



2017

## Project Implementation Review (PIR)



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### **NAMAs in the energy generation sector**

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## A. Basic Data

Project Information	
UNDP PIMS ID	5232
GEF ID	5586
Title	Appropriate Mitigation Actions in Energy Generation and End-Use Sectors in Sri Lanka
Country(ies)	Sri Lanka, Sri Lanka
UNDP-GEF Technical Team	Energy, Infrastructure, Transport and Technology
Project Implementing Partner	Government
Joint Agencies	<i>(not set or not applicable)</i>
Project Type	Full Size

Project Description
<p>Sri Lanka is highly dependent on imported oil to meet its energy needs with 49% of the primary energy supply coming from imported fuel, where 12% of the total government budget is used for electricity generation alone. This is leading to a heavy reliance on imported fossil fuels and increased GHG emissions. The National Energy Policy of Sri Lanka seeks to diversify supply mix with renewable energy resources whilst seeking to reduce energy demand through demand side management. The Renewable Energy Resources Development Plan seeks to achieve 20% from renewable energy resources by 2020 and 30% by 2030 as part of the national strategy to reduce GHG emissions through appropriate mitigation actions (NAMA). Energy Management Plan (EnMAP) seeks to achieve energy savings from the promotion of EE measures. Often the GHG savings and the cost-benefits of these low carbon interventions are not systematically quantified and their benefits remain obscure and done on ad-hoc basis. It is difficult for sub-national entities to assess the impact of their NAMA interventions at the sectors and sub-sectors level.</p> <p>In order to fill these gaps, the development of a robust, transparent and functional NAMA framework along with clear inventory and MRV system with supporting governance and oversight (NAMA Secretariat, NAMA Coordinating Entity, NAMA Implementing Entity, MRV Committee, and NAMA Registry) is needed. Such framework will systematically quantify GHG savings and benefits of the mitigation interventions using a bottom up approach to aggregate from the provincial and sub-sector levels to the national and sectors level. Furthermore, such a transparent framework will open up opportunity to access regional and international climate funding. In order to achieve this, the project will support appropriate climate change mitigation actions in the energy generation and end-use sectors as part of the initiatives to achieve the voluntary GHG mitigation targets of Sri Lanka</p> <p>To test and verify the framework, this project will seek to overcome the regulatory, institutional, technical, financial and social barriers for the scaling up of RE and EE NAMA through the dissemination of 1,000 bio-digesters, 1,300 high efficiency motors in tea factories, and 205 solar PV net metering systems with battery storage. Furthermore, the project will:</p> <ol style="list-style-type: none"> <li>1. Develop a robust provincial inventory system that could be updated periodically and aggregated at the national level using web-based EnerGIS database management system</li> <li>2. Develop a decision making tools such as MACC tools for analyzing and prioritizing a pipeline of bankable NAMA that could be implemented</li> </ol>

3. Leverage public, private and CSOs resources through the NAMA Implementing Entity for the implementation of bankable RE and EE NAMAs based on viable and cost effective business models to incentivize value chain actors to reduce supply risks and create demand and
4. Develop a robust and transparent MRV system that are accurate, reliable and credible and avoid double accounting.

During the implementation, in addition to GEF fund of USD 1,790,411 and UNDP fund of USD 250,000; the project will be supported by in-kind contribution and parallel activities from the government (SLSEA, MERE) to an amount of USD 3,400,000 and USD 230,000 and from private sector with an amount of USD 22,000,000. Thus, total resource for project implementation is USD 27,670,411.

Project Contacts	
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## B. Overall Ratings

Overall DO Rating	Moderately Satisfactory
Overall IP Rating	Satisfactory
Overall Risk Rating	Moderate

## C. Development Progress

Objective or Outcome	Description				
<b>Objective:</b>	<b>Support appropriate climate change mitigation actions in the energy generation and end-use sectors as part of the initiatives to achieve the voluntary GHG mitigation targets of Sri Lanka</b>				
	Description of Indicator	Baseline Level	Target level at end of project	Level at 30 June 2016	Cumulative progress since project start
<i>(not set or not applicable)</i>	No. of implemented NAMAs in the energy generation and end use sectors by EOP	<i>(not set or not applicable)</i>	3	<p>The Project is too early in the implementation process to be reported against the final objective. However, two Renewable Energy (RE) and one Energy Efficiency (EE) technology applications have been identified, and these three technologies will be implemented as Nationally Appropriate Mitigations Action (NAMAs) under the Project in next few years (2016-2018). These technology applications are;</p> <p>1. Technology: Solar PV net-metering with Battery Storage</p> <p>Sector: Renewable Energy power generation</p> <p>Focus group/beneficiaries: Domestic consumers</p> <p>Locations: Two green zones of the country; Kotte and Kurunegala</p>	<p>The Project has started the implementation of the identified three Nationally Appropriate Mitigation Actions (NAMAs) technologies; Solar PV with battery storage, High Efficiency Motors (HEM) in the tea plantation sector and domestic and institutional level biogas. The progress of these NAMA implementation can be summarized as follows;</p> <p>13 Solar PV with battery storage has been installed under the first phase (trial phase) and one more unit to be installed, and performance monitoring is in progress.</p> <p>24 HEMs and 5 Variable Frequency Drivers (VFDs) were installed in 5 tea factories in the pilot trial phase. Trial monitoring and analysis completed.</p> <p>79 Biogas digesters have been constructed during the reporting period and further 47 units are under construction.</p> <p>The detailed progress and the activities completed to date are provided under</p>

				<p>2. Technology: Biogas as a solution for waste management</p> <p>Sector: Renewable Energy power generation</p> <p>Focus group/beneficiaries: Domestic consumers, small and medium scale commercial establishments, institutional establishments</p> <p>Locations: Northwestern, Uva, Sourthern and Central province</p> <p>3. Technology: High Efficiency Motors</p> <p>Sector: Energy Efficiency in industrial end-users</p> <p>Focus group/beneficiaries: The tea industry/plantation sector (mainly private sector)</p> <p>Locations: Uva, Central, Sabaragamuwa and Sourthern provinces</p> <p>The detailed implementation arrangements and activities completed to date in the implementation of NAMAs are detailed under outcome No.03</p>	outcome No.03. The implementation of these NAMAs will be continued for the next two years (2017-2019).
The progress of the objective can be described as:		On track			
Objective:	Established and regular update of renewable energy utilization baseline & energy intensity reference baselines for the energy generation and end-use sectors				

	Description of Indicator	Baseline Level	Target level at end of project	Level at 30 June 2016	Cumulative progress since project start
<i>(not set or not applicable)</i>	No. of provinces that regularly conduct sub-sectoral GHG emission inventories of their energy generation and end-use sectors by Year 4	<i>(not set or not applicable)</i>	3	<p>The Project exploring the possibility of storing the provincial, sectoral and national inventory and proposed MRV system (outcome No.04) into the existing EnerGIS system (of Sri Lanka Sustainable Energy Authority) with the required upgradation. The possibility of linking this energy data management system with the future Green House Gas (GHG) inventory mechanism of the Third National Communication is also under consideration. Once developed this will be a web-based system that is efficient, reliable and can be updated with easy access and sharing of information via intranet/internet from sub-national or sectoral level to national level. The Project team has conceptualized how to capture energy intensities and GHG saving data of the three selected technology application for piloting (i.e. Solar PV net-metering, HEMS and biogas).</p> <p>Key progress to date can be detailed as follows;</p> <ul style="list-style-type: none"> <li>• A review of the existing</li> </ul>	<p>The Project is in the development of a provincial/sectoral GHG emission inventory system that will be aggregated at the national level.</p> <p>The progress to date can be detailed as follows;</p> <p>Existing EnerGIS Data Management System (DMS) of SLSEA has been planned to be upgraded as a fully functional energy DMS which will also include the GHG emission inventory. For this task, the project contracted a local Information and Communication Technologies (ICT) service provider, and two of the major tasks of this service provider are;</p> <p>(1) Development of an Application tool which facilitate energy/GHG data collection of NAMAs (including database/management) feeding to EnerGIS system. This will also include Quality Assurance (QA)/Reporting/etc</p> <p>(2) Upgradation of existing EnerGIS system facilitating the first task.</p> <p>This Web-based App is now in the testing phase, and trials are being performed with the available data from pilot technologies. EnerGIS of SLSEA was upgraded with ArcGIS 10.5</p>

			<p>EnerGIS database management system of Sri Lanka Sustainable Energy Authority (SLSEA) is underway. It has been identified that the existing EnerGIS database is only being used for resource assessment, resource allocation and related development activities of New Renewable Energy resources.</p> <ul style="list-style-type: none"> <li>Recently, this EnerGIS, has been upgraded to ArcGIS 10.3 by the SLSEA, and it will facilitate multi-criteria analysis, spatial techniques, 3D and statistical analysis, network analysis, image analysis and has the provision to accommodate energy supply and demand spatial analysis as well as the possibility to incorporate other sector applications like transport planning. The Project team had an initial discussion with the local service provider of this ArcGIS software during this EnerGIS upgradation process. The discussion is based on how to customize this ArcGIS software and available system to accommodate the project requirements. This discussion will be extended under the advice of the Energy/GHG data inventory expert.</li> <li>Based on this review the Energy/GHG inventory expert will</li> </ul>	<p>version which will facilitate the development of the proposed energy/GHG data managementsystem, and EnerGIS system is now being customized for the project's requirement.</p> <p>Energy/GHG emission data flow structures have been identified for the selected pilot technologies. These data flow structures include field/factory/installation level data collection, data quality control at provincial/sectorial level, data aggregation and quality verifying at national level (Sustainable Energy Authority) and annual reporting to the final focal unit (Climate Change Secretariat). This system will be tested and verified for the pilot technologies selected under the project, and will be expanded to capture other NAMA technology-applications of the energy sector.</p> <p>A provincial level stakeholder consultation was conducted in North-Western province to obtain their suggestions for the development. This was in addition to the consultation of the two key stakeholders of the project; Sri Lanka Sustainable Energy Authority and the Climate Change Secretariat.</p> <p>Data of available pilot implementations are now being fed to this DMS, and will</p>
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				recommend how to further improve the existing data management system based on international accepted best-practices and guidelines on Energy/GHG inventorying.	be tested and verified before the system is introduced to provincial level. Further system and quality improvements will be done based on the findings from field and sector/provincial level feedbacks.
<i>(not set or not applicable)</i>	No. of provinces that have established and operational sub-sectoral GHG emission inventory system by Year 4	<i>(not set or not applicable)</i>	3	<p>Work has not fully commenced.</p> <p>Northwestern, Uva, Southern and Central provinces are the four provinces that have been identified to establish and operationalize sub-sectoral GHG emission inventory systems by Year 4.</p> <p>The project has planned the sub-national/provincial and sectorial level initial capacity building on data gathering and inventorizing of energy data, and 5 training workshop are scheduled to be conducted between Sept, 2016 and March, 2017 in five different locations (Colombo, Galle, Badulla, Kurunegala and Kandy) in the four provinces.</p> <p>The Project team has identified potential personnel that could be utilized for the data collection, verifying and reporting process at provincial and sectorial level (in particularly, for these selected three NAMAs). They are;</p> <p>At provincial level: Livestock</p>	<p>The project is to establish sub-sectorial GHG emission inventories in North Western, Uva, Southern and Central provinces.</p> <p>A web-based Data Management System (DMS) is being developed as described above and this web-based DMS will be used to make inventories of GHG Emission Reductions (ERs). The same system will also be used for the MRVing of these ERs as detailed under the progress of component 4.</p> <p>The project team has identified potential personnel that could be utilized for data collection, verifying and reporting process at provincial and sectorial level (for these selected three NAMAs in particular) who are listed below</p> <p>At provincial level: Livestock Development Inspectors, Economic Development Officers, and Agricultural Inspectors of respective provinces – A total of 125 officers selected under the programme were provided with one-day capacity development programme on the subject apart from their main involvement in biogas programme.</p> <p>Sectorial level: Energy managers</p>

				<p>Development Inspectors, Economic Development Officers, Agricultural Inspectors of respective provinces.</p> <p>Sectorial level: Energy managers (trained on energy efficiency and energy management in industrial sector by SLSEA). Meter readers of the electricity utility (Ceylon Electricity Board and The Lanka Electrify Company) covering the power generation sector.</p> <p>These personnel will be provided with necessary training and capacity building requirements on this specific subject.</p>	<p>(trained on energy efficiency and energy management in industrial sector by SLSEA). Meter readers of the electricity utility (Ceylon Electricity Board and The Lanka Electrify Company) covering the power generation sector.</p> <p>The project has planned to provide necessary training and capacity building requirements on energy/emission data management and MRVing of ERs for these personnel in the near future.</p>
<i>(not set or not applicable)</i>	No. of provinces that utilize the functioning web-based EnerGIS GHG inventory system by year 1	<i>(not set or not applicable)</i>	1	<p>Work is in the initial planning stages. The Project has identified the North western province where both solar Net-metering (in Kurunegala Green Zone) and biogas pilot technologies are being implemented as the potential starting province for this functional web-based EnerGIS GHG inventory.</p>	<p>Web-based EnerGIS inventory system which is being developed will be first introduced to the North Western Province (NWP). Data of already installed biogas and solar PV units in the province has already been recorded and will be fed to this inventory system. GHG inventory together with renewable energy utilization baseline &amp; energy intensity reference baselines will be made available to the province with available pilot technology data under the project (scheduled for Sept, 2017). The required capacity building activities on normal operation, how to best use this web-based system for their planning and decision making process have been scheduled for Q3 of 2017. This system will also be introduced to the</p>

					other provinces as well as will be expanded to capture other technology-applications data.
The progress of the objective can be described as:		On track			
Outcome 1:	Prioritized Nationally Appropriate Mitigation Actions (NAMAs) in the energy generation and end-use sectors are identified and designed				
	Description of Indicator	Baseline Level	Target level at end of project	Level at 30 June 2016	Cumulative progress since project start
(not set or not applicable)	No. of provinces that established MAC curves for energy sector by year 1	(not set or not applicable)	3	<p>Work has not fully commenced. However, the following key activities have been completed.</p> <p>The project has recruited and International Consultancy(IC) team to provide advisory service to the Project team on Energy/GHG inventory (outcome 1), MACC analysis (outcome 2) and MRV (outcome 4) of NAMA. The concept GHG inventorying, MRV establishments, MACC analysis and related NAMA governance are relatively novel concept to the IP, and the necessity of external assistance requirement was clearly identified]. The first mission is planned for Aug, 2016.</p> <p>The Project team has planned to conduct one-day workshop programme on MACC analysis in Colombo during the IC's first mission in Aug, 2016.. The Project is to extend the results of this workshop as a</p>	<p>1 MAC Curve has been established at national level.</p> <p>Marginal Abatement Cost (MAC) Curve analysis was initially conducted for 17 pre-selected mitigation options in the energy generation and end user sectors. This was mainly conducted as a capacity building activity for key stakeholders of the project (Sustainable Energy Authority, Climate Change Secretariat, project team). This 17 technology list was developed considering the national importance and larger abatement potential at national level. The required data and information for this analysis was collected from primary and secondary data sources. The required expert guidance was provided by an International Consultancy firm with the assistance of local consultants.</p> <p>When the project clearly identified the scope of MAC and its usages, the project gave the preference for a comprehensive MAC analysis at national level than a having provincial</p>

				<p>comprehensive MACC analysis using reliable primary and secondary data (from provincial, sectorial level).</p> <p>The project has planned to explore further any other Multi-Criteria Decision Making tools which will incorporate socio-economic development and environmental aspects for the prioritization of appropriate mitigation cations. This will be done on the advices and the guidance of the selected IC.</p>	<p>level MAC Curves which will have a lesser use(mainly due to the fact that energy sector decision making is done at national/central level whereas the Provincial Level authorities do not have much influence in decision making). Thus, the project undertook the task of completing a comprehensive analysis for the sector covering most of energy and cross sector technology- applications. This analysis will be completed this August, and the results will be discussed with the relevant decision &amp; policy makers. The results will also be presented to the national expert committee on Climate Change Mitigation (CCM), and the project has also undertaken the complementary task of reviewing energy sector CCM targets set under Nationally Determined Contributions (NDCs).</p>
<i>(not set or not applicable)</i>	No. of NAMA EE/RE projects that are designed based on the prioritized NAMA projects and the detailed MAC curves for the energy generation and end-use sector by Year 4	<i>(not set or not applicable)</i>	3	<p>Three RE &amp; EE NAMA projects has been identified after project stakeholder consultations. These three RE and EE NAMA technologies will test and verify the overall NAMA framework (i.e.Solar PV net-metering with battery storage, biogas as solution for waste management and High Efficiency Motors). A comparative analysis for the pre-selection of these three technologies is expected during the MACC analysis above. These three RE &amp; EE NAMA</p>	<p>Three pilot RE &amp; EE NAMA projects (i.e. Solar PV net-metering with battery storage, biogas and High Efficiency Motors) have been pre-identified after stakeholder consultation, and these technologies will be used to test, verify and demonstrate the overall NAMA framework. Validation of the selection of above technologies was performed during MAC analysis, and the following preliminary findings were made;</p> <p>Domestic Solar PV with battery is a costlier GHG abatement option</p>

				<p>projects have been designed in detail and are being implemented, and further information and progress of these implementations are provided under outcome 3.</p>	<p>compared with normal domestic Solar PV options. In fact, this option remains as the highest cost option among the list of abatement options selected for the analysis.</p> <p>Efficient motors replacing an existing motor will be a 'cost'. However, efficient motor as a new purchase shall be a 'benefit'.</p> <p>Biogas remains as a grey area due to the fact that baseline data of the technology are not very clear and not available. Further analysis is to be made in this regard.</p> <p>Initial design documents and implementation plans are available for these technologies. Full NAMA design documents will be prepared for these selected NAMAs, using the NAMA template proposed by the UNFCCC.</p> <p>The project has also undertaken the task of development of a selection criteria for prioritizing NAMA in the energy sector. This prioritization process will incorporate a Multi-Criteria Assessment (MCA) methodology with the findings of MAC analysis and barrier analysis for RE/EE technologies of the sector. Sustainable development goals, socio-economic aspects and</p>
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					other co-benefits will be considered in this MCA assessment.
The progress of the objective can be described as:		On track			
Outcome 2:	Identified private and public sector entities implemented prioritized appropriate mitigation actions for the achievement of Sri Lanka voluntary mitigation target				
	Description of Indicator	Baseline Level	Target level at end of project	Level at 30 June 2016	Cumulative progress since project start
(not set or not applicable)	No. of identified fully capable and qualified private and public sector entities that are interested in funding prioritized NAMA projects by Year 2	(not set or not applicable)	2	<p>The project has identified two capable and qualified private and public sector entities which are the Sri Lanka Sustainable Energy Authority (public sector entity which is also the project implementing partner) and the Planters' Association of Ceylon (PAC) which is the private tea producers/industry collaboration.</p> <p>The Sustainable Energy Authority has confirmed their interest to extend their RE &amp; EE programmes in selected (Project) provinces of Sri Lanka, and these programmes include establishment of energy baseline, concessionary financing for establishment of biogas units and technical support to the selection of appropriate technologies for RE and EE promotions.</p> <p>Similarly, tea industry companies of PAC are actively looking for solutions to reduce their electricity consumption to improve</p>	<p>The identified two capable and qualified private and public sector entities are the Sri Lanka Sustainable Energy Authority (public sector entity which is also the project implementing partner) and the Planters' Association of Ceylon (PAC) which is the private tea producers/industry collaboration.</p> <p>The Sustainable Energy Authority (SLSEA) has continued to extend their support and funding for RE &amp; EE programmes in the country. These programmes include establishment of energy baseline (e.g. hotels, hospitals and government institutes in 2016/2017) concessionary financing for establishment or dissemination of RE technologies (including biogas, solar PVs especially of 'Sooryabala Sangramaya - the ambitious action plan to install 1 million domestic scale solar PV units by 2025) and by leading Demand Side Management plan (accelerated implementation of energy efficiency measures to achieve 1895 GWh savings by 2020). Tea industry companies of PAC are also working</p>

				<p>productivity and competitiveness whilst reducing their carbon footprint. Initial commitment of USD 4 million from the PAC as cost share to demonstrate the benefits of installing High Efficient Motors (HEMs) in tea factories has been secured. Initially the project will assist these tea factories to invest in HEMs and achieve financial viability through matching re-bate scheme (50% gradually reducing to 20%). These companies will invest in HEMs their own after project co-financing is gradually removed in the future.</p> <p>The Project will leverage these financing partnerships to deliver expected project outcomes.</p>	<p>towards energy efficiency improvements. Reduction of their electricity consumption in tea factories improves productivity and competitiveness as well as emission reductions; which is the particular interest of tea industry companies for investing in High Efficient Motors (HEMs). An initial commitment of USD 4 million from the PAC as cost share to demonstrate the benefits of installing HEMs in tea factories has been secured. Initially the project will assist these tea factories to invest in HEMs and achieve financial viability through matching re-bate scheme (40% gradually reducing to 20%). These companies are expected to invest in energy efficiency applications including HEMs and Variable Frequency Drivers (VFDs) on their own after project co-financing is gradually removed in the future.</p> <p>Note: During the pilot trials of HEMs, it was identified that application of HEMs in the tea industry application did not result in significant energy saving due to various reasons as well as was not financial viable. On the other hand, Variable Frequency Drivers (VFDs) application has a bigger energy saving potential in the same industry with more economic benefits. Thus, the project is to introduce VFDs to the tea industry.</p>
<i>(not set or not</i>	No. of NAMA EE/RE projects that are	<i>(not set or not</i>	3	Detailed implementing plans are	Three RE & EE NAMA projects

<i>applicable)</i>	designed and implemented based on detailed MAC curves for the energy generation and end-use sector by Year 2	<i>applicable)</i>		<p>available for the selected three NAMA projects (i.e., Solar PV net-metering with battery storage, biogas as solution for waste management and High Efficiency Motors). Business and financial models involving public private partnership have been developed for the implementation of these NAMA projects. These three RE &amp; EE NAMA projects has been identified after project stakeholder consultations, and will be used to test and verify the overall NAMA framework. A validation for the pre-selection of these three technologies is expected during the MACC analysis in which above three NAMA projects are included.</p>	<p>(domestic Solar PV with battery storage, biogas as solution for waste management and High Efficiency Motors) were initially preselected after project stakeholder consultations, and are now used to test and verify the proposed NAMA framework. A validation for the pre-selection of these three technologies was completed with MAC analysis as well as the lessons learned from initial implementations and trials of these NAMAs. The required changes for the selected technologies have now been identified and can be summarized as follows;</p> <p>Biogas of small scale – Provincial biogas programme is not progressing as expected due to inherent technical and other limitations of the technology which is beyond the project scope. Achieving the final target of 1,000 digesters within the project life cycle will be challenging as well as the long-term sustainability after the project support. Thus, the project is to consider medium to large scale biogas units/applications without compromising the overall GHG saving targets set under the programme.</p> <p>Domestic Solar PV with battery – Cost of battery (and technology) is too high which make the technology-application not financially viable or economical in</p>
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					<p>the current reality. Domestic solar PV without battery will be an option to be promoted and demonstrated under the project.</p> <p>High Efficiency Motors(HEM) in the tea sector – The efficiency gain from an application of HEM was found to be offset by other parameters of the tea withering process and the technology is not financially viable. Application of Variable Frequency Drivers (VFD) has a bigger energy saving potential, financial viability and long-term sustainability than HEMs. Thus, technology change (from HEMs to VFDs) within the same industry (tea) is being considered.</p> <p>The available implementing plans for the pre-selected three NAMA projects will be updated as per the suggested changes. Business and financial models involving public private partnership will also be revised for the implementation of these revised NAMA projects.</p>
<i>(not set or not applicable)</i>	No. of individual projects that constitute the country's NAMAs by Year 4	<i>(not set or not applicable)</i>	1,000 biogas systems 1,300 tea factories 205 solar systems	Solar PV: The Project/pilot demonstration will be conducted in two phases. In the first phase, 20 solar PV net-metering systems are installed as a trial to verify technical feasibility of the selected technology. The project is in the planning phase of installing 20 solar PV system, and	79 biogas digesters have been completed in five provinces and 47 units are under construction. 24 High efficiency motors including 5 Variable Frequency Drivers (VFD) have been installed in 5 tea factories 13 Solar PV systems with battery storages have been installed by July,

				<p>will be completed in Aug-Sept, 2016. Further information on the progress can be summarized as follows;</p> <p>Some R&amp;D aspects has been incorporated in to the first phase where rebound effect of beneficiaries, battery technologies (introducing Li-ion battery technology) and grid-independent operation during peak hours. The Project has been in collaboration with the utility (CEB &amp; LECO) for proposed R&amp;D activities. Moreover, strong emphasize to look a way to reduce the financial burden of low-end consumers on the government (and the utility) from the grid were made by the Ministry of Power and Renewable Energy (MoPRE). The Project is looking at the technical feasibility and corresponding financial viability of this request, and will be verified during the Trial phase.</p> <p>The Project has called for application from beneficiaries, and they will be short-listed during the month of July, 2016. In parallel, the Project has called for Request for Proposals from shortlisted technology suppliers, and they will also be selected for the “trial” phase in July, 2016.</p>	2017.
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				<p>Biogas: A rapid assessment of current SLSEA biogas programme in two provinces (North-western and Southern) including successes, issues and barriers and causes of failure if any is being conducted. The results will be used for further strengthening the project implementation mechanism and approach.</p> <p>Beneficiary selection for biogas piloting is underway, and the project has received approximately 300 applications to date. 54 beneficiaries of NWP and SP have been short-listed, and their applications have been sent for the regional biogas committee's verification. It is expected that these units will be installed in these two provinces in July-Sept period.</p> <p>High Efficiency Motors (HEMs): Installation of HEMs is being carried out in two phase. The "trial" phase is where 24 HEMs will be installed in five selected tea factories to test and field verifying of different types and brands of motors which are available market. The Project expects this "trial" phase to be a</p>	
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			<p>showcase to the same industry promoting scaling up actions. The “trial” phase has been planned in a way to facilitate further EE improvements in the same industry like the application of Variable Speed Drives (VFDs) and applications of efficient fans/blowers. In the “full” scale implementations, individual tea factory has to come up with own financing while the Project assist them reaching financial sustainability of their investment by providing the proposed matching rebate (up to 50%, 30%, and 20% in 3 stages – gradually reducing available project financial assistance). The Project has pre-selected 2 tea factories of Tea Research Institute (TRI) based on their full courtesy, commitment and available resource for the “trial” phase and related R&amp;D activities. TRI is a semi-government organization, and acts as the focal point for disseminating new technologies related to tea cultivation and processing.</p> <p>18 HEMs (for withering process units) capacities ranging from 3.0 -7.5 kW and 6 HEMs (for rolling process) capacities ranging from 11.0-15.0kW are being procured and will be installed in five tea factories in Aug/July 2016. In</p>	
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				parallel, 5 VFDs (capacities ranging from 3.0-7.5 kW) will also be installed in these five tea factories.	
<i>(not set or not applicable)</i>	No. of operational Private-funded NAMA projects by EOP	<i>(not set or not applicable)</i>	1 (high efficient motors in tea factories)	<p>Private-funded NAMA project (High Efficient Motors in the tea industry) implementation has started, and the progress can be summarized as; HEMs trial piloting are planned in five tea factories of which three tea factories are privately owned. In these tea factories, 14 HEMs and 3 VFDs will be installed in Aug/Sept 2016. The project is to select beneficiaries for the full scale implementation from factories of private tea plantation. sector where co-financing for the promotion of HEMs is provided</p> <p>In support of this, the tea industry (i.e. companies under the Planters' Association of Ceylon) have agreed to commitment USD 4 million as co-financing to demonstrate the benefits of installing high efficient motors in tea factories.</p>	<p>Privately funded NAMA project (High Efficient Motors in the tea industry) implementation commenced with pilot trials before full scale implementation of HEMs. This was to ensure that the application of HEMs does not have any technical risk and make a viable technology to be promoted and up-scaled under the project. This pilot trial included installation of 24 HEMs and 5 VFDs in five tea factories covering all tea growing areas. The installation of these HEMs and VFDs from 6 different suppliers (and makes) were completed in the last quarter of 2016. Some trial and experimental analysis were conducted in the first quarter of 2017.</p> <p>It was learnt that application of HEMs in the tea industry application did not result in significant energy saving due to various reasons as well as was not financial viable. Alternatively, Variable Frequency Drivers (VFDs) application has a bigger energy saving potential in the same industry with more economic benefits. Thus, the project is to introduce VFDs to the tea industry. A stakeholder consultation (Tea Research Institutes, private tea factories, HEM suppliers, Sustainable Energy Authority, and other industry experts) was conducted and the</p>

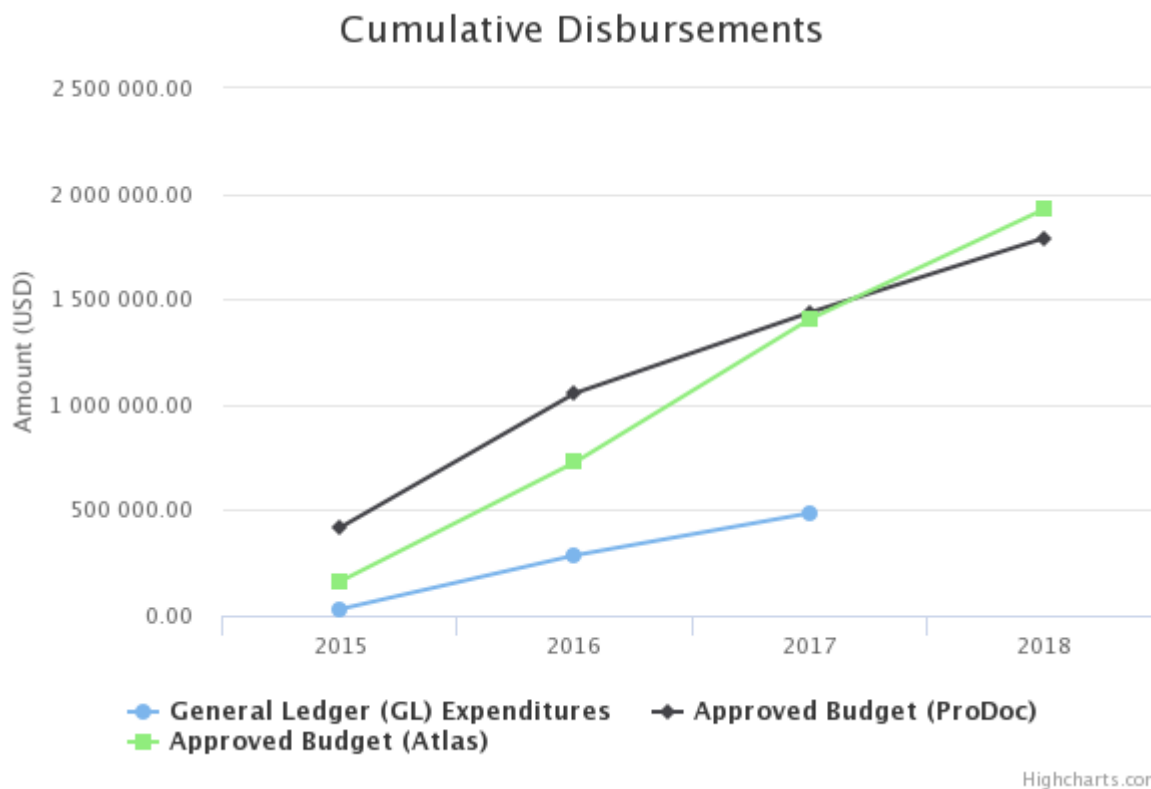
					<p>findings were presented, and suggestions/comments were obtained for VFDs as a technology alternative to HEMs.</p> <p>The project is now looking for potential suppliers of VFDs. An awareness campaign has been scheduled for the tea sector, and the project is to call for selection of beneficiaries for the full scale implementation from factories of private tea plantations.</p>
The progress of the objective can be described as:		Off track			
Outcome 3:	Accurate measurement and accounting of actual GHG emission reduction from mitigation actions in the energy generation and end-use sectors				
	Description of Indicator	Baseline Level	Target level at end of project	Level at 30 June 2016	Cumulative progress since project start
(not set or not applicable)	No. of NAMA projects with GHG ERs correctly verified by the established and operational MRV systems for mitigation actions by Year 4	(not set or not applicable)	3	Work has not commenced.	<p>MRV system for mitigation actions is being developed, and the progress to date can be summarized as follows;</p> <ul style="list-style-type: none"><li>A generalized Monitoring, Reporting and Verifying (MRV) system/framework was identified for energy sector technology-applications.</li><li>This generalized framework was then used to identify and design project specific MRVing system for the three selected technologies (Solar PV, Biogas and Efficiency Motors). MRVing parameters of these technologies, and field data gathering mechanisms were defined.</li><li>With the assistance of the International Consultants, the Project</li></ul>

					<p>has prepared the monitoring procedures and protocols, logbook/template for data gathering for these three technologies.</p> <ul style="list-style-type: none"> <li>• The Project is now in the implementation of these proposed MRV systems for the pilot technologies based on the primary data collected through the energy/GHG inventory data management system. Based on these data, GHG Emission Reductions (ERs) will be verified and reported. Based on the findings of initial implementations, improvements will be made to these MRV systems and procedures.</li> <li>• In parallel, the integration of these proposed MRVing systems to already existing institutional setups are now being discussed.</li> <li>• One training workshop on MRVing was conducted for national stakeholders and one more workshop is being planned for this September with pilot MRV demonstrations. There will also be provincial level training programs on MRVing specially targeting field officers and extension officers, those who will be engaged as sectorial/provincial focal persons for data collection and actual monitoring of NAMAs.</li> </ul>
<i>(not set or not applicable)</i>	No. of projects in the energy generation and end use sectors that are registered in the National NAMA registry by EOP	<i>(not set or not applicable)</i>	3	Work is limited to one stakeholder discussion which was held in Dec, 2015 conceptualizing	The Project is in the implementation of the proposed NAMA Institutional set-up which will facilitate the development of

				<p>probable NAMA governing structure and Monitoring, Reporting and Verifying(MRV) frame work for Sri Lanka NAMAs which is being implemented under the project and for future NAMAs. These framework will be presented for the IC team in Aug, 2016 and the project team expects to get their advisory and international experience from best practices around the world.</p>	<p>future NAMAs of the country. The proposed NAMA registry will be a part of this set-up under which these pilot NAMAs will be registered.</p> <p>Based on international consultants' recommendations, and already existing institutional arrangements, a governing structure called "NAMA Institutional Framework" was defined for the approval and implementation of NAMAs. This structure includes entities identified as NAMA Coordinating Entity, Designated NAMA Entity, NAMA Secretariat and Approver, and NAMA Expert Committee. These entities' roles and responsibilities were identified as well as the relevant Designated NAMA Entities from different sectors; namely Energy, Transport, Waste, Industry, Agriculture and Forest were identified.</p> <p>Above organizational structure and the concept (for NAMA approval) were presented at the first steering committee on NDCs and Climate Change Mitigation committees, and their suggestions were obtained before finalizing this structure. A Cabinet Paper on this governing structure has been prepared and submitted to the approval of Cabinet Ministers.</p> <p>Awareness material on NAMA, draft project proposal templates and NAMA project appraisal formats are now available and will be finalized after consultation of the NAMA Expert</p>
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					Committee. A web portal has been suggested for this NAMA proposal submission and approval process, and this web portal will be linked with NAMA registry. The Project has now called for application from individuals those who would be interested in joining this expert resource group.
The progress of the objective can be described as:		On track			

## D. Implementation Progress



Cumulative GL delivery against total approved amount (in prodoc):	27.13%
Cumulative GL delivery against expected delivery as of this year:	33.8%
Cumulative disbursement as of 30 June (note: amount to be updated in late August):	485,717.27

Key Financing Amounts	
PPG Amount	100,000
GEF Grant Amount	1790411
Co-financing	13,000,000

Key Project Dates	
PIF Approval Date	Dec 19, 2013
CEO Endorsement Date	Jan 27, 2015
Project Document Signature Date (project start date):	Jun 10, 2015
Date of Inception Workshop	(not set or not applicable)
Expected Date of Mid-term Review	(not set or not applicable)

Actual Date of Mid-term Review	<i>(not set or not applicable)</i>
Expected Date of Terminal Evaluation	Jan 30, 2019
Original Planned Closing Date	Jun 28, 2019
Revised Planned Closing Date	<i>(not set or not applicable)</i>

<b>Dates of Project Steering Committee/Board Meetings during reporting period (30 June 2016 to 1 July 2017)</b>	
2016-07-20	
2016-12-15	
2017-04-04	

## E. Critical Risk Management

Current Types of Critical Risks	Critical risk management measures undertaken this reporting period
Other	<p>Inappropriate selection of technologies for the pilot demonstrations under the component 3 – Technical Risk</p> <p>(Medium Risk)</p> <p>Technology alternatives which are not very deviating from the original selections or of the same industry or category have been identified, and design details and implementation plans of these technology alternatives are being thoroughly analyzed. These technology alternatives and the required changes will be discussed during the Mid-term Review (MTR) process scheduled for late July, 2017. An independent recommendation is expected from MTR consultants, and any required change will be made accordingly.</p>

## F. Adjustments

### Comments on delays in key project milestones

<b>Project Manager: please provide comments on delays this reporting period in achieving any of the following key project milestones: inception workshop, mid-term review, terminal evaluation and/or project closure.</b>
Not Applicable
<b>Country Office: please provide comments on delays this reporting period in achieving any of the following key project milestones: inception workshop, mid-term review, terminal evaluation and/or project closure.</b>
N/A
<b>UNDP-GEF Technical Adviser: please provide comments on delays this reporting period in achieving any of the following key project milestones: inception workshop, mid-term review, terminal evaluation and/or project closure.</b>
There are no delays in the project and the Mid-Term Review was conducted on time.

## G. Ratings and Overall Assessments

Role	2017 Development Objective Progress Rating	2017 Implementation Progress Rating
Project Manager/Coordinator	Moderately Satisfactory	<i>- IP Rating provided by UNDP-GEF Technical Adviser and UNDP Country Office only -</i>
Overall Assessment	<p>Overall project implementation is positively progressing and firm conceptual structures are in place for key deliverables as well as an adequate physical progress has been achieved during the reporting period. The project has addressed some gaps and challenges that hindered the implementation of the project. In particular, the limited in-house and institutional capacities available on the overall NAMA concept, NAMA prioritization processes and tools, and MRVing of abatement options. Lack of commitment and capacity of some initially identified stakeholders, the project implementing partners' internal human resource availability and commitment towards the project has still been remaining as noticeable barriers for the successful implementation of the project. In order to achieve the overall development objectives and targets, the project is continuously working on these gaps, challenges and barriers within the project control and scope. Further details of output-wise progress of the project are described below.</p> <p>The completed activities under the component 1, which is business-as-usual energy generation and end-use sector baselines at national and sub-national level, include identifying gaps and requirements of Sri Lanka Sustainable Energy Authority (SLSEA)'s existing energy database, resources and internal capacities. SLSEA's existing energy database "EnerGIS", which had been limited to the process of Renewable Energy (RE) resource allocation process, was upgraded with the latest software in order to facilitate for the proposed energy/GHG inventory Data Management System (DMS). This DMS is now being developed, and data related to the pilot implementations are now being fed to this DMS system and corresponding baseline and emission reductions are generated. The project is about to introduce this DMS system to the provincial/sectorial and national levels with the required capacity building activities.</p> <p>Implementation progress under component 2, prioritizing mitigation options for the energy generation and end-use sectors, includes the completion of necessary capacity building activities for key project stakeholders, completion of MAC analysis completed for pre-selected 17 abatement options, and comprehensive MAC analysis which is about to be completed. The project has started a wider discussion on integration of the findings of this comprehensive MAC analysis into the set target of country's Nationally Determined Contributions of the energy sector. The project has also started working on a Barrier Analysis for GHG abatement options and Multi-Criteria Analysis (MCA) as the final tool to prioritize mitigation options for the energy generation and end-use sectors.</p> <p>Comparatively lower level of progress have been achieved under component 3; implementation of appropriate mitigation actions in the energy generation and end-use sectors. The selected NAMA pilot projects i.e. High Efficiency Motors in the tea industry, domestic solar PV with battery storage, and biogas as a</p>	

solution for waste management and alternative energy are being implemented as per the initial implementation plans. The provincial biogas programme is slowly moving in the selected province, 79 biogas digester units have been constructed and another 48 units are under construction. The progress of this biogas programme is hampered by the initial implementation delays due to lack of institutional and political commitment, Central and Uva provinces in particular, and technology-application inherent issues. The project has extended the programme to Eastern province as the fifth province to work as a strategic move to achieve the overall target. The project has also considered the scale of biogas unit under consideration, and has called for proposals for medium-to-large digester units. A situational analysis covering two provinces of the project has been completed, and findings to be incorporated to the programme. The project has provided extensive training for 128 extension officers identified as the focal persons for the programme and those who will also be engaged in inventory/MRVing of the energy sector. A registration of qualified biogas service providers has been completed and available for continuation of the programme. 13 units of domestic solar PV with battery has been installed as a trial implementation and full scale implementation is to be decided with the lessons learned from this initial phase. Similarly, 24 High Efficiency Motors were installed in 5 tea factories as a trial phase to mitigate any risk associated with the technology-application selection. Major finding of this trial phase is that the saving potential and corresponding economic benefit of the application of HEMs in the tea sector is minimal. Variable Frequency Drivers (VFDs) as a technology alternative has been tested and verified, and will be introduced to the same industry after Mid-term review team's independent recommendations.

The implementation of component 4, MRV system and NAMA registry of energy generation and end-user sectors is progressively moving ahead. NAMA Institutional set-up was identified, and the organizational arrangement is now in the approval stage as a Cabinet paper. NAMA registry to be established within this NAMA Institutional Set-up. In parallel, MRVing system (Monitoring, Reporting, and Verifying) is being developed for the energy sector abatement options. General MRVing framework was identified for the energy sector, and this was then used to identify and design project specific MRVing system for the three selected technologies (Solar PV, Biogas and Efficiency Motors). MRVing procedures and protocols, logbook/template for data gathering for the selected technologies have been developed. Improvements to this initial design are to be made based on the findings of initial tests with piloting.

The reported financial progress of the project remains as at 47% satisfactory level of the total budget by June, 2017 and yearly utilization of the allocated budget (2017) remains at 38% by the same time. A significant financial progress is expected in the next 2 quarters of the year with HEM and Solar PV piloting.

In the overall implementation, the project has continuously engaged with the key project stakeholders which are government (project implementing agency itself, provincial level authorities, ministries and officials), and non-government, related private investors/parties (mainly tea industry), general public (direct and indirect beneficiaries), private sector service providers (Renewable Energy and Energy Efficiency related services and suppliers) and R&D partners. New partnerships and opportunities which are important and related to the project have been explored and some secured initiatives are detailed in section J (partnerships).

	<p>The structure of the Project Management Unit (PMU) has had some changes and minor setbacks duration 2016/2017 reporting period as well. The sector specialist working on efficiency motors left the team in July, 2016. An immediate recruitment was made to avoid this gap. PMU was only completed when two new recruitments were completed in Dec, 2016 and March, 2017. They are project associate dedicated to work on the 4th component of the project and a project assistant facilitating overall work. These recruitments have expedited project work.</p> <p>Insufficient capacities of project implementation partners, discontinuous and uncommitted support from local governments have been clearly noticed during the project implementation duration. This is very important requirement for project long-term sustainability and the project team has brought up this issue and requirement at the management discussion. An internally allocated team project Implementation partner (SLSEA) dedicated to the project is being discussed as a solution. One of the major risks identified is the selection of improper technologies for the pilot demonstrations under component 3. Technology alternatives which are not very much deviating from the original selections or of the same industry or category have been identified and will be implemented after the Mid-term Review (MTR) process which is scheduled for July, 2017.</p> <p>The overall implementation of the project components are delayed against the original Annual Work Plan timeline due to initial challenges and drawbacks, but the Project has clear focus on the final project outcome. The project team intends to achieve the project's major relevant global environmental objectives and benefits with fast tracked implementation over the next implementation year.</p>	
<b>Role</b>	<b>2017 Development Objective Progress Rating</b>	<b>2017 Implementation Progress Rating</b>
<b>UNDP Country Office Programme Officer</b>	Moderately Satisfactory	Satisfactory
<b>Overall Assessment</b>	<p>The main objective of this project is to establish infrastructures for development and registration of National Appropriate Mitigation Action (NAMA) projects in energy sector in Sri Lanka. To achieve this objective few specific actions have been identified. Establishment of</p> <ol style="list-style-type: none"> <li>1. Institutional framework comprising of different sectors</li> <li>2. National energy database</li> <li>3. Tool for prioritization of energy efficiency measures</li> <li>4. Monitoring, reporting and verification (MRV) system and demonstration of three technology case studies are identified as specific activities of this project.</li> </ol> <p>As of June 2017, the progress of the project can be summaries as follows.</p> <ol style="list-style-type: none"> <li>1. Institutional framework comprising of different sectors was proposed and discussed amongst key government institutions responsible for NDCs and finalized and awaiting the Cabinet approval for implementation.</li> </ol>	

2. Initial development of the database has been completed and gathered the data and information from pilot projects implemented and the testing of the database is being carried out.

3. The development of Marginal Abatement Cost Curve (MACC) has been completed and ready to use as a tool for prioritization of EE measures.

- The MRV framework has been developed and based on three pilot demonstration the initial test of MRV system is being carried out.

Project is progress towards achieving its objectives. The achievements towards the work plan for during the reporting period has been commendable specially in terms of development of capacity and demonstrating the use of e MAC curves as a key tool to guide and contribute to decision making on mitigation investment and developing the NAMA institutional framework. Further, the project has hit its financial target against the approved budget from June 2016 to June 2017.

However, one of the drawbacks of this project is that the selected three technologies for pilots have not been successful as expected even though three selected technologies were decided and selected in consultation of serious of selected stakeholders. Project aims to rectify this with the ongoing midterm review (MTR) through different technology options. With that the project, will be able to achieve the expected results towards end project targets.

Sri Lanka has now submitted the Nationally Determined Contributions (NDCs). The NDCs for the energy sector account for bulk of the GHG emission reduction target, which amounts to reducing 20% GHG emission (to 39,383 Gg, from the total GHG emissions of 196,915 Gg for the period 2020-2030. With that there will be an increasing trend in promotion of renewable energy and energy saving options in the country.

Further, the project has started discussions with other relevant projects implemented by UNDP such as Third National Communication and Data project in identifying synergies between these projects and boost the impact of all three interventions. NAMA project would greatly contribute to the third national communication in providing some of the data to improve the quality of the report. As Sri Lanka is also in the process of preparation of third National Communication to UNFCCC, the project has recognized the importance of aligning with the relevant discussion and system reporting Mitigation and GHG emission levels. Further, the project has also forged links with an initiative to streamline data management in relation to 3 Rio Conventions. The project plans to work closely with these initiatives to avoid duplication in the process and outputs.

As the project is seems to be considered as predominantly technical it is important to bring in social aspects specially gender aspects to it. E.g. As the MAC tool will be promoted as a key tool in planning and decision making in the energy sector, it is important to promote to consider relevant social costs and benefits alongside for better decision making. The initial assessment of gender carried out by the project? could be identified as a positive sign towards this. However, project should pay more attention on strategizing and planning for social actions and documenting and communicating results and best practices among other stakeholders including general public.

In terms of potential risks, Since the NAMA is new to Sri Lanka, strong commitment of key stake holders is needed to continue the initiatives. Capacity issue, and insufficient clarity of roles and responsibilities of different actors who are engaged in the overall process would negatively affect in operationalization of NAMA institutional framework. These confusions similarly reside with data collection process too. With this background, it is required to strength the legal

	<p>powers of respective institutions to collect data on time and strong directives or enforcement is needed from National planning level for implementation of these measures. However, this is beyond the project scope.</p> <p>In order to address some of the issues relating to data collection, project is in the process of planning capacity development programmes at national and provincial level relating to improve the capacity of data collection, storage and usage to ensure effective implementation of GHG emission inventory and other related information management systems which could potentially serve as decision support tools.</p> <p>With these suggested minor adjustments, project has a great potential in achieving project objectives. With the progress of the project activities project also should seek measures to ensure the sustainability of important initiatives done by the project beyond the project period.</p>	
<b>Role</b>	<b>2017 Development Objective Progress Rating</b>	<b>2017 Implementation Progress Rating</b>
<b>GEF Operational Focal point</b>	<i>(not set or not applicable)</i>	<i>- IP Rating provided by UNDP-GEF Technical Adviser and UNDP Country Office only -</i>
Overall Assessment	<i>(not set or not applicable)</i>	
<b>Role</b>	<b>2017 Development Objective Progress Rating</b>	<b>2017 Implementation Progress Rating</b>
<b>Project Implementing Partner</b>	Satisfactory	<i>- IP Rating provided by UNDP-GEF Technical Adviser and UNDP Country Office only -</i>
Overall Assessment	<p>Development Objective: This could be taken as a pilot project which develops Monitoring, Reporting and Verification (MRV) framework of emissions reductions of Sri Lanka towards the target of reducing 20% emission of greenhouse gas against the emission levels of 2010 by 2030 as pledged under the Nationally Determined Contributions (NDCs) under the COP 21 Paris Agreement.</p> <p>The project is currently in a phase of accelerated implementation. ICT infrastructure for database management was developed and tested by feeding the data obtained from the three pilot technologies. This data base system was incorporated with the Geographic Information Systems at the Sri Lanka Sustainable Energy Authority (SEA) and both systems are now hosted in separate cloud space recently purchased. This would enable to streamline the process of data acquisition for these pilot technologies, by way of enhanced access provided to stakeholders. Marginal abatement cost analysis of mitigation options for energy sector was carried out and several such technologies were prioritized based on the output named the MAC curve. The results will be presented to sector specialists to initiate full scale implementation in energy sector and for possible replication in other sectors. In this context, SEA will play a major role in coordinating and implementing these actions in future.</p> <p>However, some implementation problems occurred during project implementation in latter part of 2016 due to the absence of budget allocations through a government vote by Treasury. Therefore, several difficulties were faced as the implementing agency to implement the project. Thus, the</p>	

<p>Secretary to the MoP&amp;RE, who is also the Chairman of the Project Board of UNDP NAMA Project and UNDP Biomass Project provided relief to utilise another vote to conduct activities implemented by SEA within the activities of the NAMA Project. However, pace of the project was maintained by the project team, by directly implementing several activities through UNDP, in order to finish the project activities by 2019, as agreed.</p> <p>More focus should be given to implement proper mechanisms within the Provincial level set-up and the Project Management Unit (PMU) within SEA. However, the Ministry of Power and Renewable Energy is in the process of obtaining the formal approval for the cadre for PMU from the Ministry of Finance. Furthermore, it is assumed that this cell would operate even after the completion of the project while retaining the capacities within the institute and would assist in reporting COP 21.</p> <p>The annual work plan would be revised during the Mid Term Review (MTR) which is to be held in this year based on the results obtained during the trial phase and the situational analysis. This would ensure the achieving of target of GHG emission reduction through the project intervention.</p> <p>Implementation Progress: The project is in line with the annual work targets. Currently the project operates with the assistance of voluntary staff of SEA who is technically competent until the PMU is formally established within the SEA. Ministry of Power and Renewable Energy is in the process of obtaining formal approval for the project cadre as proposed in the Project Document from the Department of Management Services (of the Ministry of Finance). Further, project board guided the PMU towards smooth operation of the project through facilitating project implementation mechanisms.</p> <p>Risk is associated with the varying level of interest in the project of Provincial officials due to change of Ministerial portfolios, change of staff, etc. Therefore, Memorandums of Understanding (MOUs) were signed between relevant provincial councils and the SEA to minimize the problems associated with the institutional arrangements and provincial level operating set-ups.</p> <p>The quality of the biogas digesters would be monitored through a quality assurance checklist. Project monitoring has been done continuously, especially with provincial councils.</p> <p>However, the problems identified would address during the Mid Term Review and annual work plan will be revised accordingly. Further, the MRV framework developed for the three technologies and data management system could be used for the proper monitoring of the project implementation in future.</p>		
<b>Role</b>	<b>2017 Development Objective Progress Rating</b>	<b>2017 Implementation Progress Rating</b>
<b>Other Partners</b>	<i>(not set or not applicable)</i>	<i>- IP Rating provided by UNDP-GEF Technical Adviser and UNDP Country Office only -</i>
Overall Assessment	<i>(not set or not applicable)</i>	
<b>Role</b>	<b>2017 Development Objective Progress Rating</b>	<b>2017 Implementation Progress Rating</b>

UNDP-GEF Technical Adviser	Moderately Satisfactory	Satisfactory
Overall Assessment	<p>Note: The current RTA joined the team in January 2017 and has only started overseeing this project since February 2017. This project's overall goal is to develop a robust, transparent and functional NAMA framework along with clear inventory and MRV system with supporting governance and oversight. This encompasses the establishment of a NAMA Secretariat, NAMA Coordinating Entity, NAMA Implementing Entity, MRV Committee, and NAMA Registry.</p> <p>For the project objective to support appropriate climate change mitigation actions in the energy generation and end-use sectors as part of the initiatives to achieve the voluntary GHG mitigation targets of Sri Lanka, the main objective level EOP target is to implement three (3) NAMAs in the energy generation and end-use sectors.</p> <p>The recommended overall DO progress assessment is MS (Moderately Satisfactory) as the project has shown notable progress in the implementation of the 3 NAMA's over the reporting year but is at the same time still struggling to meet the levels of implementation that should have been expected at this stage of project implementation. However, appropriate actions have been taken that give assurance of further acceleration of project implementation in the coming period.</p> <p>On this objective-level progress, compared to last year, the project has been able to make some notable progress. Whereas previously the project implementation was still in the early stages, in this reporting year, the project has been able to advance the discussion with the key stakeholders on the selected technologies, reach an agreement, and install: 13 Solar PV units with battery storage; 24 High Efficiency Motors and 5 Variable Frequency Drivers; and 79 Biogas digesters.</p> <p>However, the progress in realizing results with regard to the three identified NAMA's is behind expected levels at this stage of the project due to certain challenges related to the selection of the three technologies mentioned above. Although these technologies were selected based on a series of stakeholder consultations and thus mutual agreement, the resultant technology choices and especially their specific application and sizes are currently being re-considered as part of the Mid-Term Review process. The project recently concluded to adjust the specific application of PV technology, to adjust the sizes of biogas installations and to revise the original High Efficiency Motors (HEM) to Variable Frequency Drive (HFD) motors while making sure that the stakeholders are kept informed and engaged in its discussion.</p> <p>Another challenge in the project exists of connecting the work on the existing three NAMAs towards future NAMA development and specifically in terms of financing future NAMA's. The project may look for more finance opportunities, including international climate funds or private sector funding.</p> <p>Awareness raising and incorporation of the NAMA concept need continuous further efforts through this project and other ongoing initiatives as well, as</p>	

development of the NAMA institutional framework requires a strong commitment of the key stakeholders in the country.

Though not specifically mentioned within the PIR, the issue of institutional arrangement, capacity issues and sometimes unclear roles and responsibilities among different actors is one of the most important contextual conditions, which requires key stakeholder's continuous attention. In this respect, one element that may need to be discussed in terms of the project scope is its focus and relation with provincial level. Several outcomes are hinged upon the involvement at the provincial level, instead of national level. For Outcome 1, the project has a strong focus on development (and upgrading to) a specific web-based software. It is important to keep in mind that these indicators are focusing on the provinces and that interventions aimed at a provincial level may need to be further discussed, in order to fully incorporate the relevant stakeholders. Especially the training of provincial personnel that is expected to supply the data to the software is crucial for the effective functioning of the GHG emission inventory. The 1 day capacity building activity that is currently mentioned may have to be upgraded to a full-fledged training activity.

The IP rating is set as S (Satisfactory). Although the efficiency of the delivery rate may need catching up to come to fully satisfactory financial delivery, the backlog is explained by the complications in the implementation of the NAMA technologies for which the project has sought a timely adjustment by means of conducting the MTR and analyzing the adaptation of the three NAMAs to come to increased levels of technology deployment. With timely noticed technical risk and by conducting the MTR on schedule and at the right moment when still having room to steer the project in different directions, the PMU has shown an appropriate risk management practice. The good quality management practice is further strengthened by the initiative of the project to seek collaboration options with other relevant projects that are implemented by UNDP. As Sri Lanka is moving forward to achieving a significant reduction of GHG emission through the Nationally Determined Contributions, the project is well aligned and thus more efforts in improving the project design could be sought after, including further collaborating with other ongoing initiatives and projects in the country, e.g. the 3rd National Communications.

## H. Gender

### Progress in Advancing Gender Equality and Women's Empowerment

This information is used in the UNDP-GEF Annual Performance Report, UNDP-GEF Annual Gender Report, reporting to the UNDP Gender Steering and Implementation Committee and for other internal and external communications and learning.

<b>Has a gender analysis been carried out this reporting period? Please note that all projects approved in GEF-6 (1 July 2014 through 30 June 2018) are required to carry out a gender analysis.</b>
Yes
<b>If a gender analysis was carried out what were the findings?</b>
<p>Initial discussion was held to identify the areas of interest for gender analysis and entry points, and a detailed study will be conducted and findings will be integrated into the project implementation during next year.</p> <p>Biogas dissemination programme and domestic solar PV technologies have been identified as an area of importance for gender analysis under the project. This is mainly due to the fact that these two types of individual tech. users are directly benefited from the project and areas where general public is mainly involved.</p>
<b>Does this project specifically target woman or girls as direct beneficiaries?</b>
No
<b>Please specify results achieved this reporting period that focus on increasing gender equality and improving the empowerment of women.</b>
<p>Results reported can include site-level results working with local communities as well as work to integrate gender considerations into national policies, strategies and planning. Please explain how the results reported addressed the different needs of men or women, changed norms, values, and power structures, and/or contributed to transforming or challenging gender inequalities and discrimination.</p>
NA

## I. Communicating Impact

<p><b>Tell us the story of the project focusing on how the project has helped to improve people's lives.</b></p> <p><b>(This text will be used for UNDP corporate communications, the UNDP-GEF website, and/or other internal and external knowledge and learning efforts.)</b></p>
<p>Mrs. M.Y. Kularathna is a beneficiary who had received the project financial assistance to install a biogas digester unit. The family runs a small scale family business which makes yogurt, ice cream, and other sweets out of milk from their dairy cattle unit, and sell to the locality as their main income. They were used to buying fuel wood that was required for these food/milk processing from outside which had cost them (may also from an unsustainable fuel wood source). They had installed a biogas digester with part-finance assistance from the project, and started using cow dung as the feed material for the digester. They are now using the biogas generated from the digester as their main source of fuel for their food processing purpose. There is no requirement for fuel wood sourcing or bought from outside now. This is apart from the other main benefit they get from waste management issue with this cattle/cow dung. They are also looking for possible business opportunities out of digestate of biogas unit as organic fertilizer. The family has been able to maximize the opportunity out of the project assistance provided, and the project expects that the provincial biogas programme shall improves the lives of the involved people in such a manner.</p> <p>Summary based on a discussion held with Mr &amp; Mrs. Kularathna of Kirimetiya, Mahawa (NWP), Sri Lanka.</p>
<p><b>What is the most significant change that has resulted from the project this reporting period?</b></p> <p><b>(This text will be used for internal knowledge management in the respective technical team and region.)</b></p>
<p>NA</p>
<p><b>Describe how the project supported South-South Cooperation and Triangular Cooperation efforts in the reporting year.</b></p> <p><b>(This text will be used for internal knowledge management within the respective technical team and region.)</b></p>
<p>The project has discussed with Third National Communication (TNC) and DATA project teams of UNDP, Sri Lanka for possible synergies among the projects. The areas of interest includes generalized framework for (energy) data management, and possible link with national communication (of GHG emissions).</p> <p>The project has also assisted the concept development for a "Trilateral South-South Cooperation - Transitioning to Sustainable Energy Uses in the Agro-Industry, Sri Lanka" under the Chinese government's "Belt &amp; Road" initiative. This new project expects to use the same implementation arrangements of Provincial Authorities that are in place under the NAMA project. Possible areas of cooperation identified by the projects include solar PV and biogas application, capacity development of local energy service providers in these technical areas, and technology transfer &amp; knowledge sharing with the Chinese counterpart.</p>

## Project Links and Social Media

Please include: project's website, project page on the UNDP website, Adaptation Learning Mechanism (UNDP-ALM) platform, Facebook, Twitter, Flickr, YouTube, as well as hyperlinks to any media coverage of the project, for example, stories written by an outside source. Please upload any supporting files, including photos, videos, stories, and other documents using the 'file upload' button in the top right of the PIR.

N/A

## J. Partnerships

Give the name of the partner(s), and describe the partnership, recent notable activities and any innovative aspects of the work. Please do not use any acronyms. (limit = 2000 characters). This information is used to get a better understanding of the work GEF-funded projects are doing with key partners, including the GEF Small Grants Programme, indigenous peoples, the private sector, and other partners. Please list the full names of the partners (no acronyms please) and summarize what they are doing to help the project achieve its objectives. The data may be used for reporting to GEF Secretariat, the UNDP-GEF Annual Performance Report, UNDP Corporate Communications, posted on the UNDP-GEF website, and for other internal and external knowledge and learning efforts. The RTA should view and edit/elaborate on the information entered here. All projects must complete this section. Please enter "N/A" in cells that are not applicable to your project.

<b>Civil Society Organisations/NGOs</b>
NA
<b>Indigenous Peoples</b>
NA
<b>Private Sector</b>
<p>The project's partnership with the private sector is mainly highlighted in technology piloting. Under the High Efficiency Motor (HEM) trial phase, the project closely worked with three private sector tea companies/factories where detail experiments and analysis on HEMs in the tea withering process were conducted amidst some day-to-day process/production disturbance. A similar and continued support was also received from the Tea Research Institute, Sri Lanka.</p> <p>The project approached People in Need(PIN), Cz and Janathakshan (GTE) Limited, which had been working on the EU SWITCH-Asia Initiative to up-scale biogas technology in the country, on potential partnership in biogas promotion. As a result, the project now has the access to the trained masons and S&amp;M sector biogas installer registered under them.</p>
<b>GEF Small Grants Programme</b>
NA
<b>Other Partners</b>
<p>Provincial Councils (PCs) and entities under them: Five Provincial Councils (PCs) namely North Western, Southern, Central, Eastern and Uva, are involved in the pilot project of biogas technology dissemination which is identified as one of the NAMA technologies. The project continues to work with various departments and entities under these Provincial Councils like the Local Government Departments, Ministries of Fisheries, Energy and Power etc, and Department of Agriculture, Department of Animal Production and Health, Department of Livestock Development etc. Provincial implementation of biogas programme is led by these PCs.</p> <p>The project is actively working with the Tea Research Institute (TRI) of Sri Lanka which is the apex semi-governmental institute for generating and disseminating new technologies related to tea cultivation and processing. Both TRI, Sri Lanka and the project have benefited from the research collaboration on HEM trial phase and it's findings, and the project expects to continuously working</p>

with this partner to increase the energy efficiency in the tea industry.

The project assisted the concept development for a “Trilateral South-South Cooperation - Transitioning to Sustainable Energy Uses in the Agro-Industry, Sri Lanka” under the Chinese government’s “Belt & Road” initiative. This project expects to populate energy NAMA framework model in to the agro-industry in which solar PV irrigation, and up-scaled biogas technology applications are disseminated in the sector. Areas of focus also include technology incubation, Solar PV and biogas in particular, with the assistance of the Ministry of Science and Technology Administrative Centre for China’s Agenda 21. This will be USD 2 million (including USD 1 million co-finance from Government of Sri Lanka) and the project is in the final approval stage.

The project is also closely working with the Climate Change Secretariat (CCS) of Sri Lanka to develop the World Bank assisted “Partnership for Market Readiness (PMR)” project. Both NAMA and PMR project concepts have common areas of interest which include technology prioritization, MRVing process and applications, and in broader terms climate financing, carbon offsets and country’s NDC achievements. Synergies between these projects will be added advantage to achieve the project overall objective.

## K. Grievances

### Environmental or Social Grievance

This section must be completed by the UNDP Country Office if a grievance related to the environmental or social impacts of this project was addressed this reporting period. It is very important that the questions are answered fully and in detail. If no environmental or social grievance was addressed this reporting period then please do not answer the following questions. If more than one grievance was addressed, please answer the following questions for the most significant grievance only and explain the other grievance(s) in the comment box below. The RTA should review and edit/elaborate on the information entered here. RTAs are not expected to answer these questions separately.

<b>What environmental or social issue was the grievance related to?</b>
Environmental sustainability
<b>How would you rate the significance of the grievance?</b>
Minor
<b>Please describe the on-going or resolved grievance noting who was involved, what action was taken to resolve the grievance, how much time it took, and what you learned from managing the grievance process (maximum 500 words). If more than one grievance was addressed this reporting period, please explain the other grievance (s) here.</b>
NA

## **L. Annex - Ratings Definitions**

### **Development Objective Progress Ratings Definitions**

(HS) Highly Satisfactory: Project is on track to exceed its end-of-project targets, and is likely to achieve transformational change by project closure. The project can be presented as 'outstanding practice'.

(S) Satisfactory: Project is on track to fully achieve its end-of-project targets by project closure. The project can be presented as 'good practice'.

(MS) Moderately Satisfactory: Project is on track to achieve its end-of-project targets by project closure with minor shortcomings only.

(MU) Moderately Unsatisfactory: Project is off track and is expected to partially achieve its end-of-project targets by project closure with significant shortcomings. Project results might be fully achieved by project closure if adaptive management is undertaken immediately.

(U) Unsatisfactory: Project is off track and is not expected to achieve its end-of-project targets by project closure. Project results might be partially achieved by project closure if major adaptive management is undertaken immediately.

(HU) Highly Unsatisfactory: Project is off track and is not expected to achieve its end-of-project targets without major restructuring.

### **Implementation Progress Ratings Definitions**

(HS) Highly Satisfactory: Implementation is exceeding expectations. Cumulative financial delivery, timing of key implementation milestones, and risk management are fully on track. The project is managed extremely efficiently and effectively. The implementation of the project can be presented as 'outstanding practice'.

(S) Satisfactory: Implementation is proceeding as planned. Cumulative financial delivery, timing of key implementation milestones, and risk management are on track. The project is managed efficiently and effectively. The implementation of the project can be presented as 'good practice'.

(MS) Moderately Satisfactory: Implementation is proceeding as planned with minor deviations. Cumulative financial delivery and management of risks are mostly on track, with minor delays. The project is managed well.

(MU) Moderately Unsatisfactory: Implementation is not proceeding as planned and faces significant implementation issues. Implementation progress could be improved if adaptive management is undertaken immediately. Cumulative financial delivery, timing of key implementation milestones, and/or management of critical risks are significantly off track. The project is not fully or well supported.

(U) Unsatisfactory: Implementation is not proceeding as planned and faces major implementation issues and restructuring may be necessary. Cumulative financial delivery, timing of key implementation milestones, and/or management of critical risks are off track with major issues and/or concerns. The project is not fully or well supported.

(HU) Highly Unsatisfactory: Implementation is seriously under performing and major restructuring is required. Cumulative financial delivery, timing of key implementation milestones (e.g. start of activities), and management of critical risks are severely off track with severe issues and/or concerns. The project is not effectively or efficiently supported.