

NS-89 - Smart Street Lighting Initiative

Indonesia

NAMA Seeking Support for Implementation

A Overview

A.1 Party

Indonesia

A.2 Title of Mitigation Action

Smart Street Lighting Initiative

A.3 Description of mitigation action

The Smart Street Lighting Initiative (SSLI) NAMA aims to increase the energy efficiency of street lighting by substituting conventional street lighting with more efficient technologies in Indonesian cities and urban areas. In doing so, the SSLI will result in reduced energy consumption and lower greenhouse gas (GHG) emissions. Most of the cities are still partially charged for the street lights' electricity consumption on a lump-sum (unmetered) basis, the SSLI will therefore encourage further energy policy reform, the more rapid uptake of electricity metering and the modernisation of street lighting systems that meet road safety standards. The SSLI thus contributes to a more efficient and secure energy system and a safer society.

The NAMA is in line with several provincial mitigation action plans (RAD-GRK) and contributes to the Indonesian emission reduction target (26/41% compared to BAU in 2020). So far no national standards for LED street lighting exist. Furthermore, most of the cities are still partially charged for the street lights' electricity consumption on a lump-sum (unmetered) basis, hence no financial incentives exist to invest into more efficient technologies such as LED. The NAMA aims to start implementation during 2014 in up to four small and medium-sized cities, before expanding to implementation in further eight cities by 2016 and in 15 cities until 2020. The NAMA will support cities to overcome their incremental cost when investing into more efficient technologies. In the mid-term the NAMA aims at changing the pricing mechanism to enable cities to re-invest the gained savings. The NAMA will also support relevant policies and regulations development to further enable nation wide effort towards energy efficient street lighting. In addition to achieving GHG emissions reductions, the NAMA supports several other Indonesian development priorities including energy security of supply (by reducing demand) and public safety (through increased lighting amenity).

The ICCTF will administer international NAMA funds to demonstrate implementation in selected pioneer cities, to strengthen cities' capacities and to overcome barriers in order to pave the way for broader implementation with financing through the Ministry of Finance' Government Investment Facility (PIP). Furthermore, it will introduce the ESCO (Energy Service

Company) model. In this way, the NAMA support is integrated with domestic financing in the form of low interest loans to enable city-wide implementation and leverage the impact of the NAMA support to other cities.

A.4 Sector

<input type="checkbox"/> Energy supply	<input checked="" type="checkbox"/> Transport and its Infrastructure
<input type="checkbox"/> Residential and Commercial buildings	<input type="checkbox"/> Industry
<input type="checkbox"/> Agriculture	<input type="checkbox"/> Forestry
<input type="checkbox"/> Waste management	

Other

A.5 Technology

<input type="checkbox"/> Bioenergy	<input type="checkbox"/> Cleaner Fuels
<input checked="" type="checkbox"/> Energy Efficiency	<input type="checkbox"/> Geothermal energy
<input type="checkbox"/> Hydropower	<input type="checkbox"/> Solar energy
<input type="checkbox"/> Wind energy	<input type="checkbox"/> Ocean energy
<input type="checkbox"/> Carbon Capture and Storage	<input type="checkbox"/> Low till / No till
<input type="checkbox"/> Land fill gas collection	

Other

A.6 Type of action

<input type="checkbox"/> National/ Sectoral goal	<input type="checkbox"/> Project: Investment in machinery
<input type="checkbox"/> Strategy	<input type="checkbox"/> Project: Investment in infrastructure
<input checked="" type="checkbox"/> National/Sectoral policy or program	<input type="checkbox"/> Project: Other

Other

A.7 Greenhouse gases covered by the action

<input checked="" type="checkbox"/> CO2	<input type="checkbox"/> CH4
<input type="checkbox"/> N2O	<input type="checkbox"/> HFCs
<input type="checkbox"/> PFCs	<input type="checkbox"/> SF6

Other

B National Implementing Entity

B.1.0 Name

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B.1.9 Contact Person 3

B.1.10 Address

B.1.11 Phone

B.1.12 Email

B.1.13 Comments

The Ministry of Energy and Mineral Resources (MEMR) has the responsibility for energy efficiency policies and measures, including energy efficiency standardization for street lighting (includes LEDs). MEMR will coordinate the efforts of other key agencies involved in implementation,

including those responsible for financing, maintenance, installation, safety and performance standard setting. Directorate General of New Renewable Energy and Energy Conservation (EBTKE) is the technical support unit with primary coordination responsibility for energy efficiency standardisation. EBTKE is now developing the energy efficiency standard and LED guideline for street lights.

C Expected timeframe for the implementation of the mitigation action

C.1	Number of years for completion	5
C.2	Expected start year of implementation	2014

D Currency

D.1	Used Currency	AED
		Conversion to USD: 1

E Cost

E.1.1	Estimated full cost of implementation	294000000
E.1.2	Comments on full cost of implementation	<p>Funds from the NAMA facility are required to (1) provide technical assistance to change related framework conditions such as strengthening the capacities of relevant actors and (2) financial assistance to demonstrate on a larger scale in several cities with adequate capacities which would build the basis for larger domestic investments and implementation.</p> <p>The full cost of implementation are considering the investment costs for the technology component plus related capacity building activities. For the assumed scenario we therefore reflect incremental cost of implementation of 286 million USD plus 7.5 million USD for capacity building purposes and outreach.</p>
E.2.1	Estimated incremental cost of implementation	
E.2.2	Comments on estimated incremental cost of implementation	<p>The incremental costs for financing the technology components of the NAMA are 286 mio. USD until 2020 .The incremental costs for financing the technology components are based on a scenario that reflects installation of energy efficient streetlighting in about 15 Indonesian middle-size cities with an overall number of about 350,000 lamps.</p>

F Support required for the implementation the mitigation action

F.1.1	Amount of Financial support	19000000
F.1.2	Type of required Financial support	<input checked="" type="checkbox"/> Grant <input type="checkbox"/> Loan (sovereign) <input type="checkbox"/> Loan (Private) <input type="checkbox"/> Concessional loan <input type="checkbox"/> Guarantee <input type="checkbox"/> Equity <input type="checkbox"/> Carbon finance <input type="checkbox"/> Other
F.1.3	Comments on Financial support	<p>The financial support for the SSLI NAMA divides into 11,5 million USD for technology investments (NAMA financing component) and 7,5 million USD for technical assistance (NAMA technical component).</p>
F.2.1	Amount of Technological support	11500000

F.2.2 Comments on Technological support

The SSLI NAMA foresees an investment roll-out that comprises of different financing sources for different phases of implementation. The technological support is used to provide funding for capital investment for the replacement with energy efficient street lights such as LED in the starting phase (2014-2015). This investment aims at triggering investments by local governments into more energy efficient street lights through low interest loans from the government investment facility (PIP) which aims to invest 7 – 10 mio USD annually into energy efficient street lighting (2015-2016). During the transformation phase of the SSLI NAMA, the implementation of energy efficient street light systems shall be financed by involving Energy Service Companies (ESCO) , commercial loans from the financial market and other forms of public financing (2016-2019).

F.3.1 Amount of capacity building support

F.3.2 Type of required capacity building support

<input type="checkbox"/>	Individual level
<input checked="" type="checkbox"/>	Institutional level
<input checked="" type="checkbox"/>	Systemic level
<input type="checkbox"/>	Other <input type="text"/>

F.3.3 Comments on Capacity Building support

The capacity building support is to provide technical assistance in various areas of the SSLI NAMA that will be carried out by ESDM with the support of Technical Support Unit (TSU) established within the Ministry.

The capacity building support are including :

- Assistance to city administrations including its municipal public lighting agencies in preparing specific business plans for financing and implementation.
- Technical assistance for Municipal public lighting agencies on purchase, installation and maintenance of energy efficient (LED) street lighting.
- Technical assistance for reform of street lighting tax policies / pricing regulations (Change of pricing mechanism currently applied to charge cities for their consumption).
- Development of training modules covering introduction of different lighting technologies, street lighting management systems, installation and maintenance, MRV
- Establishment of MRV data base / MRV implementation
- Development and testing of ESCO model - Enable cities to re-invest the gained savings more easily in cooperation with the private sector, including Energy Services Companies, or ESCOs.
- Technical Assistance to energy efficiency performance and safety standards for efficient lighting products (formulation of the EE standards as input for LED street light product performance standards).

- Awareness-raising on usage of energy-efficient street lighting technologies amongst relevant stakeholders

F.4 Financial support for implementation required

F.5 Technological support for implementation required

F.6 Capacity Building support for implementation required

G Estimated emission reductions

G.1 Amount 1.4

G.2 Unit

G.3 Additional information (e.g. if available, information on the methodological approach followed) First calculations of the SSLI NAMA shows that 425.000 tCO₂e emission reduction to 2020 can be achieved. Considering the current average lifetime (10 years) of LED street lighting technologies, the SSLI NAMA can achieve up to approx. 1.400.000 tCO₂e in 2024.

The empirical assessments show that a 50-60% reduction could be achieved through SSLI NAMA implementation nationally. According to the national statistics, street lighting accounted for 3,068 GWh of electricity sales by PLN in 2011. That is, roughly 1,500-1,850 GWh of potential electricity saved per annum compared with business as usual.

Two different monitoring approaches could be applied based on whether cities under the SSLI NAMA have full metering in place or not: 1) If meters are in place for street lighting in the respective city the actual energy savings compared to the baseline can be measured directly. 2) If no meters are installed the approved CDM methodology AMS-II.L *Demand-side activities for efficient outdoor and street lighting technologies* could be used. This approach does not require actual monitoring of energy consumption using metering, but energy savings are estimated by determining the lamp's wattage and the operating hours. Both approaches would apply sampling for estimating the energy savings and corresponding emission reductions.

H Other indicators

H.1 Other indicators of implementation The SSLI NAMA results in sustainable development benefits to the social sector, economy and environment. Therefore, relevant sustainable development indicators (in addition to GHG emissions, kWh and domestic and international SSLI NAMA investments) will be used as reference such as job creation, improved public activity for men and women.

I Other relevant information

I.1 Other relevant information including co-benefits for local sustainable development The SSLI NAMA offers many potential co-benefits for local governments in economic, social and environmental aspects. For local sustainable development, SSLI offers improvement in safety standards in urban areas, possibly a reduction in traffic accidents, and also offers opportunities for local community to conduct business and participate in civic life in the evening. SSLI also reflects gender-sensitive approach, where both men and women will be targeted to receive the benefits of SSLI from improved public illumination in the evening.

Criteria	Potential Co-Benefits (Direct and Indirect)
Economic	
Job creation	<ul style="list-style-type: none"> - Created employment - Availability of qualified, highly efficient productive national labour
Energy security	<ul style="list-style-type: none"> - More efficient use of fossil fuels - Reduced import rates of fossil fuels - Reduced costs
Reduced road accidents	<ul style="list-style-type: none"> - Cost savings - Saved lives
Social	
Enhancement of quality of life	<ul style="list-style-type: none"> - Health improvements (safety, fewer accidents, violent crimes) - Distribution of costs and benefits - Income distribution - Local participation in civic life - Enhancement of health conditions and safety standards
Environmental	
Reduction of local/regional environmental impacts	<ul style="list-style-type: none"> - Reduction in other pollutants (e.g. from Mercury lamps)

J Relevant National Policies strategies, plans and programmes and/or other mitigation action

J.1 Relevant National Policies

Driven by high subsidies and high rates of fossil fuel use, the energy sector is the second largest emitter of GHG emissions in Indonesia. Electricity demand is growing at around 9% annually, and an estimated 50GW of new capacity needs to be added by 2025 according to the state-owned electricity company PLN (Perusahaan Listrik Negara). In 2009, the Government of Indonesia made a commitment to reduce its GHG emissions by 26% through domestic efforts and up to 41% with international support by 2020. In 2011 the National and Local Action Plans on GHG Emission Reduction (RAN/RAD-GRK) were launched to formulate actions to achieve these reduction targets; these actions include energy efficiency measures.

At the national level, the use of energy efficient technologies particularly in public, residential and commercial sector is one of the priority of MEMR to support the Indonesian emission reduction target and the National Energy Conservation Master Plan (RIKEN) that calls for a decrease in energy intensity by an average of 1% per year until 2025.

J.2 Link to other NAMAs

K Attachments

K Attachments

Title	Description
GIZ ESDM SSLI NAMA IP final.pdf	

K.1 Attachment description

K.2 File

L Support received

L.1 Outside the Registry

L.2 Within the Registry

Support provided	SupportType	Amount	Comment	Date
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