



TERMS OF REFERENCE for INDIVIDUAL CONTRACT

Assignment Title:	Energy Economist
Cluster/Project:	Policy and Innovation Unit
Post Level:	Senior Specialist
Contract Type:	Individual Contractor
Duty Station:	Phnom Penh, Cambodia (The Individual Contractor is expected to be based at Ministry of Economy and Finance (MEF), in Phnom-Penh, Cambodia)
Expected Place of Travel:	None
Contract Duration:	15 April 2021 – 31 March 2022 (Maximum 12 months, within which no more than 95 person days of work per Individual Contract)
Functional linkages:	The Individual Contractor will be under the overall guidance of Chief of MEF Energy Team and General Department of Energy at Ministry of Mines and Energy (MME) and day-to-day supervision of Technical advisor on Energy and work closely with UNDP Energy Team.

1. Background

The United Nations Development Programme (UNDP) is the UN's global development network, an organization advocating for change and connecting countries to knowledge, experience and resources to help people build a better life. UNDP Cambodia Country Office works in partnership with the Royal Government of Cambodia (RGC), non-government organizations, civil society organizations, community-based organizations, multilateral aid agencies, bilateral donors and private sector to support the progress towards the Sustainable Development Goals (SDGs). To support the implementation of the UNDP country programme 2019-2023, the Policy and Innovation Hub (PIH) plays an important role within the country office to develop high level policy and technical advisory support to the government. PIH work is guided by three set of strategies (1) research, policy and innovation, (2) communication, and (3) programming. Through the policy, research and innovation, communications, and programming, the PIH is expected to deliver the two main outputs (1) Prosperity, and (2) Planet. Climate change, natural resources, circular economy and energy are the focused areas of the Output 2, i.e. Planet.

The choices made to respond to COVID-19 and to environmental and social protections will impact Cambodia's economy beyond recovery. In recent months, the RGC has decided to enhance coal-based generation to meet growing electricity demand. In a letter to the government, the group, RE100 raised concerns around the focus on coal-generated electricity compared to global trends towards increased shares of renewables. Coupling with Covid-19 crisis which has significantly impacted garment industry across the region, this is making the country's garment industry, a major employer of Cambodia's labor force, less attractive compared to countries with commitments to renewable energy. Concurrently, a new UNDP report estimates that replacing coal and gas with investments in solar in Cambodia can result in a net average annual gain of up to 39,321 high-skilled jobs in 20 years. Renewable energy options also offer important means to reach the remaining 370 remote villages in Cambodia that are yet to be electrified.

Therefore, proposed activities under this TOR will support MEF to catalyze long-term investment in energy sector towards greening infrastructure, reduce the cost of electricity, improve efficiency of service delivery by improving efficiency of Rural Electricity Enterprises (REEs) in Cambodia to manage, overcome, and build a resilient pathway forward from the challenges presented by COVID-19 and beyond. All these are important in shaping post-COVID economic revival. Improved energy policies will increase energy access to the most vulnerable, including poor households and women-headed households, to accelerate the implementation of gender sensitive green economy related policies and programmes.

2. Objective of the Assignment

The main objective of this consultancy is to make available his/her expertise to the MEF Energy Team and MME's GDE for the purpose of advancing policies in the energy sector. This includes areas of energy access, renewable energy, and energy efficiency by having a good understanding of regional energy market and Cambodia's electricity sector, evaluating the existing landscape and identifying potential opportunities for enhancement of institutional, structural, and operational efficiencies.

3. Description of Responsibilities / Scope of Work

In close collaboration and cooperation with Energy Team based at MEF and GDE at MME, the individual Consultant will undertake the following tasks. Outputs from these tasks should be practical at field level than to remain as theoretical analysis. All deliverables under each task should be submitted in the form of a report, PowerPoint presentation, and include hands-on training wherever applicable. These tasks will build on the work that UNDP conducted during 2020 with the Energy Team at MEF, GDE at MME, and other stakeholders. During the course of implementation of these activities, MEF Energy Team will closely coordinate with other development partners who are providing technical assistance and may amend the following activities to avoid duplication and build synergies.

The scope of work as detailed below will be subject to adjustments, first during the inception workshop/phase, and second throughout the assignment as mutually agreed upon by UNDP, MEF Energy Team, GDE at MME and The Consultant. There are five broad components to this assignment, each comprising of multiple sub-tasks:

- **Component 1:** Action plan and roadmap for power market enhancement development in Cambodia
- **Component 2:** Opportunities for promoting the use of Demand-Side Management (DSM) and Energy Efficiency (EE)
- **Component 3:** Climate Economics and Policy Design to improve economic competitiveness
- **Component 4:** Improving the financing landscape for the implementation of Cambodia's Nationally Determined Contribution (NDC)
- **Component 5:** Provide capacity building to expand and institutionalize its governance in Cambodia's energy sector

Component 1: Action plan and roadmap for power market enhancement development in Cambodia

Building on the study report on Electricity Market Structure by MEF and UNDP from 2020, this assignment would like to refine roadmap and develop specific action plan to enhance the power

market development of Cambodia towards improving the efficiency of the energy sector. This would include:

- Establish historical context and current overview of Cambodia's electricity distribution and retail market, including the roles and responsibilities of all relevant actors.
- Conduct a review of existing literature, including annual and case-study reports from relevant institutions and development partners with similar experience of regional developing nations in establishing rural distribution and retail services
- Provide analysis of key structural reforms and instruments to induce efficiency gains and cost of service delivery reductions to open up the opportunity for electricity tariff reduction. These would include (but not limited to):
 - EAC Cost Recovery Calculation
 - REE licensing and operations
 - Technical and service delivery standards
 - Role of REF program #4 Cross-Subsidy
 - REE tariff setting policy strategy
- Set out typical roadmap and action plan for the introduction of competitive mechanisms for power market reform, including case-study examples for merging and consolidation of both public and private small power distributors, and for the separation of distribution and retail sectors.
- Refine the existing roadmap strategy for the implementation of strategy options considered to be most feasible over short-term, medium-term, and long-term considerations, and develop specific action plans to implement roadmap strategy.

Component 2: Opportunities for promoting the use of Demand-Side Management (DSM) and Energy Efficiency (EE)

Electricity shortage and excessive supply co-exist both in a single day (peak hour) and in a year (seasonal peak). While extending capacity can keep up with increasing demand driven by population and economic growth (residential and transport sectors), the expenditure including the minimum-take payment for excess electricity can also increase. This suggest that capacity extension is not an efficient solution to deal with power shortage. Instead, DSM should be promoted to improve efficiency of resource usage.

- Conduct a comprehensive review of existing literature, including relevant regional experiences, case-studies on different types of DSM measures and its practical implementation methods include:
 - Energy Efficiency
 - Demand Response programs
 - Distributed Energy Resources
 - Energy-Management Systems
 - Critical Peak tariff and Time of Use tariff pricing
 - Network charge optimization
 - Dynamic Demand capability
- Identify specific and realistic DSM measures that can be implemented in Cambodian context including economic principles
- Formulate a roadmap strategy with action plan for the implementation of DSM (including EE) measures that are most feasible over short-term, medium-term, and long-term.

Component 3: Climate Economics and Policy Design to improve economic competitiveness

Cost is no longer the single most important factor for industry. Instead, as a global trend, environmental responsibility including using RE in production, and taking part in climate change abatement is becoming a popular branding strategy for industry. In this regard, formulating a Roadmap and Action-plan for the development of RE integration and Climate Policies in Cambodia's energy sector is crucial to promote the competitiveness of the economy.

- Conduct a climate risk study for energy sector in Cambodia and provide a review on the experience of climate policies as applicable to the energy sector in regional and international jurisdictions.
- Set out key principles and concepts of climate economics and policies, including (but not limited to):
 - Marginal Damage Cost and Marginal Abatement Cost, and Aggregate Marginal Cost Curves
 - Cost-Benefit Analysis
 - Cost-Effectiveness, Equimarginal, and Cost-Minimization Conditions
 - Contingent Valuation Analysis (CVA), Benefits Transfer Method, Social Cost of Carbon (SCC)
 - Integrated Assessment Modelling (IAM)
 - Decarbonization methodologies
 - Types of emissions schemes, such as: Command and Control (C&C), Ambient/Technological Standards, emissions performance standards, Incentive-Based (IB), Emissions (Carbon) Tax, Cap & Trade
- Conduct modelling (by building an extension to MEF's in-house spreadsheet-based modelling tool) of Cambodia's power sector of the Marginal Abatement Cost (MAC) for various emissions-reduction scheme options, such as an Emissions Target, Cap & Trade, Emissions (Carbon) Tax, Renewable Energy Certificates, and Technological Standards.
- Produce report analyzing results, including options for consideration of designing climate policies for Cambodia's energy sector. This includes an analysis on the establishment of national greenhouse gas and energy reporting systems for GHG inventory and energy balances.
- Formulate a Roadmap and Action-plan for the development of Climate Policies in Cambodia's energy sector.

Component 4: Provide capacity building to expand and institutionalize its governance in Cambodia's energy sector

Production of training material on fundamental concepts of energy economics for both MEF and MME personnel. Further, this support builds on the groundwork that was conducted in 2020 in the formal establishment of Energy Unit (EU) within the Ministry of Economy and Finance to expand and institutionalize its governance in Cambodia's energy sector.

- Produce custom training material (spreadsheets, handbook/guidelines, and PowerPoint presentations) on fundamental energy-economics for Cambodia's electricity sector.
- The main purpose of this material is to provide incoming members of the MEF- Energy Team and MME personnel with some baseline training on key concepts tailored specifically to the Cambodian context.
- Initial list of topics include, but not limited to (& final list will be decided during inception workshop):
 - Energy Demand Forecasting
 - Energy Efficiency
 - Technical Generator Characteristics (technology-specific)
 - Cost structure generator characteristics (technology-specific)

- VRE Integration (technology-specific)
- Economic Cost-Benefit-Analysis (CBA) of RE
- Climate Economics
- Electricity Tariffs
- Power Systems Modelling
- Spreadsheet and guideline material will be presented and utilized over frequent training sessions with the MEF Energy Team and MME. It should also be updated/adapted as needed throughout the duration of this assignment.

Component 5: Improving the financing landscape for the implementation of Cambodia’s Nationally Determined Contribution (NDC)

Cambodia submitted its updated NDC in December 2020. It has identified prioritized mitigation actions. It is a priority now for implementing these NDC actions by identifying external financing, so that Cambodia could achieve and further enhance its national mitigation targets under the Paris Agreement. This support is mostly directed to MME.

- Conduct an assessment of the current financing landscape in Cambodia for climate change mitigation, with consideration of both project- and programme level opportunities. This includes an analysis on sustainable business models on efficient and clean energy across all sectors.
- Evaluate risks, challenges and barriers currently facing the implementation of climate change mitigation actions and related financing in Cambodia
- Identify opportunities for improvement, borrowing from best practice applicable to the Cambodian context detailing potential programmes and projects for UNDP in Cambodia. Consider in this analysis, a range of potential financing instruments, limitations for UNDP and how to involve other stakeholders in partnership to circumvent the limitations, specifically focusing of but not limited to,
 - Direct/Corporate PPAs
 - Green Bonds for financing large-scale RE projects
 - Attracting institutional investors for financing RE
 - Securitization instruments for RE project financing
 - Tapping into Climate Funds for financing RE projects
- Develop two concept notes in close collaboration with MME based on their needs following the standardized GCF concept note templates with required supporting annexes. As applicable, activities conducted during 2019, and 2020 including technical assessment reports, shall be part of annexes. UNDP will collaborate with institutions that could operationalize non-grant financing instruments.

4. Deliverables

As a final product of the assignment, the Individual Contractor will deliver reports including findings and recommendations of the assigned activities. All these deliverables will be drafted in close coordination and partnership with the MEF Energy Team and based on the review comments by UNDP and MEF. Once agreed with and accepted by UNDP, a final version will be prepared and submitted to UNDP.

No	Outputs and Activities	Estimated Duration to Complete (person working days)	Target Due Dates
1	Detailed workplan/methodology Inception Report	2 days	26 April 2021

No	Outputs and Activities	Estimated Duration to Complete (person working days)	Target Due Dates
2	Up on successful completion of Component 1: Action plan and roadmap for power market enhancement development in Cambodia	10 Days	24 May 2021
3	Up on successful completion of Component 2: Opportunities for promoting the use of Demand-Side Management (DSM) and Energy Efficiency (EE)	12 Days	31 June 2021
4	Up on successful completion of Component 3: Climate Economics and Policy Design to improve economic competitiveness	18 Days	15 August 2021
5	Up on successful completion of Component 4: Provide capacity building to expand and institutionalize its governance in Cambodia's energy sector.	15 Days	15 October 2021
6	Up on successful completion of Component 5: Improving the financing landscape for the implementation of Cambodia's Nationally Determined Contribution (NDC)	35 Days	28 February 2022
7	Final Project Report (summarizing key results and lessons learnt)	3 Days	15 March 2022
Total		95 days	

5. Monitoring / Reporting Requirement

The Individual Contractor will prepare all of the reports and deliverables in the agreed format, stating all actions taken during the assignment. Reports shall be submitted after each deliverable achieved according to the agreed schedule.

6. Duration

The start date for the Individual Contractor's services will be upon signing of the contract, expected to be from 15 April 2021, and completed by 31 March 2022.

7. Duty station

The duty station for this assignment is Phnom Penh.

Only selected individual contractor expected to travel to the Country Office (CO) in country (Cambodia) is (are) required to undertake (BSAFE) training. The course accessible is here: <https://training.dss.un.org/course/category/6>.

8. Payment

Professional fee

Candidates can include all related costs in their all-inclusive daily rate as travel cost outside Cambodia will not be covered by the project. Upon certification by the Technical Advisor on Energy that assignment related tasks have been completed by the individual contractor, UNDP Cambodia

will pay directly to their account. Payment amount is paid within 30 days after satisfactorily completion of work and receiving of certification of payment. Total number of days must be 95 working days from 15 April until 31 March 2022.

If unforeseen assignment not required by the Terms of Reference is requested by UNDP, upon consultation by the Technical Advisor on Energy with the Individual Contractor and approval of the additional assignment by Senior Management, such additional services will be at UNDP's expense and the Individual Contractor may receive a professional fee per full working day based on the Contract Amendment.

In order to ensure the assignment to be effective and efficient, the payment in instalments will be applied as below:

No	Outputs/Deliveries	Payment Schedule	Payment Amount %
1	Detailed workplan/methodology Inception Report	15 April 2021	20%
	Up on successful completion of Component 1: Action plan and roadmap for power market enhancement development in Cambodia	15 May 2021	
2	Up on successful completion of Component 2: Opportunities for promoting the use of Demand-Side Management (DSM) and Energy Efficiency (EE)	31 June 2021	30%
	Up on successful completion of Component 3: Climate Economics and Policy Design to improve economic competitiveness	15 August 2021	
3	Up on successful completion of Component 4: Provide capacity building to expand and institutionalize its governance in Cambodia's energy sector	15 October 2021	20%
4	Up on successful completion of Component 5: Improving the financing landscape for the implementation of Cambodia's Nationally Determined Contribution (NDC)	30 January 2022	30%
	Final Project Report (summarizing key results and lessons learnt)	15 March 2022	

Travel cost

UNDP Cambodia will reimburse directly to their account, at the applicable UN DSA rate/per diem, costs related to field travel (within Cambodia) required by the Terms of Reference, upon prior approval of Travel Authorization by Technical Advisor on Energy and/or Senior Management.

If unforeseen travel or field visit not required by the Terms of Reference is requested by UNDP, and upon consent of the Technical Advisor on Energy and the Individual Contractor and approval of

Travel Authorization by UNDP Senior Management, such travel shall also be at UNDP's expense and the Individual Contractor will receive a per diem not to exceed United Nations DSA rate in such other location(s).

9. Experience and Qualification Requirements

In executing this TOR, the Individual Contractor will need to closely cooperate and partner with members of the Energy Team of MEF whose academic background is in finance and economics. The prospective Individual Contractor should have a thorough understanding of energy sector in Cambodia. The following qualification requirement apply:

Essential:

- At least postgraduate degree in Electrical/Power Engineering and/or Energy Economics or a related discipline or a combination of appropriate Bachelor and Postgraduate degrees;
- At least 7 years of work experience in fields of energy markets, regulatory policies, economic analysis and/or financing of energy systems, energy management and process engineering sector particularly in the field of implementation of high-impact, cost-effective energy management and process engineering solutions;
- Good understanding of energy sector in Cambodia. Prior working experience in Cambodia and ministries would be an asset.

Desirable:

- Demonstrated experience working with governments and international organizations in a developing country context, where such experience in south-east Asia is an added advantage;
- Strong knowledge of government policies in power/energy sector and strategies related to the RE and EE measures;
- Past practices in developing training modules in energy planning, conversion technologies, and demand side management is an added advantage;
- Experience in liaising and working with stakeholders, in particular public and private sector parties;
- Demonstrated experience in implementing community level energy solutions;
- Experience in designing and facilitating capacity building processes, consultations and coordination processes;
- Excellent organizational skills, especially for facilitating meetings and writing reports; and
- Excellent writing, editing and oral communication skills in English is required.
- Good interpersonal/communication skills.

10. Document to be Submitted

Applicant shall submit the following documents:

Required

- Letter of interest/proposal, explaining why the applicant considers him- or herself the most suitable for the work.
- Letter of interest/proposal, providing brief methodology on how the work will be conducted and/or approached.
- Personal CV, including information about past experience in similar projects / assignments and contact details for referees.
- Duly accomplished Letter of Confirmation of Interest and Availability and Financial proposal using the template provided by UNDP

11. Evaluation Criteria and Method

Evaluation Criteria

Technical Evaluation Criteria	Obtainable Score
At least postgraduate degree in Electrical/Power Engineering and/or Energy Economics or a related discipline or a combination of appropriate Bachelor and Postgraduate degrees	15
Methodology on how the work will be conducted and/or approached	25
At least 7 years of work experience in fields of energy markets, regulatory policies, economic analysis and/or financing of energy systems, energy management and process engineering sector particularly in the field of implementation of high-impact, cost-effective energy management and process engineering solutions;	30
Strong knowledge of government policies in power/energy sector and strategies related distribution and retail segments of power markets in south-east Asia	20
Good understanding of developing countries context, particularly Cambodia including prior working experience	10
Total Obtainable Score:	100

Evaluation Method

Cumulative analysis

Contract award shall be made to the incumbent whose offer has been evaluated and determined as:

- i) Responsive/compliant/acceptable, and
- ii) Having received the cumulative highest score out of a pre-determined set of weighted technical and financial criteria specific to the solicitation.

* Technical Criteria weight: 70%

* Financial Criteria weight: 30%

Only offeror obtaining a minimum 70% from the maximum available technical score (70 points) would be considered for the Financial Evaluation.

The maximum number of points assigned to the financial proposal is allocated to the lowest price proposal and will be equal to 30. All other price proposals will be evaluated and assigned, as per below formula to evaluate financial offer:

$$[\text{max points available for financial part (300 points)}] \times \frac{[\text{lowest of all evaluated offered prices of responsive offers}]}{[\text{evaluated price}]}$$

The proposal obtaining the overall cumulatively highest score after adding the score of the technical proposal and the financial proposal will be considered as the most compliant offer and will be awarded a contract.