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Telephone: East Kilbride
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File Ref: 6539

Your Ref: OPM Proposal date 17/01/17

Date: 07/04/17

Contract Amendment No: 5

CONTRACT FOR: Framework Agreement Purchase Order number PO5929 – Call Down Contract for Climate Proofing Growth & Development (CPGD) – South Asia –Amendment Number 5

CONTRACT NUMBER: PO6539

1. With reference to the contractual letter dated 25 August 2014 (and all subsequent amendments to date) whereby your firm was engaged to carry out the Terms of Reference as detailed in Annex A of the aforementioned contract and with reference to your Amendment 5 proposals dated 17 January 2017(as revised by your email dated 22 February 2017), I confirm that the UK Government wishes to make the following further amendments to the letter of 25 August 2014:

Section 4

Appendix A: Key Personnel

Delete: (Programme Manager - India)

Insert: (Programme Manager - India)

Delete: (Team Leader – Nepal)

Insert: (Team Leader – Nepal)

Annex A: Terms of Reference

Insert: Appendix 1 (attached)

Additional Deliverable 1 - Design a Framework for promoting and introducing innovative market mechanisms for climate risk insurance in Smart Cities that are also climate and disaster sensitive (as per your revised proposal dated 22/02/17).

Due by May 15, 2017:

Submission of Detailed Project Report to Assam Energy Development Authority & DFID

Final Report on climate Risk Insurance in Guwahati

Additional Deliverable 2 - Establishing a sustainable community energy generating model in Majuli, Assam (as per your proposal dated 17/01/17)

Due by March 31, 2017:
Development of community climate risk profile report for Majuli

Annex B - Revise Personnel Input & Fee Rates

- (OPM Programme Director) days increased to 220
- days reduced to 6

In accordance with the Terms and Conditions Section 8 – Sub Contractors: Addition to OPM Consortia Partners:

Insert:

- Acclimatise
- Iora Ecological Solutions
- IMAX-ICRA Consulting
- International Water Management Institute

Please note the inclusion of the aforementioned suppliers is predicated upon OPM having undertaken the appropriate due diligence as confirmed in email **/** dated 24/02/17.

2. This amendment relates to a revision to Key Personnel, inclusion of 2 new deliverables to the Terms of Reference, revision of Personnel Input & Fee Rates and the inclusion of new consortia members. NOTE: there is no change to the agreed financial limit of this contract as a result of these changes.

3. Please confirm in writing by signing and returning one copy of this letter, within **15 working days** of the date of signature on behalf of DFID that you accept the amendments set out herein.

4. Please note the provision in the contractual letter, that the financial limit of the UK Government's liability to the Supplier under this engagement shall not exceed the sum specified, unless the amount of any such excess has been agreed by the Department for International Development in writing before the Supplier takes any action which might result in the financial limit being exceeded.

For and on behalf of the
Secretary of State
for International Development

Name:

Position: Procurement & Commercial Manager

Signature:

Date:

For and on behalf of
Oxford Policy Management Ltd

Name:

Signature:

Date:

Designing a framework for promoting and introducing innovative market mechanisms for climate risk insurance in Smart Cities that are also climate and disaster sensitive.

Background to the problem

The sheer scale of the ongoing infrastructure development schemes floated by Government of India and assistance from Donor agencies is reflective of the pressure and demand that urbanization poses on Indian cities. However, the increase in the frequency of urban disasters and rapid changes in climate, call for attention to the fact that the new infrastructure projects and the investments are also linked to climate risk insurance mechanisms. This project will make an assessment of demand for the same in the city of Guwahati which is one of the cities chosen under the Smart City program of Government of India. Climate risk insurance in cities fits well with the ongoing CPGD-CCIP program's objectives and also leads to inclusion of safe guard mechanisms particularly beneficial for the vulnerable population including the poor and the marginalised. The program aims to explore market potential for climate risk insurance in cities through the pilot project in Guwahati. It will draw insights from insurance practice in UK.

Summary description of the work stream

The 4 months duration project will make an assessment of climate risk insurance potential, gaps and innovative solutions for the smart city of Guwahati to bring in risk insurance mechanisms. It will also bring in some of the UK best practices and innovative mechanisms for city level risk insurance mechanisms and contextualise it to Indian case-Guwahati city.

1. Objectives :

The objective is to conduct a pilot study in Guwahati Smart City to better understand gaps, challenges and institutional impediments to climate risk insurance market and an assessment of market for the UK based insurance companies into India, while also bringing in UK expertise on climate risk insurance.

2. Partners for the project and scope:

OPM will be the key delivery company. UK and India based insurance regulatory associations like ABI, UK and General Insurance Corporation and ICICI Lombard, India will be on board as advisors. UK based insurance experts will help identify UK best practices and policy and governance mechanisms that worked well in UK risk insurance markets and Indian insurance experts would help address the challenges that the current mechanisms might pose and would help come up with new mechanisms that foster risk insurance markets in climate sensitive smart cities.

3. Methodology

Step 1: A three stage assessment is proposed to achieve the objectives of this program. These will be parallel streams of work, the results of each will culminate into the design of risk insurance potential and mechanisms for Guwahati with the support and learning from the UK counterparts.

- i. **Climate risk profiling for insurance needs for Guwahati**-Guwahati city already has a already developed a climate resilience strategy. The strategy document and Guwahati Smart City Plan along with the CDP and Master Plan for the city will be used to carry out a risk profile for the city. Evaluation of the preparedness of the city to manage climatic risks and its impact on infrastructure and economy of the city will be conducted. A cumulative risk potential will be prepared and the value of the infrastructure at risk will be quantified and recorded. The population at risk will also be quantified.
- ii. **Assessments of Indian Insurance markets** w.r.t to Climate risk insurance- To understand the existing mechanisms on risk insurance if any, in various contexts including disasters and climate risks. This will help in understanding the level of work already done, and level of risk insurance services available. This will also help scope and focus the project's deliverables to the most critical and desired part of the Indian risk insurance market that would need help and assistance from the UK counterparts.
This will also include evaluation of any past/recent climatic catastrophe and its impact. Ministry of Home Affairs, Government of India at the Central level and the Revenue Departments at the state level are responsible for sanction and disbursement of relief funds, rehabilitation and redevelopment in India. Commissioner relief's office in each state takes responsibility of rehabilitation, relief and redevelopment in the wake of a calamity. On the basis of information collected above an assessment of Government of India's relief funds; an evaluation of the potential and value of the risk insurance market in Guwahati/State of Assam will be compared and evaluated
- iii. **Assessment of international and UK re-Insurance experience** and barriers and opportunities -
 - a. Some of the international best practices on cities' risk insurance will be studied.
 - b. Besides this, since UK's climate risk insurance market is a well-developed mechanism.
 - a. Therefore, the Enablers/Catalysts of UK cities re-insurance market will be studied in detail.
 - b. There are best practices and case studies available in the UK that could be studied for the purpose of this study and used to design something similar and contextualised for Indian conditions. Their mechanisms and cases will be studied in detail and assessed for their potential for replication in Indian project city.
 - c. An assessment of how the system operates in UK, the average value of risk insurance, and the assets and population covered, the monetary mechanisms will be studied and documented besides

looking at the barriers if any and the regulatory and policy mechanisms adopted in the UK and other successful places.

Step 2: Analysis and design stage:

- i. Consultations workshops: consultation workshops will be organised in the 4 months duration of the project and will involve key Indian insurance companies, city stakeholders and UK insurance representatives to analyse the Indian context and to strengthen the focus on knowledge sharing between the city of Guwahati and the UK-India market.
- ii. A broad analysis of potential of risk insurance market in India will be conducted thus positioning this project into wider regulatory and policy perspective
- iii. An analysis of UK interventions and UK's experience in the Indian context will be conducted. Also, the potential and uptake for UK's insurance expertise for its value in Indian market will be assessed- (i) for the procedural issues and requirements involved (compliance mechanisms, (ii) the challenges and competition that sector will have to address for wider market access.
- iv. An analysis of the project city's risk based insurance requirements, its preparedness for serving the market and the inherent institutional and governance challenges will be analysed and put forth before the consultation committee in one of the consultations.

Step 3: Results and Options Stage:

The results would include a deeper understanding of insurance markets in the Indian context and in particular for the state of Assam and Guwahati city learning from the UK experience. This stage will develop a concrete set of options for development of the Indian urban climate risk market for Guwahati referencing UK case studies to show which approaches have been successful. Facilitate dialogue with sector stakeholders on the options and conclusions on which approaches offer most prospects for success.

4. Outputs and benefits:

The proposed outputs as spelled out in the ToR will include:

- i. A summary of recommendations and opportunities for developing the risk insurance market in Guwahati in particular and Assam in general.
- ii. A summary of recommendations and opportunities, to bolster entry of risk insurance companies in the Indian insurance market
- iii. Summary materials project flyer/info graphic, slide pack and web resources to support the two outputs above
- iv. Presentation of the final report to DFID with inputs for their planned and larger program on risk insurance and to the Ministry of Urban Development and MoEFCC to present the pilot case and the pilot model.
- v. Presentation of the findings to UK insurance/risk management companies in the UK.
- vi. An event to facilitate take up of recommendations with relevant stakeholders

5. Expertise:

Technical Lead(30 days) :

An urban management and smart city expert with at least 10-15 years of experience that specialises on urban planning for smart cities/urban planning and master planning, project management, climate resilience and/or disaster risk reduction.

Insurance expert (One national- 24 days,and One International- 18 days))

A climate change and disaster management specialist of at least 10-15 years of senior management experience of working directly on climate resilience strategies and disaster risk reduction projects/ plans and strategies. Knowledge of UK insurance industry

Senior Urban Development Expert (one)-24 days

Urban development expert with an experience of working with city governments in India. Experience in North East India/Guwahati city preferred. Policy planning and infrastructure development planning experience required.

Assistant Consultant (Urban-2 nos)-14 days each

Consultant with an experience of working in Northeastern India or landscapes and is able to support the lead consultant in the achievement of all deliverables as per the ToR and especially in review of literature, analysis of Smart Cities Plans, conducting various consultations and market analysis and delivery of outputs as mentioned and approved in the proposal.

Assitant Consultant (Climate resilience and disaster -2 Nos)-14 days each

Urban Climate Resilience expert with experience of working on resilience strategies, hazard and risk assessments, disaster risk assessments and post disaster recovery mechanisms.

Work- plan:

[illegible]

[illegible]

Establishing a sustainable community energy generating model in Majuli, Assam

Background to the problem

Majuli is the biggest river island in the world and is the first island district in the country. The island is of great cultural importance as it has several *satras* – Vaishnavite monasteries of which some date back to the 16th century. These monasteries are institutional centres for performing arts, carrying forward the tradition of Vaishnavism. Also, the district is a significant habitat of the Missing tribes, which carries rich traditional heritage of weaving, flood adaptation technique and indigenous cuisine in the state. The district falls in the Chief Minister's constituency and is recognised as a heritage site by the Government of Assam attracting national and international tourists.

Due to its geographically disadvantageous position, this newly formed and highly flood prone district is one of the most underdeveloped district of the state. Lack of access to clean energy, inadequate energy availability are two of the major issues crippling the lives of the inhabitants in Majuli.. Majuli has a population of 98, 457 in 19,274 households. Out of these, approximately 75% depends on kerosene to light up their houses and have no access to electricity. (Census Report, 2011) Lack of access to adequate energy has affected the life of the entire district island, including livelihood, transport, health, education, thus increasing the vulnerability of the population with respect to their development potential as well as climate resilience. **Reducing energy scarcity through clean energy technology**

Considering these aspects, through this project a sustainable community energy generating system will be established to supplement the energy demands of the community where energy having high-efficiency will be co-generated with the help of renewable hybrid energy systems with bio-gas plants, small solar plants and or solar-wind hybrid systems installed across the district. The system will operate with support of a society with members from the community. The project will provide technical support to the society with the help of experts who will share their knowledge with the local community on day to day functioning of the system. This will also help to establish a proper fuel chain in the locality with the involvement of the local youth in the process.

Summary description of the project

The project will span over a period of 4 months (15 January to 15 May). The Sustainable Community Energy Generating Plan will be developed with the help of a team of experts. The community energy society / enterprise will be established and registered. The detailed project report with engineering designs will be developed for funding by MNRE. A series of training and capacity building exercises will be carried out at the identified project site. Identification and establishment of an efficient fuel chain, with the involvement of the local youths will help in increasing efficiency of the system along with ensuring sustainability. This project will be a pilot scale community-based energy generation plan, which will be implemented through the state nodal agency for renewable energy.

Objectives of the TOR

The objective of this TOR is to outline the detailed approach for the project to develop an appropriate community energy generation plan and capacity building of the communities with respect to the energy generation system adopted. This TOR will also look in to the aspects of revenue generation for the local economy, creating employment, building community resilience to climate change, and maintaining low carbon consumption in the district.

Scope of work

This project will be a pilot scale community based energy generation plan for the district and will be the first of its kind in the state. This project will lead to development of an energy generation plan and the most effective system for energy generation, which can be used as a model for the entire state. Once the model is developed it requires minor adaptation for replication within the state, including remote villages, fringe villages of Kaziranga National Park, Schools and Colleges, Religious places etc. through the State Nodal Agency for Renewable Energy.

A community energy users association in the form of an enterprise will be developed, headed by Village Head Man/Women, which will in future monitor the functioning of the system and be responsible for OPEX. The District Commissioner's office has proposed that it will link the society with schemes under the national and state government to provide technical and financial support for the system and its timely upgradation.

Majuli Cultural Landscape Management Authority will support the project by mobilising community members to adopt the community energy generating system. National Experts will be hired to conduct training and capacity building exercise for the members of the established society and other community representatives.

Rural women of the district will be recognised and included as an important stakeholder in the plan, which will add to their empowerment. The plan will help in to reducing various challenges of the sectors like health, education, local transport and livelihood in the island district, thereby increasing the adaptive capacity of the community.

This activity will be carried out in 4 months from 15 January 2017 to 15 May 2017.

Methodology

It is proposed to follow the steps listed below to achieve the objective of this work.

Step 1: Establish the energy needs of the Majuli Island population through a rapid energy needs assessment. Developing a detailed energy map for Majuli with components listed below.

Step 2: Mapping of the district to identify the best system (Bio – gas/ solar/solar-wind hybrid) for co-generating electricity for different locations.

Step 2.a : Mapping of the community profile and contextualising the community enterprise model (developed for ASSAM BY MSE) with Majuli community data

Step 3: Development of a Draft Community Energy Generating Plan, that provides a guideline for establishing and operationalising the society and identifies the need and nature of capacity building required for smooth functioning of the society.

Step 3 a: Establishment of the Community energy enterprise and chartering its rules and regulations

Step 4: Validation of the Community Energy Generating Plan (DPR For one project) with concerned stakeholders (AEDA, District Authority, Community Leaders).

Step 4 a: Validation of the Energy Users Association (Community Enterprise)

Step 5: Submission of the (DPR for CAPEX) Community Energy Generation Plan (one project) to AEDA

Step 6 : Ongoing :Capacity Building workshops for the villagers will be held parallelly.

Details of activities to be undertaken:

Step 1: Establish the energy needs of the population in Majuli

Under this activity, the status and pattern of energy use in the district will be analysed through a rapid energy needs assessment. This will help to identify the energy needs and challenges of the population living in Majuli.

The Feasibility Study to be presented with a thorough executive summary and must be accompanied by a PowerPoint presentation that encapsulates all the key features of the study.

The executive summary and PowerPoint presentation to be compiled in such a manner that they can be used by the senior government officials for decision-making purposes.

Step 2: Mapping of the district to identify the best system

Once the need assessment is completed, existing and potential sources/systems (Bio – gas/ solar/wind-solar hybrid), available resources for energy generation as well as existing challenges will be mapped, analysed and evaluated to identify the best system for co-generation of electricity at different locations of the state.

As a minimum, “Sustainable community energy generating model in Majuli, Assam” will aim to include:

- Available solar resource data and the previously generated solar maps as a basis of feasibility studies
- Cost-benefit analysis for different technological options.
- Availability, inter-operability, reliability, scalability and maintenance aspects; defining communication, command and control systems, load consumption, system

architecture definition and roadmap (including layout, modules, inverters, transformers, meters, etc.), relationship between the features, system output and performance should be taken into account.

- Shading analysis report including
 - An assessment of the inter-annual variation and yield confidence levels.
 - Consideration of site-specific factors, including soiling or rain, and the cleaning regime.
 - Electrical losses Influence of temperature variances on the efficiency of the plant.
- Transmission line and grid connection, including cost and potential barriers to achieve grid connection.
- Power off-take options (what voltage, who the off-taker would be etc. through analysing available existing grid condition).
- The investment plan analysing stakeholders and community acceptance, demand and market sizing, customer profiling, return on investment, costs and revenues trajectory, running and recovery costs, distribution channels, risks, and profitability and performance analysis.

Step 2.a : Mapping of the community profile and contextualising the community enterprise model (developed for ASSAM BY MSE) with Majuli community data.

- Secondary community data to be collected and verified by field sampling
- Community interactions will be organised to ensure buy in of the enterprise and seek community contribution to the proposed enterprise model.

The Final Report, comprising all the above deliverables, to be compiled in a single report in Word format (with relevant annexes), and delivered as both electronic and hard copy documents.

All financial models to be in Excel format, and must clearly set out all assumptions; sensitivity analyses carried out; and model outputs. The financial models must be sufficiently adaptable for use by others.

Step 3: Development of a Draft Community Energy Generating and Utilization Plan

Following the mapping of sources, resources, potentials and challenges, a Community Energy Generation Plan will be drafted which will act as a guideline for establishing and operationalising the society. The plan will also help to identify the need and nature of capacity building required for smooth functioning of the society. *The plan will also look into the options of integrating the existing schemes and programmes of the state and national government for improved efficiency of the system.*

The key deliverable from the plan will be one DPR on energy generation which will include the following in addition to the other aspects of a standard energy DPR as per norms of AEDA.

- The project site and boundary area and approximated site plan and layout. This will include topographic mapping of the site(s). Available geophysical, soil, climate, solar and weather data will have to be included.
- A conceptual design of the project, including estimation of installed capacity depending on the type of best available technology.

- Estimated anchor load.
- The cost estimates for development, construction and operation of the project and predicted revenue, based on the available resource data, as well as indicative quotes or comparison with similar projects.
- The land ownership and land use status.
- Land requirements, availability, and contractual arrangements.
- Permitting requirements and expected timeline and estimated costs.
- Financial modelling detailing financial assumptions, energy yield, and evaluation of results depending on available primary and secondary data.

Step 3 a : The community society will be registered and a charter of rules developed for the society to manage the OPEX of the energy systems in the future. Further, a project steering committee will also be formed to look after the smooth functioning of the plan

Step 4: Validation of the Community Energy Generating Plan and finalisation of DPR

The plan will be validated with the district stakeholder's and concerned authorities and Government counterparts through a workshop.

Step 5: Final Community Energy Generation Plan and Implementation

Following the validation workshop, the plan will be finalized including the recommendations of the workshop

Step 6: Capacity Building of community to install and manage the energy systems: There will be capacity building activities like workshops on new techniques of energy generation, energy efficiency for the rural community.

Outputs/ Deliverables:

- a. A rapid energy needs assessment leading to energy generation mechanisms against identified needs and resources – Feasibility / scoping report
- b. A Community Energy Generating Plan – Strategy that AEDA can use in future
- c. An institutional set up in the form of a community enterprise (Energy Users Association) will be developed for overall monitoring of the system, to be registered in time – Community Enterprise framework and one model set up
- d. A DPR for one project known as Energy Generation Plan 1 will be submitted to AEDA - available for replication across different locations of the state.

1. Expertise:

Technical Lead (30 days):

A renewable energy management expert with at least 10-15 years of experience that specialises on rural off grid community based energy planning, DPR preparation and /or CDP preparation and has experience of working with local governments and communities , particularly Indian Government and city governments on key schemes in the energy sector.

Senior Consultant 3 nos (30/30/ 40 days):

A climate change adaptation / community specialist of at least 10-15 years of senior management experience of working directly on climate resilience strategies. Should have experience in developing plans, DPRs, models for community charters.

Supporting Consultant 3 nos- (30/30/40 Days):

Consultant with an experience of working in Northeastern India or landscapes and is able to support the lead consultant in the achievement of all deliverables as per the ToR and especially in review of literature, analysis of energy needs, conducting various consultations and community interactions analysis and delivery of outputs as mentioned and approved in the proposal.

Work Plan: 2016-2017

Quarters/Months	Q4		Q1		
Activities	Jan	Feb	Mar	April	May
Project kickstart and background data work					
Study on status and pattern of energy use in Majuli					
District Mapping to identify the best system of energy generation					
Development and Validation of Community Energy Generation Plan					
Capacity Building of the communities on Energy Generation					
Set up and operationalization and setting up of monitoring committee of the energy generation system					

At all stages, draft outputs will be submitted for comment to the Management lead. Final outputs, incorporating any comments, will be submitted to the Technical and Management lead for final sign-off.