



## **Consultant Opportunity**

### **Power System Planning Consultant**

*USAID Clean Power Asia program, implemented by Abt Associates*

#### **I. Introduction/Overview**

The primary objective of USAID Clean Power Asia is to work with Lower Mekong (LM) countries and other Association of Southeast Asian Nations (ASEAN) developing member states to encourage power sector investments in environmentally friendly, clean energy sources, specifically focusing on scaling up investment in grid-connected renewable power. USAID Clean Power Asia is a program funded by USAID and implemented by Abt Associates. When any reference is made to approvals or authorizations, it will be stipulated whether those decisions are contractually made by USAID or Abt Associates as implementer. As the client, any decisions made by USAID and communicated to Abt Associates are final.

#### **II. Background**

USAID Clean Power Asia works to promote renewable energy (RE) in Lower Mekong countries and throughout Southeast Asia by collecting and documenting data, identifying tools, supporting RE analysis and planning, and increasing stakeholder's understanding of planning for higher levels of renewable energy. Promoting higher amounts of renewable energy requires the improved availability and quality of RE data and tools for analysis, including technical and economic potential, RE zones, and grid integration studies. The program supports the establishment and updating of national renewable energy targets and the integration of these targets into power development plans and integrated resource plans for the power sector. USAID Clean Power Asia works to rationalize the planning and development of renewable energy by linking it to the transmission planning process through supporting designation of renewable energy zones.

The Asian Development Bank (ADB) has been working with countries in the Lower Mekong plus southern China to support energy cooperation through the Greater Mekong Sub-region (GMS) Economic Cooperation Program since the early 1990s. The GMS regional power trade coordinating committee (RPTCC), launched in 2004, has been conducting joint planning and analysis focused on transmission planning and interconnections.<sup>1</sup>

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<sup>1</sup> The Greater Mekong sub-region (GMS) is a name coined by ADB with the launch of their economic cooperation program with this region includes Cambodia, Lao PDR, Myanmar, Thailand, and Vietnam and Southern China, specifically [Yunnan Province](#) and the [Guangxi Zhuang Autonomous Region](#). The GMS has been coordinating on energy sector cooperation since the early 1990's, with the first meeting of the Regional Power Trade Coordination Committee (RPTCC) held in 2004. The RPTCC has been conducting joint planning and analysis of differences in regulations and grid codes, focused mainly on transmission interconnections. See <https://www.adb.org/sites/default/files/publication/29387/gms-ecp-overview-2015.pdf>. The World Bank funded a study for the GMS which was presented at the RPTCC meeting #25. See <https://www.greatermekong.org/sites/default/files/RPTCC-25%20Summary%20of%20Proceedings.pdf>. The study evaluated the optimum transmission line configuration between all GMS countries. An updated Power Sector MasterPlan for GMS generation and transmission completed by Manitoba Hydro, and presented at RPTCC meeting #26 in November 2019. See [https://www.greatermekong.org/sites/default/files/Attachment%206.%20Regional%20Master%20Plan\\_0.pdf](https://www.greatermekong.org/sites/default/files/Attachment%206.%20Regional%20Master%20Plan_0.pdf)



Thailand leads the Ayeyarwady-Chao Phraya-Mekong Economic Cooperation strategy (ACMECS), a cooperation framework among Cambodia, Lao PDR, Myanmar, Thailand, and Vietnam to promote balanced development in the sub-region. Its recent strategy includes priorities for infrastructure development, including high priorities transmission lines to facilitate power trade.<sup>2</sup>

The Japan International Cooperation Agency (JICA) has completed a medium-term plan for several LM countries (Lao PDR, Myanmar, others) including proposed interconnections. JICA has also been providing assistance to several LM countries on planning, operations, grid codes, and regulations focused on improving synchronicity between countries to facilitate bilateral trade.<sup>3</sup>

Abt Associates is supporting the Head of ASEAN Power Utilities/ Authorities (HAPUA) through the ASEAN Centre for Energy (ACE) on the first step in moving towards a multilateral power market, through the ASEAN Interconnection Master Plan Study (AIMS) III. To complement this study, the International Energy Agency (IEA) conducted a feasibility study for developing a voluntary multilateral power market in Southeast Asia, and the Economic Research Institute for ASEAN and Southeast Asia (ERIA) conducted a study on institutional arrangements required for developing this market. The purpose of AIMS III is to determine the combined generation and transmission needs for Southeast Asia, the opportunities for increasing bilateral and multilateral power trade, and the potential for increasing the amount of variable renewable energy (VRE) on the ASEAN power grid. This process includes three phases. Phase 1 includes an RE resource assessment, capacity expansion planning, production cost modeling, and a socio-economic-environmental assessment. A second phase to analyze the impact on the system's reliability is in process. The ultimate goal is to identify the transmission interconnections to be included in an updated ASEAN Power Grid plan.

The HAPUA Secretariat and ACE presented the results of the AIMS III study to the HAPUA council at the 36<sup>th</sup> meeting of the HAPUA Council, followed by presenting the results of the study to ASEAN preliminary decision-makers at the 38<sup>th</sup> Senior Official Meeting on Energy (SOME) in August, and the ASEAN Ministers of Energy Meeting (AMEM) in early November 2020.

To promote interconnections and power trade in the Lower Mekong and in Southeast Asia, Abt Associates seeks a *Power System Planning Expert* to conduct a desk study and analyze several reports

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<sup>2</sup> The LM countries, led by Thailand, also developed a MasterPlan for Infrastructure development under the Ayeyarwady-Chao Phraya-Mekong Economic Cooperation strategy (ACMECS), a cooperation framework among Cambodia, Lao PDR, Myanmar, Thailand, and Vietnam to promote balanced development in the sub-region. Its MasterPlan, issued in 2018, includes priorities for infrastructure development, including high priorities transmission lines to facilitate power trade. The official ACMECS MasterPlan unveiled in 2018 can no longer be found on the official ACMECS website - <https://www.dft.go.th/acmeecs-wgtif/ABOUT>. However, an article by the Asia Foundation provides some insight into the plan at <https://asiafoundation.org/2019/10/23/making-sense-of-the-many-mekongs/>. A hard copy of the masterplan will be provided by Abt Associates to the selected consultant

<sup>3</sup> The JICA study on the power network system masterplan for the Laos People's Democratic Republic is available at <https://libopac.jica.go.jp/images/report/P1000042609.html>. Reports on their work in Cambodia and Myanmar are not currently available. JICA's priorities for support of the ACMECS (Lower Mekong) MasterPlan may be found at <https://www.mofa.go.jp/files/000406737.pdf>.



on transmission plans and transmission lines, including preparing presentations for upcoming meetings. S/he will also work closely with JICA, including serving as a liaison with JICA on related technical work, and other relevant partners to analyze reports and provide recommendations on transmission lines required to facilitate increased bilateral and multilateral trade in the lower Mekong and throughout Southeast Asia. As the first step in completing the AIMS III Phase 3, Abt Associates also seeks a grid codes and regulations expert(s) to analyze grid codes and other regulations to increase grid stability and reliability, promote power trade and integrating VRE into the regional power system. The detailed tasks required are outlined below.

### **III. Objective**

The main objective of this consultancy is to review, understand, and evaluate transmission plans and how they will facilitate power trade, in particular interconnections between Southeast Asian countries, with a focus on specific pairs of countries in the Lower Mekong. Optional tasks are included which focus on standards and processes for transmission planning, operations and maintenance.

### **IV. Scope of Work**

Abt Associates aims to have an in-depth understanding of data, tools and approval processes for transmission planning in Lower Mekong countries. Abt Associates requires the consultant to review transmission plans and interconnection analyses completed, especially those completed by JICA and in the ADB-supported GMS studies. The consultant will analyze the studies that are the basis of the infrastructure plans in the ACMECS infrastructure Strategy and the USAID Clean Power Asia-supported AIMS III study. S/he will compare and analyze the pros and cons of transmission infrastructure recommended by the JICA, GMS, ACMECS, AIMS III, and other studies in terms of facilitating bilateral and multilateral trade. The consultant will analyze the existing and potential transmission lines identified in various studies in terms of their importance in facilitating power trade, the technical barriers to synchronizing country grid systems to enable power trade, and global best practices to overcome those barriers.

The Power System Planning Consultant will review and summarize previous transmission planning studies and plans conducted for the LM countries and for Southeast Asia; regulations related to planning and O&M; and analyze pros and cons of identified interconnection projects. This will require reviewing JICA transmission studies and plans conducted in specific countries, the AIMS III study, and the underlying analysis of transmission lines identified in the ACMECS infrastructure plan. The consultant will also analyze the necessity and benefit of specific interconnection lines proposed between Lao PDR and Vietnam, and conduct specific research and analysis related to the interconnections proposed from China into Lao PDR and Vietnam (included in the GMS studies and other studies), and the interconnections identified in the ACMECS studies that have been prioritized by Thailand, including an interconnection between Thailand and Myanmar, a top priority for Thailand. Several optional tasks are included as well, including desk studies on the transmission planning processes in LM countries. Options include a study of data, tools and approval process in country and



for export/import; synthesizing information from other Southeast Asia studies on transmission planning and operations; summarizing global best practices related to transmission planning/analysis; and implications for ASEAN & Lower Mekong countries specifically.

## **V. Tasks, Services Sought & deliverables**

### **Main tasks**

#### ***1. Task A1: JICA technical liaison***

The consultant will serve as a technical liaison with JICA to understand previous studies of transmission plans and regulations related to planning and O&M, synchronizing grids (in particular between Laos and Vietnam/Cambodia/Myanmar) and to assist Abt Associates in drafting scopes of work, including expected outputs and next steps, for cooperation with JICA on projects focused on transmission planning, O&M and operations.

### **Deliverables:**

1. A monthly report on activities related to JICA, including minutes of meetings and calls.
2. Scopes of work for cooperation with JICA on transmission planning and O&M, in a provided format.

#### ***2. Task A2: Analyze interconnection projects identified in other studies***

The consultant will analyze pros and cons for prioritized interconnection projects identified for the LM in various studies conducted by JICA, ADB supported studies for the GMS (Lower Mekong countries and China), AIMS III (ASEAN) and ACMECS (Lower Mekong countries and China) in terms of their ability to facilitate bilateral trade among LM countries. Note whether the proposed lines are grid to grid or “gen-ties”, i.e. projects built in one country with a dedicated transmission line to another country and operated as part of the purchasing country’s grid rather than the exporting country’s grid. Note that the AIMS III study may prioritize projects identified in the study which will include transmission interconnections and associated power to be traded, as well as VRE generation to be built in each of the trading partner countries. If this is completed, Abt Associates will make it available to the consultant to review, evaluate and comment on these priorities.

### **Deliverables:**

1. A report analyzing the pros and cons for Lower Mekong identified by several different sources in terms of how they will facilitate more bilateral trade and which ones are highest priority for moving towards multilateral trade.
2. A presentation for meetings of LM countries under the umbrella of ACMECS or other venues, including the findings from the analysis and/or one of the studies, to be determined by Abt Associates in consultation with relevant donors.

#### ***3. Task A3: Analysis of prioritized transmission projects in ACMECS strategy***

The consultant will analyze transmission lines identified in the ACMECS infrastructure plan connecting Thailand with other LM countries. S/he will document why the transmission lines were identified as high priority lines for Thailand, identify who benefits and how, the barriers to realizing the planned infrastructure



projects, and business models and opportunities for financing the transmission infrastructure, in particular the transmission line between Thailand and Myanmar.

**Deliverable:**

A report on ACMECS transmission interconnections linking Thailand with other LM countries, the reason for their being selected as high priority, the beneficiaries, barriers to investment and opportunities to facilitate investment and construction of the planned infrastructure.

**4. *Task A4: Review and analyze AIMS III study for LM countries and compare to ACMECS and GMS projects***

The consultant will review the results of the capacity expansion plan in AIMS III (including the interim or draft final report and the list of prioritized projects, if available) and compare transmission projects identified to the projects identified in the ACMECS strategy and GMS studies in terms of how they facilitate cross-border trade, who are the beneficiaries, and how they benefit from the projects. The consultant will also assist Abt Associates to share the analysis and recommendations with the LM countries, including through memos and presentations at GMS, ACMECS or AIMS III meetings and/or other venues.

**Deliverables:**

1. Memo documenting the comparison of transmission projects between AIMS III, ACMECS and GMS studies including impacts on cross-border trade and beneficiaries.
2. A presentation for 1-2 meetings, including an ACMECS meeting or other venue.

**5. *Task A5: Document and map planned interconnections and provide recommendations for overcoming barriers to investment***

The consultant will document existing and planned interconnections between LM countries as determined by various studies and plans adopted by governments, including providing details about the planned infrastructure and creating a map that documents how much power trade can be facilitated by these interconnections and their current status in terms of approval, financing, construction, etc. S/he will also analyze the barriers to synchronizing the grids and make recommendations for overcoming the barriers.

**Deliverables:**

1. A report describing the existing and planned interconnections, barriers and recommendations. 2. An annex to the report including a map of the lines with summarized status and transmission capacity (possibly in GIS or other format as agreed with Abt Associates).

**6. *Task A6: Analysis of interconnection lines proposed between Lao PDR and Vietnam***

The consultant will analyze the necessity and benefit of specific interconnection lines proposed between Lao PDR and Vietnam, including but not limited to, a line proposed by a private developer, one proposed by the IFC, and potentially others included in the Lao medium-term plan and/or Vietnam PDP, based on existing studies.



**Deliverable:**

A report summarizing the necessity and benefit of these interconnections in terms of facilitating bilateral trade between Lao PDR and Vietnam.

**7. *Task A7: Research and compare transmission lines linking China and Thailand with Myanmar and impact of China's proposed lines on planned power trade between Thailand and Myanmar***

China utilities have proposed transmission lines connecting with Myanmar. At the same time both the ACMECS strategy and GMS studies, as well as JICA's transmission study for Myanmar, appear to have prioritized different transmission lines from China that may have an impact on Myanmar's system and ability to import from and export to Thailand. The Consultant will research planned interconnections from China and compare them to interconnections from China into Myanmar. S/he will also analyze the potential impact of the proposed China interconnections on Myanmar's system and ability to synchronize and trade power with Thailand. A brief summary of the planned transmission lines and China's plans will be provided by Abt Associates.

**Deliverables:**

1. Memo documenting existing and comparing planned interconnections between Myanmar and both China and Thailand, that are identified in JICA's medium-term transmission plan for Myanmar, in the ACMECS strategy, and/or in GMS studies.
2. Technical report documenting the impact of China utilities' proposed projects on Thailand's ability to trade power with Myanmar.

**VI. Schedule**

1. The consultant should be able to start working once a consulting agreement is signed.
2. All work and deliverables are to be completed no later than **March 31, 2020** with an estimated level of effort (LOE) of **80 days** (60% for the high priority tasks and 40% for the optional tasks).
3. The consultant will discuss with Abt Associates on setting a schedule to ensure that each deliverable can meet the scheduled due dates to be established prior to signing an agreement. The consultant will work at least 15 days a month with a preference to meet the Abt Associates' team once a week. The meeting can be held virtually depending on the location of the consultant and the situation in country with regarding to Abt Associates' policy on working from home.

**VII. Qualifications / Requirements**

*Minimum qualifications required for this position:*

1. Education: Master's Degree in power engineering or a related field.
2. Experience: Minimum 8-10 years of relevant professional experience in transmission planning
3. Citizenship: Thai national is preferable or a citizen of a Southeast Asian country with a Thai



work permit.

4. Other qualifications: Ability to work effectively and harmoniously with colleagues from varied cultures and professional backgrounds; excellent in English writing, coordination, communication and negotiation.

*Preferred qualifications:*

1. Experience working for international organizations, nongovernmental; or governmental institutions /organizations or donors in a multi-cultural setting.
2. Excellent knowledge of English and at least one language of a South-East Asian country an advantage (Thai is preferable).

**VIII. How to apply**

Interested candidates may express their interest by emailing a CV and expression of interest to [recruitment@usaidcleanpowerasia.com](mailto:recruitment@usaidcleanpowerasia.com) no later than **December 16, 2020**. To be complete, your application **MUST INCLUDE** the following information:

1. A written **Expression of Interest** of up to one page describing past experience with similar assignments, including any previous publications or writing samples with relevant technical analysis related to this position. The expression of interest must address the minimum qualifications and preferred skills/prerequisites specified above. In the EOI, please propose an allocation of the total LOE to the tasks proposed.
2. **Resume or CV** clearly indicating work/consulting history and either daily consulting rate or annual compensation for each consultancy/position, stated in currency of payment.
3. **US Federal Form 1420 (EBD)** <https://www.usaid.gov/forms/aid-1420-17>

Please be prepared to provide upon request **proof of education and/or degree attained** (transcript or diploma) and **proof of annual salary or daily consulting rate** as stated in the EBD (acceptable forms include employment agreement, pay stubs, employer verification letter).

Abt Associates is an Affirmative Action/Equal Opportunity employer committed to fostering a diverse workforce and provides market-competitive salaries and comprehensive employee benefits.

*Disclaimer: Abt Associates will never ask candidates for money in exchange for an offer of employment.*