Title of the Assignment: Scoping study for agriculture-energy nexus in rural areas of Delhi

List of abbreviations

1. Introduction

2. Project description

A.1 Analysis of problems and potentials (in relation to the development cooperation measure)

A.2 Description of the technical cooperation measure

A.2.1 Objective and indicators

A.2.2 Target group(s) and stakeholders

A.2.3 Executing agencies and partner structure

A.2.4 Design of the development cooperation measure

A.2.5 Results and risks

3. Terms of Reference

I. General Terms of Reference for the firm of consultants

II. Detailed specifications

III. Terms of Reference for the experts

IV. Specification of inputs

1. Introduction

This document defines the terms of reference (TORs) for a scoping study for agriculture-energy nexus revenue villages of Delhi's South-West district to enhance livelihood opportunities for farmers. Section 2 provides the background of the IGEN-ACCESS project, while Section 3 defines the terms of reference for a competitive tendering. Firms of consultants or consortiums which would like to bid need to meet all requirements laid out in this document.

2. Project description

A.1 Analysis of problems and potentials (in relation to the technical cooperation measure)

India has emerged as one of the fastest growing economies in the world with an impressive growth rate of 7.9% for the year 2015-16 exceeding expectations and earlier predictions of 7.6%. The current government of India prides itself on being progressive, and claims that India's current economic and social development is the result of systematic policy driven proactive governance.

As per the Economic Survey 2017-18, the agriculture sector employs more than 50 percent of the total workforce in India and contributes to 17-18 percent to the country's GDP. The Government aims to double the income of farmers by 2022. Traditionally, the approach followed for this has been by increasing the agricultural output. Newer strategies like adopting newer technologies, innovative cropping patterns, value addition, improved market linkages and other allied sectors are now also explored to increase income prospects. In addition, the economic survey also notes that the rate of mechanization in the sector is increasing at a very fast pace. Also due to increased migration of men from rural to urban areas, there is an increased number of women who are playing multiple roles as cultivators, entrepreneurs and laborers.

Renewable energy applications in agricultural sector provide multi-pronged benefits. These sources offer a great scope for enhancing the savings potential for farmers, especially for value addition applications. Solutions like renewable powered cold storages, drying, thermal applications for product enhancement (especially in dairy industry) etc are some of the examples in this regard. Moreover, use of clean sources of energy are vital for sustainable agriculture practices and preventing climate change, hence reducing greenhouse gas emissions.

The Indian farmers have installed a large number of electric and diesel pumps in India to reduce their dependence on monsoons. According to Central Electricity Authority agriculture sector consumes 18.33 percent of electricity, mainly for irrigation purposes. Although the agricultural tariffs are subsidized, reliability of supply is of concern to the farmers. Solar water pumps offer a good opportunity for reducing the dependence on diesel and grid electricity for irrigation. Different models are being tested to bringing in economic and operational viability of solar water pumps, including on other productive uses of panels, when the pump is not in use.

The government has also introduced the Kisan Urja Suraksha Evam Utthaan Mahaabhiyan (KUSUM) scheme to incentivize farmers to run solar farm water pumps and use barren land for generating solar power to have extra income. The center will provide Rs 48, 000 crore financial assistance under this scheme for different elements of the programme.

Similarly, allied activities like dairies and other value addition processes like milk processing, baking, grinding etc also involve energy consumption. This is both for thermal as well as electric demand from the units. Biogas offers a good potential for areas with dairy clusters. This will not only enable

supply of clean energy at more affordable rates in long run, but also provide avenues for production of organic manure from the biogas plants. Biogas applications can be both for agricultural and allied sector and at the household level.

As highlighted above, there are multiple other renewable energy technologies, which can be applied for direct agricultural applications and value addition of the produce. This would enable increased product value and at the same time enhance livelihood opportunities for local population. Strong market linkages are vital for sustaining such initiatives in a longer run. Increased renewable energy applications are vital for combating climate change impacts.

The present study proposes to explore the potential for enhancing the income of farmers in Delhi's rural areas by increasing the share of renewable energy applications in agricultural applications.

Impact

The intended impact of the study is to increase income and livelihood opportunities for farmers by enhancing renewable energy applications.

Outputs

A scoping report covering the below aspects:

a. Existing and projected potential application of renewable energy for value addition and livelihood generation
b. Opportunities for enhancing income/livelihood from agricultural and allied activities through renewable energy applications and profitable market linkages
c. Recommendations on concrete actions (with identified geographies) which can be adopted for achieving the intended impact.

Please refer to Section 3 for more detailed description of aspects to be covered in the scoping report.

A.2 Description of the technical cooperation measure

The Indo-German Energy Programme – Access to Energy in Rural Areas (IGEN-Access) is a bilateral cooperation project carried out by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ) and the Indian Ministry of New and Renewable Energy (MNRE).

A.2.1 Objectives and indicators

The objective of IGEN-Access is to improve the sector environment for rural energy enterprises, and strengthen the ability of enterprises to deliver renewable energy solutions to rural communities.

The areas of activities for IGEN-Access are:

Innovation and Entrepreneurship

This entails working with Rural Energy Enterprises or their networks to enhance their delivery of energy access solutions to rural households. This measure is delivered through training, access to mature and proven technologies, enhancing market intelligence, upgrading logistics and value chains, and business model development. IGEN-Access will facilitate the participation of women as enterprise owners, in particular.

Public support programmes / schemes

The intervention focuses on developing capacities of government agencies to deliver energy related services and supporting relevant institutions in developing and implementing public sector programmes and providing support in effective implementation of energy access solutions.

Access to Finance

This activity entails development of financial products such as loans and lease instruments for rural energy enterprises and consumers. Creating awareness among key stakeholders, particularly from private and public financial institutions is a major measure too.

The programme indicators are:

Outcome Indicators

OC1: 75% of rural enterprises supported by IGEN-Access directly or indirectly confirm that the business conditions (e.g. business models, training programmes, financing, public support programmes, market intelligence) have improved significantly during the programme period.

OC2: 20 rural energy enterprises- six of which are managed by women-which have been trained by programme partners have developed business plans to address 25,000 Households.

OC3: Two financial instrument tailored to the requirements of rural energy enterprises or households has been introduced on a national or state level to allow 10,000 Households access to energy.

OC4: Four national or state level programmes/ regulations (e.g. standards/guidelines) to support access to energy for which development was assisted by IGEN-Access are adopted.

Output Indicators

(OP)A.1: 40 further rural enterprises (of which 12 are managed by women) received technical training and / or business development services from organisations which were supported by the programme.

(OP)A.2: A renewable energy sector network (e.g. CLEAN) offers three services (e.g. trainings, clean cooking forum, access to finance, standards) to sustainably strengthen the sector.

(OP)B.1: Two new business models to use renewable energy for improving access to energy are piloted by energy enterprises (e.g. hybrid model, solar cold storage, solar water pumps).

(OP)C.1: Proposals for four financing instruments tailored to the requirements of rural energy enterprises or households have been presented to financial institutions (e.g. banks, cooperatives, enterprises).

(OP)C.2: Representatives of five different organisations providing financial services (e.g. banks, cooperatives, enterprises) who participated in trainings and awareness events on rural energy finance confirm their increased willingness to fund rural energy enterprises or consumer of energy products.

(OP) D.1: Proposals for the design / implementation of financial and technical guidelines for four national (e.g. on cook stoves) or state level energy access programmes/regulations/standards are available.

(OP)D.2: One action plan for clean cooking energy in India was adopted by the inter-ministerial roundtable.

(OP)E.1: Market intelligences (e.g. market barriers, user requirements) of 3 products or services (e.g. solar water pumps, solar cold storages, energy efficient cook stoves) are prepared and available for enterprises of the sector.

The deliverables achieved by the activity under this tender will be evaluated using (OP) A.2 and (OP) A.1.

A.2.2 Target group(s) and other stakeholders

IGEN-Access will work through enterprises, private sector institutions, corporates, the Central Government, State Nodal Agencies, training institutions, financial institutions and NGOs to improve energy access for and benefit:

- The rural population without access to energy
- Poorest strata of society
- Women

A.2.3 Executing agencies and partner structure

The IGEN-Access programme's implementation agreement is signed between Ministry of New and Renewable Energy (MNRE) and the German Federal Ministry for Economic Cooperation and Development (BMZ). On behalf of BMZ, GIZ is implementing the IGEN-Access programme.

According to the bilateral agreement between the two governments, BMZ will establish and finance the IGEN-Access programme, and based on the implementation agreement between MNRE and GIZ, MNRE will provide corresponding inputs such as:

- Personnel
- Infrastructure
- Logistical support
- Professional support (technical)
- Financial support
- Access to stakeholders
- Facilitate access to financial resources

IGEN-Access is to focus on Uttarakhand, Uttar Pradesh, Bihar, West Bengal and North Eastern Region. The State Nodal Agencies (SNA) of these states are also implementation partners. Other partners are public and private financial institutions, renewable energy enterprises, training providers, Non-Government Organisations and a range of other Government Departments associated with rural development.

A.2.4 Design of the technical cooperation measure

A.2.4.1 Methodological approach and use of instruments

The IGEN-Access programme has been built using the management model "Capacity Works", developed for GIZ. IGEN-Access programme approach has taken into consideration the five success factors necessary for a fruitful cooperation which are strategy, cooperation, steering structure, processes and learning and innovation.

The programme was developed by GIZ to support the change processes desired by the partner country (India) with respect to access to energy. The programme objectives and results were agreed with MNRE. The strategic plan identifies a range options for capacity development.

The programme used the results model tool to map the agreed objectives. It also provides a better overview of the systemic context in which the IGEN–Access is working. The results model also highlights the project boundaries and the key results (outputs and outcome) and how they are embedded in the overall context.

A stakeholder map was used to provide insights for effectively crafting relations with specific actors for achieving project outputs and outcome.

The decision making process is being managed by a steering committee comprised of decision-makers from the MNRE and senior representatives of GIZ. The steering committee meetings are conducted as part of the overall energy coordination meeting which take place every second/third month. On working level MNRE is updated on programme activities and any other developments concerning the project on a monthly basis. This meeting is also used to seek support and inputs from MNRE.

The IGEN-Access programme approach focuses on processes of cooperation systems for delivering services that are relevant to the sector and directly contribute to the outcomes and outputs of the programme. This is being achieved by defining clear objectives and initiating activities that directly contribute to these objectives. The programme has also incorporated learning processes through capacity development activities at individual, organizational, network and societal level. The programme has a clearly defined communication process in place. These main output processes and learning processes are complemented by support processes and a steering process. The support process include result based monitoring, knowledge management, strategy development and updating, project progress reporting, and internal steering.

Learning and innovation is an integral part of the IGEN-Access programme. To start with, the programme has analysed its predecessor programme, IGEN RE, and incorporated the lessons learned in designing the programme. Every year a strategy workshop is conducted to analyse the programme and employ necessary course correction. Capacity development activities are undertaken at different levels.

Also the Binding Minimum Quality Standards of the GIZ are used to assess the status of the IGEN-Access programme annually. The assessment focuses on eight key aspects using a five level scale. These aspects are: Results Model, Stakeholder Analysis, Steering Structure/Steering Meetings, CD Strategy, Operational Plan, Results Based Monitoring, Implementation Agreement and Cross-cutting issues.

A.2.4.2 Interaction with other development cooperation programmes in the partner country

IGEN-Access is constantly in the process of identifying synergies related to energy enterprise development with other development cooperation programmes within GIZ as well as with other development agencies or partners. In the event any such synergies are identified IGEN-Access will establish communication with the respective organisations to collaborate for a mutually beneficial outcome.

A.2.5 Results and risks

A.2.5.1 Macroeconomic, socio-economic, socio-cultural, political and ecological assessment

In the offer of the IGEN-Access programme, policy markers are defined. They express the level of expectation with regard to the contribution of the project to BMZ's development-policy goals.

The marker system of the BMZ is based on DAC System and uses three levels:

Level 2= Principal Objective; Level 1= Significant Objective and Level 0= not targeted to the objective.

Principal objective means that the programme intends to achieve results directly in this area. Significant objective means that this marker is not decisive for the developmental intervention but anchored in the concept of the project. Both types of the objective should be considered in the conceptualization of the project.

The IGEN-Access programme has two marker with level 2 (LE 2) in the area of Rural Development and Food Security and Climate change mitigation and level 1 in the areas of Socio-Economic Effects, Participative Development and Good Governance, Gender and Protection of Environment and Natural Resources. These are the cross cutting issues (Programme Vorschlag Teil B TZ Modul = Programme offer Part B TC Module, page: 12-13).

a. Rural Development and Food Security (LE - 2)

Rural Development and/or Food Security is a major objective (project objective considering the programme objective) of the intervention and is crucial for its implementation. The improvement of energy access in rural areas contributes to improved agricultural production (solar pumps) as well as to more food processing (e.g. drying and cooling facilities) and more efficient cooking and improved health conditions of women.

b. Socio-Economic Effects (AO – MSA)

The project indirectly addresses the economic potentials in rural areas and contributes to poverty reduction at sectoral level (e.g. through the development of local value chains, productive uses of energy).

c. Participative Development and Good Governance (PD/GG – 1)

The project will indirectly contribute to improvements in the political frameworks and their implementation and thus pays high attention to participation of all actors in the political as well as private sector. Continuous dialogue with selected actors (financial institutions, private entrepreneurs, start-ups, etc.) will be applied in developing such political frameworks/guidelines.

d. Gender (GG – 1)

New business models will pay attention that women get access to training and other capacity development interventions and the implementation of pilot projects will be gender sensitive and effects of the pilot projects will be gender sensitively monitored.

e. Protection of environment and natural resources (UR – 1)

The project advices the government and private institutions to use more clean and renewable energy technologies/sources (e.g. sun, wind, water, biomass) and this will reduce negative effects on the environment (e.g. reduce pollution of air, soil and water through diesel generators for irrigation etc.).

f. Climate Change (KLM – 2)

Significant contribution through pilot projects and replication of viable business models to increased use of renewable energy which contributes to the reduction of GHG emissions (e.g. energy efficient biomass cook stoves, solar water pumps).

These cross cutting issues have to be considered in formulation and specification of the strategic options as well as in developing activities and work packages.

A. 2.5.2 Assessment of the risks

The risk profile of the programme is medium. Some of the risks identified are:

a) The training and educational institutions may not take new topics for supporting entrepreneurs in their portfolio. The entrepreneurs may not make use of the new training offers.
b) Financial institutions may not develop tailor made products attractive for private enterprises.

The project is also expected to strengthen the network with key actors and ministries focused on poverty reduction (Ministry of Rural Development, Ministry of Power) and ensure that the financial instruments to be developed are oriented towards the needs of the stakeholders. General agreement between different ministries and/or stakeholders is challenging.

3. Terms of Reference

I. General Terms of Reference for the firm of consultants

<u>Background and context</u>

Delhi is divided into eleven districts with an area of around 1483 sq km. The South West district has population of approx. 1.8 million, covering an area of 420 sq km[1]. Out of this area, 153 sq km falls under rural area as per 2011 Census.

South West District of Delhi is surrounded by West District of Delhi on its North, Jhajjar on its West, Gurugram on its south and South District of Delhi on its East. It is bounded by the border of Haryana comprising of Gurugram, Bahadurgarh & Jhajjar and West, Central, New Delhi and South District of NCT of Delhi. The district is divided into three sub-divisions as below:

1. Kapashera
2. Najafgarh
3. Dwarka

The Kapashera Sub Division is predominantly rural, Najafgarh Sub Division is mostly and the Dwarka Sub Division is a mix of both urban and rural. A large area of Kapashera and Najafgarh is categorised as green belt and agricultural activities and allied are being undertaken in the area. It is to be noted that area within 3km of state border in this district is categorised as green belt. There

[1] http://www.delhi.gov.in/wps/wcm/connect/DoIT_SouthWest/south+west+district/home/general+information/introduction

are 30 villages in Kapasheda and 27 villages in Najafgarh area[2]. Agencies like NABARD, Khadi and Village Industries Commission, Indian Agriculture Research Institute, National Institute of Food Technology Entrepreneurship and Management, National Dairy Research Institute etc are actively supporting farmers and entrepreneurs in the area.

The Delhi Government is interested in incentivising farmers in the area to improve productivity through agriculture and allied activities. This will also help in maintaining green cover of the state. On the other hand, stakeholders in the area are progressive and are interested in taking forward innovative steps for increasing their incomes from farms and other allied activities through value addition activities. Few examples include dairy and its value chains, horticulture, fish and shrimp farming, baking units and multiple other proactive initiatives being undertaken in the area. There are self-help groups and farmer producer organisations in the area, which are involved in value addition activities for agricultural and dairy produce. Key crops cultivated in the area include wheat, mustard, spinach, jowar and bajra.

A dedicated Krishi Vigyan Kendra is also located in Ujwa village. Other agencies like Khadi Village Industries Commission, Indian Agricultural Research Institution, National Dairy Research institute, National Institute of Food Technology Entrepreneurship and Management, Banks, etc are also active in the region and are actively providing support to the stakeholders.

Access to reliable and affordable energy for electrification as well as thermal applications is vital for increasing avenues for livelihoods generation and income for communities. The villages to be studied under this project are connected with grid supplied electricity, which is used for varied uses, like agricultural, commercial and domestic. However, reliability of supply is an issue, particularly for commercial applications.

The current project aims to scope out opportunities for agriculture and energy nexus, which will help in increasing income and savings from agriculture and allied activities. The study aims to explore opportunities to integrate renewable energy sources in the existing energy mix (both grid connected and off-grid), which can help in enhancing livelihood opportunities. The renewable energy sources to be studied will cater to both thermal and electrical applications for direct and indirect use for agricultural purposes. The identified activities would provide opportunities to increase income from agriculture and allied activities.

Renewable energy is considered to be an integral part of sustainable agriculture and value chain. It is expected that increased use of renewables in the overall energy mix for this purpose will bring in monitory benefits to the farmers. Additionally, climate change and environmental gains will also be there due to reduced dependence on fossil fuel based energy.

Challenges and knowledge gap

Delhi has a special status amongst union territories, which provides many merits and demerits to the region. The green belt/ agricultural areas in Delhi do not get all the advantages as other states receive due to this special status. Awareness about the governmental schemes to avail benefits and accessing finance is limited. Moreover, challenges on the operational side like availability of labour, market linkages, single window clearances are some of the challenges faced by the farmers in the area. The ground water of the area is saline.

Scope of work

The overall purpose of this study is to scope out the existing scenarios and usage of energy (both electrical and thermal) in the area. The assignment will also bring out options that can be proposed

[2] http://www.delhi.gov.in/wps/wcm/connect/DoIT_SouthWest/south+west+district/home/general+information/villages

to stakeholders (both beneficiaries and government) for enhancing income from agriculture and allied services by increasing the share of renewable energy in the energy mix.

Areas to be covered in the study

Under this project, villages falling in the green belt and areas where allied activities for income generation are carried out will need to be covered. Around 12-15 villages in Kapasheda and Najafgarh are to be studied as part of this project. Indicative criteria for selection of villages include the following:

- Villages marked in the masterplan which cannot be converted for non-farm activities
- Percentage of agricultural land in the village and number of people dependent on agriculture
- Water table and water quality
- Proximity to markets
- Willingness of inhabitants to partner in this programme (as this would entail economic and other contributions)
- Connectivity to grid and other infrastructure for solar installations
- Financial aspects (like access to banks or other MFIs)
- Presence of SHGs, Farmer Producer Organisations and other similar institutions related to agricultural and allied activities

In addition to the above, the consultant is to suggest additional/ modify the criteria in consultation with IGEN-ACCESS. Villages which may be considered include Bakkar Garh, Issapur, Dhansa, Ghalibpur (in Najafgarh sub-division), Deorala, Rawata, Ghumman Heda, Shikarpur, Tikra, Nanakhedi, Ragupur (in Kapasheda sub-division). Other villages like Mitraon, Chawwla etc may also be considered as there are many activities ongoing with the SHGs and FPOs. Finalisation of villages will be done in consultation with IGEN-ACCESS and Delhi government.

The study will constitute an feasibility analysis of (renewable energy integration in) the existing and extensive scoping for potential future interventions that can be taken up in the area to achieve the impact as indicated earlier. The firm of consultants needs to apply the following methodologies: background research, empirical studies for extensive field reviews, stakeholder interactions and analytical and informed inferences. All this will feed into:

a. Analysis and conclusions (including cost benefit analysis) for renewable energy applications and on enhancement for agricultural and allied activities
b. Recommendations on existing institutions (like SHGs, FPOs etc) present in the area which can be mobilised and trained
c. Challenges and barriers on market linkages

The study is divided into following packages, as below:

A. Detailed analysis of energy supply and demand scenarios of the selected villages are prepared
B. Agricultural value chains to assess the potential economic benefits that may accrue from agricultural and allied activities analysed
C. Opportunities for market linkages explored
D. Cost benefit analysis of the proposed interventions highlights the potential value add due to integration of Renewable energy in agriculture
E. Dissemination of results

The firm of consultants is expected to conduct the study in close cooperation with IGEN-ACCESS. The firm of consultancy shall provide a pool of experts to conduct the study. Consortiums are also welcome. The firm of consultants is in charge of providing advisory services, mission logistics, and quality assurance with timely reporting to GIZ – IGEN Access (as detailed out later).

The structure of all reports under this tender needs prior approval by IGEN-ACCESS. All documents will be composed in English and will have to be perused by a native English speaker. IGEN-ACCESS reserves the right to immediately return documents if grammar, punctuation, or spelling errors are found.

We expect the bidders to answer the following questions as part of their proposal.

1. What would be your approach and methodology for conducting the study?
2. What data would you capture to address the above mentioned issues? Please provide reasons. How would you make sure the data are available and correct?
3. What are the perceived risks associated with the different tasks under this work package? How does the bidder propose to mitigate these risks? How would the firm of consultants ensures the quality of deliverables (for all processes, indicators and project steps).
4. What type of data analysis methodology/techniques or data visualization techniques will be used by the bidder? Please elaborate the roles and responsibilities of different team members for implementation of your proposal.
5. Which stakeholders will be consulted and covered in the study?
6. What has been your previous experience in conducting such studies? Please give concrete examples (3-4 maximum), where your recommendations have been taken up for implementation by the government or other stakeholders.

In the following table, further requirements, indicators and activities (in continuation to the above) are defined. Please note that all documents, such as tables, lists, etc. (see also means of verification) needs approval by IGEN-ACCESS.

Indicator	Output	Activities	Key Indicators	Means of verification
Detailed analysis of energy supply and demand scenarios of the selected villages are prepared	report on desk based research and empirical studies prepared	Finalise criteria for selection of villages and identify villages on the basis of these criteria (12-15)	Criteria defined	List of villages identified
		Conduct background research through literature survey to understand historical trends of energy use	Research conducted	Report on desk based research
		Carry out empirical reviews to understand the existing trends in energy use in the selected villages	Empirical studies conducted	Brief write up on existing trends in energy use
		Undertake field reviews and stakeholder interviews to understand existing energy supply scenarios. Prepare a detailed questionnaire for feedback and review. Few indicative areas that can be enquired are: a. existing sources of energy (electricity and thermal) for farm and allied activities b. tariffs charged for different uses of electricity c. identify barriers for reliable and affordable sources of energy d. renewable sources of energy being tapped in the area	Field reviews conducted	Questionnaire on energy supply scenarios

		Undertake field reviews and stakeholder interviews to understand existing energy demand scenarios. Prepare a detailed questionnaire for feedback and review. Few indicative areas that can be enquired are: a. Sinks for energy (electricity and thermal) from the agricultural and associated sectors i.e. both farm and non-farm activities for direct and indirect use (including fisheries, SHGs, dairy etc) b. Estimated energy (electricity and thermal) requirement for the sinks identified above	Field reviews conducted	Questionnaire on energy demand scenarios
		Undertake field reviews and stakeholder interviews to understand potential energy supply scenarios. Prepare a detailed questionnaire for feedback and review. Few indicative areas that can be enquired are: a. Identify potential sources for generation of renewable energy and the technology that can be applied for both decentralised use or feeding back to the grid. Technology adoption options may both be decentralised for various direct and indirect applications for agriculture and allied activities and grid connected b. Estimate the total quantum of clean energy that can be generated from renewable sources c. Suggest areas, number and technologies that can be applied for setting up renewable energy plants	Field reviews conducted	Questionnaire on potential energy supply scenarios

		Undertake field reviews and stakeholder interviews to understand potential energy demand scenarios. Prepare a detailed questionnaire for feedback and review. Few indicative areas that can be enquired are: a. What can be the additional uses of energy (electricity and thermal) for value addition and additional livelihood generation b. What is the scope of renewable energy in sustainable agriculture and post-harvest processing	Field reviews conducted	Questionnaire on energy demand scenarios
		Desk based study on the water availability situation and its dependence on energy: This is for determining appropriate capacities of RE technologies (particularly solar water pumps) and suggesting suitable activities for value addition	List of literature for review identified	Background research document on appropriate RE technologies
		Propose concrete interventions for renewable energy solutions and proposed technology providers in specific areas to enhance livelihoods of farmers	Broad list of interventions and technology providers prepared	Report on concrete interventions for renewable energy solutions and proposed technology providers
	Concrete actionable recommendations proposed	Identify different government schemes and programmes which can provide support to the proposed intervention	Research on relevant government schemes/programmes conducted	List and description of proposed government schemes and programmes identified
		Share results with IGEN Access team and accommodate the suggested modifications	Meeting organised	Minutes of meeting
		Develop a report on this indicator	Draft index and report prepared	Final report covering all aspects of this indicator

Agricultural value chains to assess the potential economic benefits that may accrue from agricultural and allied activities analysed	Analytical report on ongoing/ existing agriculture and allied activities prepared	Study existing land use, cropping patterns and income profile from both agriculture and allied activities	Formats for study prepared	Report with details on the various aspects (as outlined in key indicator column) and recommendations on agricultural and allied activities to enhance incomes
		Study exiting value-chains for the identified agriculture and allied activities	Field and background study conducted	
		Propose activities for value addition and income enhancement through efficient electricity and thermal use in agricultural and allied activities	Activities' list analysed	
		Provide concrete recommendations on agricultural and allied activities to enhance incomes	Recommendations shared with IGEN-ACCESS team	
	Report on potential for setting up new enterprises for energy use in agriculture and allied sectors prepared	Identify opportunities for new offgrid and grid compatible renewable energy enterprises to set up businesses using renewable energy, including on waste to energy, organic, farming, dairy product enhancement etc	Detailed list of opportunities prepared	Report covering a) aspects outlined b) opportunities for capacity enhancements and income enhancement of institutions c) job opportunities
		Study and analyse the existing institutions (like SHGs, FPOs etc) in the area	Existing institutions analysed	
		Propose areas where capacities of these institutions can be enhanced to achieve project's intended impact	Areas for capacity building identified	
		Assess opportunities for job creation	List of opportunities prepared	
		Identify income enhancement opportunities for SHGs, especially women led SHGs, using enhanced use of renewable energy	List of income enhancement opportunities prepared	

Opportunities for market linkages explored	Detailed recommendations report on opportunities for market linkages developed	Undertake reviews to assess the potential areas for value enhancement of different products in the study area	Areas for value enhancement identified	a) list of potential areas for value enhancement b) list of barriers and challenges c) list of options for market linkages d) detailed processes documented for tie-ups
		Identify existing barriers and challenges identified for market linkages and options to mitigate	Barriers and challenges identified	
		Explore options for market linkages of the products through haats, opportunities for tie-ups with main stream outlets for agricultural produce and allied activities	Options identified and documented	
		Detail out process on how these tie ups can be achieved	Process identified	
Cost benefit analysis of the proposed interventions highlights the potential value add due to integration of Renewable energy in agriculture	Cost benefit analysis study prepared	Assess feasibility of different renewable energy interventions based on technical and operational factors and the qualitative benefits that can be derived out of it	Feasibility study conducted	Report on technical feasibility and cost-benefit analysis with qualitative and quantitative assessments (as mentioned in key indicators)
		Undertake a quantitative analysis of costs/investments required for proposed interventions and pay-back period	Formats for quantitative assessments prepared	
		Prepare a detailed cost benefit analysis report with quantitative and qualitative assessments	Draft report prepared	
Dissemination of results	Dissemination workshop organised	Identify key stakeholders for dissemination of results to enhance potential for uptake (farmers, SHGs, FPOs, local administration, technology providers, KVK etc.)	Stakeholder chart prepared	Workshop organised and feedback incorporated in final report
		Organise a workshop for dissemination of findings and feedback from the stakeholders for fine tuning in final report	Workshop designed and organised	

Monitoring and evaluation

Monitoring and evaluation is an integral part of all GIZ projects. Monitoring provides information on the results that the project activities achieve, thereby allowing to evaluate the strengths and weaknesses of the activities implemented.

The IGEN-Access programme uses a Results-Based Monitoring (RBM) system to continuously review the progress in achieving the objectives of the programme and to take corrective actions where necessary.

For this tender, a project monitoring sheet (PMS) will be developed in consultation with IGEN Access. The format for the PMS and guidance on developing and maintaining it will be provided by GIZ. The consultancy/firm has to update the PMS on a monthly basis and submit to GIZ. The PMS will help provide inputs to the RBM system. Thus, the firm of consultants is to provide evidence how it is going to measure the progress of the project and provide/update the respective data. The firm of consultants is expected to respond to changes flexibly, especially if the project is in danger of straying from the defined results corridor

RBM and PMS are key steering tools in this project.

II. Detailed specifications

General

The consultancy/firm needs to demonstrate following ability through adequate references and documents.

- Provide evidence of permissions to operate in India for international staff seconded or any other proposed collaboration in India
- Provide evidence of at least 5 years of offering and completing similar services in comparable organizations in India (e.g. preparing and conducting surveys, statistical analysis, research projects of similar nature)
- Demonstrate ability to work in a highly collaborative environment with teams that are subject to time and skill constraints
- Demonstrate ability to manage contracts of this magnitude with reference to financial and administrative functions.
- Provide evidence of knowledge and experience of contexts around decentralized energy sector and nexus with renewable energy technology applications, particularly for income enhancement
- Prior demonstration on selection and management of key staff members as described below for proposed tasks in various roles of leaderships, advisors, managers etc.
- Evidence of working with a network of national and international research institutes

Quality assurance and other requirements

To ensure the quality of the outputs the firm of consultants has to meet the following requirements:

1. Reports or documents pertaining to the project and prepared by the firm of consultants need to be thoroughly verified prior to submission. Sub-quality deliverables would not be accepted; Please note: all documents should be developed either by the project managers or the team leader (see terms of reference for the experts)
2. It is expected that all documents will undergo a final proof read by the team leader
3. All interviews including focus group discussions will be recorded and documented, that is transcribed in English;
4. The firm of consultants ensures that IGEN-ACCESS staff is briefed continuously on the progress of the project and informed immediately on any changes whatsoever (e.g. delays);
5. IGEN-ACCESS lead will be updated in advance about the planned meetings, who would accompany the project team as per availability
6. The selected team members need to have sensitivity regarding gender issues and have a sound understanding about India and the Indian culture
7. All meetings will be documented by the firm of consultants. The minutes of meetings need to be approved by IGEN-ACCESS. The consultant is to propose a format for steering meeting and minutes.
8. The firm of consultants is not allowed to replace project staff without prior approval by IGEN-ACCESS.
9. The assignment requires extensive field visits and stakeholder interactions by experts

Timeline

The project period is 6 months and starting May/June 2018. The bidders should design their technical and financial bids considering the given timeline.

Deliverables

During the project period, the firm of consultants is expected to provide the following deliverables

1. Updates (conference call or in special cases one to one meeting) on a fortnightly basis on project progress.
2. Inception report with schedule of deliverables as defined in the terms above to be delivered within the first two weeks of the project.
3. Project monitoring sheet (form provided by IGEN-ACCESS) within the first two weeks of the project
4. All reports and documents as defined in the terms above. The consultant will provide a mid-term progress report, a final scoping report and timely presentations (2-3) to Delhi government.

Programme Steering Structure

The firm of consultant will report to a Technical Expert (to be nominated) from the GIZ – IGEN-Access programme. The firm of consultant is to designate a team lead.

A steering meeting will take place once in two months at the GIZ premises in Safdarjung Enclave/Delhi. The steering meetings will be attended by the core personnel of the project team (team lead, all other experts). Depending on situation IGEN-ACCESS reserves the right

to demand from the consultant that additional personnel will attend the meetings (e.g. enumerators, interviewers).

Structure of the proposal

The proposal should contain a very brief company profile followed by a detailed approach and methodology to execute the project. The proposal should also contain the project timeline highlighting milestones and deliverables. Please elaborate the roles and responsibilities of the different team members in the proposal. Qualifications of the organization (information on similar projects) and team qualifications (CVs) should be provided in the annex.

Geographic Locations

The firm of consultants will need to be allowed to operate in India and any international staff seconded will need to have necessary permissions to work in India. Experts should be ready to travel within India, especially to rural areas in South West Delhi and other NCR regions.

Staff requirements

The firm of consultants is expected to provide a pool of experts (national). The pool of experts should encompass:

1. Project Management Specialist/Team lead
2. Renewable energy expert
3. Agriculture and allied activities expert for value chain development
4. Local economic development expert for market linkages
5. Junior expert/ admin
6. Professional writer/Communications expert

Human days for experts

No.	Personnel	No. of days
1	Project Management Specialist/Team lead (1)	35
2	Renewable energy expert (1)	35
3	Agriculture and allied activities expert for value chain development (1)	40
4	Local economic development expert for market linkages (1)	35
5	Junior expert/admin (1)	15
6	Professional writer/Communications expert (1)	5

III. Terms of Reference for the experts

To achieve the specified objectives, GIZ expects the firm of consultants to assign national experts for the project. This assignment requires extensive field visits and stakeholder interactions. The identified resources are:

1. Project Management Specialist/Team lead

Reports to – GIZ (assigned GIZ expert and GIZ IGEN-ACCESS lead)

Core Responsibility	Core Competencies & Requirements
• First point person of contact for the project • Ensure transparency and quality standards • Proof reading of documents • Acts as back stopper for the project on any human resource gap during course of project period • Checks on the fund utilisation and financial planning in consultation with the officer responsible for the commission at GIZ • Coordinates with government departments and other likeminded stakeholders building positive relationship • Develops a detailed action plan for the team members based on the agreed deliverables for the project • Responsible for reports and other reporting compliances as per ToR • Provides overall guidance and steer to the project team members • Leads on interactions with the government counterparts	• Master's degree in energy/agriculture or related field and at least ten years of operational experience • Minimum of ten years of work experience in programme management • Possess personal qualities of integrity, credibility, and commitment to execute mandate • Flexible and able to multitask; can work within an ambiguous, fast-moving environment, while also driving toward clarity and solutions; demonstrated resourcefulness in setting priorities and guiding investment in people and systems • Willingness to travel to rural locations • Knowledge of spoken Hindi in addition to English • Prior work experience in India is desirable

2. Renewable energy expert

Reports to: Project Management Specialist/Team lead

Core Responsibility	Core Competencies & Requirements
• Conduct background research on energy supply and demand scenarios in the area • Prepare questionnaires for empirical studies • Undertakes field visits for stakeholder interactions • Undertakes analysis of the existing and potential	• Should have higher education degree (minimum Masters) in energy/ environment or related field • Should have knowledge of spoken Hindi and fluency in English (speaking and writing) • Field experience of data collection through stakeholder interactions in rural areas • Strong communication and inter personal skills including presentation skills

opportunities for renewable energy interventions • Provide concrete recommendations, as detailed earlier • Prepared draft report on energy • Supports other experts as and when required	• Minimum of 5 years of work experience in renewable energy • Good report writing skills

3. Agriculture and allied activities expert for value chain development

Reports to: Project Management Specialist/Team lead

Core Responsibility	Core Competencies & Requirements
• Conduct background research on ongoing agricultural and allied activities in the area • Prepare questionnaires for empirical studies • Undertakes field visits for stakeholder interactions • Undertakes analysis of the existing and potential opportunities for RE integration in agriculture • Provide concrete recommendations, as detailed earlier • Prepared draft report on interventions in agriculture and allied activities • Supports other experts as and when required	• Should have higher education degree (minimum Masters) in agriculture or related field • Should have knowledge of spoken Hindi and fluency in English (speaking and writing) • Field experience of data collection through stakeholder interactions in rural areas • Strong communication and inter personal skills including presentation skills • Minimum of 5 years of work experience in renewable energy • Good report writing skills

4. Local economic development expert for market linkages

Reports to: Project Management Specialist/Team lead

Core Responsibility	Core Competencies & Requirements
• Conduct background research on existing market links for the finished products • Undertake empirical research • Undertakes field visits for stakeholder interactions, if required	• Should have higher education degree (minimum Masters) in rural management/ business administration or related field • Should have knowledge of spoken Hindi and fluency in English (speaking and writing)

• Undertakes analysis of the existing and potential opportunities for market linkages • Provide concrete recommendations, as detailed earlier • Prepared draft report on potential market linkages and the process involved in setting up these linkages • Supports other experts as and when required	• Field experience of data collection through stakeholder interactions in rural areas • Strong communication and inter personal skills including presentation skills • Minimum of 5 years of work experience in renewable energy • Good report writing skills

5. Junior expert/ admin

Reports to: Project Management Specialist/Team lead

Core Responsibility	Core Competencies & Requirements
• Provide support to the team in core project activities • Provide logistic and operational support to team members • Support in organising workshops and other stakeholder interactions	• Should have a master's degree in energy, agriculture or administration related subject • Should have knowledge of Hindi and fluency in English (speaking and writing) • Strong communication and inter personal skills including presentation skills • Should be a team player • Minimum of 2 years of work experience in related fields (quantitative/qualitative research)

6. Professional writer/Communications expert

Reports to: Project Management Specialist/Team lead

Core Responsibility	Core Competencies & Requirements
• Proof reading of documents (style, grammar, etc.)	• Should have higher education degree (minimum Master) in English/Journalism/related fields • 5 years of experience in proof reading/journalism

The firm of consultants may choose to subcontract some experts (2, 3, 4 and/or 6) in case the required competencies are not available within the organisation.

giz

IV. Specification of inputs

- Concrete tasks and assignment periods in the different thematic areas specified by GIZ through TOR. Before the concrete assignment, the consultancy/firm will develop an implementation proposal / work plan (assigned experts with CV, foreseen tasks, length of assignment (number of human-days in the country of residence) for discussion with the GIZ project manager and for final written approval by GIZ.
- The proposal shall clearly describe how the competencies of the individual experts complement each other to ensure that all required qualification are covered.
- The proposed experts have to be available from the start date of the contract.
- Reporting is expected as per terms above. Special reports can furthermore be required upon request by GIZ. The assessment of impacts of implemented activities shall be a key feature of all reports provided to GIZ.
- All written outputs of the assignment are to be submitted to GIZ as Microsoft Word and pdf documents. Before any project-related information is to be published or contacts with the media are to be established, these must be coordinated with GIZ.