



**Government of Nepal
Water and Energy Commission Secretariat
Singha Durbar, Kathmandu**

**Expression of Interest (EOI)
(National Consulting Service)**

For

**Energy Consumption and Supply Situation in Federal System of Nepal (Province No. 1 and
Province No. 2)**

**Job No. : WECS/03/075/76
Budget Head: 308101**

March, 2019



EOI Document for Energy Consumption and Supply situation in Federal System of Nepal

Abbreviations

CV	-	Curriculum Vitae
EA	-	Executive Agency
EOI	-	Expression of Interest
GON	-	Government of Nepal
PAN	-	Permanent Account Number
PPA	-	Public Procurement Act
PPR	-	Public Procurement Regulation
ToR	-	Terms of Reference
VAT	-	Value Added Tax
WECS	-	Water and Energy Commission Secretariat



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A. Request for Expression of Interest (EOI)

**Government of Nepal
Water and Energy Commission Secretariat (WECS)
Singha durbar, Kathmandu, Nepal**

Date of First Publication: 2075/12/..

Name of Project: Energy Consumption and Supply Situation in Federal System of Nepal (Province No. 1 and Province No. 2)

1. Government of Nepal (GoN) has allocated fund from Government Budget toward the cost of "**Energy Consumption and Supply Situation in Federal System of Nepal (Province No. 1 and Province No. 2)**" and intends to apply a portion of this budget to eligible payments under the Contract for which this Expression of Interest (EOI) is invited for National Consulting Service.
2. The Water and Energy Commission Secretariat now invites EOI from eligible consulting firms ("consultant") to provide the following consulting services.

Objective: The main objective of this project is to find the existing situation of energy consumption and supply situation of the energy resources at local, districts and Provincial level of Province No. 1 and Province No. 2 and forecast energy demand up to 2040 A.D. of the provinces at different economic growth rates.

3. Interested eligible consultants may obtain further information and EOI document free of cost at the address **Water and Energy Commission Secretariat, GoN, Singha Durbar** within 15th day of the Date of First Publication during the office hours or visit the client's website www.wecs.gov.np
4. Duly completed EOI documents in hard copy should be submitted to the address mentioned below clearly mentioning the name of the job in sealed envelopes before 12 Noon (NST) within 16th day of date of first publication of this notice.

Water and Energy Commission Secretariat
Singha Durbar, Kathmandu
Tel: 4211423, Fax: 4211425

5. The consulting firm(s) can apply either in single or in Joint Venture (JV). The number of consulting firms in a JV shall not exceed three including the lead firm. In addition, same consulting firm is not allowed to enter into more than one JV for the Job.
6. The EOI documents received shall be opened at 14:00 (NST) on the 16th day of date of first publication of this notice in the presence of the applicants or the authorized representatives whosoever wish to attend. Absence of the applicants or their authorized representatives, however, shall not obstruct or prevent the opening of the EOI in anyway.



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7. In case the last date of obtaining and submission of the EOI documents happens to be a holiday, the next working day will be deemed as the due date but the time will be the same as stipulated.
8. EOI will be assessed based on **Experience of Consulting Firm (50%), Financial Capacity (of Consulting Firm (10%) and Qualification of Key Personnel (40%)**. Based on evaluation of EOI, only shortlisted firm will be invited to submit technical and financial proposal through a Request for Proposal (RFP).
9. Minimum score to pass the EOI is 60 percent of the total EOI marks. Applicants obtaining at least 60% marks in the EOI evaluation process shall be considered as qualified firms. Only top six out of such qualified firms will be shortlisted and allowed to participate in Request for Proposal (RFP) Process.
10. RFP for this job will be subsequently issued to the shortlisted firms. The Quality and Cost Based Selection (QCBS) procedure will be used for final selection of the consulting firm, based on technical and financial proposals.
11. WECS reserves the right to accept or reject any or all EOI applications with or without giving any reason whatsoever.



B. Instructions for submission of Expression of Interest

1. Expression of Interest may be submitted by a sole firm or a JV of consulting firms.
2. Interested consultants/firms must provide information indicating that they are qualified to perform the services (descriptions, organization and employee and of the firm or company, description of assignments of similar nature completed in the last 7 years and their location, experience in similar conditions, general qualifications and the key personnel to be involved in the proposed assignment).
3. This expression of interest is open to all eligible consulting firms.
4. The assignment has been scheduled for a period of **12 months**. Expected date of commencement of the assignment is **Jestha 2076 B.S.**
5. A Consultant will be selected in accordance with the **QCBS** method.
6. Expression of Interest should contain following information:
 - (i) A covering letter addressed to the representative of the client on the official letter head of company duly signed by authorized signatory.
 - (ii) Applicants shall provide the following information in the respective formats given in the EOI document:
 - EOI Form: Letter of Application(Form 1)
 - EOI Form: Applicant's Information (Form 2)
 - EOI Form work Experience Details {Form 3(A) and 3(B) }
 - EOI Form: Capacity Details (Form 4)
 - EOI Form: Key Experts List & Qualification of Key Experts (form 5).
7. Applicants may submit additional information with their application but short listing will be based on the evaluation of information requested and included in the formats provided in the EOI document.
8. The Expression of Interest (EOI) document must be duly completed and submitted in sealed envelope and should be clearly marked as EOI Application for Short-listing for the "**Energy Consumption and Supply situation in Federal System of Nepal (Province No. 1 and Province No. 2)**". The Envelope should also clearly indicate the **name and address of the Applicant as mentioned in EOI notice.**
9. The completed EOI document must be submitted on or before the date and address mentioned in the **EOI notice**. In case the submission falls on public holiday the submission can be made on the next working day. Any EOI Document received after the closing time for submission of proposals shall not be considered for evaluation.



C. Terms of Reference (ToR)

1. Introduction

Information on energy resources and its consumption provide sound bases for appropriate policy formulation and planning of the energy sector towards sustainable development. It requires regular update and compilation of the resource status through primary research survey and study programs. The information helps in resources planning and management in integrated way. Energy resources have multiple usage. Fuel wood resources can be used for other wood demanding areas. Similarly agricultural residues and animal dung has vital contribution in agricultural production. Use of water resources also has multiple benefits like Hydropower generation, Irrigation, drinking water supply etc. Society can also achieve maximum benefits once the resources are utilized at optimum level for the concerned purpose. This requires actual field based information so that benefits can be accessed from multiple perspectives.

Water and Energy Commission Secretariat (WECS) has been involved in collection and analysis of the field based energy resources and consumption information since its establishment. WECS completed Sectorial Energy Supply/Demand Profiles at the regional level and Residential Energy Supply/Demand Profiles at the district level during 1990-1995. Such regional and district level sectoral energy supply demand profiles were updated and compiled in 1995/96 at national level. Industrial Sector Energy Consumption Survey was completed in 1997/98 covering both traditional and modern sector. Furthermore, WECS conducted the Commercial Sector Energy Consumption Survey in 1998/99 and Transport Sector Energy Consumption in the year 1999/2000. Agricultural Sector Energy consumption survey was also completed in 2000/01. Based on these primary surveys of energy demand supply situation, WECS published Energy Sector synopsis report in regular basis. Energy Consumption and Supply Situation of Nepal, 2011/12 is the latest survey carried out by WECS. WECS routinely conducts such primary surveys and prepares reports related to the development of the energy sector in Nepal, for example, estimation of resource potential, energy consumption and conversion technologies appropriate for Nepal's future economic growth, modernization, socio-economic development, policy researches and demonstration studies. Such information obtained from surveys and studies provide a scientific basis which would be a value added tool for conducting various energy policy analysis and energy modeling exercises.

As Nepal has entered into federal system with 753 local bodies and 7 provinces. Till date all the energy data are collected and compiled centrally. So WECS is planning to collect the data of energy consumption, supply and project energy demand of each province. This is just the initial step towards micromanagement of the energy data base. Though, WECS is publishing energy synopsis and energy data sheet frequently but previous data does not give any information about provinces. According to constitution 2015, every province has right to plan the project and in order to achieve their goal, province needs data related to energy. Energy consumption, energy supply and energy demand of each province shall be quantified after completing this project. WECS acting as an umbrella organization is going to collect and compile all the energy database of each province and district so that it would help province for the planning and management of energy resource.

An Integrated Energy Information System shall be established at WECS, which shall serve as a center of excellence. For such center, all sorts of data related to energy need to be collected, analyzed and updated regularly. Such system is of great importance in projecting future energy demand. On this backdrop WECS intends to invite National Consultants to conduct a



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survey on energy consumption and supply situation as well as project the future energy demand of all provinces of Nepal.

2. Objective of the study

The main objective of this project is to find the existing situation of energy consumption and supply situation of the energy resources at local, districts and Provincial level of Province No. 1 and Province No. 2 and forecast energy demand up to 2040 A.D. of the provinces at different economic growth rates (socio economic, demography & technology). The outcomes of this study shall be further presented in three physiographic regions (Himalaya, Mountains and Terai).

Followings are the specific objectives of the survey work in each province:

- To determine the present status of energy consumption and supply situation in all economic sectors namely residential/domestic, industrial, transport, commercial/business, agricultural, construction & mining industries and other sectors with energy resources potential of all districts of Province No. 1 and Province No. 2 including physiographic region.
- To prepare energy flow diagram (Sankey chart)
- To estimate the future energy demand of all type of energy for 20 years period in all economic sectors (Residential, Industrial, Commercial, Transport, Agriculture, Construction and Mining sectors) disaggregated by Province No. 1 and Province No. 2 at different growth scenarios (socio economic, demography & technology).
- Suggest the most appropriate and relevant models for energy demand forecast and add the data required to be collected
- To assess the supply demand balance of the energy resources by physiographic region of all Districts of Province No. 1 and Province No. 2.
- To identify the costs of all energy resources especially the commercial energy resources in each sample unit.
- Per capita and per economic sector energy consumption need to be assessed from the survey.

3. General Scope of Work

The scope of the work is, but not limited to, following:

- Before conducting the survey on energy consumption, supply situation and demand projection, the existing plans, policies, rules, regulations and guidelines related to energy shall be reviewed.
- Primary data shall be collected at natural and local unit at first and then converted into standard gigajoules (GJ) and Ton of Oil Equivalent (ToE) unit later during analysis.
- Both Total as well as Specific energy consumption of supply and demand in all economic sectors by each fuel type shall be provided.



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- The study shall be carried out for all districts of Province No. 1 and Province No. 2 including three physiographic regions for the sample survey.
- The output of the survey should contain the energy consumption status of all district of Province No. 1 and Province No. 2. Total and Specific energy consumption of economic sectors and sub sectors, by each fuel types, end uses and energy technologies/devices shall be found out from this survey.
- The output of the survey shall also contain energy supply potential and demand projection of all energy forms of these provinces.
- **The estimation of the sample size shall be within 95% level of confidence with 5% margin error and cent percent response rate.** The ultimate location for determination of sample size of all economic shall be district level. The number of sample units should be large enough to secure such accuracy or precision.
- Major statistical information of the energy consumption in each Economic Sector at district and provincial level shall be assessed during the survey. Specially the average energy consumption, standard deviation/variation, coefficient of variation, standard error of the mean should be found out for each type of energy consumption in all sectors.
- After collection and compilation of all the data, energy demand of Province No. 1 and Province No. 2 by sector and fuel type shall be forecasted by using freely available software/model. The time period of the forecast shall be upto 2040 A.D., based on the survey carried out and secondary data if necessary.
- All the energy resources available and used in the country should be considered while surveying the energy consumption, demand and supply status. All the energy resources used in all economic sectors for all purposes and end uses by all devices should be identified during the survey. Energy resources shall be categorized into renewable and non-renewable energy resources. Renewable energy shall then be divided into conventional renewable and new renewable. Conventional renewable energy is further divided into traditional biomass and modern biomass whereas new renewable category includes the solar energy, wind energy, solar-wind hybrid system, geothermal energy, hydrogen fuel, hydropower etc. The traditional biomass means fuel wood, agricultural residues and animal dung whereas modern biomass includes both liquid and non-liquid biofuels. Biogas from the animal and human excreta and other waste biomass, ethanol, biodiesels are some of the examples of the liquid biofuels whereas non liquid biofuel means bio briquettes, charcoal etc. Nonrenewable energy resources primarily include the fossil fuel that covers petroleum fuel, natural gas, coals.
- Based on the ToR, detailed survey questionnaire separately for each economic sectors shall be prepared, which needs to be approved by WECS before mobilizing in the field survey.
- Before conducting Energy Consumption, Supply and Demand survey, training programme for the enumerators, field supervisors and WECS staffs shall be organized.
- A letter from the surveyed commercial, industrial, agricultural and construction & mining sector is necessary to verify the work. The letter should be submitted to WECS after completion of the field work in Field/Interim report.



4. Specific scope of the work

4.1. Residential/Domestic sector

- Household shall be the basic unit of energy consumption both in the rural and urban residential sector.
- Methodology for residential energy demand analysis should be developed and approved by WECS. Based on the approved methodology necessary data and assumptions will be agreed.
- Residential sector covers both the rural and urban residential sector while assessing the energy consumption.
- Detail survey design shall be developed and total number of sample units based on the standard statistical procedure shall be estimated.
- During the household survey, the energy consumption of the last year that is 12 months of the 2075 BS shall be collected. The detailed questionnaire shall be developed during the inception work. However consultants are advised to provide the detail methodological approach of data collection, data entering and analysis, reporting and presentation etc. Testing of the questionnaire shall be carried out before approval of the Inception Report.
- Primary data shall be collected in their natural unit in disaggregated form wherever possible. Natural unit shall be converted into the standard energy unit that in GJ and ToE while analyzing and reporting the final work.
- Basic socio economic information shall also be collected during the household survey. Especially the household size, farm size, distance from the nearest market, distance from the forests, distance from the highway/accessible road, access to grid electricity, access to other energy form such as biogas, solar, micro hydro, bio briquette etc. shall be collected. This provides the relationship between energy consumption and socio economic situation.
- Energy production within the household level shall also be assessed. Particularly the fuel wood, agricultural residues and animal dung produced within the household level shall be estimated. Commercial production of the energy resources such as bio-briquettes, fuel wood etc. shall also be accounted during the survey. **Energy supply demand balance at household level shall therefore be known from the survey work.**
- Local measurement unit of the non-commercial energy resources such as fuel wood, animal dung and agricultural waste shall be taken into account while taking the questionnaire survey at the household level. Standardization of the local unit is necessary during the data analysis.
- Consultants are strongly advised to compare the output of this survey work with "Update and Compilation of Regional Energy Consumption Profile 1995/96", and "Energy Consumption and Supply Situation of Nepal, 2011/12" reports of WECS for reference.

4.2. Industrial Sector

Industrial Energy consumption Survey shall cover both the traditional/cottage and modern industries. The modern industries can further be divided into large, small and medium enterprises. However, National Standard of Industrial Classification should be adopted while



surveying the industry sector.

- Methodology for industrial energy demand analysis should be developed and approved by WECS. Based on the approved methodology necessary data and assumptions will be agreed.
- All categories of industries should be represented for energy consumption and survey. A single factory with a particular product shall be the sample unit of the industrial energy consumption and survey with greater focus on energy intensive industries.
- Like in the residential sector, each district shall be the basic sampling location for the primary survey of the industrial energy consumption.
- Energy consumption by end uses, devices/technologies in each district, provincial level shall be estimated from the primary survey. Furthermore, energy consumption by industrial output, cost, labour etc. are important variables to be identified.
- Consultants are strongly advised to compare the output of this survey work with "Industrial Energy Consumption Survey 1996/97 ", and "Energy Consumption and Supply Situation of Nepal, 2011/12" reports of WECS for reference.

4.3. Transport Sector

Transport sector has different types of mode to be surveyed from energy consumption perspective. Transport sector shall be broadly divided into Road Transport (Passenger and Freight), Air transport and Ropeway sub sector. Road, Air and Ropeway transport which shall further be divided into public, private, corporate and government transport and others. The main uses of the transport sector are passenger services, goods carrier services. In this sector buses, cars, jeeps, vans are used for passenger services and truck, lorry, pickup could be the load carrier services. Similar categories can be made in the air transport sector.

Each type of energy consumption in each mode of transport sector for all District of Province No. 1 and Province No. 2 shall be assessed in the survey. Major variables in transport sector from the energy consumption perspective shall be identified. For example, energy consumption per passenger kilometer can be one of the important variables for Passenger Transport and ton kilometer for Freight Transport that can be used for future forecasting of the energy consumption.

- The study shall find out the major driving factors affecting the energy consumption in this sector.
- Methodology for transport energy demand analysis should be developed and approved by WECS. Based on the approved methodology necessary data and assumptions will be agreed.
- A time series data of the number of vehicles registered in the country shall be identified so that the growth of the vehicles can be estimated to make the relation with sectorial energy consumption.
- Number of vehicles (operational and non-operational) registered in different Zones as well as in Provinces of Nepal should be taken into consideration while determining the sample size in this sector. All types of vehicles shall be accounted and be represented during survey work. Energy consumption, the vehicle registration number, owner's information, its type, capacity etc. shall be mentioned in the field survey. The information related to vehicle registration can be obtained from Department of Transport Management.



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- Average kilometres of each vehicle type in a day/week/month/year should be assessed during the primary survey from the sample unit.
- A vehicle shall be the sample unit in this sector. The sample unit can be motorcycle, jeep, car, bus, truck, airplane, helicopter etc.
- Total fuel consumption by each transport mode can be estimated based on the distance covered in a day/week/month/year and the distance covered per unit of fuel.
- Supply of fuel used in the transport sector should also be assessed during the field survey. Numbers of petrol pumps supplying the petroleum products in the transport mode are important in this regard. Transport sector fuel consumption can be obtained from the divisions of Nepal Oil Corporation.
- "Detailed Energy Consumption Survey in Transport Sector of Nepal (2000)" report of WECS can be reviewed in this regards.
- The further details on energy consumption survey and design on the transport sector are expected from the consultant side.

4.4. Commercial sector

This sector is one of the major energy consuming sectors. Each type of energy consumption in commercial sector for all District of Province No. 1 and Province No. 2 shall be assessed in the survey. This sector includes varieties of institutions ranging from academic sector to the commercial complexes. Some important sub sectors are hotels, restaurants, wholesalers/dealers/retailers of the industrial products, hostels/barracks, academic institutes, corporate bodies, hospitals, nursing homes, banks and high rise buildings etc.

- The basic sample unit for this sector shall be commercial entity.
- Methodology for commercial energy demand analysis should be developed and approved by WECS. Based on the approved methodology necessary data and assumptions will be agreed.
- A complete list of the commercial entities by district and province shall be identified from the government registration office.
- Energy consumption per capita, energy consumption per sample unit, energy consumption per factor of expansion in each category of the corporate sector shall be identified. For example, energy consumption per bed or per guest can be major variables for hotels/ restaurants. Energy consumption per number of student can be the expansion factor in hostels.

4.5. Agricultural sector

Electricity and petroleum products are two major energy resources used in this sector. Electricity is mainly used in water pumping for irrigation purposes whereas petroleum products are used for both the water pumping as well as tillage purpose by tractors, harvesters etc. Major energy technologies in this sector are electric pump, electric generator, diesel pump, diesel generators and tractors. Drought animal power in this sector can be ignored in this survey. It requires separate survey for accurate estimate. Trend of using Renewable energy in the agriculture sector is increasing. Solar water pumping is recognized as emerging technology in the rural area.

- Methodology for agriculture energy demand analysis should be developed and approved by WECS. Based on the approved methodology necessary data and assumptions will be agreed.



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- Ultimate sample location in this sector shall be the district. A farm shall be the sample unit for the energy consumption survey. The farm size (big, medium and small) shall be taken into consideration while identifying the sample size. However, sampling intensity shall be the different one than the residential sector.
- The data shall be collected on the basis of type of energy consumption (petroleum, Solar, grid electricity etc.), its specific use (irrigation, plantation, harvesting etc.) and technology used (tractor, power tiller, harvester, paddy/garlic thresher etc.)

4.6. Construction and Mining sector

Construction Projects like Water supply, Irrigation, Hydropower, Crusher industry, High rise building construction, Road/Bridge construction projects and mining industries (Limestone, Coal etc.) are energy intensive sites. Heavy equipment's like Loader, Dozer, Excavator, Tunnel Boring Machine, Crusher machine etc. are frequently used in such construction projects.

- Inventory of construction sector projects, mining industries and equipment used shall be prepared.
- Methodology for construction and mining sector energy demand analysis should be developed and approved by WECS. Based on the approved methodology necessary data and assumptions will be agreed.
- Each district shall be the basic sampling location for the survey and construction site shall be the sample unit.
- Energy consumption by end uses, devices/technologies and the fuel type in each district and provincial level should be determined from the survey.
- Energy consumption, supply and demand forecast of all on going National Pride Projects of these Provinces shall be carried out. The energy consumption, supply and demand forecast of such projects shall be categorized under Province level.

5. Energy Resource and Supply Assessment

- All the indigenous and modern energy resources of all economic sectors shall be assessed at district and Provincial level.
- Energy Resources database or information shall be updated up to the recent years using standard factors acceptable as per statistical procedures.
- Energy supply assessment shall be made based on secondary information available in the country. Authentic and approved secondary information shall be used for this purpose.
- Supply situation of the imported fossil fuels (coal, petroleum products, natural gas) shall also be estimated for all district of Province No. 1 and Province No. 2.
- Production of electricity in different parts of the country can be collected from Nepal Electricity Authority (NEA), Independent Power Producers Association of Nepal (IPPAN) and Alternative Energy Promotion Centre (AEPC) up to the recent years and also its future generation plan. Electricity supply situation shall also cover the transmission and distribution network in the country.



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- Supply potential of renewable energy resources shall also be assessed based on the available information. Supply potential of some of the renewable such as wind, micro hydro, solar, biogas, waste to energy and solar wind hybrid can be found from the AEPC. Similarly, other reliable and authentic institution can be used for collecting the information.

6. Energy Demand Projection

Forecast of energy demand can help the decision/policy makers to know the volume and trend of the future energy consumption for better planning and scheduling the appropriate operation of energy supply and distribution systems. The following shall be considered while projecting the energy demand.

- The future energy demand projection shall be based on a set of consistent assumptions on medium to long term socio-economic, technological and demographical developments of provinces. The different socio economic growth rates shall be based on consultation with National Planning Commission (NPC).
- The appropriate and freely available software/model shall be used for the demand forecasting.
- All economic sectors and all energy resources shall be considered in the energy demand projection.
- The Past and Current Energy demand and consumption shall be reviewed. For reference "Electricity Demand Forecast Report (2014-2040)" report published by WECS and "Energy Demand Projection 2030" report published by Investment Board of Nepal shall be reviewed.

7. Duration and Phase of Work

The whole survey works shall be completed in **12 months** after signing the contract. The phase of the work shall be as follows:

- Inception/Desk Reporting Phase
- Interim I Phase
- Interim II Phase
- Draft Phase
- Final Phase

The scope of work for each Phase shall include, but not be limited to, the following:

7.1. Inception/Desk Reporting Phase

In this phase, the consultant shall review Literatures related to previous and existing Energy consumption pattern, Supply and Demand situation as well as collect all the information's related to economic sectors especially from energy perspective. The duration of this Phase shall be of **one (1) month** after signing the contract.

- Plan/Policies/Guidelines related to Energy shall be reviewed.



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- Data related to distribution of the population, households, industrial units, commercial and business units, agricultural and farm units, transport units, constructions and mining's etc. shall be identified of District and Provincial level of Province No. 1 and Province No. 2 that helps to estimate the sample size.
- Basic characteristics and information related to the economic sectors shall be collected from the different authentic institutions and authorities. For example, population census report, national living standard survey report, household expenditure survey report, labor survey report, economic survey reports, agricultural census survey, industrial inventory etc. are the important reference materials for Inception/Desk Reporting.
- In this phase, a detail sampling design including the number of sample units in each economic sector for the energy consumption survey shall be estimated based on the aforesaid statistical methods. Districts shall be the ultimate location for determination of sample size. Before the field work, the questionnaire shall be prepared and submitted in the Inception Report for approval. The questionnaire shall also be tested before approval.
- For mobilization of the survey team for field data collection prior approval of WECS is required. Before conducting the real survey, a pilot survey for the test of the questionnaire shall be carried out.
- Inception Report shall include the detailed methodology for sampling determination, collecting the data and information of each sector and energy resources. It shall also cover the field mobilization schedule of field supervisors, enumerators and other team members.
- The Inception Report shall include the detailed information and methodology of the model to be used for Energy Demand Projection.
- Consultants are strongly advised to refer the previous WECS survey reports regarding the energy consumption.
- This Inception Report shall further provide the outline of output of the survey and detailed table of contents for writing the final results.
- At least **five (5) hard copies** of the report including a soft copy shall be submitted to WECS for its approval. All pages of the hard copy should be authenticated by the consultant with official signature and official stamps.
- WECS will organize one day Workshop for presentation on Inception Report. WECS will comment on the report as per objective, scope and spirit of the ToR. WECS may also invite the experts and concerned professionals in this Workshop. All the comments and suggestions provided by WECS shall be incorporated in the revised Inception Report.

7.2. Interim Phase

After approval of the Inception Report, the consultant shall prepare for field mobilization of the supervisors, enumerators and other team members for field survey. Before mobilization of the staffs for the field survey, an extensive training programme for field staffs shall be organized. **WECS professionals shall be engaged in this training programme.**



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- A prior approval is required for the use of field questionnaires and field personnel not specified in technical proposal. The Consultant shall have the responsibility to defend the quality, authenticity and appropriateness of data.
- The consultant shall complete all the field survey work in this phase. The Interim/Field reports shall include compilation of data of different end uses in district and provincial levels including physiographic region at different economic growth rates.
- The field survey questionnaires, primary and processed data shall be the property of WECS and shall be submitted to WECS in original form separately. These data should not be used anywhere else without a written consent from WECS.
- A proof of the field work and primary data collection from the sample unit in each sector should be submitted to WECS for its verification. **For household and agricultural sector energy consumption survey, a certification from the Municipal Office/ Ward Office of the Municipality shall be submitted to WECS.** In case of Industrial, Commercial, Construction and Mining sectors, a certification form related entity shall be obtained and submitted to WECS.
- All the information collected during the field work for primary data of the energy consumption should be analyzed using **a standard computer model/programme**. The preliminary findings of the field work should also be mentioned in this report. Important statistical information specially the standard deviation, average, standard error, error margin of the sample survey should also be covered here. Accuracy of the sample survey shall also be judged from this information.

The Interim Phase is divided into two (2) Phases:

- a) **Interim Phase-I:** In this Phase, the consultant shall complete the survey of at least 1 province out of 2 provinces. The consultant shall submit **5 hard copies** with a soft copy of the Interim Report-I including all the data collected, processed and analyzed. The duration of this phase shall be of **Four (4) months** after submission of the Inception Report.
- b) **Interim Phase-II:** In this Phase, the consultant shall complete the survey of remaining province. The consultant shall submit **5 hard copies** with a soft copy of the Interim Report-II including all the data collected, processed and analyzed. The duration of this phase shall be of **Four (4) months** after submission of the Interim Report-II.

All the above Interim Reports shall include the entire completed questionnaire sheet in its original form. Soft copy shall include model/data entering, data analysis and data output information of field work. The Interim Reports shall cover the list of sample units with its detail information (name, location, geography, types etc.). After completion of the field survey work, the consultant shall submit Interim Reports to WECS. With coordination with WECS, the consultant shall organize a presentation programme on respective Interim Reports at WECS meeting hall. After presentation on each Interim Reports, WECS will provide comments and suggestions. All the comments and suggestions provided by WECS shall be incorporated in respective Interim Reports.



7.3. Draft Report Phase

After completion of Interim Phase, the consultant shall prepare and submit **Five (5)** hard copies and a soft copy of Draft Report for review and comments. The duration of this Phase shall be of **two (2) months** after the submission and approval of Interim Report-II.

- This draft report shall include data analysis and results/outputs of all Interim Reports in compiled form.
- The report shall cover text, table, picture based on the findings of the survey work. It shall also compare the results with previous finding of the WECS survey work.
- The complete developed model of future energy demand projection of all economic sectors by each energy resources type at different growth scenarios (socio economic, technology & demography) of provincial level of Province No. 1 and Province No. 2 shall be submitted.
- One week training in operation of energy demand projection model shall be conducted by the Consultant at WECS.
- WECS will organize Provincial level workshops (one Workshop in each Province) for presentation (by Consultant) and discussion on Draft Report among related stakeholders. WECS may also invite the experts and concerned professionals in these Workshops.
- *Costs and expenditures of the Workshops and training shall be covered by the consultant itself.*

7.4. Final Report Phase

The duration of this phase shall be of **one (1) month** after the submission and approval of Draft Report.

- After receiving comments/suggestions from WECS and related experts on the Draft Report, the consultant shall prepare the Final Report incorporating all the comments and suggestions.
- The submitted Final Report shall be in the manner acceptable to WECS. Ten (10) hard copies and a soft copy of Final Report shall be submitted. The consultant shall submit the analyzed database files and complete energy demand projection model.

8. Expected Human Resources

The following professionals with stated qualifications are proposed for the assignment.

S. N.	Particulars	Minimum Qualification	Required No.	Experience
1	Team Leader	Master's degree in Engineering field	1	More than 10 years of professional experience in the related and relevant field
2	Energy Modeling Expert	Master's degree in Engineering field	1	At least 10 years of professional experience in the related and relevant field



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3	Statistician/ Data Analyst	Master's degree in Statistics	1	At least 10 years of Professional experience in related and relevant field
4	Economist	Bachelor's degree in Economics	1	Minimum 5 years of professional experience in related and relevant field
5	Electrical Engineer	Bachelor's degree in Electrical Engineering	1	Minimum 5 years of professional experience in the related and relevant field
6	Mechanical Engineer	Bachelor's degree in Mechanical Engineering	1	Minimum 5 years of professional experience in the related and relevant field
7	Forestry Expert	Bachelor's degree in Forestry Science	1	Minimum 5 years of Professional experience in related and relevant field
8	Field Supervisor	Minimum 10 +2	1	Minimum 5 years of Professional experience in related and relevant field
9	Computer Operator/Office Assistant	Minimum 10+2	1	Knowledge in Computer (MS office)
10	Enumerators	Minimum SLC/SEE	12	-

Note: CV of key experts from S.N. 1 to 7 shall be evaluated. The work experience of the key experts shall be counted after completion of the Bachelor's Degree.

The responsibility of the experts are, but not limited to, the following:

8.1. Team Leader

The Team Leader shall have substantial experience in the area of energy sector. S/he shall have minimum Master's degree in engineering field with more than 10 years of professional experience in the related and relevant field. S/he shall have specific work experience in Energy survey/Energy statistics/Energy management /Energy Planning sector. S/he shall be responsible to:

- Take full responsibility for the consulting team and as per the Term of Reference (ToR), provide overall direction to the consulting team and coordinate between individual experts and with related WECS officials.
- In co-ordination and cooperation with WECS, carryout extensive consultations with the key stakeholders for obtaining suggestions and concurrence with the contents of the plan.
- Prepare detailed schedules for the fieldwork and office works;
- Organize meetings and workshops;
- Ensure timely delivery and quality control of the outputs required as per ToR.

8.2. Energy Modeling Expert

The Energy Modeling Expert shall have substantial experience in the area of energy sector.



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S/he shall have minimum Master's degree in Engineering field with at least 10 years of professional experience in the related and relevant. S/he shall have specific work experience in energy modeling works. S/he shall be responsible to:

- Work closely with other members of the core technical team and assist the Team Leader.
- Take full responsibility for preparation of framework, data analysis and carry out modelling for the energy demand projection.
- Assist the Team Leader in timely delivery of all outputs related to modelling and preparation of reports.
- Assist the study team in preparing questionnaires required for the model to predict the demands of various energy resources at future at economic growth rate.

8.3. Statistician/ Data Analyst

The Statistician/Data Analyst shall at least have Bachelor's degree in Statistics with minimum 5 years of Professional experience in related and relevant field. S/he shall have specific work experience in data analysis, statistics and preparation of questionnaire of similar sector. S/he shall be responsible to:

- Work closely with other members of the core technical team and assist the Team Leader.
- Coordinate with field supervisors to receive the field survey data for further processing.
- Carry out all the statistical analysis after receiving the data from field survey.
- Provide inputs to the Energy Modelling Expert during energy modelling.
- Assist the Team Leader in timely delivery of all outputs and preparation of reports.

8.4. Economist

Economist shall at least have Bachelor's degree in Economics with at least 5 years of professional experience in related and relevant field. S/he shall have specific work experience in economic analysis. S/he shall be responsible to:

- Work closely with other members of the core technical team and assist the Team Leader.
- Ensure that economic/financial assessments carried out are undertaken with correct methodologies.
- Assist the Team Leader in timely delivery of all outputs and preparation of reports.
- Analysis of energy data in terms of different economic growth rates.
- Provide inputs to the Energy Modelling Expert during energy modelling.
- Assist the Team Leader in timely delivery of all outputs and preparation of reports.
- Predict the energy consumption of various energy resources at different economic growth rates.

8.5. Mechanical Engineer

The Mechanical Engineer shall have substantial experience in the area of energy sector. S/he shall at least have a Bachelor's degree in Mechanical Engineering with at least 5 years of professional experience in the related and relevant field. S/he shall have specific work experience in Energy planning /Energy management / Energy sector survey. S/he shall be responsible to:



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- Work closely with other members of the core technical team and assist the Team Leader.
- Carry out field work and diagnose the data related to all Mechanical/Industrial sectors during energy survey.
- Provide inputs to the Energy Modelling Expert during projection of the energy demand.
- Monitor, review and analyze the inputs provided by different experts in the team;
- Assist the Team Leader in timely delivery of all outputs and preparation of reports.

8.6. Electrical Engineer

The Electrical Engineer shall have substantial experience in the area of energy sector. S/he shall at least have a Bachelor's degree in Electrical Engineering with at least 5 years of professional experience in the related and relevant field. S/he shall have specific work experience in Energy planning /Energy management / Energy sector survey. S/he shall be responsible to:

- Work closely with other members of the core technical team and assist the Team Leader.
- Carry out field work and diagnose the data related to all Electrical sectors during energy survey.
- Provide inputs to the Energy Modelling Expert during projection of the energy demand.
- Monitor, review and analyze the inputs provided by different experts in the team;
- Assist the Team Leader in timely delivery of all outputs and preparation of reports.

8.7. Forestry Expert

The Forestry Expert shall at least have Bachelor's degree in Forestry science with minimum 5 years of Professional experience in related and relevant field. S/he shall have specific work experience in survey related to traditional energy (fuel wood, agriculture residue, biomass etc.) and preparation of questionnaire of forest/agriculture sector. S/he shall be responsible to:

- Work closely with other members of the core technical team and assist the Team Leader.
- Carry out the survey and diagnose the data related to traditional energy.
- Provide inputs to the Energy Modelling Expert during energy modelling.
- Assist the Team Leader in timely delivery of all outputs and preparation of reports.

9. Work Schedule

The Consultant shall complete the entire study project within a period of 12 months from the date of signing the agreement with WECS. It is responsibility of the consultant to plan in detail the work schedule and expert person-months schedule to complete the assigned work within the assigned time frame.



10. Terms of Payment

Payment shall be made according to the following schedule:

Installments	Payment (%) of the total Contract Amount	Condition for Payment
1 st Installment	20%	After submission and approval of Inception Report
2 nd Installment	20%	After submission and approval of Interim Report I
3 rd Installment	20%	After submission and approval of Interim Report II
4 th Instalment	20%	After submission and approval of Draft Report and operational energy model with inputs and outputs
5 th Installment	20%	After submission and approval of Final Report and model

Consultant should request the WECS for the payment of the offered job with valid bills.

11. Language of the Report:

All the reports shall be prepared and submitted in English.

12. Competencies

The organization/consulting firm shall have the following competencies:

- Excellent communication skill, good working relationship with the government and other organization and ability to collect and analyze data and information.
- Excellent ability to quickly grasp and synthesize inputs from a range of disciplines related to this subject area.

13. Qualifications:

The consulting firm shall provide lists of qualified human resources with proven track records. The study team should comprise of specialist and/or knowledge –based human resources having required qualifications and experiences in relevant fields/thematic areas to carry out the works as included in the scope of this study. S/he shall have fluent writer and oral communication in English.

14. Property Rights

WECS shall have the sole authority on all data (primary and analyzed), texts, pictures, letters, analysis, questionnaires (filled and unfilled) and other information collected during the survey. Therefore, the consultant should include a letter indicating the transfer of copyright on information. The consultant should refrain from using any of the information in any other studies without receiving prior approval from WECS. Failing to get prior approval from WECS in such cases may result in black listing of the consultant in WECS works and publication of such act of the consultant in national daily newspapers.



15. Work Inspection

- Before proceeding with the field work, the consultant shall submit a field work schedule so that WECS may send its own staff to observe the field work and monitor the progress.
- Before the award of the contract, the designated WECS staff may visit the office of the consultant to verify the status and soundness of the consulting firm to carry out the job. The designated WECS staff shall also be entitled to visit the office of the consultant during implementation, from time to time to inspect the work in progress. The consultant should submit monthly progress report in writing.

16. Other Instructions

- WECS' energy professionals shall regularly monitor and evaluate the survey work from the beginning. Field works shall also be monitored and evaluated directly at the site as well as office. WECS may request other government and related agencies to monitor and evaluate the consultant's work both in the office and in the field.
- The cost of presentations, meetings, workshops, interactions as indicated in the ToR and suggested by WECS should be covered by the consultant.
- WECS reserves the right to accept or reject any or all of the proposals without assigning any reason whatsoever.



D. Evaluation Criteria (Evaluation of Consultant’s EOI Application)

Consultant’s EOI application which meets the eligibility criteria will be ranked on the basis of Ranking Criteria as detailed below.

I) Eligibility & Completeness Test criteria	Compliance
Notarized copy of Company/Firm Registration certificate (of each member of Joint Venture (JV) in case of JV)	Consultant shall submit document
Notarized copy of VAT & PAN Registration certificate (of each member of JV in case of JV)	Consultant shall submit document
Notarized copy of Tax Clearance Certificate or submission for Tax clearance of FY 2074/75 (of each member of JV in case of JV)	Consultant shall submit document
Self declaration letter of the firm (In case of JV, the Consultants shall submit self-declaration either separately or jointly by signing each member of JV)	Consultant shall submit document
Joint Venture agreement between of JV partners duly signed by authorized signatories & stamped with company seal of each member of JV & clearly mentioning the name of lead firm, name of JV partners, role and responsibility of each members, name of authorized signatories (in case of a JV)	Consultant shall submit document
Power of attorney of authorized signatories of JV agreement from their respective firm with signature & stamp for each member of JV(in case of a JV)	Consultant shall submit document
Power of attorney to lead firm by JV partners (in case of JV)	Consultant shall submit document
The total number of consulting firms including the lead firm shall not exceed a maximum of three in a JV.	Shall meet the mentioned criteria
An applicant must not submit more than one (1) EOI application either as a single entity or as a partner in JV Firm	Shall meet the mentioned criteria
EOI Form 1: Letter of Application	Consultant shall duly fill the given form
EOI Form 2: Applicant’s Information	Consultant shall duly fill the given form
EOI Form 3: Work Experience Details	Consultant shall duly fill the given form
EOI Form 4: Capacity Details	Consultant shall duly fill the given form
EOI Form 5: List and Qualification of Key Experts	Consultant shall duly fill the given form

Note: Only the Firms or JV(s) fulfilling the Eligibility & Completeness Test criteria mentioned above shall be eligible for further evaluation. The EOI application of those Firms or JV(s) which do not fulfill the above criteria shall not be evaluated further.



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II)	EOI Evaluation Criteria	Minimum Requirement	Score
A.	Evaluation of personnel		
	Experience of Personnel		40
	Team Leader	Master's degree in Engineering field with more than 10 years of professional experience in the energy sector. S/he shall have specific work experience in Energy survey/Energy statistics/Energy management /Energy Planning sector	10
	Energy Modeling Expert	Master's degree in Engineering with at least 10 years of professional experience in the energy sector. S/he shall have specific work experience in energy modeling works.	7
	Statistician/ Data Analyst	Master's degree in Statistics with at least 10 years of Professional experience in related and relevant field. S/he shall have specific work experience in data analysis, statistics and preparation of questionnaire of similar sector	7
	Economist	Bachelor's degree in Economics with at least 5 years of professional experience in related and relevant field. S/he shall have specific work experience in economic analysis and preparation of questionnaire of economic sector	4
	Electrical Engineer	Bachelor's degree in Electrical Engineering with at least 5 years of professional experience in the related and relevant field. S/he shall have specific work experience in Energy planning /Energy management / Energy sector survey and preparation of questionnaire of Electrical field.	4
	Mechanical Engineer	Bachelor's degree in Mechanical Engineering with at least 5 years of professional experience in the related and relevant field. S/he shall have specific work experience in Energy planning /Energy management / Energy sector survey and preparation of questionnaire of mechanical sector	4
	Forestry Expert	Bachelor's degree in Forestry science with minimum 5 years of Professional experience in related and relevant field. S/he shall have specific work experience in survey related to traditional energy (fuel wood, agriculture residue, biomass etc.) and preparation of questionnaire of forest/agriculture sector	4



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B.	Experience of Consulting Firm (within last 7 Years)		50
B1.	General Experience (Only lead firm in case of JV)	Experience in the planning/design/Energy sector/Infrastructure development/Modeling. The completed projects/tasks having contract amount/value less than 1 million shall not be considered for evaluation.	20
B2.	Specific experience	Experience in Energy survey/ Energy statistics / Energy planning and management. The completed projects/tasks having contract amount/value less than 1 million shall not be considered for evaluation.	30
C.	Financial Capability of the Firm/JV		10
	Average Annual Turn Over of the best three Fiscal Years in recent last five consecutive Fiscal Years (in NRs.)	At least 20 Million	10

Note: *Curriculum Vitae (CV) of the key professionals shall be submitted with expert's original signature in blue indelible ink along with the notarized copy of the Nepal Engineering Council (NEC)'s certificate of the professionals required to be registered as per NEC Act, 2055 and Regulation, 2057, and Academic qualification Certificates shall also be submitted for each expert. Notarized copy of certificates of projects completed by the firms shall be submitted. The notarized copy of work completion certificate of Firms shall be submitted. The certificate of Specific experience of the Firm and Personnel shall be submitted.*



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E. EOI Forms & Formats

Form 1. Letter of Application

Form 2. Applicant's information

Form 3. Work Experience Details (General and Specific) [Form 3(A) and 3(B)]

Form 4. Capacity Details [Form 4(A)]

Form 5. List and Qualification of Key Experts



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1. Letter of Application

(Letter head paper of the Applicant or partner responsible for a joint venture, including full postal address, telephone no., fax and email address)

Date:.....

To,

The Water and Energy Commission Secretariat

Singha Durbar, Nepal

Telephone No.: +977 1 4211415, 4211417, 4211421

Fax No.: +977 1 4211425

Email Address: wecs@mos.com.np

Sir/Madam,

1. Being duly authorized to represent and act on behalf of (hereinafter "the Applicant"), and having reviewed and fully understood all the short-listing information provided, the undersigned hereby apply to be short-listed by **Water and Energy Commission Secretariat** as Consultant for **WECS/03/075/76 "Energy Consumption and Supply situation in Federal System of Nepal (Province No. 1 and Province No. 2)"**
2. Attached to this letter are copies of original documents defining:
 - a) the Applicant's legal status;
 - b) the principal place of business;
3. **Water and Energy Commission Secretariat** and its authorized representatives are hereby authorized to verify the statements, documents, and information submitted in connection with this application. This Letter of Application will also serve as authorization to any individual or authorized representative of any institution referred to in the supporting information, to provide such information deemed necessary and requested by yourselves to verify statements and information provided in this application, or with regard to the resources, experience, and competence of the Applicant.
4. **Water and Energy Commission Secretariat** and its authorized representatives are authorized to contact any of the signatories to this letter for any further information.¹
5. All further communication concerning this Application should be addressed to the following person,

Name:

Designation:

Address:

Telephone No.:

Fax No.:

Email Address:

¹ Applications by joint ventures should provide on a separate sheet, relevant information for each party to the Application.



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6. We declare that, we have no conflict of interest in the proposed procurement proceedings and we have not been punished for an offense relating to the concerned profession or business and our Company/firm has not been declared ineligible.
7. We further confirm that, if any of our experts is engaged to prepare the TOR for any ensuing assignment resulting from our work product under this assignment, our firm, JV member or sub-consultant, and the expert(s) will be disqualified from short-listing and participation in the assignment.
8. The undersigned declares that the statements made and the information provided in the duly completed application are complete, true and correct in every detail.

Signature:

Name of Firm:

Seal:

For and on behalf of (name of Applicant or partner of a joint venture):



2. Applicant's Information

(In case of joint venture of two or more firms to be filled separately for each constituent member)

1. Name of Firm/Company:
2. Type of Constitution (Partnership/ Pvt. Ltd/Public Ltd/ Public Sector/ NGO)
3. Date of Registration / Commencement of Business (Please specify):
4. Country of Registration:
5. Registered Office/Place of Business:
6. Telephone No:..... Fax No:..... E-Mail Address:.....
7. Name of Authorized Contact Person / Designation/ Address/Telephone:
8. Consultant's Organization:
9. Total number of staff:
10. Number of regular professional staff:

(Provide Company Profile with description of the background and organization of the Consultant and, if applicable, for each joint venture partner for this assignment.)

Signature:

Name of Firm:

Seal:

For and on behalf of (name of Applicant or partner of a joint venture):



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3. Work Experience Details

3(A). General Work Experience

(Details of assignments undertaken. Each consultant or member of a JV must fill in this form.)

S. N.	Name of assignment	Location	Value of Contract	Year Completed	Client	Description of work carried out
1.						
2.						
3.						
4.						
5.						
6.						
7.						

Signature:

Name of Firm:

Seal:

For and on behalf of (name of Applicant or partner of a joint venture):



3(B). Specific Experience

Details of similar assignments undertaken in the previous seven years

(In case of joint venture of two or more firms to be filled separately for each constituent member)

Assignment name:	Approx. value of the contract (in current NRs)
Country: Location within country:	Duration of assignment (months):
Name of Client:	Total No. of person-months of the assignment:
Address:	Approx. value of the services provided by your firm under the contract (in current NRs;):
Start date (month/year): Completion date (month/year):	No. of professional person-months provided by the joint venture partners or the Sub-Consultants:
Name of joint venture partner or sub-Consultants, if any:	Narrative description of Project:
Description of actual services provided in the assignment: Note: Provide highlight on similar services provided by the consultant as required by the EOI assignment.	

Signature:

Name of Firm:

Seal:

For and on behalf of (name of Applicant or partner of a joint venture):



4. Capacity Details

4(A) Financial Capacity

(In case of joint venture of two or more firms to be filled separately for each constituent member)

Annual Turnover	
Year	Amount Currency

Average Annual Turn Over of the best three fiscal Years in recent last five consecutive fiscal years (in NRs.)

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(Note: Supporting documents for Average Turnover should be submitted for the above.)

Signature:

Name of Firm:

Seal:

For and on behalf of (name of Applicant or partner of a joint venture):



5. List and Qualification of Key Experts (Include details of Key Experts only)

(In case of joint venture of two or more firms to be filled separately for each constituent member)

SN	Name	Position	Highest Qualification	Work Experience (in year)	Specific Work Experience (in year)	Nationality
1						
2						
3						
4						
5						
6						
7						
8						

Signature:

Name of Firm:

Seal:

For and on behalf of (name of Applicant or partner of a joint venture):