NS-202 - Support to Integrated E-Waste Management System for State of Sabah, Malaysia

Malaysia

NAMA Seeking Support for Implementation

A Overview

A.1 Party	Malaysia
A.2 Title of Mitigation Action	Support to Integrated E-Waste Management System for State of Sabah, Malaysia
A.3 Description of mitigation action	**Executive Summary** Improper management of household Electrical and Electronic Waste (hereafter referred to as E-waste) leads to degradation of natural environment and human health. The State of Sabah has identified this area as a threat to its tourism as well as long term environmental damages. On the other hand, the proper recovery and recycling of E-Waste presents an opportunity to conserve resources as well as reducing greenhouse gas emissions. A comprehensive study financed by the State of Sabah was conducted from October 2013 to December 2014 to assess the baseline and come up with integrated management strategies and action plan. The study identified several barriers and gaps (requirement of economic instrument to support the cost of recovery, lack of infrastructure, awareness and capacity) that need to be supported (financially and technically) before a comprehensive collection, transportation and recycling of E-waste can be operationalised. NAMA funding is hereby requested to partially support the implementation of the proposed strategy and action plan mentioned above. The total NAMA funding requested from 2016-2020 is RM24,691,614 (USD 6,670,705). In addition to the requested NAMA funding requested, co-financing estimated total of RM 111,781,676 (USD 30.2 million) is expected to be borne by various involved stakeholders from government, private sectors and NGOs. The support project will lead to direct and indirect effects on mitigating GHG emissions. The estimated total emission reduction from year 2016 to 2030 (including post project impact) are 467,845 tCO2e, including both direct and indirect emissions reduction. **Background** E-waste is one of the fastest growing waste streams in the world. Improper management and disposal of E-waste can cause environmental pollution and adverse impact to public health. From October 2013 to December 2014, a study to investigate the existing management of E-waste in Sabah was implemented with the objective to develop an integrated E-waste management plan to ensure proper and holistic management of E-waste in Sabah. This study was one of the approved initiatives under the Brunei Darussalam, Indonesia, Malaysia and The Phillipines East Asean Growth Area (BIMP-EAGA) Environmental and Information and Communications Technology (ICT) Cluster. From field surveys, workshops and meetings carried out in the study, it was found that the current management of E-waste in Sabah is informal, involving to certain level of informal scrap metal recycling and also disposal to landfills and dumping sites. Some major barriers to a proper E-waste management system have also been identified through the study, i.e. the absence of policy in E-waste management system, lack of clear responsibility allocation in E-waste management, lack of qualified personnel and equipment for dismantling E-waste, lack of knowledge on dismantling and recovery potential,

lack of approved E-waste recycling facilities in Sabah, high collection and transportation cost locally and shipment to Peninsular Malaysia and the uncertain volume of E-waste. All of these have resulted in no proper facilities in Sabah to safely dismantle and process discarded E-waste at the present moment.

E-waste found at landfills and dumpsites which contain lead, mercury and other toxic materials can leach or leak out and contaminate the surrounding environment (air, water and soil). Recovery and recycling of E-waste is a measure to the above problem.

The Mitigation Action

The proposed mitigation action is to set up a systematic collection, transportation and recycling system of E-waste for the State of Sabah, Malaysia. The e-waste will be collected from from major cities and towns and transported to approved full recovery facilities in Peninsular Malaysia. By doing this, the E-waste could be handled effectively and positively by putting them into purposeful use through recovery of raw materials and reducing the amount of E-waste ended up in landfills. As a result, greenhouse gases (GHGs) would be reduced.

Mitigation action proposed for this project includes stage implementation of E-waste collection, transportation and recovery system, which is illustrated below:

The 3 stages are to achieve the following key objectives:
Stage 1 – To conduct pilot collection system at selected areas
Stage 2 – To link up with National Recycling Fund
Stage 3 – To extend the pilot collection to other cities

In order to implement the proposed E-waste management system, both technical and financial resources need to be available. In additional to local funding currently under request, international funding from NAMA scheme is hereby requested to cover financial gaps identified in order to kick start the action plans without further delays. The total NAMA funding requested from 2016-2020 is RM24,691,614 (USD 6,670,705). The requested funding will cover local transportation costs (31%), shipping costs (32%), infrastructure upgrades (4%), operating cost (3%), management and maintence fees of collection centres (5%), awareness, education and training programs (10%), good practice and experience sharing with BIMP-EAGA members (1%), web systems development/maintenance (1%), consultancy and web application cost (9%), project management cost (4%) and contingencies cost (1%).

Measuring, Reporting and Verification (MRV) for the whole collection, transportation and recycling system will be developed and achieved based on a web based application system. The web based system will served as a monitoring and information platform for waste generator, collectors, transporters, recovery facility players and enforcers to obtain the latest information on the schedule of waste collection, amount and types of waste managed by the programme and finally the monitoring of performance.

A.4 Sector

- [ ] Energy supply
- [ ] Residential and Commercial buildings
- [ ] Agriculture
- [x] Waste management
- [ ] Transport and its Infrastructure
- [ ] Industry
- [ ] Forestry
- [ ] Other

A.5 Technology

- [ ] Bioenergy
- [ ] Energy Efficiency
- [ ] Hydropower
- [ ] Wind energy
- [ ] Cleaner Fuels
- [ ] Geothermal energy
- [ ] Solar energy

A.6	Type of action	☐ Carbon Capture and Storage ☐ Ocean energy ☐ Land fill gas collection ☐ Low till / No till ☐ Other ☐ National/ Sectoral goal ☐ Project: Investment in machinery ☐ Strategy ☒ Project: Investment in infrastructure ☒ National/Sectoral policy or program ☐ Project: Other ☐ Other
A.7	Greenhouse gases covered by the action	☒ CO2 ☐ CH4 ☐ N2O ☐ HFCs ☒ PFCs ☐ SF6 ☐ Other

B National Implementing Entity

B.1.0	Name	Environment Protection Department (EPD), Sabah
B.1.1	Contact Person 1	Susan Pudin
B.1.2	Address	Wisma Budaya, 1st – 3rd Floors, Tunku Abdul Rahman Road, Locked Bag No. 2078, 88999 Kota Kinabalu, Sabah, Malaysia
B.1.3	Phone	(+6) 088-251290/251291/267572/268572
B.1.4	Email	susan.pudin@sabah.gov.my
B.1.5	Contact Person 2	Vitalis Justin Moduying
B.1.6	Address	
B.1.7	Phone	(+6) 088-238130
B.1.8	Email	vitalis.moduying@sabah.gov.my
B.1.9	Contact Person 3	
B.1.10	Address	
B.1.11	Phone	
B.1.12	Email	
B.1.13	Comments	

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	2016

D Currency

D.1	Used Currency	AED Conversion to USD: 0

E Cost

E.1.1	Estimated full cost of implementation	136473289
E.1.2	Comments on full cost of implementation	The total cost of implementation estimated to be RM 136,473,289 (~USD 40 millions) for the first 5 years of implementation (2016- 2020). This amount includes nama funding support of RM 24,691,614 (USD 7.5 million). The remaining co-financing, estimated total of RM 111,781,676 (USD 32.5 million) is expected to be borne by various involved stakeholders from government, private sectors and NGOs. Type of co-financing items from the local governments and private sector includes the salaries and time spend on the projects, workplace and office rental cost and the investment of the

household e-waste full recovery facility cost.

The local government as well as involved stakeholders has already demonstrated commitment to establish a proper management system for E-Waste. The local government funded the study on Integrated Management of Electrical and Electronic Waste in Sabah from October 2013- December 2014. The estimated amount (both direct and in kind contribution) that has already been incurred by the local government and other stakeholders for the study and the preparation for the project implementation is estimated to be RM 5,895,116 (USD 1.6 million). Further support for the State Government of Sabah to apply for NAMA has been received from the Low Emission Capacity Building Project (LECB) under the cooperation of United Nation Development Programme (UNDP) and Ministry of Natural Resources and Environment Malaysia.

At the regional level, Sabah E-waste Management Project is one of the projects prioritised under The Brunei Darussalam- Indonesia-Malaysia-Phillippines East ASEAN Growth Area (BIMP-EAGA) Environmental Cluster and the Environment Cluster will have to work closely with BIMP-EAGA ICT Cluster in the preparation and implementation of this project. Malaysia is also selected as the lead country for the 'Clean and Green Technology' and tasked to finalise the project concept for implementation among the region. Support provided by NAMA is essential for knowledge transfer and project replication among the BIMP-EAGA members as per announced in BIMP-EAGA 2nd Environment Cluster Meeting in October 2013 at Davao City Philippines.

E.2.1 Estimated incremental cost of implementation

E.2.2 Comments on estimated incremental cost of implementation

F Support required for the implementation the mitigation action

F.1.1 Amount of Financial support: 24691614

F.1.2 Type of required Financial support

- [X] Grant
- [ ] Loan (sovereign)
- [ ] Loan (Private)
- [ ] Concessional loan
- [ ] Guarantee
- [ ] Equity
- [ ] Carbon finance
- [ ] Other

F.1.3 Comments on Financial support

Without financial support through NAMA, the E-waste management system implementation will not occurred in the 'business-as-usual' scenario. Due to lack of funding and the delay in implementation of household E-waste system at national level, there will be an implementation gap. The amount of NAMA support required will be able to kick start the action plan activities from stage 1 to stage 2 of the project before the entire system gets linked up to the National E-Waste Recycling Fund system which is only expected to be implemented in a few years time. The proposal of National Recycling Fund System has been presented by the Federal Department of Environment Malaysia during the Sabah E-Waste Project Completion Workshop on 13th October 2014. Once the economic instrument (recycling fund system) at national level has been set up, the E-waste system set up will be financially sustained.

	The requested funding will cover local transportation costs (31%), shipping costs (32%), infrastructure upgrades (4%), operating cost (3%), management and maintenance fees of collection centres (5%), awareness, education and training programs (10%), good practice and experience sharing with BIMP-EAGA members (1%), web systems development/maintenance (1%), consultancy and web application cost (9%), project management cost (4%) and contingencies cost (1%).
F.2.1 Amount of Technological support	
F.2.2 Comments on Technological support	
F.3.1 Amount of capacity building support	3478944
F.3.2 Type of required capacity building support	[X] Individual level [X] Institutional level [X] Systemic level [ ] Other
F.3.3 Comments on Capacity Building support	Costs for capacity building are part of the total NAMA funding requested. Total of RM3,478,994 (USD 939,874) are required under this cost. The type of cost identified under capacity building are Awareness, Education and Training program (10%), Good practice and experience sharing with BIMP-EAGA members (1%) and setup of Project Management unit (4%) from the total financial support required.
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	652,771
G.2 Unit	MtCO2e
G.3 Additional imformation (e.g. if available, information on the methodological approach followed)	Total emission reduction (direct and indirect) from 2016-2030 are estimated to be 652,771 $MtCO_2e$. The estimated total emission reductions for a period of 5 years from 2016-2020 are 147,736 $MtCO_2e$. Total estimated emission reduction from year 2021-2030 is 505,036 $MtCO_2e$. The Clean Development Mechanism (CDM) methodology "AMS-III.BA Recovery and recycling of materials from e-waste" version 01.0 and GHG Protocol HFC Tool (Version 1.0)- Calculating HFC and PFC Emissions from the Manufacturing, Installation, Operation and Disposal of Refrigeration & Airconditioning Equipment (Version 1.0) were used for the emission reduction calculations. The parameter identified for the monitoring system on measuring, reporting and verification (MRV) will be the type and amount of e-waste collected and recycled, material composition, number of e-waste collection point established, number of e-waste collection drive, awareness activities and campaign conducted.

H Other indicators

H.1	Other indicators of implementation

I Other relevant information

I.1 Other relevant information including co-benefits for local sustainable development

On environment implications of the project, apart from reducing greenhouse gas, the implementation of this project will help to reduce e-waste disposed to landfill and informal recovery where improper management and disposal of E-waste can cause environmental pollution and adverse impact to public health. This is especially crucial for Sabah where the tourism industries will rely on the pristine environment being conserved and protected.

On economic implications of the project, the implementation of the project will lead to an increase in employment opportunities and contribute to the local economy, especially in the form of foreign investment for local technological support and contractors.

On the social aspects, the local environment can be improved from the reduction of greenhouse gas released to the atmosphere and at the same time improve the working environment for the workers on-site as well as for the health of surrounding community.

Apart from the emissions reductions, other indicators of implementation are reduced amount of E-waste being illegally disposed of in the vicinity of Kota Kinabalu and Sandakan, Sabah, reduced activities of informal recovery of E-waste materials and increased amount of materials such as metals and plastics recovered from E-waste.

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

J.1 Relevant National Policies

This project is in line with a number of national and state level policies and programmes in Malaysia.

National Level

Malaysia has pledged to reduce carbon emissions intensity of the country's Gross Domestic Product by 40% by 2020 during UNFCCC COP 15 in the year of 2009. Waste management is listed as one of the key areas for mitigation measure for climate change under the National Policy on Climate Change in Malaysia.

Malaysia has formed a National Strategic Plan for Solid Waste Management in the year of 2003 and enacted the Solid Waste and Public Management Cleansing Act 2007 for the purpose of preserving the living environment and improving public health through the restriction of waste discharge, appropriate sorting, storage, collection, transport, recycling, disposal, or the like of waste and conservation of a clean living environment.

The proposed mitigation actions are also in line with the National Green Technology Policy where waste management is one of the key areas covered under the policy.

State Level (Sabah)

The management of Green House Gas Emissions and management of waste are both key strategy pointers elaborated in the Sabah State Policy on the Environment. E-waste management was also included in the the Solid Waste

Management Master Plan in Sabah.

E-waste Management Policy for Sabah proposed by the study in 2014 was endorsed during the project steering and technical committee meeting. This policy is expected to be presented to State Cabinet approval in the near future. Thus, the support from the government to implement a proper E-waste system is very strong.

J.2 Link to other NAMAs

K Attachments

K Attachments

Title	Description
Attachment1-Letter_KEPKAS.pdf	Letter of Support from the Ministry of Tourism, Culture and Environment Sabah
Attachment2-Letter_NRE.pdf	Letter of Support from the Ministry of Natural Resources and Environment Malaysia
Attachment3-ExecSum-Study on E-Waste Sabah.pdf	Executive Summary of the Study on E-Waste in Sabah
Attachment4-Draft Sabah State Policy on e-waste management.pdf	Sabah State Policy on E-Waste Management
Attachment5-Total ER Calculation sheet (CO2 + HFC).xlsx	Calculation of Total Emission Reduction

K.1 Attachment description

K.2 File

Browse...

L Support received

L.1 Outside the Registry

Preparation of this NAMA document was funded by the Low Emission Capacity Building Project (LECB) in Malaysia implemented by the Ministry of Natural Resources and Environment Malaysia and United Nation Development Programme (UNDP). LECB-Malaysia is part of the UNDP-LECB Global Programme is supported through contributions by the European Commission, the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, and the Government of Australia.

L.2 Within the Registry

Support provided	Support Type	Amount	Comment	Date