

Appendix D

Sri Lanka country paper

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D2. Poverty Alleviation and the CDM

D1.1. The development profile in Sri Lanka

D1.1.1. Poverty in Sri Lanka

The human development indicators in Sri Lanka are good compared to other nations having similar per capita income. Sri Lanka has an admirable record in both public education (over 90 percent literacy rate) and health services. These cover the entire country. Sri Lanka had a per capita GDP of US\$829 in 1999.

19 percent of the population (three million people) were defined as poor in 1997. About 85 percent of these households are in rural areas. Around 2 million households, most of these in rural areas, are beneficiaries of the Samurdhi Welfare programme.

The Institute of Policy Studies states that the poverty situation has improved in the last decade.¹ It states that the poverty problem is increasingly, not so much of absolute poverty (other than conflict areas in the north and east) but of relative poverty: *"People perceive themselves poor as they relate their standards of consumption to the levels they aspire to"*.

D1.1.2. The investment climate in Sri Lanka

Private sector investment constituted just over 27 percent of GDP in 1999. The northeast war, populist political policies, poor economic fundamentals (a widening fiscal deficit of over ten percent of GDP in 2000) are barriers to achieving the full potential in foreign investment. Further to these, poor infrastructure (i.e. roads), lack of qualified middle management, increasing labour costs also create barriers to investment.

Weak governance impacts on economic performance. The distortion of economic incentives (i.e. subsidies on kerosene and diesel), losses to government revenue and the loss of public confidence in government are underlying barriers to investment expansion. The loss of public confidence has come about from the poor economic situation and the high cost of living the country faces as a result of political mismanagement in the last two decades.

Despite this, the Sri Lankan government has an aggressive investment promotion programme through the Board of Investment. Services (software industry, power, ports, telecom) have received the most investment in Sri Lanka followed by manufacturing. Sri Lanka has not attracted many major world-class players in manufacturing, for instance, Motorola, the US telecom-electronics giant explored possibilities for establishing a US \$ 1 billion production facility, but finally decided on Malaysia.

Total foreign investment received in 1999 is Rs. 176,000 million (US \$ 2,200 million). Total number of enterprises registered under the Board of Investment is 1,399 in 1999. 41 new investments came in

¹ Sri Lanka, State of the Economy, Institute of Policy Studies, 1999

1999 totalling about Rs. 24,000 million (US \$ 300 million). Investment has declined significantly since 1999.

D1.1.3. Institutional framework for poverty reduction strategies

There has been a push towards structural adjustment and a focus on private sector-led development, in order to encourage the economy to change from low productivity (subsistence-oriented) to higher productivity services and industrialisation. However, structural adjustments to the macro economy have had adverse effects on poverty alleviation. Even after more than twenty years of over five percent per annum growth, over 25 percent of the population remains in poverty.

Poverty reduction has been always a strategic consideration for all Sri Lankan governments since independence.² As such, there have been many programmes addressing the issue of poverty over the years. The poverty reduction framework is based on three strategies:

1. Creating opportunities for the poor to participate in economic growth;
2. Strengthening the social protection system;
3. Empowering people to participate fully in the development process.

There are six areas of priority for action in the area of pro-poor growth:

1. Building awareness that peace can make a vital contribution to poverty reduction;
2. Maintaining a stable macro economic environment;
3. Improve market access by linking poor regions to dynamic markets;
4. Creating opportunities for the poor to benefit from structural changes by fostering broad-based rural development and sound urban settlement;
5. Improving access to quality education and healthcare; and
6. Innovative environmental management to enhance the sustainability of the poverty reduction process.

D1.2. The overlap between CDM projects and poverty reduction

D1.2.1. Research results

Table D1 sets out the development-focused CDM projects scoped by the Sri Lankan steering committee.

² *"For Better Tomorrow...Public Investment Towards Poverty Reduction"* Department of National Planning of the Ministry of Finance and Planning, 2000

Table D1 Development-focused CDM projects selected

Sector		Project
Energy	Grid connected Generation Systems	1. 1.5 MW Mini-hydro Plant/Irrigation Project – Hasalaka
		2. 5MW Fuelwood based Electricity Generation Plant
		3. 1MW Sawdust based Co-generation Plant
	Off-grid systems	4. Package of Village Hydro Plants (250 kW)
		5. Package of Solar PV Systems for Homes (50kW)
		6. Package of Solar Water Pumping Systems for Domestic use and Forest Plantations – 20 systems
		7. Package of 100 Biogas Plants
		8. Efficient Fuelwood Stove Programme
Waste		9. Waste Dump Methane Recovery and Power Generation
Forestry		10. Establishment of a Forest Plantations totalling of 1000 Hectares

Appendix D1.3 provides a more detailed description, the baselines and the replicability value of the projects.

Table D2 highlights the overlap between greenhouse reduction projects and development objectives. The Sri Lankan projects are all ranked relatively highly though there is a fair distribution in the rankings enabling some comparison. Seven out of the twelve development areas are ranked high priorities. There is some concentration of benefits in the areas ranked as high priorities. Social exclusion is also a feature of nine out of the ten projects, though this is ranked as a low priority in Sri Lanka.

Table D2 The overlap between greenhouse gas reduction projects and development priorities in Sri Lanka

	Development priority for Sri Lanka	Projects									
		1	2	3	4	5	6	7	8	9	10
Income	H	XX	XX	XX	X	X	X	XX	XX		XX
Water	H	XX					XX				
Transport	H	XX									
Employment	H	XX	XX	XX	X	X		X	XX		
Energy provision	H	XX	XX	XX	XX	XX	XX	XX	XX	XX	
Education	H				X	X		X			
Food security	H	X					X				X
Health	Med-H				XX	XX	XX	XX	X	XX	
Housing	Med										
Crime & Security/ Peace	Med-L			X							
Sanitation	L						X	XX		XX	
Social Exclusion	L	XX	XX	XX	XX	XX	XX	XX	XX		XX
Replicability		L	H	L	H	H	H	H	H	H	L
Assured benefits Score		26	16	16	9.5	9.5	14.5	10.5	16	9.5	6
Other potential Benefits		5	0	2.5	15	15	11	10	8.5	0	5
Total Benefits		31	16	18.5	14.5	14.5	25.5	20.5	24.5	9.5	11

Assured benefits, those benefits that would occur through the implementation of the project itself, receive two XX. Potential benefits rely on collateral assets being supplied, for example, solar home systems in rural areas may lead to rural enterprise development if credit services are also provided, however, credit services lie outside the project boundary. 1 X represents these benefits. Each benefit receives one point, which is multiplied by its developing ranking. Impacts are weighted according to development priority: those in a high priority are weighed by 5, medium priority by 3 and low priority by 1. Where the project partners have established medium-high and medium-low priorities the factors are 3.5 and 2.5 respectively. Two numerical rankings are given at the bottom of each column. The first shows the value of the assured benefits, and the second ranking shows the value of potential benefits.

The CDM projects scoped through stakeholder consultation focus on the energy and forestry sectors for households in rural areas, since poverty is largely a rural phenomenon in Sri Lanka. The rural community largely relies on agriculture for its income, and many of these households engage in subsistence farming. As a consequence of the liberalisation of the agricultural sector, there is an increasing trend to import basic foodstuffs, forcing farmers to switch crops or change to other forms of income-earning activities outside farming. Small-scale agricultural development projects aimed at increasing agricultural productivity, water supply and irrigation are planned by the government to address rural development.

The government plans to electrify 80 percent of the population by 2005, but this will still leave around one million households without electricity. The government recognises that electricity plays an

important role in agriculture, animal husbandry and agro-based industry activities, as well as facilitating education and awareness.

Deforestation occurred at a rate of over three percent per year from 1984 to 1994. Currently, Sri Lanka has around 1.58 million (24 percent of land) covered by forest. Around 1.5 million households consume biomass for cooking purposes. The government has begun reforestation programmes, and has identified 1.6 million hectares of scrub land which required some cover to prevent further degradation.

In terms of assured benefits, the highest-ranking project is S1 (which involves the provision of small scale hydro project and irrigation benefits for farmers). The project includes the rehabilitation of the irrigation canal and the storage pond and concrete lining up to the proposed forebay tank. The present maximum capacity of the channel is about 200 liters/second and is expected to increase to at least 300 liters/second for irrigation purposes, thereby restoring to agricultural value an abandoned area of 150 hectares. The project will allow the 1500 benefiting farming families to harvest two seasons, potentially doubling their income. S1 scores highly for the provision of water, transport and employment impacts (high priorities) and for social exclusion.

The next highest are S2, S3 (grid-connected projects) which impact on income, and employment through the provision of biomass resources for electricity generation, and S8 (efficient cooking stoves), which provides income and employment benefits primarily through increased local production of the stoves.

S2, a fuelwood-based electricity generation plant, impacts on income and employment, and is therefore seen to be beneficial to reducing levels of social exclusion. Fuelwood will be supplied through local energy plantations. The plantations will provide direct employment to about 1000 families on a continuous basis.

S3, a sawdust-based cogeneration plant, also ranks highly because of the income and employment impacts, in a predominantly fishing community with high youth unemployment. Sawdust collection and delivery to the plant will provide direct employment to about 100 persons on a continuous basis. In addition, there will be regular employment to about another five individuals within the power plant in its operation and maintenance work. Sawdust dumping has become a major environmental concern in Sri Lanka.

In terms of total benefits, S1 ranks the highest again. The next two highest are two off-grid projects, S6, a solar water-pumping project, and S8, an efficient fuelwood stove programme. For project S7, the provision of biogas plants, the potential benefits of the projects are nearly as high as the direct benefits. The significance of the potential benefits illustrates the impact of project design on the overall developmental impact of CDM projects.

S6, a solar water-pumping project, is important in a key development aspect, and this is water supply. In fact, the government is harnessing community support for development and management of small-scale water supply schemes for rural areas. The increase in water scarcity in dry zone rural areas is attributed to decreasing levels of rainfall, as well as poor soil water retention due to loss of tree cover. The lack of water is a key determinant of migration away from these areas. The project establishes

20 community-owned water-pumping schemes powered by solar PV systems in 20 villages in the intermediate and dry-zone of Sri Lanka where water scarcity has resulted in failed crops and drinking water shortages. Moneragala district in the Uva province is such an area. These water pumping systems are expected to supply the necessary water resources for community forest plantations to be established under this project while supplying the requirements of the village communities who will manage the plantation and the pumping scheme.

S7, the small-scale biogas plants project, proposes the installation of biogas technology to supply cooking energy and fertiliser requirements in rural communities. This will result in a reduction in fuelwood consumption for cooking, it will encourage the proper disposal of waste, and it will lower the costs associated with fertilisers used for farming. The project enhances the opportunities for the villagers to establish organic farming techniques, which could greatly improve the financial returns from farming. The technology consists of a digester which will take in either animal waste (wet systems) or biomass waste (dry batch system) and the produced gas will be piped into the house to operate a gas cooker and gas lamps. There are 1.5 million rural farming households in Sri Lanka, of which 30 percent would have access to animal waste to operate a wet (Chinese type) system, and another 30 percent could use paddy waste to operate a dry batch type of system.

Three of the ten projects (S4 and S5 are two off-grid electricity generation technologies; S8 is an efficiency cook stove technology) all have potentially larger benefits than the direct or assured benefits of the projects, highlighting the importance of providing collateral assets or services.

The lowest ranking project overall is S9, the landfill gas plant, because two of its three impacts are on health and sanitation which do not rate as high priority development objectives.

The Sri Lanka study concludes

- ?? The CDM projects scoped focus on the energy and forestry sectors for households in rural areas;
- ?? A large majority of all the projects address high development priorities directly: energy, employment or income.
- ?? Some projects impact on education and food security, however this is indirect and is dependent on the provision of other assets and services.
- ?? The development-focused projects that have the highest replicability value include all the off-grid system projects (a key priority area for pro-poor growth in Sri Lanka) and the efficient fuelwood stove programme.

D2. Capacity building needs

D2.1. Existing capacity

D2.1.1. Institutional Framework

Sri Lanka became a member of the United Nations Framework Convention on Climate Change (UNFCCC) in March 1994. Sri Lanka has not yet ratified the Kyoto Protocol.

The Ministry of Environment and Natural Resources is the focal point for the UNFCCC. It has established a Climate Change Secretariat with funding from Environmental Action 1 Project (EA1P), an intersectoral environmental project funded by the World Bank. However, central government has not provided further assistance to develop this secretariat further, for instance, to enable CDM transactions, as climate change has not been a priority amidst other pressing security (the Northern war) and economic issues.

D2.1.2. Capacity building actions to date

It is worth noting the activities that have to date been implemented in Sri Lanka to inform the assessment of capacity needs of Sri Lanka with regards to implementation of a greenhouse gas mitigation strategy. Table D3 sets out the capacity building activities carried out in Sri Lanka to date.

Table D3 Capacity Building Activities Carried-out in Sri Lanka

Sponsor	Activity	Participants (where relevant)
Awareness raising and technical training		
EA1P, 2001	Workshop for brainstorming on the Development of a National CDM Strategy.	Min of Forestry and Environment, Min of Finance, Min of Industry, Min of Energy, Min of Science and Technology, Energy Forum, Universities, Meteorological Department, Agricultural Department, Forestry Department, Lanka International Forum on Environment and Sustainable Development (NGO)
UNEP, ADB, SACEP 2000	National workshop on the UNFCCC and the institutional design of the cooperative implementation mechanisms	Min of Forestry and Environment, Min of Finance, Min of Industry, Min of Energy, Min of Science and Technology, Energy Forum, Universities, National Planning Dept, Meteorological Department, Agricultural Department, Forestry Department, Lanka International Forum on Environment and Sustainable Development (NGO) , UNDP, private consultants
EA1P, 2000	Workshop on Sri Lanka's position on the Kyoto Protocol	Min of Forestry and Environment, Min of Finance, Min of Industry, Min of Energy, Min of Science and Technology, Energy Forum, Universities, Meteorological Department, Agricultural Department, Forestry Department, Lanka International Forum on Environment and Sustainable Development (NGO)
Government Consolidated Fund, 2000	Workshop on the CDM and emission trading potential of Sri Lanka	Min of Forestry and Environment, Min of Finance, Min of Industry, Min of Energy, Min of Science and Technology, Energy Forum, Universities, Meteorological Department, Agricultural Department, Forestry Department, Lanka International Forum on Environment and Sustainable Development (NGO), private consultants, Solar Industries Association
Scoping/ strategy building		
DFID-UK, 2000 - 2002	An assessment of the links between the CDM and poverty alleviation. Recommendations on capacity building actions	
UNDP/GEF, 1998- 2000	National communications	
Ministry of Environment and Natural Resources 1999	National Action Plan on Climate change	

The emphasis of capacity building actions to date has been on awareness raising and greenhouse gas inventory work. Most of the participants at these events have been from the government, research institutions, environmental NGOs and some from private sector. In addition, the MEND project reached out to the regional and rural level stakeholders including government and NGOs, as well as a cross section of mainstream stakeholders in the area of business, finance, banking and investment.

Under the Climate Change Enabling Activity Phase II, the ministry has established National CDM Study Centers at the Universities of Moratuwa and Peradeniya, which are mandated with climate change research to support the climate change secretariat's requirements. The recently established Climate Change Centre at the Meteorological Department further supports the needs of the centre.

D2.2. Capacity building needs for CDM project implementation

D2.2.1. Research results

The gap analysis shows that there is some capacity for only half of the capacity indicators in Sri Lanka. Results are shown in Table D5.

It is important to note that the MEND project has been significant in creating awareness and political momentum in the Sri Lanka government.

Table D5 Gap analysis for capacity needs for CDM project implementation

Indicators of capacity	Level of capacity	Details
Skills/expertise/awareness		
Awareness levels	☞	Some awareness has been created at a government level but more work is required. MEND project has helped in taking the message to some regions.
Technical expertise	☞	The ESD project has created a pool of expertise in technical and financial areas for solar PV, mini/micro hydro and wind power areas. There is work to be done in relating these to climate change requirements. A UNDP-GEF project also provides technical assistance for the renewable energy area.
Institutional		
CDM Office	☞	.A CDM office has been created within the Environment and Economics Division of the Ministry of Environment and Natural Resources , but does not operate formally as yet as capacity building is required for, processes, procedures and staffing.
Small scale projects bundling mechanism	X	
Technology transfer strategy	X	
Policy & Legal Context		
Country climate change strategy	☞	The government is still deciding whether to enter into the Kyoto Protocol (even though it has been agreed earlier to sign the protocol). Therefore, there has been very little institutional development to accommodate the CDM. However, the Ministry of Environment and Natural Resources has begun the process of developing a strategy. There is a draft National CDM Policy drafted.
Legal framework	X	
Integration into other policy areas	X	There are some supporting policies for clean technology transfer, although these are concentrated in the energy sector.

Development of standardised approaches to the project design document	X	
Streamlined CDM approval procedures	☞	For small – scale projects the approval process can be as short as 3 months. However, there is no fast-track process specifically for poverty-focused projects.

(X=not available, ☞=some/partly, ??=good.)

As a country with a low GHG emission level, Sri Lanka's attention to climate change-related activities to date has been minimal. This can be attributed mainly to lack of expertise in the field, and lack of sufficient technological know-how, as well as the more pressing priorities such as the Northeastern war. In order to successfully contribute to the Kyoto mechanisms, Sri Lanka needs capacity building almost in every way to implement the UNFCCC.

The following sections provide further country-specific information on three key areas of capacity needs:

- ☞ Awareness raising and technical expertise;
- ☞ Technology information dissemination;
- ☞ Experience in the implementation with the scoped technologies;
- ☞ Supporting fiscal regime.

For generic information on other capacity indicators, please refer to the main capacity building paper.

D2.2.1.1. Awareness raising and technical expertise

The Ministry of Environment and Natural Resources has promoted climate change issues to a limited number of stakeholder groups, principally through seminars and workshops. However, awareness needs to be enhanced in the development community, and in other stakeholder groups such as the micro-financing institutions. MEND has gone some way to doing this, although a more sustained effort is required. Table D6 summarises the level of awareness among different stakeholders.

Table D6 Level of Awareness among Stakeholder Groups in Sri Lanka

Actors/ Institutions	Level of awareness	Comments
Government	Low	The Ministry of Environment & Forests has been promoting climate change issues heavily. More needs to be done to engage other government stakeholders, and in particular the Ministry of Samurdhi Affairs, which deals with poverty alleviation. Some of the micro-financing institutions involved in poverty alleviation programmes are SANASA (Thrift and Credit Co-operatives), Rural Development Bank and Sarvodaya Economic Enterprises Development Services (SEEDS). The Ministry of Finance and Planning has the overall responsibility of determining the fiscal policy of the country, and is therefore instrumental in developing a policy framework that encourages technology transfer.
Local government	Low	MEND has supported two regional workshops on the CDM, and there has been substantial interest from the stakeholder groups at regional level. There are another seven regions where awareness raising could take place.
Business sector	Low	Chambers of Commerce can play an important role in promoting the idea of CDM within government as well as mobilising the private sector to participate in the CDM.
Financing institutions	Low	Most micro-financing institutions require capacity building to become efficient lenders of funds in rural areas, as seen from the bottlenecks and delays in the SEEDS/solar vendor partnerships.
NGOs	Low	Climate Action Lanka is the only known NGO dealing with climate change issues. The Energy Forum raised awareness at the rural level. Environment Foundation Limited (EFL) is a non-profit company who supports legal action for environmental violations. EFL was partly responsible for mobilising public action against the coal power projects. EFL was also involved in early energy conservation studies.
Research/technical institutes	Mixed	The Universities of Moratuwa and Peradeniya have recently established Climate Change Research Centres. The Meteorological Department has also established a research centre.

The public sector: Sri Lanka has only a few experts in the field of Climate Change who can guide the enabling activities within the country for the implementation of the UNFCCC. Hence preparation of the National Communications, the National Action Plan and various other reports and submissions required by the UNFCCC secretariat consumes lots of time and energy, for example, in developing country-specific carbon emission factors, and there is insufficient technical expertise to comply with these requirements. Sri Lanka also lacks sufficient technical know-how in the assessment of vulnerability and the assessment of adaptation and mitigation technologies. More expertise has to be developed through specialized training by way of fellowships/ scholarships and workshops, and exchange programmes.

Technical expertise is also required in climate change impact analysis.

A process of confidence building is required for new technologies to be accepted by domestic policy makers, as has been seen in the World Bank-funded Energy Services Delivery (ESD) project, which

has been important in catalyzing the implementation of solar PV installations for domestic use and village (micro) hydro projects for the last five years. Demonstration projects are important in this respect.

The private sector: Sri Lanka does not have sufficient capacity to formulate and design potential projects. There is minimal in-country expertise for assessing baselines. However, the Universities of Moratuwa and Peradeniya have established Climate Change Research Centres, recently, which aim to develop this area of expertise.

The potential participation from the private sector and NGOs and their role in climate change-related activities in the country have not been factored into policies and procedures as yet.

D2.2.1.2. Technology information dissemination

Responsibility for technology-related knowledge and promotion lies with the Ministry of Science and Technology. The National Engineering Research and Development Centre (NERD Centre) which comes under this ministry has been involved in developing local technology in many sectors including those in the renewable energy sector. The National Science Foundation and the local universities have been funding many research activities in related areas. The University of Moratuwa has recently established the Centre for Energy Studies (CENS) mainly to cater the research needs in the energy and environment sector. CENS will act as one of the CDM Study Centres of the Ministry of Forestry & Environment.

The NERD Centre and the CENS would benefit from collaboration with international institutions in specific research areas. In particular, CENS is currently planning research projects to feed into the CDM Secretariat on areas such as baselines and adaptation. They are in the process of identifying capacity needs.

D2.2.1.3. Experience in technology implementation

The Energy Sector: There is experience in Sri Lanka in implementing all the technologies scoped by this research, and for some technologies this experience is substantial. The Energy Services Delivery (ESD) project, funded by the Sri Lankan government, the World Bank and the GEF, has electrified about 20,000 rural households using solar technologies since July 1997 and the four developers hope to install another 5,000 systems before July 2002 when the project ends.

Twenty-five micro (village) hydro projects have been implemented on a commercial basis, electrifying a further 1,300 off-grid households. Another ten such schemes are expected to be operational before the end of the ESD project period. The ESD project has also funded the private sector to develop 30 MW of grid connected mini hydro for the Ceylon Electricity Board (CEB). There are an additional 110 village hydro projects (0.5 kW to 25 kW) operating in Sri Lanka providing electricity to about 3,500 households. It should be noted that most of these projects have been developed with donor assistance and not on commercial terms.

There is significant interest in the area of biomass energy for both off-grid and grid-connected applications. Currently, the Ministry of Science & Technology is carrying out pilot projects on energy plantations and they are about to establish a 35kW pilot demonstration plant. The tea plantation

companies, having large tracts of marginal land, have expressed interest in biomass electrification as they could use the power for their own requirements.

There are about 1,000 biogas systems known to operate in rural households to meet cooking and lighting requirements.

The Forestry Sector: The Government, in partnership, with non-governmental organizations has promoted efficient cook stoves to help reduce the use of biomass for cooking in rural areas. Efficient cook stoves are now sold on a commercial basis in rural areas. It is estimated that 250,000 efficient stoves are now being used, out of a target population of 1.25 million households.

D2.2.1.4. Integration into other policy areas

Carbon values may improve the internal rate of return of greenhouse gas reduction projects, but in many cases will make a marginal difference, at least until carbon prices rise. Fiscal incentives can be particularly important in helping to attract clean technology transfer. However, there are currently few supporting policies in the greenhouse gas mitigation sectors, and these are concentrated in the energy sector.

Table D7 highlights the policy tools that Sri Lanka currently applied to the greenhouse gas mitigation sectors.

Table D7 Supporting sectoral policies for CDM project implementation

	Sectoral strategy plan	Existing fiscal policies relating to the sector
CDM related	X	X
Sustainable development	☞	Government regards the private sector as the engine of growth. As such there are incentives for private sector investment (BOI). It makes the linkages with sustainable development and the trickle down effect of economic development for poverty alleviation (which is questioned now).
Poverty reduction	☞	There are many programmes in poverty reduction in Sri Lanka such as the Samurdi welfare programme.
Fossil fuel energy	☞	Kerosene is subsidized as well as diesel.
Renewable energy	☞	Small-scale renewable energy (less than 10MW) power plant can be developed with a guaranteed power purchase by the CEB at a pre-published rate based on avoided costs. The ESD project has catalysed these, which are provided with loans at competitive interest rates. These projects are developed with a guaranteed power purchase by the CEB at a pre-published rate based on avoided costs. So far, mainly mini hydro plants have been connected in this manner except a recent link up of a 25 kW solar PV roof-top array at a Norwegian funded agency.
Energy efficiency	☞	Compact fluorescent lamps are sold at subsidized prices – however this policy is applied inconsistently. In the industrial sector, loans and technical assistance are provided at concessionary interest rates on energy conservation related investments in both new and existing industries. The NDB, a development bank operates a fund called E Friends which provides

		loans at low interest rates to businesses investing in demand side management and energy conservation.
Forestry	☞	There is a Forestry Masterplan for the country and there are positive steps and policies to protect and grow forests.
Agriculture	☞	Over the years government has supported many agricultural initiatives through land allocations, fertiliser subsidies and irrigation programmes.
Waste	X	X
General investment		<p>The following are general incentives provided under section 17 of BOI law and guaranteed by the Sri Lankan government (however, factors such as quantum of investment, employment creation and regions on investment will effect the types of incentives);</p> <ul style="list-style-type: none"> ?? tax holidays of 5 to 20 years depending on project ?? concessionary tax rate after expiry of the tax holiday ?? tax exemption on payment of dividends, royalties etc.. ?? duty free import of plant, machinery and raw material ?? free repatriation of profits, dividends. ?? unrestricted offshore borrowing ?? free to operate with local commercial banks and to deal with foreign currency ?? share transactions without any exchange control restrictions

Appendix D1.1: Stakeholders consulted

<i>Steering Committee Member</i>	<i>Position</i>
Dr B.M.S. Batagoda	Director, Ministry of Forestry and Environment
Dr Priyantha Wijayatunga	Senior Lecturer, University of Moratuwa & Energy & Environmental Consultant
Mr Ranil Senaratne	Director, Fentons Limited(Private sector energy project developer)
Mr W.M. Bandusena	Director, Alternative Energy, Ministry of Irrigation and Power
Dr N. Samarapulli	Chief Economist, Board of Investments
Mr Asoka Abegunawardene	Programme Manager, Energy Forum
Mr Shavi Fernando	Deputy General Manager, Ceylon Electricity Board
Mr. Upali Dahanayake	Director, National Planning Department, Ministry of Finance and Planning
Mr. C.W. Abhayaratne	Ceylon Chamber of Commerce
Mr. Gamini Senanayake	Director, Wayamba Province Chamber of Commerce
Ms. Sanjeevani Munasinghe	Manager, Energy Projects, Intermediate Technology Development Group

Stakeholder meeting participants

Name	Organisation
Dr B.M S Batagoda	Director, Ministry of Forestry and Environment
DrPriyantha Wijayatunga	Senior lecturer, University of Moratuwa
Dr N.K. Atapattu	Director/Projects, Ministry of Agriculture, Rajamalwatte, Battaramulla
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Ms C.R. Karunatillaka	Director. CK Projects (Pvt) Ltd, 55/1, Chitra Lane, Colombo 5
Mr V. Nagendran	C-ordinator – Plantations, Future In Our Hands Development Fund, 325/A/3, Kanupelella, Badulla
Dr R.A. Attalage	Senior Lecturer, University of Moratuwa, Moratuwa
Mr N.S. Sarath Ananda	Development Co-ordinating Officer, Divisional Secretariat Office, Madagama, Bibile
Mr Lukshman Nonis	Mazenod College, Kandana
Mr A.K. Seneviratne	Acting Director, Ministry of Industrial Development, 73/1, Galle Road, Colombo 3
Dr. T. Jayasingam	Senior Lecturer in Botany & Dean/Faculty of Science, Eastern University, Chenkalady
Mr Sarath Withana	Deputy General Manager, Ceylon Petroleum Corporation, Oil Installations, Kolonnawa0
Mr Amal Udawatta	Upali Newspapers (Vidusara Science Magazine), Bloemendhal Road, Colombo 14
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Mr Jayantha Nagendra	DFCC, Colombo 3

Appendix D1.2 Setting out the poverty baseline

	Qualitative discussion	Indicators
Food Security	<p>Rural farming productivity is dropping as rice and other secondary food crops are now imported as a part of the free market process. Rural livelihoods are suffering and there is an increase in poverty. (For instance, the abolishing of Paddy Marketing Board, the government body to purchase rice at a guaranteed price has dropped prices and imported rice from China and India is cheaper for urban consumers only). Therefore, rural people not only lose their livelihood, but also access to the imported food items as they are only available in cities. Therefore, there is a food security issue in rural areas of Sri Lanka. This is also directly linked to income.</p> <p>Malnutrition is a problem in urban and rural areas for children above 5 years of age.</p>	<p>/// Reducing trend of rice production from 2000-2001 after the end of the Paddy Marketing Board (even though there has been a growing trend till 2000) -</p> <p>?? Percentage of children under-five suffering from underweight – 34% (1995-2000)</p> <p>?? Percentage of children under-five suffering from stunting – 18%</p> <p>?? Daily per capita calorie supply (1994) 2263</p> <p>?? Daily per capita protein supply (1994) 49 Grams</p>
Income	<p>The Institute of Policy Studies reports (in a publication called Sri Lanka, State of the Economy in 1999) that the situation of poverty has improved in the last decade. However, it states that "the poverty problem is increasingly, not so much of absolute poverty (other than conflict areas in the north and east) but of relative poverty". "People perceive themselves poor as they relate their standards of consumption to the levels they aspire to".</p> <p>About 50% of total number of families (2 million households) are beneficiaries of Samurdi Welfare programme. About 1% or 12,000 families are deemed ultra poor and receives Rs. 1000 per month and another 45% (900,000 families) receive Rs. 500 per month.</p> <p>75 % of these people inhabit rural areas even though there is poverty in urban</p>	<p>?? 19% of the population is defined as poor. 85% of these people live in rural areas/ are farmers etc</p> <p>?? Population below national poverty line is 3 million</p> <p>?? Share of income of richest 10% of population – 28%</p> <p>?? Share of income of richest 20% of population – 42.8%</p> <p>?? Share of income of poorest 10% of population – 3.5%</p> <p>?? Share of income of poorest 20% of population – 8%</p>

	<p>areas. 19% of the population or 3 million people are deemed poor in 1997. About 85% of the poor households are in rural areas. ?? Sri Lanka has a per capita GDP of US \$ 829.</p> <p>The reduction of earnings from rural agriculture has impacted negatively on income levels. The rural farmers are vulnerable to weather, market prices (what the middleman will pay etc.). Recent trend has been to import basic foodstuffs such as potatoes and onions from neighbouring India at cheaper prices. Rice is imported from China. This is the result of the liberalisation of the market. With 75% of the population being rural, the country is further alienating this population if it does not catalyse with assistance in value addition and diversification to the agriculture industry.</p>	
Health	<p>Life expectancy has increased in the last two decades and the infant mortality rate has dropped. There is a free national healthcare network that reaches even the most rural areas.</p> <p>Even though Sri Lanka has a wide spread national healthcare system, it requires constant upgrades due to increasing population pressures as well as new epidemics such as malaria and dengue fever, which is related to the weather.</p>	<p>/// Life expectancy – 71 Female / 69 Males /// Infant mortality rate (1996 - 17.3%; 1997 -15.9 per 1000 births) ?? Modern health institutions provide services to about 95% of the population. It covers 85% of the rural population. Distance of rural communities from health facilities – 30 kms ?? Pop. Per hospital bed (1996) - 349 ?? Population with access to essential drugs 95 % ?? Population per physician (1996) - 349</p>
Water	Water is the next essential issue as it is a factor for survival, whether for crops	/// 31% have access to pipe borned water.

	and domestic use.	/// 83 % of the population with access to safe water /// Lack of access to potable water 17 %
Sanitation	Sanitation in rural areas is better than in urban lower income areas.	/// 88% overall has separate toilets
Transport	The public transport system has been privatised and this has affected rural bus services, making mobility a problem in rural areas. The government is attempting to link the poor regions with the growing domestic and then international markets. This is planned through the development of the port network, national highways, improving bus system, modernizing the railways, telecommunications and upgrading commercial agricultural marketing infrastructure. For instance, these will change the low productivity subsistence oriented agriculture to higher productivity, as markets open up for rural people. With opening up of markets, rural incomes can grow.	?? Traditional fuel consumption as a percent of total energy use – 46.5%
Crime/Security/Peace	<p>The underlying cause of many of the economic and social problems is the North and Northeastern war that has ravaged the country in the last 17 years.</p> <p>The cost of war has included the increase in violence in the country as a whole. There are many soldiers with weapons who have abandoned the Armed Forces and running from the law. This has increased crime and violence in the country significantly in the last ten years.</p> <p>The 17 year old war has had an adverse effect on the psychi of the people. There are many armed forces deserters running from the law with weapons and crime has increased. The country is longing for a peaceful settlement of the war in the north and east. Crime also increases when the economy is down and the war has affected it.</p>	?? Reduction of economic growth from 5% to 3% from 1989 as war escalated along with the southern insurgency
Housing	Due to the weather rural housing is not a major issue. However, with increasing urban population, housing is becoming a priority area for the	/// Over 62% have brick homes /// Over 73% have tiled roofs

	government. However, although a national priority, this is not an issue that directly impacts in the poorest in rural areas.	<ul style="list-style-type: none"> /// There are low income areas in Colombo bordering on slums, but government has a relocation programme underway currently to low income housing estates /// 23.3% of households live in wattle and daub houses
Employment	Sri Lanka is an economy supported by women (even though there is double the number of males in the labour force). Thousands of women from rural and semi-urban areas work in the Arab countries as well as many are employed in the garment industry. This has created social problems of alcoholism amongst males.	<ul style="list-style-type: none"> /// 39.7% of population is the labour force with 53% male and 27.35 females with this figure increasing over the years. /// The urban unemployment levels hover around 12-15%. ?? 60% of the poor are engaged in subsistence farming
Energy	<p>Electricity has become a subjective indicator of whether or not one is socially excluded in the modern context. As such, it has become a key political and social issue, so much so that politicians promise grid electricity for votes.</p> <p>Grid cannot be extended to all rural areas and 50% of households remain off grid. Therefore, there is a private sector and NGO driven push to market off-grid technologies such as solar PV and village (micro) hydro. Government is only now looking at policies to incorporate renewable energy for both off and on grid generation. There is also a shortage of generation capacity (with 8% annual increase in demand) which is 60% hydro based. The planned coal power plant has been cancelled for environmental reasons and the country is at the moment (July 2001) facing load shedding with daily two hour power cuts due to poor rainfall.</p>	<ul style="list-style-type: none"> /// Only 56% of the households have grid electricity /// 2 million homes not electrified /// 1600 MW generation capacity with 60% hydro /// Demand for electricity increasing by 8% annually and doubles every ten years (there is a shortage currently)
Education	Mch emphasis is given to the already widespread national free education system. The education now has to take into the account the new requirements for a global economy such as English and IT education. Sri Lanka has a literate, but an inappropriately educated population who do not fit	<ul style="list-style-type: none"> /// Literacy Rate 91.8% /// Primary School Education - 35.2% (decreased from 41.1% from 1986/7 maybe due to falling birthrate) /// Secondary School Education - 35.5% - (increased from

	<p>into the modern world of business. Free education system in the last 40 years has increased the literacy rate to over 90%. However, most have been educated in Sinhala and Tamil and not having English education has created an underclass that is unemployable especially in the growing private sector. The country saw two youth insurrections (1971 and 1988-89) as a result of this problem.</p>	<p>32.1% in 1986/7) /// Tertiary education - 20.7% (increased from 15% in 1986/7) /// No Schooling - 8.6% and decreasing (1996/7 from Central Bank)</p>
<p>Social Exclusion</p>	<p>The ethnic war is more a result of social exclusion than ethnic differences, even though it has evolved into one. Remnants of the old class and caste system remains, but people can over come barriers with education and English. The divisions are based on other factors such as rural and urban also.</p>	

Appendix D1.3 Description of project selected

<p>1. 1.5MW Mini-hydro Plant at Hasalaka</p>	<p>This project develops a mini-hydro scheme of capacity 1.5MW in an abandoned irrigation site. The project includes rehabilitation of the irrigation canal and the storage pond and concrete lining up to the proposed forebay tank. Present maximum capacity of the channel, which is about 200 liters/sec., is expected to be increased to 3000 liters/sec. from the Weir to the Forebay tank and to 300 liters/sec. beyond for irrigation purposes. This will make a regular water flow to the storage pond which will in turn irrigate an abandoned area of 150 hectares. The beneficiaries of the irrigation scheme are going to be about 1500 farming families in the vicinity. All the construction and rehabilitation work of this hybrid system of hydropower and irrigation will be carried out in collaboration and consultation with the Department of Irrigation.</p> <p>The project will allow farmers to harvest two seasons so that farmers are not solely dependent on the rain. This would potentially double farmer's income.</p> <p>During the construction period of about one year around 150 to 200 inhabitants of the villages in the vicinity will have direct employment improving the income level of their families possibly totalling around 1000 persons. Indirect beneficiaries can be about five times of this number mainly resulting from improved infrastructure facilities such as roads and bridges.</p> <p>The grid-connected generating station would provide regular employment to about 10 people in the surrounding areas mainly as maintenance workers. The total direct long-term beneficiaries are likely to be more than 50 people.</p>
<p>2. 5 MW Fuelwood based Electricity Generation Plant</p>	<p>Under this project, a 5MW fuelwood-based electricity generation plant is to be established in the intermediate zone where generally land availability is high. Fuelwood will be supplied through local energy plantations. A total of about 3000 to 5000 Hectares are expected to be covered with these plantations mainly owned and managed by the people in the vicinity of the plant with necessary technical and financial assistance. The plantations will provide direct employment to about 1000 families on a continuous basis.</p> <p>This the first time such a project will be done in Sri Lanka.</p>
<p>3. 1 MW sawdust - based cogenreation Plant</p>	<p>This project envisages establishing a 1MW sawdust-based electricity generation plant to be grid-connected to the Ceylon Electricity Board, in the vicinity of Moratuwa (urban town 20 kms south of Colombo), where the sawdust availability is high. Sawdust dumping has become a major environmental concern. The neighbouring sawmills can supply sawdust. Sawdust collection and delivery to the plant will provide direct employment to about 100 people on a continuous basis. In addition, there will be regular employment to about another 5 individuals within the power plant in its operation and maintenance work. Employment will have a positive impact in this predominantly fishing community with high youth unemployment. Further, the environmental impacts from sawdust dumping will be eliminated.</p> <p>Biomass power generation is new to Sri Lanka</p>
<p>4. Package of 8 Off-Grid Village Hydro Plants</p>	<p>8 projects totalling 250 kW would electrify about 1,000 households.</p>

<p>(Total 250 kW)</p>	<p>Village (micro) hydro plants, pioneered by ITDG-Sri Lanka, range from 1 kW to 100 kW plants that operate off-grid to provide electricity to communities, which typically have from 10 to 200 households closely situated. Currently 110 village hydro plants (total of about 550 kW) power about 3,500 homes with 80 to 150 Watts of electricity. Most of the 110 projects have been subsidised through rural development funds. However, the Sri Lankan government and World Bank, Energy Services Delivery (ESD) project (established in 1997) has catalysed a more commercial model where funds are accessed by communities through commercial banks participating in the project. 10 projects have been done in this manner electrifying 660 homes so far. The rural community forms into an Electricity Consumer Society (ECS) that is then incorporated as a business in order to access commercial funds of the ESD.</p>
<p>5. Package of 1000 Solar Photovoltaic Systems for Households (total 50kW)</p>	<p>So far 15,000 Solar PV systems are in operation for household lighting. A market potential of 200,000 systems exist according to vendors. This constitutes 10% of the 2 million unelectrified households who can afford to purchase a system at current prices. However, with lower costs, the potential market will be close to one million homes as the CEB claims it will electrify 80% of total 5 million households by 2005.</p> <p>At the moment these households use kerosene lamps or the more economically advantaged homes use an automotive battery that requires recharging every twice a month at a battery charging center located upto 10 kms away at times.</p> <p>This project would electrify 1000 homes. Individual households will be installed with a 50 Watt system which will operate on 12 Volt DC power. The solar module will charge a lead-acid (typically an automotive type) battery, which will in turn power about 10 nos. 10 Watt DC lamps, a TV and radio. The system is managed by an electronic controller, which will prevent the battery from being over charged or discharged.</p>
<p>6. Package of Solar Water Pumping Systems and Forest Plantations –20 systems</p>	<p>There is an increase in water scarcity in dry zone rural areas. This is related to the decreasing rainfall, as well as poor soil water retention due to decreasing tree cover. As a result people are moving away from these areas. Providing water for domestic use and for small plots and in this case an additional community forestry programme will enable people to remain in rural areas and earn a livelihood.</p> <p>Project envisages, the Water Resources Board establishing 20 community owned water-pumping schemes powered by solar PV systems with government funding. These are to be mainly concentrated in 20 villages in the intermediate and dry-zone of Sri Lanka where water scarcity has resulted in failed crops and drinking water shortages in impoverished villages. Moneragala district in the Uva province is such an area. These pumping systems are expected to supply the necessary water resources for community forest plantations to be established under this project while supplying the requirements of the village communities who will manage the plantation and the pumping scheme.</p> <p>A typical village with approximately 100 households would require about 200 cubic meters per day. A typical system would use a 250 Watt solar PV system and pump water to a central tank. Water would be distributed to central points in the village where all 100 households can reach within 100 meters. (This type of scheme requires indepth study into the actual seasonal requirements for domestic and small-scale farming, seasonal water table levels etc.) The figures shown here are approximations given as an example.</p>

	<p>Typically, a village based system will be operated through a rural cooperative similar to the Electricity Consumer Society and a monthly fee should be collected for the service from all members. This fund can be used for maintaining and repairing the system.</p> <p>The most popular method of rural community water pumping is to use either kerosene or diesel water pumps.</p> <p>The forestry portion of the project will have positive effects through the practice reforestation and afforestation. It will also improve agro-forestry practices, soil and grassland management in the area.</p>
<p>7. A Package of 100 Biogas Plants for Individual Homes</p>	<p>Under this project, small-scale family owned 50 biogas plants will be installed to supply cooking energy and fertiliser requirements in these communities. These will be promoted by a non-governmental organisation who promotes technology in rural areas. This will result in reduction in fuelwood usage in cooking, proper disposal of waste and lowering of costs associated with fertiliser used for farming. Also this enhances the opportunities for the villagers to establish organic farming techniques, which will greatly improve the financial returns from these investments. A typical unit will cost Rs. 25,000 to install (US \$ 200).</p> <p>The system consists of a digester that will take in either animal waste (wet systems) or biomass waste (dry batch system) and the produced gas will be piped into the house to operate a gas cooker and gas lamps.</p> <p>There are 1.5 million rural farming households in Sri Lanka and out of that about 30% would have access to animal waste to operate a wet (Chinese type) system. About another 30% could use paddy waste to operate a dry batch type of system. So, the potential market for biogas system would be about 900,000 households. However, due to various barriers about 500 systems are operating currently.</p>
<p>8. Efficient Fuelwood Stoves Programme</p>	<p>There are 1.5 million rural farming households in Sri Lanka who use the three stone open hearth to cook. It is estimated that 250,000 efficient stoves are now being used. There is a potential to increase this to the entire rural population. So, the target population would be 1.25 million households.</p> <p>Small-scale manufacturing and marketing of efficient fuelwood stoves in 20 villages across the country where raw material is available.</p> <p>A few families (could be existing potters in the area) are trained to establish manufacturing facilities in each village while a few others are trained for marketing both within and outside the villages. There is a market for efficient cook stoves as rural areas are depleting the fuelwood resources. There are other considerations such as indoor ventilation; ease of cooking that has raised the rural householder expectations. A typical unit can be sold for about Rs. 100 each (US \$ 1.10). This project can be developed by a rural non-governmental organization dealing in energy.</p>
<p>9. Methane Recovery and Power Generation</p>	<p>A 1 MW grid connected generating plant can be installed to operated on the recovered methane gas at the Welisara dumpsite.</p> <p>A large-scale biogas facility along with a power plant of appropriate capacity will help cities to address the garbage problem while supplementing the electricity supply system</p>

	<p>in the city. A project such as this will help in organising the dumpsite to make it more environmentally friendly (i.e.covering the site daily with soil to enclose the garbage). It will also prevent the burning of garbage as it happens now causing localised pollution as well as adding to the global emissions. The piping system can be installed to recover the gas to be filtered and used to run the generators.</p> <p>The immediate population that will benefit from impacts in reduced pollution levels will be about 500 households in the vicinity of the garbage dump. This project can be replicated in the major cities of Kandy, Galle, Anuradhapura and Nuwara Eliya and will benefit about 1,500 households in immediate vicinity of the dumpsites.</p>
<p>10. Reforestation project</p>	<p>This project is a reforestation to grow trees on marginal lands to increase the forest cover surrounding a tea plantation. The area covered will be 1000 hectares. The plantation company will employ the surrounding village community to plant the trees and manage them. The company will ensure that the forest is managed properly over the commitment period for CDM.</p>

Appendix D1.4 Scoping of project benefits

Projects	Primary (direct) benefits	Secondary (indirect) benefits	Empowerment
1. 1.5 MW Mini- hydro Plant (with Irrigation)- Hasalaka	<ul style="list-style-type: none"> ✍ Increased diversification of energy supply ✍ Increased availability of energy supply (as any addition currently is positive due to the energy crisis with daily 2 hour power cuts for load shedding) ✍ Improved agricultural productivity through increases in water availability and reliability for irrigation ✍ Employment ✍ Improved roads from canal bank roads (this would create better access to markets for the farmers) ✍ Decrease in expenditure on import of diesel oil for power generation 	<ul style="list-style-type: none"> ✍ Improved food security ✍ Increased access to income to due improved agricultural productivity ✍ Promote employment in service and maintenance ✍ Funds to purchase off-grid SHS as electricity will feed the grid and not the immediate community 	<ul style="list-style-type: none"> ✍ Improved links between meso and micro level actors & institutions (project developer, provincial council, divisional secretariat and rural community ✍ Strengthens cooperatives to manage the water resource ✍ Promotes participation in decision making in the irrigation area; ✍ Benefits from a solar home system, for example, will be access to information and entertainment, education and a better quality of life
2. 5 MW fuelwood based electricity generation plant	<ul style="list-style-type: none"> ✍ Increased diversification of energy supply ✍ Increased availability of energy supply as country is going through a power crisis ✍ Increased reliability of energy supply ✍ Income generation for surrounding village community ✍ Increased employment ✍ Increased demand and use of local materials (wood) 	<ul style="list-style-type: none"> ✍ Better watershed retention in soil and prevention of soil erosion by the tree cover (better soil conditioning for farming) 	<ul style="list-style-type: none"> ✍ Promotes community resource ownership and management; ✍ More funds to purchase a solar home system for lighting of households and all positive implications (quality of life, access to information and entertainment, education, etc).

<p>3. 1 MW sawdust based co-generation plant</p>	<p>?? Increased diversification of energy supply</p> <p>?? Increased availability of energy supply to assist in the power crisis</p> <p>?? Increased reliability of energy supply</p> <p>?? Income generation for urban youth in the area from collecting and delivering saw-dust to the plant</p> <p>?? Direct employment for 10 people in the plant</p> <p>?? Elimination of environmental impacts from sawdust dumping (eg, blocking of drainage ways and local pollution)</p> <p>?? Decrease in expenditure on imports of diesel oil for power generation</p>	<p>?? Promote employment in service and maintenance.</p>	<p>?? Promotes participation of youth in decision making</p> <p>?? Reduce youth idleness and crime</p>
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<p>4. Package of Village hydro plants (250 kW)</p>	<ul style="list-style-type: none"> ☞ Diversification of energy supply ☞ Provision of electricity to 1,000 off-grid households ☞ Increases reliability of energy supply ☞ Decreases fire hazards from reduced use of kerosene lamps 	<ul style="list-style-type: none"> ☞ Improves access to education ☞ Improves access to entertainment ☞ Improved health(air quality with the elimination of kerosene use) ☞ Increases access to starting businesses (eg rice mill, battery charging centre, small industry) ☞ Employment in service and maintenance ☞ Increases enabling environment for rural business start-ups 	<ul style="list-style-type: none"> ☞ Increases village level cooperation ☞ Community development through cooperation (leadership and team building) ☞ Learning about sustainability and commercial development through the project ☞ Linkages with mainstream funders and financiers; ☞ Learning to manage and operate a system that has limited amount of electricity conservation; ☞ Women will benefit from better light in the home (keeping a cleaner home without kerosene stained wall, better illumination in kitchen); ☞ Family will have access to information and entertainment with radio and TV.
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<p>5. Package of 1000 Solar home systems (50kW)</p>	<ul style="list-style-type: none"> ⚡ Electricity to 1,000 off-grid ⚡ Decreased fire hazard from reduced use of kerosene lamps 	<ul style="list-style-type: none"> ⚡ Improved access to education ⚡ Improved access to entertainment, ⚡ Improved health (air quality with the elimination of kerosene) ⚡ Employment in service and maintenance ⚡ Increases enabling environment for rural business start-ups 	<ul style="list-style-type: none"> ⚡ Learning to manage and operate a system that has limited amount of electricity (conservation); ⚡ Women will benefit from better light in the home (keeping a cleaner home without kerosene stained wall, better illumination in kitchen); ⚡ Family will have access to information and entertainment with radio and TV.
<p>6. Package of Solar water pumping systems and forest plantations – 20 systems</p>	<ul style="list-style-type: none"> ⚡ Increased water supply for drinking ⚡ Increased water supply for small scale farming ⚡ Increased forest cover ⚡ Improved health from increased availability of water and increased quality of water 	<ul style="list-style-type: none"> ⚡ Increased access to income from agro-forestry ⚡ Improved access to income from improved agricultural productivity ⚡ Improved food security ⚡ Protection of forests -(water retention in soil and less erosion leading to better agricultural productivity) ⚡ Employment 	<ul style="list-style-type: none"> ⚡ Strengthens rural cooperatives ⚡ Learning to manage a system with limited resources; ⚡ Learning teamwork and leadership ⚡ Women benefit as collection of water will be easier

<p>7. A package of 100 biogas plants</p>	<ul style="list-style-type: none"> /// Diversification of energy supply /// Increased reliability of energy supply /// Increased income through a reduction in expenditure on fertiliser /// Increased time savings on fuel wood collection /// Improved sanitation /// Improved health through better indoor air quality /// Improved health through improved sanitation practices 	<ul style="list-style-type: none"> /// Increased productivity of women involved in fuel wood collection /// Stem depletion of forest in the area -(not significant in the short-run) /// Potential for new market in organic farming /// Employment /// Increases enabling environment for rural business start-ups 	<ul style="list-style-type: none"> /// Learning to manage and operate a biogas system; /// Women will benefit from better health and more time for other activities /// Women will benefit from better light in the home (keeping a cleaner home without kerosene stained walls, better illumination in kitchen)
<p>8. Efficient fuelwood stoves programme</p>	<ul style="list-style-type: none"> /// Increased reliability of energy supply /// Increased time savings on fuel wood collection /// Save money on purchase of fuelwood /// New business opportunities for pottery industry 	<ul style="list-style-type: none"> /// Improved health through improved indoor air quality /// Less depletion of surrounding forests -(not significant in the short-run) 	<ul style="list-style-type: none"> /// Women will benefit from better health and more time for other activities
<p>9. Methane recovery and power generation</p>	<ul style="list-style-type: none"> /// Diversification of energy supply /// Improved health through avoidance of noxious emissions from dumps /// Employment /// Improvement of road infrastructure (in support of transport of waste) /// Save on import of diesel fro power generation 	<p>?? More efficient collection of garbage in Colombo City;</p>	
<p>10. Establishment of a forest plantations totalling of 1000 hectares</p>	<ul style="list-style-type: none"> /// Increase access to income from sale of sustainable wood production /// Protection of forest cover - (prevention of soil erosion and water retention in soil for better soil conditioning) 	<p>Potential to diversify electricity production</p>	<ul style="list-style-type: none"> /// Strengthens co-operation between micro-actors and plantation owners /// Promotes participation in decision-making

Appendix D1.5 Actors and Institutions - Scoping capacity building needs

General Stakeholders

The Ministry of Forestry & Environment and the Department of Meteorology in the Ministry of Science and Technology are the main focal points associated with climate change activities in Sri Lanka. While the Department of Meteorology has already established a Centre for Climate Change, the Ministry of Forestry & Environment has taken steps to establish a CDM Advisory Group with CDM Study Centres being formed in the University of Peradeniya and the in the University of Moratuwa mainly to feed the requirements of the CDM Advisory Group.

The Central Environmental Authority (CEA), which comes directly under the Ministry of Forestry & Environment, is the agency that assesses and monitors the environmental impact of all types of projects in Sri Lanka. Non of the projects cannot be implemented without an environmental impact assessment the complexity of which is dependent on the nature and the size of the project, and clearance from the CEA.

The Ministry of Finance and Planning has the overall responsibility of determining the fiscal policy of the country. Therefore it the responsibility of this ministry to establish necessary national policy framework for required financial and other incentives to encourage climate change related investment in the country, on the recommendation of the different sector ministries having climate change interests

One of the major players in the climate change related activities is the Ministry of Irrigation & Power, which is responsible for national policy and its implementation in the energy sector. Ceylon Electricity Board (CEB), a state owned utility, which comes under this ministry, is the sole authority responsible for electricity generation, transmission and a major part of distribution activities. A major component of the generation system is owned by the CEB with a limited private sector involvement in thermal generation and small hydro development. The country's generation sector expansion is mainly based on the Long Term Generation Expansion Plan developed by the CEB

The Ministry of Industries is responsible of development and implementation of the national industrial policy. Therefore this is likely to be a key institution involved in when CDM projects are implemented particularly if it involves general industrial sector activities. The Board of Investment (BOI), which comes within the purview of the Ministry of Industries, is the main government agency promoting and facilitating establishment of any project in the country.

The Ministry of Science and Technology is responsible of development and adoption of new technology and promotion of appropriate technologies by assisting implementation on a pilot scale. National Engineering Research and Development Centre (NERD Centre) which comes under this ministry has been involved in developing local technology in many sectors including those in the renewable energy sector. Also the National Science Foundation and the local universities have been funding many research activities in related areas. The University of Moratuwa has recently established the Centre for Energy Studies (CEoS) mainly to cater the research needs in the energy

and environment sector. CEnS will act as one of the CDM Study Centres of the Ministry of Forestry & Environment.

The Central Bank and the Department of Statistics are the main sources of organised data in all sectors in the country.

Climate Change and its implications have been areas where high profile attention has been received by the media and the government. The policy makers and the public have been regularly exposed to implications (changing weather, water shortages, rising ocean, cyclones etc.) of Climate Change in Sri Lanka through seminars and workshops mainly organised under the patronage of the Ministry of Forestry and Environment.

As a nation, there is relatively high 'green' awareness in the country. This is reflected in government policies and actions. This was evident from its actions such as its encouragement of more grid connected small hydro plants and establishment of the pilot wind power plant. Through the UNFCCC initiatives, the government is also moving towards incorporating environmental issues to mainstream government policy. Considering these it can be seen that the general awareness within the government required for CDM projects is high.

Potential Allies

Major actors in policymaking, planning and implementation of CDM projects in Sri Lanka would be the Ministries of Forestry & Environment, Irrigation & Power and Finance & Planning. In addition, the universities, private sector business community and the NGOs will also play a major role mainly at the implementation and monitoring stages.

Specific Stakeholders

Business

The most important institutions to be targeted would be the Chamber of Commerce, Chamber of Industries and the Federation of Chambers of Commerce and Industry where most of the business and industry organisations are covered through their membership. There are few consulting companies particularly those working in the energy sector, which would be avenues for CDM project promotion. Also the groupings of the renewable energy sector investors such as Solar Industry Association and Small Power Producers Association consisting of almost all related industries will be major contributors in implementation of CDM projects. There is also a newly formed Bio-Energy Association who hopes to develop biomass based energy systems.

Community Groups

Name of Organization	Contact
Sarvodaya Women's Movement	Mrs. Amara Pieris – Tel: 647843
Youth Development Programme "Ranhiru", Samagipura, Hali-Ela	Mr. W. Ranasinghe- Tel: 072-665805
Mahaweli Samaja Sanwardane Padanama Karabewa, Nochiyagama	K. Dammananda Thero
Swarnadama Padanama Singhagama, Pandulagama Anuradapura	Mr. Sriyaratne Munasinghe
Sri Lanka Amaddyapa Yovun Samajaya 21A Millawitiya, Kuruwita	Mr. E.A.T.C. Peiris Tel: 072-619126, 036-6379
Saiva Mangaiyar Kalagam (Hindu Women's Society) 23 Rudra Mawatha, Colombo 6	K. Wimaladeva Tel: 504225
Farms Lanka 91/3 St. Peter's Road Moratuwa	Clarence Mendis Tel: 648564
Education and Social Development Foundation Samadhi Nikethana, Diyakobala, Bibile	Ven H. Sirisumana
Janashakti Uva Foundation "Asoka Nivesa", Beraliyapola, Lunuwatte	J.M. Jayatilake
Lanka Mahila Samithi 123, Sir James Peiris Mawatha, Colombo 2	Ms. Jeevani Sugunadasa Tel/Fax: 424060
Galwewa Praja Viyapruthiya Mahaara, Baragama, Amblantota	Mr. S. Dhramadasa
People's Progressive Development Society Muruthuvar Road, Akkaraipattu 08	Mr. Mr. K.S.T. Manikavasaham
Gami Seva Sevana Ltd. Office Junction Galaha	Mr. Ranjith De Silva Tel: 08-467201 071-724877
Kirinda Community Project Kirinda, Godana, Tissamahrama	Mr. Ariyasena Ranatunga Tel: 047- 23409
Mahinda Samajaseva Sangamaya Ranmuthugala Temple, Kadawata	Rev. Silogama Wimala
Centre for Participatory Development Dissanyake Transport, Weddagala Road, Kalawana	Ms. Kamani Jayawickrama

All the above organizations have registered with the NGO Secretariat of the Ministry of Social Services. The above list is chosen from a list of 101 organisations. There are many more that are registered at provincial levels, but the list was not available.

NGO Sector:

The main NGOs working in the energy and environment sectors such as Energy Forum, ITDG, Sri Lanka Energy Managers Association and Lanka International Forum on Environment and Sustainable Development (LIFE) will be the main stakeholders within the NGO sector. These NGOs are mainly

involved in research and pilot scale implementation activities in the energy and environment sectors and also in capacity building and awareness programmes. This includes activities involving renewable energy, energy efficiency and climate change.

Workers:

Trade Unions	General Information
Ceylon Workers Congress	Tea Plantations
Jathika Sevaka Sangamaya	Civil Service
Janatha Vimuthi Peramuna Union	Labour
Sama Samaja Union	Labour

Researchers

The universities, NERD Centre, Energy Conservation Fund, National Science Foundation and the Institute of Fundamental Studies are the main research institutions involved in activities relevant to climate change and CDM. These institutions have been carrying out research work particularly in the areas of energy and environment for a long period of time.

Actors & Institutions involved in CDM project formulation for livelihood focused projects

CDM project stages	Energy	Waste/Forestry
Scoped project types		
Project Initiation and Promotion	BOI, Ministry of Irrigation and Power, Ceylon Electricity Board, Ministry of Forestry and Environment, Private Sector (vendors, project developers), Provincial Councils, NGOs, rural communities (Electricity Consumer Societies)	BOI, Ministry of Forestry and Environment, Provincial Councils, Private Sector, NGOs. Rural Communities, Provincial Councils
Packaging	Ministry of Forestry and Environment Ministry Irrigation and Power Ministry of Industries Private Sector, Banks, NGOs, Consultants	Ministry of Forestry and Environment, private sector, Provincial Councils Local councils, Private Sector, Banks, Consultants, NGOs
Appraisal/Approval	Ministry of Finance & Planning, Ministry of Forestry & Environment (Climate Change Focal Point), or a <i>newly established independent regulatory and approval body consisting of government, private sector and NGO officials.</i>	Ministry of Finance & Planning, Ministry of Forestry & Environment (Climate Change Focal Point), or a <i>newly established independent regulatory and approval body consisting of government, private sector and NGO officials.</i>
Implementation/Management/CER Sales	Private Sector, NGOs, Ministry Irrigation and Power, CEB, NGOs	Private Sector, Provincial and local Councils, NGOs
Monitoring	Independent Regulatory Body , Ministry of Forestry and Environment, CDM Study Centres	Independent Regulatory Body , Ministry of Forestry and Environment, CDM Study Centres at Universities

Capacity needs for actors and institutions involved in the grid-connected energy projects.

Stages of the project cycle	Identification of current actors & Institutions	Identification of actors and institutions who should be involved	Capacity needs (training of existing or new actors, awareness raising workshops, courses, etc.)	Who should provide this capacity	Policy recommendation
Initiation	Private sector promoters, Ministry of Irrigation and Power, CEB, NGOs, Grid Connected Power Developers Association, municipalities, provincial councils, Board of Investment, Development and Commercial Banks, The World Bank	Ministry of Forestry and Environment, private sector promoters, Ministry of Irrigation & Power, Ministry of Science & Technology, National Engineering and Research Center (NERD), CEB, NGOs, municipalities, provincial councils, Energy Conservation Fund, Universities, financing institutions (banks, cooperatives etc.), World Bank, BOI	<ol style="list-style-type: none"> 1. Private Sector <ul style="list-style-type: none"> - Resource assessments (locating of sites) - Develop business plans - Negotiating skills for loans and power purchase agreements - CO2 avoidance assessments to apply for CDM funds 2. Government Ministries and Provincial Councils <ul style="list-style-type: none"> - study benefits and costs of participating in carbon trading - Develop strategies to access CDM and other climate 	<ol style="list-style-type: none"> 1. Government should facilitate the capacity building after developing country strategies for CDM project development. 2. Capacity building can be funded by the government, donor agencies as a part of technical assistance 3. It can be provided also by countries who will require CER's to purchase to reduce transaction time and costs. Bilateral donor projects could 	<ol style="list-style-type: none"> 1. Government should develop strategies for climate change funds and how they will be administered. It should establish standards and procedures for CER sales in Sri Lanka, after deciding on baselines and areas that can be traded. 2. There should be other transparent supporting policies to incorporate renewables into the energy mix. The power

			<ul style="list-style-type: none"> - change funds - Set policies and regulations on private sector carbon trading - Establishing a climate change secretariat <p>3. Universities and Research Institutions</p> <ul style="list-style-type: none"> - Establish courses on systems design for grid connected systems, environmental benefits of renewables, effect on climate change et. In universities - Research into developing energy systems and products in Sri Lanka (i.e. electronic switchgear, turbines, biomass gasifiers etc.) <p>4. NGOs and Rural Organizations</p>	<p>fund such programmes.</p>	<p>purchase pricing should be transparent and consistent.</p> <p>3. Government should create policies to attract foreign and local investment in grid connected renewable energy power projects through fiscal incentives (ie. Tax holidays for investors, duty waivers on imported equipment etc.).</p> <p>4. Government should fast track approval processes for BOI, environmental clearances, land use permits etc. and this should be decentralised the provincial level also.</p> <p>5. There should be a climate change</p>
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			<ul style="list-style-type: none"> - Project development - Awareness creation on renewables - Accessing funds and project development - Project management 		<p>secretariat to establish standard and transparent procedure for CER sales.</p> <p>6. Project initiation should be decentralised through policies that would enable provincial councils to establish energy centers to provide resource information, approvals for project development, assessments to enable CER sales.</p>
Packaging	<p>There are no organizations appraising projects for CDM at the moment.</p> <p>The ESD project funded grid connected mini hydro projects are appraised by the banks who fund the project and the CEB who purchases the</p>	<p>Ministry of Forestry and Environment – Climate Change Secretariat, independent authority to appraise projects (consisting of government, private, NGO, academic stakeholders), financial institutions such as development and commercial banks.</p>	<p>These organizations require training on developing baselines, registration, certification, measuring GHG, estimating additionality, certification of reductions and generation of CERs.</p>	<p>The government should facilitate training with international assistance from experts.</p>	<p>There should be a clear policy on what areas of the energy/forestry sectors can be and cannot be packaged and traded.</p>

	electricity.				
Approval	There is no facility to approve CDM projects at the moment	The Climate Change Secretariat in the Ministry of Forestry & Environment should be established to provide approvals for CER sales. Eventually, this should be done by an independent agency, which will consist of stakeholders from government, NGOs, academia, private sector and banks.	<ol style="list-style-type: none"> 1. The Ministry of Forestry and Environment requires capacity building and training for the Climate Change Secretariat in areas such as developing baselines, registration, certification, measuring GHG, estimating additionality, certification of reductions and generation of CERs. 2. There should be coordination between Board of Investments and Climate Change Secretariat so approvals can be fast tracked. 	The government should facilitate the training.	There should be clear policies on climate change and environment in order to develop strategies as to how to and who should approve such projects for the sale of CERs.
Management	Private sector companies, CEB	Community organizations, NGOs, provincial councils	Project management, technical training for	Government training institutions, Business	Policies should be set on standards for

			maintenance and management	schools	project and management if they are to be offered for CER sales (i.e. monitoring of kWh production and allocating values).
CER Sales	There are no institutions selling CERs for this sector	Climate Change Secretariat or the Independent Authority	Valuing of of CERs, negotiating with governments and organizations purchasing CERs	International organizations like UN, universities (i.e. Imperial College of London)	Establish policies for approval and selling of CERs.

Capacity needs for actors and institutions involved in the off-grid energy projects.

Stages of the project cycle	Identification of current actors & Institutions	Identification of actors and institutions who should be involved	Capacity needs (training of existing or new actors, awareness raising workshops, courses, etc.)	Who should provide this capacity	Policy recommendation
Initiation	private sector promoters, CEB, NGOs, rural communities, micro financing institutions, consulting companies, provincial councils, Board of Investment (BOI), Development and	1. Ministry of Forestry and Environment, private sector promoters, Ministry of Irrigation & Power, Ministry of Science & Technology, National Engineering and Research Center (NERD), CEB, NGOs, rural communities, micro	1. Private Sector - Resource assessments (locating sites for micro hydro and biomass) - Load assessments - Systems design	1. Government should coordinate and facilitate the capacity building after developing country strategies for CDM project development. 2. Specific training for technicians for	1. Government should develop strategies for climate change funds and how they will be administered. It should establish standards and procedures for CER sales in Sri Lanka,

	Commercial Banks, The World Bank	financing institutions, municipalities, provincial councils, Energy Conservation Fund, Universities, financing institutions (banks, cooperatives etc.), World Bank, BOI, consulting companies, Solar Industries Association (SIA), National Apprenticeship and Industrial Training Agency (NAITA).	<p>for solar PV</p> <ul style="list-style-type: none"> - Business management skills (technical and soft skills) - Develop business plans - Negotiating skills for loans - CO2 avoidance assessments to apply for CDM funds <p>2. Government Ministries and Provincial Councils</p> <ul style="list-style-type: none"> - study benefits and costs of participating in carbon trading - Develop strategies to access CDM and other climate change funds - Set policies and regulations on private sector carbon trading - Establishing a climate change secretariat <p>5. Universities and Research</p>	<p>solar PV systems, micro hydro and biomass system installation and maintenance can be provided by technical institutions such the Solar Industries Association (SIA) and the National Apprenticeship and Industrial Training Agency (NAITA).</p> <p>3. Capacity building can be funded by the government, donor agencies as a part of technical assistance</p> <p>4. It can be provided also by countries who will require CER's to purchase to reduce transaction time and costs. Bilateral donor projects could fund such programmes.</p>	<p>after deciding on baselines and areas that can be traded.</p> <p>2. There should be other transparent supporting policies to incorporate renewables into the energy mix.</p> <p>3. Government should create policies to attract foreign and local investment for waste to energy projects through fiscal incentives (ie. Tax holidays for investors, duty waivers on imported equipment etc.).</p> <p>4. Government should fast track approval processes for BOI, environmental clearances, land use permits etc. and this should be decentralised the provincial level</p>
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			<p>Institutions</p> <ul style="list-style-type: none"> - Establish courses on systems design for off-grid solar PV, mini grid micro hydro, and biomass systems, environmental benefits of renewables, effect on climate change et. In universities - Research into developing energy systems and products in Sri Lanka (i.e. electronic controllers and lamps for solar PV, switchgear, turbines, biomass gasifiers etc.) <p>6. NGOs and Rural Organizations</p> <ul style="list-style-type: none"> - micro financing - Project development - Awareness creation on renewables 		<p>also.</p> <p>5. There should be a climate change secretariat to establish standard and transparent procedure for CER sales.</p> <p>6. Project initiation should be decentralised through policies that would enable provincial councils to establish energy centers to provide resource information, approvals for project development, assessments to enable CER sales.</p>
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			<ul style="list-style-type: none"> - Accessing funds and project development - Project management 		
Packaging	<p>There are no organizations appraising projects for CDM at the moment.</p> <p>The ESD project funded off-grid are appraised by the banks who fund the project and the ESD Administration Unit appraises projects for the GEF grant (GEF grant is provided for developers of SHS – US \$ 100 per unit and 20% of project cost for micro hydro developers)</p>	<p>Ministry of Forestry and Environment – Climate Change Secretariat, independent authority to appraise projects (consisting of government, private, NGO, academic stakeholders), financial institutions such as development and commercial banks.</p>	<p>These organizations require training on developing baselines, registration, certification, measuring GHG, estimating additionality, certification of reductions and generation of CERs.</p>	<p>The government should facilitate training with international assistance from experts.</p>	<p>In addition to the policy recommendations mentioned above, there should be a clear policy on what areas of the energy sector can be and cannot be packaged and traded.</p>
Approval	<p>There is no facility to approve CDM projects at the moment</p>	<p>The Climate Change Secretariat in the Ministry of Forestry & Environment should be established to provide approvals for CER sales. Eventually, this should be done by an independent agency, which will consist of stakeholders from government,</p>	<p>1. The Ministry of Forestry and Environment requires capacity building and training for the Climate Change Secretariat in areas such as developing baselines, registration,</p>	<p>The government should facilitate the training.</p>	<p>There should be clear policies on climate change and environment in order to develop strategies as to how to and who should approve such projects for the sale of CERs.</p>

		NGOs, academia, private sector and banks.	certification, measuring GHG, estimating additionality, certification of reductions and generation of CERs. (There should be standardised baselines for technologies such as solar PV which are decentralised to make transaction costs lower) 2. There should be coordination between Board of Investments and Climate Change Secretariat so approvals can be fast tracked for potential investors.		
Management	Private sector companies, NGOs, Community Based organisations (Electricity Consumer Societies), cooperatives	Community organizations (ECS), NGOs, provincial councils, micro financing institutions, provincial councils	Project management, technical training for maintenance and management	Government training institutions (NAITA), Business schools	Policies should be set on standards for project and management if they are to be offered for CER sales (i.e. monitoring of kWh production and allocating values).
CER Sales	There are no institutions	Climate Change Secretariat or	Valuing of CERs,	International	Establish policies for

	selling CERs for this sector	the Independent Authority	negotiating with governments and organizations purchasing CERs	organizations like UN, universities (i.e. Imperial College of London)	approval and selling of CERs.
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Capacity needs for actors and institutions involved in the waste to energy projects.

Stages of the project cycle	Identification of current actors & Institutions	Identification of actors and institutions who should be involved	Capacity needs (training of existing or new actors, awareness raising workshops, courses, etc.)	Who should provide this capacity	Policy recommendation
Initiation	private sector promoters, CEB, municipalities, consulting companies, provincial councils, Board of Investment (BOI), Development and Commercial Banks, The World Bank	1Ministry of Forestry and Environment, private sector promoters, Ministry of Irrigation & Power, Ministry of Science & Technology, National Engineering and Research Center (NERD), CEB, NGOs, rural communities, micro financing institutions, municipalities, provincial councils, Energy Conservation Fund, Universities, financing institutions (banks, cooperatives etc.), Word Bank, BOI, consulting companies, National Apprenticeship and Industrial Training Agency (NAITA).	<ol style="list-style-type: none"> 1. Private Sector <ul style="list-style-type: none"> - Locating sites for waste to energy projects) - Systems design - Business management skills (technical and soft skills) - Develop business plans - Negotiating skills for loans - Negotiating with municipalities to acquire waste and, CEB to sell power - CO2 avoidance assessments to apply for CDM funds 2. Government 	<ol style="list-style-type: none"> 1. Government should coordinate and facilitate the capacity building after developing country strategies for CDM project development. 2. Specific training for technicians for waste to energy biomass installation training can be provided by technical institutions such as the National Apprenticeship and Industrial Training Agency (NAITA). 4. Capacity building can be funded by the government, 	<ol style="list-style-type: none"> 1. Government should develop strategies for climate change funds and how they will be administered. It should establish standards and procedures for CER sales in Sri Lanka, after deciding on baselines and areas that can be traded. 2. There should be other transparent supporting policies to incorporate renewables into the energy mix. 6. Government should create policies to attract foreign and local investment for

			<p>Ministries and Provincial Councils</p> <ul style="list-style-type: none"> - study benefits and costs of participating in carbon trading - Develop strategies to access CDM and other climate change funds - Set policies and regulations on private sector carbon trading - Establishing a climate change secretariat <p>7. Universities and Research Institutions</p> <ul style="list-style-type: none"> - Establish courses on systems design for waste to energy plants, environmental benefits of renewables, effect on climate change et. In universities - Research into developing energy systems and 	<p>donor agencies as a part of technical assistance</p> <p>4. It can be provided also by countries who will require CER's to purchase to reduce transaction time and costs. Bilateral donor projects could fund such programmes.</p>	<p>waste to energy energy projects through fiscal incentives (ie. Tax holidays for investors, duty waivers on imported equipment etc.).</p> <p>7. Government should fast track approval processes for BOI, environmental clearances, land use permits etc. and this should be decentralised the provincial level also.</p> <p>8. There should be a climate change secretariat to establish standard and transparent procedure for CER sales.</p> <p>6. Project initiation should be decentralised through policies that would enable provincial</p>
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			products in Sri Lanka (i.e. electronic controllers, switchgear, gasifiers etc.)		councils to establish energy centers to provide resource information, approvals for project development, assessments to enable CER sales.
Packaging	There are no organizations appraising waste projects for CDM at the moment.	Ministry of Forestry and Environment – Climate Change Secretariat, independent authority to appraise projects (consisting of government, private, NGO, academic stakeholders), financial institutions such as development and commercial banks.	These organizations require training on developing baselines, registration, certification, measuring GHG, estimating additionality, certification of reductions and generation of CERs.	The government should facilitate training with international assistance from experts.	In addition to the policy recommendations mentioned above, there should be a clear policy on what areas of the energy sector can be and cannot be packaged and traded.
Approval	There is no facility to approve CDM projects at the moment	The Climate Change Secretariat in the Ministry of Forestry & Environment should be established to provide approvals for CER sales. Eventually, this should be done by an independent agency, which will consist of stakeholders from government, NGOs, academia, private sector and banks.	1.The Ministry of Forestry and Environment requires capacity building and training for the Climate Change Secretariat in areas such as developing baselines, registration, certification, measuring GHG, estimating additionality, certification of	The government should facilitate the training.	There should be clear policies on climate change and environment in order to develop strategies as to how to and who should approve such projects for the sale of CERs.

			reductions and generation of CERs. 2. There should be coordination between Board of Investments and Climate Change Secretariat so approvals can be fast tracked for potential investors .		
Management	Private sector companies, municipalities	Provincial councils, community organizations, CEB (if power is purchased by them), municipalities, private sector	Project management, technical training for maintenance and management	Government training institutions (NAITA), Business schools	Policies should be set on standards for project and management if they are to be offered for CER sales (i.e. monitoring of kWh production and allocating values, GHG measurements).
CER Sales	There are no institutions selling CERs for this sector	Climate Change Secretariat or the Independent Authority	Valuing of CERs, negotiating with governments and organizations purchasing CERs	International organizations like UN, universities (i.e. Imperial College of London)	Establish policies for approval and selling of CERs.

Capacity needs for actors and institutions involved in forestry projects.

Stages of the project cycle	Identification of current actors & Institutions	Identification of actors and institutions who should be involved	Capacity needs (training of existing or new actors,	Who should provide this capacity	Policy recommendation
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			awareness raising workshops, courses, etc.)		
Initiation	Private sector promoters, plantation companies, municipalities, consulting companies, provincial councils, Board of Investment (BOI), Development and Commercial Banks, The World Bank	1 Ministry of Forestry and Environment, private sector promoters, Ministry of Science & Technology, NGOs, rural communities, provincial councils, financing institutions (banks, cooperatives etc.), Word Bank, BOI, consulting companies, Agriculture Department, Mahaweli Authority,	<p>1. Private Sector Plantation companies</p> <ul style="list-style-type: none"> - Locating sites for forestry projects - Types of species - Negotiating with government to acquire marginal lands - Valuing of the sinks to apply for CDM funds <p>2. Government Ministries and Provincial Councils</p> <ul style="list-style-type: none"> - study benefits and costs of participating in carbon trading - Develop strategies to access CDM and other climate change funds - Set policies and regulations on private sector carbon trading - Establishing a climate change 	<p>1. Government should coordinate and facilitate the capacity building after developing country strategies for CDM project development.</p> <p>3. Specific training for developing of plantations and managing them.</p> <p>5. Capacity building can be funded by the government, donor agencies as a part of technical assistance</p> <p>4. It can be provided also by countries who will require CER's to purchase to reduce transaction time and costs. Bilateral donor projects could fund such programmes.</p>	<p>1. Government should develop strategies for climate change funds and how they will be administered. It should establish standards and procedures for CER sales in Sri Lanka, after deciding on baselines and areas that can be traded (ie. Decide on sinks and allocate values etc.).</p> <p>2. Government should create policies to attract foreign and local investment for forestry development projects through fiscal incentives .</p> <p>3. Government should fast track approval processes for BOI, environmental clearances, land use</p>

			<p>secretariat</p> <p>8. Universities and Research Institutions</p> <ul style="list-style-type: none"> - Establish courses on biodiversity, energy plants, effect on climate change etc. - Research into plants appropriate for reforestation and a forestation 		<p>permits etc. and this should be decentralised the provincial level also.</p> <p>9. There should be a climate change secretariat to establish standard and transparent procedure for CER sales.</p> <p>6. Project initiation should be decentralised through policies that would enable provincial councils to establish energy centers to provide resource information, approvals for project development, assessments to enable CER sales.</p>
Packaging	There are no organizations appraising forestry projects for CDM at the moment.	Ministry of Forestry and Environment – Climate Change Secretariat, independent authority to appraise projects (consisting of government, private, NGO, academic stakeholders), financial	These organizations require training on developing baselines, registration, certification, measuring GHG, estimating additionality,	The government should facilitate training with international assistance from experts.	In addition to the policy recommendations mentioned above, there should be a clear policy on the forestry sector

		institutions such as development and commercial banks.	certification of reductions and generation of CERs.		
Approval	There is no facility to approve CDM projects at the moment	The Climate Change Secretariat in the Ministry of Forestry & Environment should be established to provide approvals for CER sales. Eventually, this should be done by an independent agency, which will consist of stakeholders from government, NGOs, academia, private sector and banks.	1.The Ministry of Forestry and Environment requires capacity building and training for the Climate Change Secretariat in areas such as developing baselines, valuing sinks, registration, certification, measuring GHG, estimating additionality, certification of reductions and generation of CERs. (There should be standardised values for sinks)	The government should facilitate the training.	There should be clear policies on climate change and environment in order to develop strategies as to how to and who should approve such projects for the sale of CERs.
Management	Private sector plantation companies, NGOs, Community Based organisations,	Community organizations (ECS), NGOs, agriculture department, provincial councils	Training on planting, assessing sink values	Agriculture Department, government	Policies should be set on standards for project and management if sinks are to be offered for CER sales
CER Sales	There are no institutions selling CERs for this	Climate Change Secretariat or the Independent Authority	Valuing of of CERs, negotiating with	International organizations like UN,	Establish policies for approval and selling of

	sector		governments and organizations purchasing CERs	universities (i.e. Imperial College of London)	CERs.
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