

Market orientation

Upgrading Energy Demand Forecasting Model, Kenya. Reference 202410175

Organisation: The Netherlands Enterprise Agency, part of the Netherlands Ministry of Economic Affairs

Netherlands Enterprise Agency

The Netherlands Enterprise Agency (in Dutch: Rijksdienst voor Ondernemend Nederland, RVO) supports projects and collaborations that help create:

- A more stable business environment and solid entrepreneurship;
- More sustainable value chains;
- Better employment opportunities, especially for young people;
- Business process innovation (digitalisation);
- Sustainable trade and investment by Dutch companies in international markets; and
- Opportunities for companies to export to Europe and other regions.

More information about RVO can be found on: www.rvo.nl and <http://english.rvo.nl/> and [Developing a strong and sustainable private sector \(rvo.nl\)](http://www.rvo.nl/en/developing-a-strong-and-sustainable-private-sector).

Purpose of the notification

The purpose of the market orientation is to identify interest of organizations available and able to carry out the assignment as described below. So this market orientation is not a request for proposal. Interested parties are requested to express their interest and answer the questions below.

Name company	
Website	
Name contact person + e-mail address	
Can the party carry out the assignment as described below?	Yes / No
Can the party carry out the assignment within the maximum budget?	Yes / No
Is the party available to carry out the assignment from May 2025 up to May 2026?	Yes / No
Would the Consultancy firm carry out the assignment in association with other firms?	No / Yes as a joint venture / consortium / main contractor – sub contractor
Please give a short motivation why you are interested in this assignment for upgrading the energy demand forecasting model in Kenya. (max 1 A4)	

Extent and duration

The assignment will take place approximately from medio May 2025 up to 31 March 2026, but will start as soon as the contract is signed.

Budget indication

Maximum budget indication is €133.000 excluding Dutch VAT and (if applicable) including local VAT and fees.

Purpose of the project

The overall purpose of this project is to support the Kenyan Ministry of Energy & Petroleum to update the existing excel based electricity demand forecasting model.

Overview of the assignment

Upgrading the exiting electricity demand forecasting tool by

1. Undertake a review of the available data and current electricity demand forecasting excel based model to assess its suitability for load forecasting at national, regional and county level and the possibility of scaling it up to cover the whole electricity sector;
2. Update the regional demand and align it to the new KPLC regions namely; Nairobi, Coast, Mt. Kenya, North Eastern, South Nyanza, West Kenya, Central Rift and North Rift Regions;
3. Re-organize substation loads to fit into the new KPLC regions. This shall also involve adding in new substations that have been developed since the model was built;
4. Categorize electricity consumption by county to align demand forecast results with Kenya's 47 counties as outlined in the constitution. Expand the model to take care of emerging technologies such as data centres, e-mobility, e-cooking, green hydrogen, net metering, mini-grid systems, and captive generation and demand in order to capture latent demand not covered using the interconnected system;
5. Re-simulate the correlation analysis in order to update the factor connection rates between domestic consumption vs street lighting and domestic consumption vs small commercial consumption;
6. Expand the electricity demand forecasting model to incorporate power demand and related metrics for the residential, industrial, transport, service and agricultural sectors.

Tasks under the assignment

The consultant is expected to undertake tasks 1 and 2 as described below.

Task 3 'Capacity building' will be provided and funded by the Danish Energy Agency (DEA), part of the Danish Ministry of Climate, Energy and Utilities. The consultant is expected to consult and coordinate with DEA to ensure that the DEA experts are involved in at least:

- first on-ground dialogue with MoEP and local experts, obtaining knowledge of the existing tool and available data (Task 1, i & ii);
- the choice of method for the upgrading of the existing tool (Task 1, iii).

→ Task 1 – Review and update of demand forecasting tool - 5 months

In this task the consultant is expected to undertake the following:

- i. Fact-finding during an inception period resulting in a diagnosis of the available data and information and the existing excel based demand forecasting model (report of assessment done by TNO available at RVO) and assess the suitability of the data and existing model for load forecasting at the national, regional and county levels;
- ii. Conduct a comprehensive data analysis to identify spatial patterns, evolution of the different categories of customers, correlations, and potential outliers impacting electricity demand;
- iii. Based on the analysis, propose an adequate methodology for short, medium-term and long-term load forecast;
- iv. Update historical electricity consumption data at the national, regional, and county levels including analysis of load at sub-station level;
- v. Collect and integrate pertinent external data, such as economic indicators, demographic information, industry trends and government policy, at corresponding consumption levels (households/domestic consumers, commercial/industrial consumers and street lighting as well as urban and rural consumption);
- vi. Update the existing load forecasting tool or develop an intuitive and user-friendly tool for the electricity demand forecasting for use in subsequent forecasts;
- vii. Integrate emerging consumption trends (e-cooking, e-mobility, captive generation and mini grid consumption) into the tool;
- viii. Implement functionalities for data input, model selection, parameter customization, and forecast generation; and
- ix. Scale up proposed model to include a module on residential, industry and transport sectors load forecasting.

→ Task 2 - Load forecasting -3 month

The consultant shall:

- i. Undertake a medium (5 year) and long-term (20 year) electricity demand and forecast in three scenarios namely, Reference, Vision and Low. In doing so the consultant shall consider different assumptions for key factors but not limited to:
 - a. Electricity sales per customer category,
 - b. Electricity access,
 - c. Captive consumption,
 - d. Unserved electricity demand,
 - e. Off-grid demand,
- ii. Segregate the sales, electricity purchased and peak demand forecast data into National, regional (KPLC Regions) and County (47 counties) levels. The segregation shall further consider demand forecast for Residential, Industry, Agriculture, Service and Transport sectors.

Deliverables

The following deliverables are expected from the consultant in relation to demand forecasting:

1. Inception report – Comprehensively detailing understanding of the assignment, methodology, workplan of how the assignment will be executed, including an analysis of the existing demand forecasting tool.
2. Refurbished electricity demand forecasting tool capable of:
 - a. Forecasting electricity demand at National, regional (KPLC Regions) and County (47 counties) levels
 - b. Segregating demand into residential (Rural and Urban), transport, industrial, service and agricultural sectors.
3. Model documentation/user guide of the updated forecasting tool
4. 20 year electricity demand forecast at National, regional and all 47 counties and further segregated into Residential, Industry, Agriculture, Service and Transport sectors.

Contractor profile

Consultancy firm is free to express their interest in association with other firms if only to enhance their bids. In the case of an association, the members shall submit a declaration confirming their association (joint venture, consortium, main contractor – sub contractor) with indication of the lead partner of such an association.

Interested consulting firms shall meet the following:

- i. At least 15 years experience in energy planning including demand and forecasting;
- ii. Demonstrate successful performance in carrying out at least three (3) similar scope of work studies in the past 15 years.
- iii. Previous experience of working in an African or comparable jurisdictions context.
- iv. Services shall be provided by a consultancy firm or an association of consultancy firms. Consultants must have key professional staff qualifications and competence that satisfy the requirements of the above scope of work. Each individual on the team must be personally available to do the work as and when required. All the team members must be fluent in both spoken and written English. The skills and experience required as a minimum of the consultant team are as follows:

Position	Key qualification
Team Leader	• Demonstrate experience in leadership and management by providing at least three (3) successfully completed power sector

	planning related assignments where he/she provided leadership within the last 7 years. • At least 15 years of experience in the energy sector out of which 7 years shall be with respect to generation planning and/ or demand forecasting. • At least 3 assignments of a similar nature in last 5 years. • Previous experience of working in an African context. • A minimum of a bachelor's degree in relevant field.
Power Systems Expert	• 10-15 years of experience in electricity transmission grid on-line and off-line operations, including electric power system frequency control, electric power system voltage control and electric power system restoration. • At least 3 assignments of a similar nature in last 7 years. • Experience in operation or design of electric power grid with intermittent renewable energy. • Bachelor's degree in electrical engineering. • Master's or higher academic degree in electrical engineering or equivalent.
Economics Expert	• 10 years' Experience in tariff design and cost allocation for power system. • Experience in energy planning • At least 3 assignments of a similar nature in last 5 years. • Bachelor or higher degree in Economics, Statistics, Actuarial Science, Financial engineering
ICT Expert (s)	• 10 years' experience in the development of demand forecasting models • At least 3 assignments of a similar nature in last 10 years. • Bachelor degree in relevant field.

In case you possess demonstrable experience in similar projects you are invited to express your interest to the contact person mentioned below.

Application

Interested companies are invited to send an expression of interest to Leonie Verhoef, leonie.verhoef@rvo.nl, of the Procurement Office, with copy to Anja.roymans@rvo.nl. Please state the name of the contact person of your company, his or her e-mail address, and a resume indicating the required skills/experience. Additionally, please include a brief explanation of why you believe you are capable of completing this assignment. You do not have to send any other documents, as they will be disregarded.

As a result of the market orientation, RVO can decide to start a procurement procedure. Interested parties can be invited in this process to submit a request for proposal. Your response to this market orientation does not mean you have the right to be invited to this procurement procedure. If more than 5 applicants respond to the market orientation, a supplier selection can take place on the basis of a selection prior to the request for proposal.

In case of a procurement procedure, no distinction will be made between parties that have or have not participated in the market orientation.

Deadline

The deadline for responding to this market orientation is set at 5 March 2025

Yours sincerely,

Leonie Verhoef
Procurement Officer

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Procurement Office
Ministry of Economic Affairs
Netherlands Enterprise Agency