaps and in the tertiary and vocational educational sector and to strengthen the school education system with sufficient knowledge to adapt to different vocational and skilled education training programmes and gain productive employment opportunities.

Table 9: Expected output and key performance indicators for Recommendation 2.2

<table>
<thead>
<tr>
<th>Output</th>
<th>Key Performance indicators</th>
</tr>
</thead>
</table>
| Availability of Responsive agents to sensitize, to promote and to make the population fully aware of Environmentally sound technologies and Sustainable production and consumption practices (ESTs/SCP). | In relation to the output:  
• Number of key coordinating mechanisms and networks formed with other universities, industrial communities, environmental authorities and educational, training and research institutions;  
• Number of training courses offered for trainers;  
• Number of training courses offered to the middle level technicians;  
• Number of different units of incubators established for environmental studies to produce and support youth who are willing to become entrepreneurs in environmental management;  
• Number of causes/course curricula/ training standards |

11 Could conduct joint research with existing universities. Could jointly develop general modules on sustainability for degree level courses, collaborate with Business schools and other business related courses to educate business students on the need for sustainability and green businesses.

12 Possible to also collaborate with other national and international Environmental Research Institutes.
Availability of Responsive, qualified and capable agents to develop/adapt/adopt/transfer Green Technologies and to provide technological and non-technical services to promote implementation of SPC.

<table>
<thead>
<tr>
<th>Availability of Suppliers of green human resources to promote and support the implementation of SCP. Green human resources imply skilled human resources with adequate capacity to integrate SPC in the economic and social developmental programs at all levels.</th>
</tr>
</thead>
<tbody>
<tr>
<td>In relation to the output:</td>
</tr>
<tr>
<td>• Number of key coordinating mechanisms and networks formed with other universities, industrial communities, environmental authorities and educational and training institutions;</td>
</tr>
<tr>
<td>• Number of training courses offered for trainers;</td>
</tr>
<tr>
<td>• Number of training courses offered to the middle level technicians;</td>
</tr>
<tr>
<td>• Number of causes/cause curricular/training standards/modules that have covered environmental issues in the NVQ system;</td>
</tr>
<tr>
<td>• Number of training institutions registered with the NVQ system;</td>
</tr>
<tr>
<td>• Number of sectors covered;</td>
</tr>
<tr>
<td>• New and additional employment opportunities created;</td>
</tr>
<tr>
<td>• Number and the type of services provided for the other stakeholders.</td>
</tr>
</tbody>
</table>

Availability of a Skilled human resources base in the country.

- New and additional employment opportunities created;
- Improved demand from the identified sectors for vocational skill development and training;
- Sectors covered.

Recommendation 3

R3. Introduce a variety of basic environmental technology learning opportunities and environmental knowledge to prepare students in school for career study programmes to suit emerging job markets and/or to pursue further studies to explore a wide range of career options.

Provisions of the Present Government Policy

The present government policy direction for education (Mahinda Chinthana – Vision for the Future (2010) spells out that Sri Lanka will move towards a quality and student friendly education system which contributes to a knowledge economy and provides the required skills and virtues to face the emerging needs of a modern global knowledge economy.
Among the other policies presented in that document under education, the following two policies can be specifically used to speed up the existing and proposed strategies in mainstreaming green jobs into the national development agenda.

- Technology learning will gradually be introduced into every student’s basic educational curriculum to provide them with required skills and virtues to face the emerging needs in the future economic milieu.
- Career study programmes will prepare students for the job market or further studies and enable them to explore a wide range of career options. These programmes will be developed and implemented in the education system with the assistance of the private sector, professionals and industries.

**Relevant provisions included in the National Human Resource and Employment Policy**

- In order to address the issue of non-availability of vocational education at the level of secondary education, a policy of setting up a seamless pathway for secondary school leavers to be directed to the Vocational Education and Training (VET) sector will be promoted, with the option to continue in the VET system, if they desire to do so. Secondary school curricula will be enriched with vocational and training components. NVQ level 1 (Basic Components to work) will be introduced for G.C.E. O/L students. Teaching pre-vocational subjects in the secondary school will also be commenced.

- Work oriented G.C.E. “A-Level” technology stream will commence from the school year 2012. This would enable students at the senior secondary school level to pursue the A-level Technology stream in an available field of their choice and proceed for either gainful productive employment and/or further education in the same or allied field. School will establish collaborative work with neighbouring VET institutes to share resources, laboratory and staff in implementing this policy. The University of Vocational Technology (UNIVOTEC) will produce the teachers needed for this stream as a long term measure.

The Ministry of Environment and Ministries related to Industrial Development, should closely liaise with the Ministry of Education and Ministry of Skills Development on the technical subjects and other related environmental subjects to be sufficiently covered to implement this recommendation taking in to account of the present and emerging environmental and economic challenges.

**Table 10: Expected output and key performance indicators for Recommendation 3**

<table>
<thead>
<tr>
<th>Output</th>
<th>Key performance indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability of a Skilled human resources base in the country.</td>
<td>• Employment opportunities for school leavers in par with the labour market with improved environmental performance, social security and appropriate income;</td>
</tr>
<tr>
<td></td>
<td>• Improved access to a variety of skilled job opportunities;</td>
</tr>
<tr>
<td></td>
<td>• Percentage of enrolment of school leavers in to the NVQ system;</td>
</tr>
<tr>
<td></td>
<td>• Improved demand from the identified sectors for vocational skill development and training;</td>
</tr>
<tr>
<td></td>
<td>• Sectors covered.</td>
</tr>
</tbody>
</table>
8.2.2 Recommendations for strengthening of some key existing programmes

R4.0 Recommendation 4:

This section presents recommendations for nine existing programmes (4.1 to 4.9) which have a high potential for creating new and additional green jobs with provisions for strengthening the existing jobs.

4.1 Haritha (Green) Lanka Programme

Context

The Haritha (green) Lanka (HL) Programme (2009) is the most recent national programme developed to integrate green concepts into the national development agenda with the highest political leadership. This national programme was adopted in 2009 by the National Council for Sustainable Development (NCSD). NCSD is chaired by the President of the Country. Haritha (Green) Lanka programme has ten missions/thrust areas under which strategies and short, medium and long term action plans have been developed with key performance indicators under each activity.

The ten missions are:

1. **Clean Air – Everywhere**;
2. **Saving the Fauna, Flora and Ecosystems**;
3. **Meeting the Challenges of Climate Change**;
4. **Wise Use of the Coastal Belt and the Sea Around**;
5. **Responsible Use of the Land Resources**;
6. **Doing Away with the Dumps**;
7. **Water for All and Always**;
8. **Green Cities for Health and Prosperity**;
9. **Greening the Industries**;
10. **Knowledge for Right Choices**.

Comprehensive, achievable and measurable indicators have been established for 82 strategies and 375 activities that were under the above 10 broad thrust areas. The implementation of the strategies and activities, which is highly relevant for greening the economy (through green jobs), require many national and sectoral policy interventions.

The Haritha (Green) Lanka National Action Plan has been included in the curricula of the Sri Lanka Institute of Development Administration (SLIDA) where administrative officers in the country are trained. However, it has to be noted that a strong monitoring mechanism is a major requirement to achieve the objectives of the Haritha (Green) Lanka Programme linking with provincial councils, local authorities, district and divisional secretariats, the private sector and communities.

The country needs a skilled human resource base which can adequately provide environmental friendly knowledge and technical facilities/services and support to build green infrastructure required to move into a green economy through the programmes such as Haritha (Green) Lanka programme.

R4.1.1 Recommendation
Conduct a market survey to identify existing green jobs available and, new and additional green jobs necessary to effectively implement the Haritha (Green Lanka) Program under each mission.

R4.1.2 Recommendation

Review the effectiveness of the existing coordinating mechanism of Haritha (Green) Lanka Programme and develop a mechanism based on lessons learned to efficiently monitor the progress at national, provincial and local levels.

Table 11: Expected output and key performance indicators for Haritha Lanka Programme

<table>
<thead>
<tr>
<th>Output</th>
<th>Key performance indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Market survey to identify existing green jobs available and new and additional green jobs necessary to effectively implement the Haritha (Green) Lanka Program under each mission.</td>
<td>• Number of existing green jobs identified under each sector;</td>
</tr>
<tr>
<td></td>
<td>• Additional green Jobs necessary;</td>
</tr>
<tr>
<td></td>
<td>• New Green Jobs necessary;</td>
</tr>
<tr>
<td></td>
<td>• Sectors covered.</td>
</tr>
<tr>
<td>Review the effectiveness of the existing coordinating mechanism and develop a mechanism based on lessons learned to efficiently monitor the progress at national, provincial and local levels.</td>
<td>• Availability of an effective coordinating mechanism linking to National, Provincial and Local Levels;</td>
</tr>
<tr>
<td></td>
<td>• Implementation strategies;</td>
</tr>
<tr>
<td></td>
<td>• Number of key performance indicators fulfilled under each mission of the action plan;</td>
</tr>
<tr>
<td></td>
<td>• Feedback from the implementing agencies at horizontal and vertical levels.</td>
</tr>
<tr>
<td></td>
<td>• Improvements of economic, environmental and social indicators across the country.</td>
</tr>
</tbody>
</table>

4.2 National Green Reporting System (NGRS)

Context

The National Green Reporting System was established in June 2011 by the Ministry of Environment as a market based instrument in line with the Mission 9 (Greening the Industries) of the Haritha (Green) Lanka programme, in collaboration with the Ceylon Chamber of Commerce (private sector) and many other key public & private sector institutions related to greening the economy. Its Mission is to promote integration of environmental aspects into socio-economic development processes encouraging self-monitoring and reporting of performance. The reporting system covers six (6) Economic indicators, twenty four (24) Environmental indicators and twenty (20) Social indicators. At present, sixty seven (67) industries have been associated with the reporting system. Effective implementation of the reporting system needs Technical Service Providers and Human Resource Developers to assist the industries to apply self monitoring and reporting systems island wide which has a high potential of green job creation at different levels.

A five tier system has been introduced to provide flexibility for the industries to join the NGRS system. The companies are awarded a certificate indicating the level/tier to which they are associated with. Companies can retain in Tire 1only for a maximum two years.

Tier 1: Industries accept the NGRS in principle. No reporting requirements.
Tier 2: Voluntary Reporting by industries based on voluntary selection of minimum 10 indicators at least one each from economic, environmental and social indicators.
Tier 3: Mandatory Reporting by industries based on voluntary selection of minimum 10 indicators at least one each from economic, environmental and social indicators - measurable and verifiable by a third party.
Tier 4: Mandatory Reporting by industries based on voluntary selection of minimum 20 indicators at least one each from economic, environmental and social indicators - measurable and verifiable by a third party.
Tier 5: Mandatory Reporting by industries in accordance with all the parameters (50) listed in the reporting system - measurable and verifiable by a third party.

R4.2 Recommendation:

Develop a Vocational Education and Training (VET) Plan for the implementation of the National Green Reporting System in collaboration with the major stakeholders.

Table 12: Expected output and key performance indicators for the National Green Reporting System (NGRS)

<table>
<thead>
<tr>
<th>Output</th>
<th>Key performance indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of a Vocational Educational and Training (VET) Plan for the implementation of the National green Reporting System.</td>
<td>• Availability of the VET Plan;</td>
</tr>
<tr>
<td></td>
<td>• Number of Industries joined for the implementation of the plan.</td>
</tr>
<tr>
<td>Improvements of the Environmental Performance of the Industries and service sector.</td>
<td>• Number of Industries joined the reporting system annually;</td>
</tr>
<tr>
<td></td>
<td>• Percentage of upward transfers from tier 1to5.</td>
</tr>
<tr>
<td>Availability of Responsive agents to sensitize, to promote and to make the population fully aware of Environmentally sound technologies and Sustainable production and consumption practices (CPTs/ESTs/SPC).</td>
<td>• Number of training institutions registered in the NVQ system;</td>
</tr>
<tr>
<td></td>
<td>• Number of training of trainers produced;</td>
</tr>
<tr>
<td></td>
<td>• Number of training programmes conducted;</td>
</tr>
<tr>
<td></td>
<td>• Number of new and additional green jobs created;</td>
</tr>
<tr>
<td></td>
<td>• Sectors covered.</td>
</tr>
<tr>
<td>Availability of Responsive, qualified and capable agents to develop/adapt/adopt/transfer Green Technologies and to provide technological and non-technical services to promote implementation of SPC.</td>
<td>• Number of technical service providers registered;</td>
</tr>
<tr>
<td></td>
<td>• Number of technical services provided;</td>
</tr>
<tr>
<td></td>
<td>• Sectors covered;</td>
</tr>
<tr>
<td></td>
<td>• Number of new and additional green jobs created;</td>
</tr>
<tr>
<td></td>
<td>• Improved demand from the industries.</td>
</tr>
<tr>
<td>Availability of Suppliers of green human resources to promote and support the implementation of SCP. Green human resources imply skilled human resources with adequate capacity to integrate SPC in the economic and social developmental programs at all levels.</td>
<td>• Number of suppliers of green human resources registered;</td>
</tr>
<tr>
<td></td>
<td>• Number of new and additional green jobs created;</td>
</tr>
<tr>
<td></td>
<td>• Number of green human resources transformed;</td>
</tr>
<tr>
<td></td>
<td>• Number and type of services provided annually;</td>
</tr>
<tr>
<td></td>
<td>• Improved supply chain management opportunities.</td>
</tr>
<tr>
<td>Availability of a Skilled human resources base in the country.</td>
<td>• Number of green human resources;</td>
</tr>
<tr>
<td></td>
<td>• Sectors covered;</td>
</tr>
<tr>
<td></td>
<td>• Improved performance of industry and service sectors.</td>
</tr>
</tbody>
</table>

4.3 Vehicle Emission Testing (VET) Programme
Context

The vehicle emission testing programme is one of the significant programmes which have a high potential to promote green jobs. This programme was implemented in 2008 as per the regulations gazetted (GE/1137/35) in 2000 under the National Environmental Act No 47 of 1980 (These regulations were subsequently amended again in 2003 (GE/1295/11). The objective is to prepare and regulate the vehicle emission, fuel and importation standards of vehicles.

The Vehicle Emission Testing (VET) Programme is implemented by the Commissioner of Motor Traffic through the annual revenue license procedures. The annual revenue license is issued by Provincial Commissioner of Motor Traffic through Divisional Secretariat Office. The officials linked to this process had to be trained in addition to the technical personnel of the Motor Traffic Department, the police and other related training institutions which can be cited as ‘Transformation to Green Jobs’ within the existing system.

Two private companies Laugfs Eco Sri (Pvt.) Ltd. and CleanCo Lanka (Pvt.) Ltd. are conducting the vehicle emission testing on behalf of the government throughout the country except North Province. These companies have 34 fixed, 87 Semi-fixed and 161 mobile stations in 20 districts covering 8 provinces of the country.

Table 13: Number of Vehicle Emission Testing Stations established and Number of Employees

<table>
<thead>
<tr>
<th>Company</th>
<th>Fixed Stations</th>
<th>Semi-fixed Stations</th>
<th>Mobile Stations/ Locations</th>
<th>Total Stations</th>
<th>Employers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laugfs Eco Sri (Pvt.) Ltd.</td>
<td>19</td>
<td>48</td>
<td>103</td>
<td>170</td>
<td>598</td>
</tr>
<tr>
<td>CleanCo Lanka (Pvt.) Ltd.</td>
<td>15</td>
<td>39</td>
<td>58</td>
<td>112</td>
<td>300</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>87</td>
<td>161</td>
<td>282</td>
<td>898</td>
</tr>
</tbody>
</table>

Source: (Ministry of Environment 2007)

An Air Resource Management Center (AirMac) was established in the Ministry of Environment for stakeholder co-ordination and policy development related to air quality. According to a country survey conducted in 2007 by the AirMac, majority of the vehicle repair establishments is at micro/small level with less than 10 employees and less than 25 vehicles are repaired per month. The estimated total number of establishments is about 21,260. The total number of employees in the sector exceeds 115,000.

For the effective implementation of this programme it is necessary to build the capacities and skills of: the Divisional Secretariat officers covering all the districts in the country; Technicians of Central Environmental Authority; Examiners of Motor Vehicles; Police Officers; Garage Technicians and Owners; and Media. Also, it is essential to create and enhance awareness and knowledge of general public periodically with regard to the objective of the programme and citizens’ role through Television, Radio and News Papers etc. Systematic capacity building and skill development programmes have to be designed with periodical monitoring systems at all levels to obtain feedback of the stakeholders and take timely action to address the problems in the implementation process.

R4.3 Recommendation

Develop a Vocational Educational and Training (VET) Plan for the implementation of the Vehicle Emission Testing Programme in collaboration with the major stakeholders.

Table 14: Expected output and key performance indicators for the Vehicle Emission Testing (VET) Programme
### Output

#### Development of a Vocational Educational and Training (VET) Plan for the implementation of the Vehicle Emission Testing Programme.
- Availability of the VET Plan;
- Number of garages joined the implementation of the plan;
- Number of existing employees received training in garages and testing companies;
- Reduction of Public complaints;
- Air quality improvements.

#### Availability of a Skilled human resources base in the country.
- Availability of Responsive Agents to sensitize, to promote and to make the population fully aware of the environmentally sound technologies that can be used to reduce emissions and enjoy the benefits of the Vehicle Emission Testing Programme (environmental, social and economic);
- Availability of Responsive, qualified and capable agents to develop/adapt/adopt/transfer environmentally sound technologies and to provide technological and non-technical services to improve the efficiency of the Vehicle Emission Testing Programme;
- Technical Improvements of the testing programmes.

### R4.4 Use of Bio-Engineering methods for preventing river bank erosion

#### Context
Best practices are available on the use of Bio-Engineering Methods to prevent river bank erosion. Fig. 4 shows a best practice made to prevent bank erosion of a certain part of Deduru Oya in the Chilaw Divisional Secretariat area by using Bio-Engineering methods. Effective implementation of this program needs public, private, community partnerships whereby multiple benefits can be achieved by all parties creating win-win situations to all.

#### Figure 4: Bio Engineering Method of Erosion control

![Image of Bio Engineering Method of Erosion control](photography_by_soyasa_m_b_divisional_secretariat_chilaw_2011)

These types of Bio-Engineering methods help reducing the ecological and carbon footprint tremendously and improving community participation on environmental conservation practices. Part time green job opportunities will be increased especially in rural areas in the establishment of plant nurseries, in the coir industry, and in the cultivation of value added species such as medicinal plants.

### R4.4 Recommendation
Make it mandatory to take steps to prevent river bank erosion by the owners (both public and private sector) and encourage use of Bio-Engineering methods where ever appropriate.

Table 15: Expected output and key performance indicators for Use of Bio-Engineering methods for preventing river bank erosion

<table>
<thead>
<tr>
<th>Output</th>
<th>Key performance indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taking steps to make it mandatory to prevent river bank erosion by the owners of the river banks and encourage use of Bio-Engineering methods where ever appropriate.</td>
<td>• Legal tools; • Administrative tools; • Monitoring and evaluation mechanisms; • Length of banks rehabilitated and percentage covered; • Reduction of bank erosion.</td>
</tr>
<tr>
<td>Availability of a Skilled human resources base in the country.</td>
<td>• Availability of Responsive agents to sensitize, to promote and to make the communities fully aware of the advantages of using bio-engineering methods/ environmentally sound technologies that can be used to prevent/reduce bank erosion; • Availability of Responsive, qualified and capable agents to use and transfer bio-engineering methods and to provide technological and non-technical services to effectively use these methods and continue maintenance; • New and additional green jobs created; • Community involvement in the process and full time and part-time jobs created in the rural sector.</td>
</tr>
</tbody>
</table>

4.5 Promotion of sustainable use of bio-energy systems to meet the growing energy requirements of industry.

Context

Energy sector of the country experiences significant negative pressures due to the sharply growing demands for energy, high and volatile international oil prices and lower hydropower generation caused by erratic weather patterns. This situation results in a steady increase in the utilisation of fossil fuel based energy sources to meet the electricity demand. Industries are facing economic problems associated with high energy costs. International oil prices were largely influenced by the geopolitical disturbances, Euro Zone debt crises and the slow pace of global economic recovery.

Many industries are willing to convert their furnaces and kilns fired with imported oil to bio mass due to high fuel costs, which is a progressive step that should be encouraged. The Bio Energy Association of Sri

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Lanka urges that Sri Lanka, not having any proven fossil fuel resources has to accept the challenge of developing several sources of renewable energy available to us. They emphasize that this is a blessing in disguise and harnessing indigenous sources will not only ensure energy security with less volatile and economical costs but also help Sri Lanka to retain its position as a low carbon footprint country with the attendant numerous advantages.

There is a high potential of using the Plantation Sector, especially Tea and Coconut plantation areas, to grow and sustainably use species such as ‘Giricidia’, as a shade in Tea cultivated areas and as an under-crop in coconut plantations, to meet the growing demand of biomass by the industries. This approach has multiple other spin off benefits such as creation of green job opportunities in the supply chain and maximizing plantation sector income through integrated ‘Coconut/Tea/Gliricidia/Cattle farming systems’. Giricidia leaves can be used as a fodder for cattle. Milk production is given high priority due to high cost of imported milk powder. The leaves of Giricidia will be a valuable resource to produce organic fertiliser too which can reduce the depletion of soil fertility of agricultural lands.

Calculations of the Bio-Energy Association claim that the plantation industry can provide the leadership for this change by targeting the 235,000 tons per year consumption of oil by industries. This can be replaced up to 100% by the cultivation of Gliricidia which will result in an income of a minimum of One Billion rupees to the growers by the sale of wood alone.

**R4.5 Recommendation**

**Encourage the plantation sector and industries to develop an ecologically sound supply chain of bio mass energy to stimulate converting of their furnaces and kilns fired with imported oil to bio mass.**

**Table 16: Expected output and key performance indicators for promotion of sustainable use of bio-energy systems to meet the growing energy requirements of the industry**

<table>
<thead>
<tr>
<th>Output</th>
<th>Key performance indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability of supply chains to produce/grow, harvest, process, and transport biomass.</td>
<td>• Increased trends of converting furnaces and kilns of industries fired with imported oil to bio mass; • Percentage of land covered by bio-mass for energy generation; • Improvements of soil fertility; • New and additional employment opportunities created (both full time and part time); • Reduction of GHG emissions.</td>
</tr>
<tr>
<td>Increased Livelihood opportunities to the community within and around the plantation sector.</td>
<td>• Number of green jobs transformed and created; • Number of Livelihood opportunities secured; • Increases of milk production; • Increased income levels.</td>
</tr>
</tbody>
</table>

**4.6 Promote Solar Energy as an option to help alleviate Sri Lanka’s Electrical Energy Problem**
Context

Sri Lanka is in the throes of a power crisis or more correctly a financial crisis in the electricity generation sphere, due to over dependence on fossil fuels for power. The country has an abundance of solar energy throughout the year, which unfortunately is not utilized due to various real and perceived barriers to the wide spread utilization of this valuable resource.

Among these most important is the fact that it is a non firm energy source, available only during the day and subject to variation due to cloud cover. Thus it is not considered a suitable option for providing regular power to the national grid. The second impediment is the unrealistically high prices quoted by the vendors in Sri Lanka for the supply of solar power based power generation systems.

While Sri Lanka is held in high esteem due to its success of providing over 100,000 solar PV units to rural households located far away from the national grid, driven by a subsidy scheme and assistance from the World Bank, this project is now at an end due to the rapid expansion of the national grid and the success of the CEB in achieving the target nearly 98% electrification in the country by end of 2012. The balance 2% will be served by small solar PV systems as described above and other off grid renewable systems.

Sri Lanka has also taken the progressive step of introducing net metering facility to the consumers.

However problems inherent in the Sri Lanka’s electrical power system continue due to highly skewed daily demand pattern which has a very high peak during the hours of 6.30 PM to 9.30 PM, with a much lower demand at other times.

The consumers using over 181 units per month, are paying a premium through their electricity bills and would therefore welcome a means by which their bill can be reduced and at the same time provide a national service by installing PV panels. This is likely only if the cost of the installation can be recovered in a reasonable time, say 5 years maximum. The levels of the prices prevailing outside Sri Lanka for Solar PV systems indicate that this is certainly possible.

In this context, the recent initiative taken to install a solar panel in the official residence of the President of the country for energy can be sighted as a pace setting significant step, to bolster application of renewable energy sources under the direct leadership at the highest political level.

If even a modest 100,000 units per year is targeted at the beginning, increasing to say 200,000 per year as the demand increases, this conversion opens up tremendous green employment opportunities, particularly for the trained young people in the following sectors:

1 Installation of solar panels
2 Integration of the home PV units
3 Manufacture of increasingly sophisticated components locally for integration.

To express the true value of this potential the benefits that can be achieved can be quantified as shown below (Bio-Energy Association 2012).

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of Solar PV installations in five years</td>
<td>500,000</td>
</tr>
<tr>
<td>Capacity of each unit</td>
<td>500 W</td>
</tr>
<tr>
<td>Combined capacity which can reduce the peak demand</td>
<td>250 MW</td>
</tr>
<tr>
<td>Potential Cital Cost saving by eliminating a new power plant</td>
<td>$ 450 Million</td>
</tr>
<tr>
<td>Energy saved for the grid during peak hours (2.5 kWh per house)</td>
<td>1,250,000 kWh</td>
</tr>
</tbody>
</table>
Potential saving for CEB daily by avoiding oil based power generation @ Rs 25/kWh Rs31.25 M/day

R4.6 Recommendation

Promote households who consume over 181 units per month and the industries to use solar PV systems to reduce their energy costs.

Table 17: Expected output and key performance indicators to promote Solar Energy as an option for Sri Lanka’s Electrical Energy Problem at appropriate scale

<table>
<thead>
<tr>
<th>Output</th>
<th>Key performance indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide the option of time of day metering to the household sector with consumption of say 200 units per month and later on to be made mandatory if required (this is currently mandatory to the industries and large commercial consumers only).</td>
<td>• Legal tools; • Administrative tools; • Monitoring and evaluation mechanisms; • No of households using solar systems and percentage covered; • Reduction GHG emissions.</td>
</tr>
<tr>
<td>Ascertain a realistic price for the solar systems and make arrangements for ready availability of such systems to the general public.</td>
<td>• Increased number of suppliers and integrators.</td>
</tr>
<tr>
<td>Installing smart meters by CEB at a reasonable cost or even free of charge.</td>
<td>• Methodologies available for installation of smart meters; • Increased trend of using solar systems.</td>
</tr>
<tr>
<td>Incentives such as low or zero interest loans for the installations.</td>
<td>• Availability of loan schemes.</td>
</tr>
<tr>
<td>Availability of a Skilled human resources base in the country.</td>
<td>• Availability of Responsive agents to sensitize, to promote and to make the population fully aware of the advantages of using Solar systems. • Availability of Responsive, qualified and capable agents provide technological and non-technical services in installation and to effectively use these methods and continue maintenance and waste disposal; • New and additional green jobs created; • Reductions of GHG emissions.</td>
</tr>
</tbody>
</table>

4.7 Implementation of the Climate Change Adaptation Plan (2012)

Context

Sri Lanka developed a National Climate Change Policy in 2011. This policy contains a vision, mission, goal, objectives and a set of guiding principles followed by broad policy statements under Vulnerability, Adaptation, Mitigation, Sustainable Consumption and Production, Knowledge Management and General Statements.

Although Greenhouse Gas (GHG) emission of Sri Lanka is negligible, the country is highly vulnerable to the impacts of climate change. A National Climate Change Adaptation Strategy was developed by the Ministry of Environment with a view to build the capacity of the country to address the challenges of climate change. For the effective implementation of this Adaptation Strategy, a Technology Needs Assessment (TNA) with a Technology Action Plan was prepared in 2012 with the assistance of UNEP/GEF (Global Environmental Facility).
Five priority sectors have been identified in this assessment for adaptation viz. Food, Health, Water, Coastal, and Biodiversity. Under these sectors, potent technologies available in each sector to face the challenge of climate change have been identified through an extensive consultative process of the related stakeholders.

The technologies identified on priority basis:

**Food sector**

(1) Culture-based fisheries; (2) Sustainable land management; and (3) Crop diversification and precision farming, as the most promising technologies.

**Health Sector**

(1) Technology for early warning systems and networking for information exchange on extreme events and other climate change related events; (2) Transfer of knowledge and skills to health personnel; and (3) Management of Health Care waste.

**Water Sector**

(1) Restoration of minor tank net works; (2) Rainwater harvesting from rooftops; (3) Boreholes/tube wells as a drought intervention for domestic water supply.

**Coastal Sector**

(1) Sand dune rehabilitation; (2) Restoration of mangroves; and (3) Restoration of coral reefs by transplanting corals received the highest priority respectively.

**Biodiversity Sector:**

(1) Restoration of degraded areas inside and outside the protected area network to enhance resilience; (2) Increasing connectivity through corridors, landscape/matrix improvement and management; (3) Improve management, and possibly increase extent of protected areas, buffer zones and create new areas in vulnerable zones; (4) Focus on conservation of resources and carryout special management for restricted range, highly threatened species and ecosystems; (5) Technology Action Plan for Climate Change adaptation country needs to build its capacities especially in terms of transfer of technology their dissemination throughout the country.

Therefore, timely action is necessary for the development of a skilled human resource base for the effective implementation of this Technology Action Plan as priority sectors have been included in the plan.

**R4.7 Recommendations (two components)**

**R4.7.1 Component 1**

Develop a Human Resource Development Plan with necessary advanced knowledge, skills and vocational training for the implementation of the Technology Action Plan for Climate Change Adaptation.
R4.7.2 Component 2

Empower the vulnerable communities and ensure their active participation in application of adaptation techniques.

Table 18: Expected output and key performance indicators for the Technology Action Plan for Climate Change Adaptation.

<table>
<thead>
<tr>
<th>Output</th>
<th>Key performance indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability of a Human Resource Development Plan with necessary advanced knowledge, skills and vocational training for the implementation of the Technology Action Plan for Climate Change Adaptation (2012).</td>
<td>• Availability of the HRD plans for:</td>
</tr>
<tr>
<td></td>
<td>o Food sector,</td>
</tr>
<tr>
<td></td>
<td>o Health sector,</td>
</tr>
<tr>
<td></td>
<td>o Water sector,</td>
</tr>
<tr>
<td></td>
<td>o Coastal sector and</td>
</tr>
<tr>
<td></td>
<td>o Biodiversity sector</td>
</tr>
<tr>
<td></td>
<td>• Number of existing skilled Human Resources identified;</td>
</tr>
<tr>
<td></td>
<td>• Number of new human resource needs identified;</td>
</tr>
<tr>
<td></td>
<td>• Number of technologies covered under each sector.</td>
</tr>
<tr>
<td>Availability of Suppliers of green human resources for implementation of the Action Plan (2012).</td>
<td>• Number of suppliers of green human resources available;</td>
</tr>
<tr>
<td></td>
<td>• Number of new and additional green jobs created.</td>
</tr>
<tr>
<td>Availability of a Human Resource Development Plan to strengthen/build a knowledgebase of the ‘Disaster Management Team’ to build the capacity of the vulnerable communities/groups and empower them in application of the Adaptation Plan.</td>
<td>• Number of Team Members Trained;</td>
</tr>
<tr>
<td></td>
<td>• Spatial distribution and linkages to the vulnerable groups;</td>
</tr>
<tr>
<td></td>
<td>• Number of Vulnerable Community Groups involved;</td>
</tr>
<tr>
<td></td>
<td>• Improved community based initiatives.</td>
</tr>
</tbody>
</table>

4.8 Solid Waste Management

Context

Solid waste management was specifically selected in this study in order to assess the potential to create green jobs in this sector to fulfil a requirement of the external collaboration contract referred in chapter 1 of this report. The contract requires identifying potential areas for introducing occupational safety and health provisions into the regulatory framework of Sri Lanka’s Waste Management Authority of the Western Province as a key focus of this paper.

Solid waste is one of the key areas/issues related to environmental degradation and negative health impacts in the country.

Municipal waste, industrial waste, hospital waste, electronic & electrical waste, and construction waste need special attention to reduce health and environmental impacts due to mismanagement. Efficient and effective management of these waste streams could lead to resource conservation too. Also, there is a heavy potential on creation of green jobs in this sector. To apply life cycle thinking in waste management effectively, many sub sectoral entities are necessary such as collectors, transporters, recyclers, recoverers, spare parts providers, assemblers, service providers for operation and maintenance etc. Special attention is particularly necessary to make the green jobs decent in the waste management sector. Administrators and
managers should also be trained properly to complete the waste management cycle. The importance of Research and Development should be recognised in this sector.

Municipal waste management is a mandatory requirement of the Local Authorities (Municipal Councils, Urban Councils and Pradeshiya Sabhas (village councils) under MC Ordinance No 16 of 1947, UC Ordinance No 61 of 1939, Pradeshiya Sabha Act.No 15 of 1987). Under the 13th amendment of the Constitution, waste management also comes under the purview of Provincial Councils. National Environmental Act (NEA) has provisions to manage waste in an environmentally sound manner under the Environmental Protection Licensing (EPL) and the Environmental Impact Assessment (EIA) systems. Waste Management Authority of the Western Province (2007) and the North Western Provincial Council (1990) established under the 13th Amendment to the Constitution has widened the institutional framework for solid waste management. The Urban Development amendment to Act No. 4 of 1982 recognises that a proper waste management system is an integral part of the urban development programme and suitable lands may be earmarked for waste management activities in the development plans.

A National Strategy for Solid Waste Management was developed in 2000 with a broad policy of managing solid waste ‘from its generation to final disposal’, prioritizing waste avoidance over recycling, and recycling over the other forms of disposal methods. Technical Guidelines for Solid Waste Management were published by the Central Environmental Authority in June 2005. Subsequently a National Solid Waste Management Policy was developed in 2008 reaffirming the waste management hierarchy. A comprehensive National Programme was initiated to assist local authorities in 2009 titled ‘Pilisaru’ under the CEA. Regulations for hazardous waste management were gazetted under the NEA, under National Environmental (Protection and Quality) regulations No1 of 2008 for Scheduled (Harzardous) waste. Technical Guidelines were published by CEA in 2008 in accordance with the requirements set out in the gazette notification of 2008 for scheduled (hazardous) wastes.

Effective implementation of all these policy and legal tools needs a structured human resource base throughout the country with sufficient skills covering all levels, from unskilled labour force to higher managerial positions.

In the recent past, more attention has been paid by the Local Authorities to composting and recycling of wastes. Few Local Authorities (eg. Balangoda UC, Welimada PS, Nuwara Eliya MC) have established comprehensive waste management systems. There are 56 composting plants covering 78 local authorities under the Pilisaru Project. Balangoda UC has established a waste management training centre and provides NVQ certification training programmes for labour categories which can be cited as a best practice for mainstreaming labour categories into the national skills development programme. Such attempts are especially important to build confidence in the unskilled labour force on the need for skills development while providing opportunities to move up the ladder if they so desire.

The following sections of the Technical Guidelines published in June 2005 by the Central Environmental Authority for Solid Waste Management covers the workers’ occupational health.

- “Labour Ordinance, Factory Ordinance, other relevant regulations and guidelines stipulated by CEA approved procedure shall be followed. All design shall comply with the requirements of the relevant agencies (section 2.1.6).
- Adequate training should be given to workers involved in solid waste management operation and operator should endeavour to involve trained workers as far as possible (section 2.1.8).

The Technical Guidelines published by CEA for scheduled (hazardous) waste management have more specific provisions to cover occupational health and safety considerations. These technical guidelines have been published by CEA in accordance with the requirements set out in the National Environmental
(Protection and Quality) regulations No 1 of 2008 gazetted for Scheduled (Hazardous) waste management under NEA.

Section 2.7 of the technical guidelines on ‘Occupational Health and Safety’ requires the following key preventive actions to be taken to avoid exposure of workers to the waste:

- Well-designed operating procedures;
- Personal protective equipment;
- Pre operational training;
- Constant supervision;
- Working procedure review.

A list of personal protective equipment appropriate for a stock handling and disposal exercise has also been included under section 2.7.

It has to be emphasized that there is a dire need of skilled human resources in the waste management sector from craft/artisan category to technical/engineering and planning levels to improve the effectiveness of the implementation of existing policies and regulations and to ensure effective solid waste management in the country. Hazardous waste management including clinical waste requires more skilled human resources as the existing human resources are grossly inadequate to manage hazardous waste in an environmental friendly manner. RPL (Recognition of Prior Learning) system within the NVQ framework can be strategically used for skilled development of the existing labour force/staff. However, additional capacity building/skill development models are necessary to develop a skilled human resource base linking to university, technical and vocational education systems covering entire solid waste management spectrum throughout the life cycle.

Recommendation one of this report requires to “Develop and implement a Vocational Educational and Training (VET) Plan for mainstreaming ‘environment’ in the economic and social development sectors”. Waste management is included in the sectors considered.

R4.8 Recommendation

Consider Solid Waste Management as a key priority area under the recommendation one (i.e. Develop and implement a Vocational Educational and Training (VET) Plan for mainstreaming ‘environment’ in the economic and social development sectors).

Table 19: Expected output and key performance indicators for Solid Waste Management

<table>
<thead>
<tr>
<th>Output</th>
<th>Key performance indicators</th>
</tr>
</thead>
</table>
| Availability of a Skilled human resources base in the country for solid waste management. | • Availability of Responsive agents to sensitize, to promote and to make the community fully aware of the environmentally sound management practices that can be used for waste management aiming at different target groups;  
  • Availability of Responsive, qualified and capable agents to develop/adapt/adopt/transfer environmentally sound technologies and to provide technological and non-technical services to improve the efficiency of solid waste management in different sectors;  
  • Technical and quality improvements of the waste |
management:
- Formal inclusion of occupational and safety practices in all the waste management practices;
- Number of new and additional green jobs created and number of existing jobs strengthened;
- Improved resource efficient Business opportunities;
- Sectors covered;
- Reduction of waste generation trends and wastes to be finally disposed of;
- Reduction of public complains;
- Improved environmental quality;
- Improved social security systems for the labour force.

<table>
<thead>
<tr>
<th>4.9 Solid Waste Management Authority of the Western Province</th>
</tr>
</thead>
</table>

**Context**

Solid Waste Management Authority of the Western Province was established under the Waste Management Statute of No. 01 2007 of the Western Provincial Council providing operative legal and regulatory framework relating to waste management of the Western Province. It is important to note that more than 60% of the total waste of the country is generated in the Western Province. Therefore effective and sustainable waste management systems are essential to ensure human health, environmental protection and economic development. Major share (28.8 %) of population live in the Western Province and the Western Province accounted for 50.1% of GDP in 2004.

Municipal Solid Waste Management Rules have been gazetted in July 2008 by the Western Province (MSW Rules No 1 of 2008) under the following seven broad chapters of the Waste Management Statute No 1 of 2007.

- Chapter 1: Separation of MSW at Source.
- Chapter 2: Proper Collection/Acceptance of MSW from collection Centers or Sources of Generation
- Chapter 3: Cleaning of Roads and Public Places.
- Chapter 4: Abolishing of Open Waste Storage Receptacles.
- Chapter 5: Improving the Systems for Mass Transportation of MSW.
- Chapter 6: Treating the Collected Waste as a Resource.
- Chapter 7: Introducing an Improved Facility for the Final Disposal MSW

These seven chapters cover comprehensive solid waste management policy, regimes and strategies focusing on resource efficiency, environmental pollution management and safeguarding public health. However it is imperative to note that most of the provisions set out in these chapters are not currently being implemented as expected due to multiple reasons. Absence of environmentally sound final disposal facilities is one of the key obstacles. Lack of a skilled human resource base with the local authorities as well as with the service providers is a critical constrain among many other factors for the slow progress in implementation.

Comprehensive legal provisions are already included under the seven chapters to deal with environmental pollution and safeguard public health. However, there are no specific provisions in the rules related to occupational health and safety of the workers involved in SWM. Existing legal provisions cover occupational safety and health aspects of the workers indirectly to a considerable extent within the coverage of public health. These provisions can be considered only as basic requirements to safeguard the
occupational health aspects of the workers. Rule 65 under chapter 6 specifies that ‘reusing and recycling facilities’ should be operated in accordance with the Technical Guidelines (June 2005) of the Central Environmental Authority (CEA). CEA Technical Guidelines for Solid Waste Management require following “Labour Ordinance, Factory Ordinance, other relevant regulations and guidelines stipulated by CEA approved procedure” in SWM operations. As SWM operations cover broader operational activities/systems other than “reusing and recycling”, more focused approaches should be followed by the Waste Management Authority to cover occupational health and safety aspects sufficiently within its SWM framework.

R4.9 Recommendations (two components)

R4.9.1 Component 1

Join the National Vocational Educational and Training (VET) Plan for mainstreaming ‘environment’ in the economic and social development sectors.

R4.9.2 Component 2

Make it mandatory to include specific provisions as conditions to safeguard occupational safety and health of the workers when licenses are issued for operational activities of SWM.

Table 20: Expected output and key performance indicators for the Solid Waste Management Authority of the Western Province

<table>
<thead>
<tr>
<th>Output</th>
<th>Key performance indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability of a Skilled human resources base in the Western Province for solid waste management in an environmentally sound and decent manner.</td>
<td>• Technical and quality improvements of the waste management systems;</td>
</tr>
<tr>
<td></td>
<td>• Formal inclusion of occupational and safety practices in all the waste management practices;</td>
</tr>
<tr>
<td></td>
<td>• Number of new and additional green jobs created and number of existing jobs strengthened;</td>
</tr>
<tr>
<td></td>
<td>• Waste management sectors covered;</td>
</tr>
<tr>
<td></td>
<td>• Improved resource efficient Business opportunities;</td>
</tr>
<tr>
<td></td>
<td>• Reduction of waste generation trends and wastes to be finally disposed of;</td>
</tr>
<tr>
<td></td>
<td>• Reduction of public complains;</td>
</tr>
<tr>
<td></td>
<td>• Improved environmental quality;</td>
</tr>
<tr>
<td></td>
<td>• Improved social security systems for the labour force.</td>
</tr>
</tbody>
</table>

8.2.3 Strengthening of the legal policy framework to promote green job opportunities

It is necessary to strengthen the existing legislative framework to ensure environmentally sound waste management (air, solid and liquid) and to maximise resource use efficiency in industries where substantial quantities of resources are used and wastes are generated. To achieve this objective, availability of technically qualified human resources is indispensible. This situation will enhance opportunities to create varieties of green jobs throughout the value chain of the economic development process.

R5. Recommendation 5 (two components)

R5.1
Make it mandatory to recruit at least a higher level trained qualified environmental officer in all the industries that generate substantial quantities of hazardous wastes, GHG emissions, and in other high polluting industries.

**R5.2**
Make it mandatory to recruit at least one higher level trained qualified environmental officer in all large scale hotels.

**Table 21: Key performance indicators for strengthening the legal policy framework to promote green job opportunities**

<table>
<thead>
<tr>
<th>Output</th>
<th>Key performance indicators</th>
</tr>
</thead>
</table>
| Availability of a Skilled human resources base to promote efficient resource utilisation and for pollution and waste management in an environmentally sound and decent manner. | • Legal tools;  
• Administrative tools;  
• Monitoring and evaluation mechanisms;  
• Greening the supply chains;  
• Environmental Quality control systems applied;  
• Monitoring and Evaluation systems applied;  
• Number of Green Awards received;  
• Number of new and additional Green jobs created;  
• Reduction of Carbon footprints;  
• Reduction of environmental foot prints;  
• Reduction of Public complaints;  
• Improved social security systems for the workforce. |

**8.2.4 Enhance dialogue at National/Provincial/District and Local levels focusing on systems perspectives in policy implementation**

Enhancing dialogue at National, Provincial, District, and Local Authority levels is essential to creating and enhance a knowledge base on the need to take timely action to address the challenges in the path to sustainable and equitable development throughout the country. The following recommendations include some additional policy measures that can be taken to strengthen the existing administrative and regulatory systems to be more dynamic and conducive to mainstream green jobs in the development agenda at all levels.

**R6. Recommendation 6 (three components)**

**R6.1 Update/Develop National/Provincial/District and Local level environmental profiles and mainstream environmental concerns in the development agenda at all levels.**

**R6.2 Carryout market surveys to identify green job opportunities to ensure sustainable and equitable development at all levels.**

**R6.3 Develop an Effective Coordination Mechanism among Ministries responsible for policy making on National Human Resources and Employment Policy, Vocational and Training Policies, Higher Education Policies, Environmental Policies, Industrial Policies, Labour related policies and Health related policies that are mutually responsive and supportive; Employer’s Federations; and Federation of Trade Unions.**
The coordination mechanism referred in Figure 2 is proposed to mainstream green jobs in the sustainable development agenda by linking with the coordination mechanism of implementation of the Haritha (Green) Lanka programme.

**Figure 5:** Linkages of the proposed coordination mechanism for the implementation of mainstreaming green jobs in the national development agenda with the existing coordination mechanism of the Haritha (Green) Lanka Programme.

It has to be noted that the Ministry of Plan Implementation was supposed to monitor the progress of the Haritha Lanka Programme and report to the NCSD. However, with the government change (same government but the portfolios of the Ministries were changed), there was no separate ministry titled Ministry of Plan Implementation and as such at present the Ministry of Environment, being secretariat to...
the NCSD monitors the progress. A strong institutional mechanism is necessary to evaluate the effectiveness of the HL programme liking to the finance ministry to bridge the resource gaps. The Ministry of Environment is planning to update the Haritha (Green) Lanka Programme at present. Development of a strong monitoring mechanism is one of its objectives.

Table 22: Key performance indicators for enhance dialogue at National/Provincial/District and Local levels focusing on systems perspectives in policy implementation

<table>
<thead>
<tr>
<th>Output</th>
<th>Indicator</th>
</tr>
</thead>
</table>
| **Enhance dialogue at National/Provincial/District and Local levels focusing on systems perspectives in policy implementation.** (R6.1,6.2,6.3) | • Availability of new/updated environmental profiles with strong provisions to mainstream environmental concerns in the economic and social development agenda at all levels;  
• Identification of green job opportunities to ensure sustainable and equitable development at all levels;  
• Availability of Effective Coordination Mechanisms among Ministries responsible for policy making on National Human Resources and Employment Policy, Vocational and Training Policies, Higher Education Policies, Environmental Policies, Industrial Policies, and Labour related policies and Health related policies that are mutually responsive and supportive;  
• Linkages to Federation of Employers and Federation of Trade Unions;  
• Improved Public/Private/Community partnerships;  
• Improved communication networks (horizontal and vertical);  
• Environmental Quality control systems applied;  
• Monitoring and Evaluation systems applied;  
• Number of new and additional Green jobs created;  
• Reduction of Carbon footprints;  
• Reduction of Environmental footprints;  
• Reduction of Public complaints.                                                                                          |

9. Conclusions

This paper includes comprehensive policy recommendations for mainstreaming green jobs into national policies of Sri Lanka. Understanding of the definition of green jobs may be too complex for many, as the boundaries of the concept of ‘greening’ is very wide, ensuring that the resilience limits of the ecosystem are not exceeded.

Green jobs are defined by the International Labour organization (ILO) as direct employment in economic sectors and activities, which reduces their negative environmental impact, ultimately resulting in levels that are sustainable. Specifically these are ‘decent’ jobs that help to reduce consumption of energy and raw materials, de-carbonize the economy, protect and restore ecosystem services, flood protection and biodiversity and minimize the production of waste and pollution.

Green jobs are necessary to achieve a green economy in any country. Green economy is defined by UNEP as ‘An Economy which results in improved human well-being and social equity, while reducing environmental risks and ecological scarcities’. In this context, all communities, and indeed all citizens of a country in whatever role they play as consumers or producers are stakeholders in achieving a green economy.
This policy paper: (1) reviews existing public policies that promote development of green jobs and transformation of existing jobs into green jobs; (2) Identifies gaps and (3) Makes recommendations for policies that promote green jobs in economic sectors and activities in Sri Lanka.

During the policy review, it was evident that ample policies are available to support a green economy and thereby development of green jobs in the country. Significant national programmes are also available to support implementation of the policies. However, effective monitoring and evaluation, and reporting systems backed by dynamic and sustainable coordination mechanisms at all levels are essential prerequisites in successfully mainstreaming green jobs in the national development agenda. This is the key missing component in today’s context in the country that hampers collaborative decision making focusing on systems perspective in addressing problems. Sustainable Financial Resources Mobilisation Strategy which is one of the key components of the system has also to be given due attention to secure prudent investments in the mainstreaming process.

Considering the strengths and opportunities available in the country along with the trends of present and emerging sustainable development problems, six main recommendations with a total of twenty-four components were proposed under four thematic areas viz: ‘Strengthening of the University Education, Technical and Vocational Training, and School Education systems’; ‘Strengthening of eight key exiting programmes’; ‘Strengthening the Legal Policy Framework’; and ‘Enhance Dialogue at National/Provincial/District/ and Local Levels’.

In developing these recommendations, every attempt was made to follow a Systems approach where the proposed National Human Resources and Employment Policy, Vocational and Training Policies, Higher Education Policies, Environmental Policies, Industrial Policies, and Labour related policies are mutually responsive and supportive. Effective coordination and collaboration of the policy makers and federations of employers and employees will improve mutual understanding and speed up the mainstreaming process in a fruitful and sustainable manner.

In this context, linking the ‘Green jobs policy coordination mechanism’ with the existing national coordination mechanisms is of paramount importance to ensure accountability and sustainability of the mainstreaming process. Such a coordinating mechanism is also proposed in this paper.

Collaborative efforts of the Ministries directly responsible for the development of green jobs as well as other Sectoral Ministries can provide highly conducive opportunities to promote Green Jobs in the country and thereby develop a skilled human resource base to address the present and emerging economic, social and environmental challenges and supporting a sustainable green economy.
References


7. Hand Book on MEAs (Multilateral Environmental Agreements) (2008), Ministry of Environment and Natural Resources, 82, Rajamalwatte Road, Battaramulle, Sri Lanka.


