



EVALUATION OF THE CONNECTING THE AMERICAS 2022 INITIATIVE (CONNECT2022)

Final Evaluation Report
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Acronyms

BOT	Build-operate-transfer
CAM	Central America
Connect 2022	Connecting the Americas 2022 Initiative
CRIE	Comisión Regional de Interconexión Eléctrica
DoS	U.S. Department of State
dTS	Development & Training Services, Inc.
ECPA	Energy and Climate Partnership of the Americas
ENR	Bureau of Energy Resources
EOR	Ente Operador Regional
FGD	Focus Group Discussion
GOV	Government Agencies
IBRD	International Bank for Reconstruction and Development (World Bank)
IDB	Inter-American Development Bank
INT	International Donors and Academic NGOs
KII	Key Informant Interview
LEDS	Low Emissions Development Strategy
LNG	Liquefied Natural Gas
MER	Central American Regional Market
OAS	Organization for American States
PVT	Private Sector Entities
SIEPAC	Central American Electrical Interconnection System
SOW	Statement of Work
USG	United States Government

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Executive Summary

This document summarizes the results of a performance assessment of the Connecting the Americas 2022 (Connect 2022) initiative supported by the Bureau of Energy Resources (ENR) at the U.S. Department of State. Connect 2022 promotes increased power sector integration, access to electricity, and greater uptake of renewable energy by interconnecting power grids throughout the western hemisphere.¹ Given the scope of this evaluation, the impacts of related foreign assistance programs are not assessed. Development & Training Services, Inc. (dTS) was tasked by ENR to answer the following questions:

1. Did the Connect 2022 initiative affect the motivation and behavior of power sector agents to trade electricity in the Central American regional market (MER)? If so, how did it affect them? What factors affect their decisions to trade electricity?
2. How did the initiative influence Central American power sector agents' decisions on whether and how much to invest in power infrastructure (including generation capacity expansion, transmission, and distribution)? If no influence, why not? What other factors affected their decisions to invest?
3. What top three steps can be taken to improve the effectiveness of the initiative in spurring power trade and new investment in Central America?

The evaluation team interviewed key stakeholders in all CAM countries, Mexico and Colombia, completed a desk review of readily available literature, and conducted a targeted mini-survey. The evaluation concluded that Connect 2022:

- Has successfully supported the development of national energy plans that are key building blocks for robust, well planned national energy sector initiatives;
- Has yet to convince CAM countries to include specific strategies, timelines, targets or operational guidelines for regional energy trade in their national planning processes;
- Should continue promoting regional integration through more focused support to regional institutions that are currently weak; and,
- Could further enhance regional electricity trade by helping CAM countries design long-term transmission rights that help international and private investors.

The political stability, continuity, and transparency of national government agencies determine the sophistication of their energy and related plans. CAM countries view electricity trading in MER as a vehicle for achieving the overarching national goals of energy independence, energy security and lower end-user prices. Not all nations, however, are equally equipped to trade energy on the MER. Evaluation results further suggest that the regional shift towards the increased use of renewable resources is a result of changing national priorities and not due to international pressure. As such, Connect 2022 could build on this CAM momentum and proactively support power generation from renewable sources.

In order to continue supporting regional electricity market integration and facilitating power trade and infrastructure investment, the evaluation team recommends that policy makers:

- Create an energy exchange (or an energy users' group) that buys the lowest-cost energy and increases the efficiency of dispatchers to clear markets;

¹ The initiative aims to build regional power markets across the five sub-regions of North America, Mesoamerica (Mexico, Central America (CAM), and Colombia), the Andes (including Chile), the Southern Cone and the Caribbean while creating an attractive climate for investment in power sector infrastructure and clean generation capacity.

- Try to persuade Mexico and Colombia to join SIEPAC and integrate national and regional energy planning into a larger dialogue on economic development, immigration and regional security issues²; and
- Strengthen existing MER institutions, regulations and guidelines. Foremost among these is establishing clear guidelines for long-term transmission rights³.

The main report includes an introduction and sections with information on evaluation design, data sources, data collection methods and sample size. Subsequent sections elaborate on the data analysis methods, evaluation limitations, and findings, conclusions and recommendations.

² It should be noted that Mexico and Colombia want to sell energy in the MER but have not asked to join SIEPAC since that requires new treaty that has to be agreed upon through a long and onerous process.

³ Several government stakeholders noted that there was a lack of overall consensus on the preferred length of such rights as well as on the issue of whether such rights would actually lock in monopsony energy prices across the region instead of allowing for lower spot-market determined prices.

Introduction

This document provides an assessment of the Connecting the Americas 2022 (Connect 2022) initiative launched by the Government of Colombia with strong support from the Bureau of Energy Resources (ENR) at the U.S. Department of State (State). ENR is engaging with partner governments and regional agencies to integrate electricity transmission systems and develop regional and sub-regional power markets that can facilitate electricity trade and infrastructure investment. In addition, this diplomatic engagement encourages progress on addressing constraints affecting sub-regional interconnection and integration schemes and is aimed at facilitating the integration of lower-carbon energy sources, including distributed power-generation systems and renewable energy projects. With targeted bilateral and regional technical assistance and support from multi-lateral development banks for sub-regional integration schemes⁴, this initiative seeks to create opportunities for dialogue with private power sector entities.

The Western Hemisphere produces one-quarter of the world's oil, almost one-third of its natural gas and nearly 30 percent of global electricity. This hemisphere is also endowed with abundant renewable energy resources. State recognizes the fact that the region requires a 26 percent increase in new power-generation capacity to meet a projected annual GDP growth of as much as 6 percent during the next decade.⁵ Electrical interconnection benefits the Americas by allowing countries with excess power to export electricity to those with a power deficit. Interconnected power systems permit increased use of renewable energy resources, as well as power exchanges among countries with varying seasonal needs.⁶ A regionally integrated power market creates economies of scale that attract private investment, reduce capital costs and lower electricity costs for consumers – this makes businesses more competitive and helps create jobs. Furthermore, electric interconnection across a region such as Central America, when coupled with national strategies that include off-grid and/or mini-grid power systems and clean cook stoves, can bring modern energy services to millions of people who have limited or no access to energy.

At the Sixth Summit of the Americas in April 2012 in Cartagena, the Government of Colombia put forward a bold agenda when proposing *Connecting the Americas 2022 (Connect 2022)*, a hemispheric initiative ensuring that citizens, businesses, schools and hospitals throughout the two continents have the electricity they need at a price they can afford.⁷ The initiative seeks to obtain a political mandate from Hemispheric leaders to advance energy market integration and interconnection. The initiative has increased access to reliable, clean and affordable electricity for the region's 31 million citizens who lack it. Connect 2022 established a decade-long goal to achieve universal access to electricity through enhanced interconnections, power sector investment, renewable energy development and cooperation.

The initiative, endorsed in the Summit declaration, supports the Energy and Climate Partnership of the Americas (ECPA),⁸ involving all governments in the Western Hemisphere, the private sector, Inter-American Development Bank (IDB), World Bank (IBRD) and the Organization for American States (OAS). It is advanced bilaterally and sub-regionally in North America, in Central America (CAM) with Mexico and Colombia, the Andes with Chile, Brazil and the Southern Cone nations, and in the Caribbean.

⁴ The activities are outside the scope of this evaluation.

⁵ Source: www.energy.gov.connect, the Americas 2022.

⁶ Aguilera A., R. Diaz, E. Canahui, L.V. Bueno and M.J. Saavedra (2014). Articles from *El Economista*, Centroamérica Conectada, Year 6 (April-May), No 76.

⁷ Power generation in Latin America and the Caribbean must double by 2030. By 2035, the region will need over \$700B in power sector investments, according to the IEA. Over 31 million people in the region lack access to electricity.

⁸ ECPA promotes regional collaboration on low-carbon development strategies (LEDS), energy security and climate change.

Connect 2022 promotes increased power sector integration, access to electricity and greater uptake of renewable energy by interconnecting power grids throughout the Western Hemisphere. Led by the US State Department's ENR Bureau, the initiative aims to build regional power markets across the five sub-regions of North America, Mesoamerica (Mexico, Central America, and Colombia), the Andes (including Chile), the Southern Cone and the Caribbean, while creating an attractive climate for investment in power sector infrastructure and clean generation capacity. The Connect 2022 framework reinforces regional and bi-national efforts to bring electricity to all parts of the hemisphere⁹ and creates a business climate that accelerates renewable energy development and attracts private investment. Connect 2022 will likely bring the best in power technology to markets that need efficient low-cost solutions. It is a platform for development and prosperity.

Working through ECPA and other mechanisms, Connect 2022 is designed to tap the expertise, technology and capital of individual countries, regulators, utilities, and the private sector, as well as multilateral organizations and institutions. ENR has tasked Development & Training Services, Inc. (dTS) to conduct a *performance evaluation of Connect 2022, focused on the following questions*:

1. Did the Connect 2022 initiative affect the motivation and behavior of power sector agents to trade electricity in the Central American regional market (MER)? If so, how did it affect them? What factors affect their decisions to trade electricity?
2. How did the initiative influence Central American power sector agents' decisions on whether and how much to invest in power infrastructure (including generation capacity expansion, transmission and distribution)? If no influence, why not? What other factors affected their decisions to invest?
3. What top three steps can be taken to improve the effectiveness of the initiative in spurring power trade and new investment in CAM?

To the extent possible, the evaluation team¹⁰ (Team) sought to describe potential causal linkages between power trading in the Mercado Eléctrico Regional (MER) and relevant factors. The Team designed and implemented a data collection regime to provide a baseline assessment of:

- a) Factors motivating Central American participation in regional power markets;
- b) Related investment decisions by power sector companies; and,
- c) Connect 2022's effectiveness in enabling these factors.

The data collected was used to provide recommendations for improving Connect 2022's effectiveness, particularly in CAM, and with trade between Mexico and CAM. Colombia's role as a key partner was also examined.

⁹ This hemisphere has made significant progress integrating power sectors and promoting cross-border trade in electricity with support from the IDB, World Bank, OAS, donors and private companies.

¹⁰ In addition to the Team Leader, Mr. Amit Bando, the evaluation team included Ms. Natasha Zamecnik and was supported by local coordinators in Guatemala, Honduras, El Salvador, Nicaragua, Panama and Costa Rica during country/field visits.

Evaluation Design

The Connect 2022 initiative involves countries that have strategic relations with the United States Government (USG) and deals with topics that are politically sensitive at the country level. Low emissions development strategy (LEDS), for example, is an emerging development concept that often carries different interpretations among non-USG stakeholders.¹¹ Significant variations exist among CAM countries with respect to levels of economic development and growth trajectories, as well as industrial, socio-economic and emission profiles. These circumstances present country and region-specific challenges to implementing Connect 2022 initiatives. In light of these challenges, the evaluation team designed the analysis to be:

- Consistent with the practical and logistical realities of engagement with CAM countries;
- Cognizant of the sensitivities of CAM stakeholders at both the regional and country levels;
- Robust, with a combination of quantitative and qualitative data to answer evaluation questions;
- Evidence-based, with findings that are verified through triangulation and support “learning” for future project programming; and,
- Impartial, independent and transparent.

To maximize the reliability and validity of data analysis, the Team:

- Ensured adequate sampling of available data sources (documents and key informants);
- Ensured consistency of data gathering through the use of structured data collection tools; and,
- Used mixed methods and triangulated data using multiple sources to verify findings.

Data Sources

The Team used a combination of primary and secondary data sources to answer evaluation questions. Primary data included information collected directly from key program stakeholder groups. Secondary data included Connect 2022-related documents and other documents concerning CAM countries.

Primary Data

For evaluation purposes, the Team categorized Connect 2022 stakeholders into the following groups:

1. USG stakeholders (USG) involved in Connect 2022 activities and consulted under Connect 2022, including USAID bilateral missions;
2. Government agencies (GOV) from the respective CAM countries, as well as Colombia and Mexico;
3. Private sector (PVT) entities from the respective CAM countries, including chambers of commerce and/or industry associations; and,
4. International donors, members of academia, and NGOs (INT).

Secondary Data

Secondary data sources included:

¹¹ Some countries and stakeholders use concepts like “sustainable growth,” “green growth” and “low carbon development” to encompass strategies and actions that could be part of a comprehensive LEDS. One of the key attributes of LEDS is that they are country-owned and country-driven, and need not adopt USG terminology to describe the concept.

- Internal documents, including Connect 2022 documents and those provided by ENR, bilateral USAID missions and USG partners; and,
- External documents, including those covering relevant national and sub-national actions in CAM countries, like macro-economic plans, sectoral policies, action plans and implementation programs.

Data Collection Methods and Sample Size

Based on statement of work (SOW) requirements, the Team collected data using a non-experimental approach. This involved the use of mixed methods to allow for rapid analysis. The mixed method approach to data collection also provided quantitative and qualitative findings to ensure both rigor and depth of evidence. Mixed methods data collection included:

A. A comprehensive desk study

The desk study was an important source of quantitative and qualitative data. It provided valuable information on substantive issues and helped focus evaluation efforts by prioritizing issues and data gaps. The desk study involved an analysis of: (i) Connect 2022 documents provided by ENR; and, (ii) External documents, such as country-specific development plans and strategies, as well as those related to best practices on regional power markets. Each document was reviewed and summarized using a document review template developed by the Team. The template provided structure and consistency with respect to the study's overview, summary of organizations involved, analysis, findings, conclusions and recommendations. Each Team member took notes to highlight key learnings and knowledge gaps. This information was shared, triangulated and discussed as a team. The desk study is included in Annex I.

B. Key informant interviews (KII)

Key informant interviews provided more complete coverage, greater depth and a wider range of information on specific topics. Semi-structured questionnaires (including relevant evaluation sub-questions) were developed for each key stakeholder group to provide structure and guidance for KIIs. Team members used their judgment and experience when asking the most relevant questions during each interview, instead of asking questions verbatim. Some sub-questions, for example, were not relevant to particular informants, given their role in and knowledge of Connect 2022, and sub-questions that were answered during the course of other sub-questions were not repeated. In the case of some KIIs, limited informant availability required that Team members ask only the most relevant sub-questions. Throughout the KIIs, the Team ensured that stakeholders engaged in substantive discussions that followed a logical pattern. Per Riessman (1993, 2008) and Charmaz (2006),¹² qualitative interviews are an iterative, interactive process that is inherently fluid and emergent. The evaluators ensured that specific topics were addressed per evaluation objectives, while remaining open to capturing unanticipated data. It should be noted that focus group discussions (FGD) also were guided by the semi-structured interview format, and that both methods of data collection relied on establishing a rapport between interviewers and informants/participants.¹³

¹² Riessman, C. K. (2008). Narrative methods for the human sciences. Los Angeles, London, New Delhi, and Singapore: Sage Publications. Riessman, C.K. (1993). Narrative analysis. Newbury Park, London, and New Delhi: Sage Publications. Charmaz, K. (2006). Constructing grounded theory: A practical guide through qualitative analysis. London, Thousand Oaks CA, and New Delhi: Sage Publications.

¹³ The evaluation team used a non-accusatory information-gathering approach during KIIs and FGDs that drew on elements of the PEACE model. The approach assumed that a relaxed subject with whom the interviewer had rapport was more likely to cooperate and provide thoughtful feedback than a subject who was asked a list of questions in a mechanical manner. The PEACE model is considered to be a best practice and is suitable for any type of interviewee. The model was developed in the early 1990s as a collaborative effort between law enforcement agencies and psychologists in England and Wales. PEACE stands for: (i) Preparation and Planning; (ii) Engage and Explain; (iii) Account, Clarify and Challenge; (iv) Closure; and, (v) Evaluation.

C. Focus group discussions

FGDs were used to further explore stakeholder opinions, similar or divergent viewpoints, and judgments on key sub-questions related to the evaluation. Groups included between three and five individuals and were moderated by a Team member.¹⁴ The Team used USAID FGD guidelines to structure discussions.¹⁵

D. Targeted mini-survey¹⁶

The Team conducted a targeted mini-survey to gauge the attitudes of Connect 2022 stakeholders. The mini-survey was sent out to stakeholders who were identified through ENR, USAID, national agencies in CAM, and others.

The evaluation team attempted to use as many key data sources as were accessible and available during the evaluation period. In the case of primary data sources, lists of Connect 2022 stakeholders were obtained from ENR, USAID and other sources. The evaluation team used KIIs and/or FGDs to consult all active stakeholders who were available during field visits.

The evaluation team also attempted to consult with other key stakeholders involved in Connect 2022 activities in the countries of program focus, including donors, NGOs and members of the private sector. Consultations revealed that some stakeholders were actively involved in Connect 2022 activities, while others were not. The Team determined that stakeholders that were not working directly with Connect 2022 possessed significant technical and operational experience that could potentially offer valuable lessons for the initiative in areas such as: (i) Effective partnerships with national and regional institutions; (ii) Options for effective engagement; (iii) Program design; (iv) Relevant approaches to meet country needs; and, (v) Programmatic learning to address impact and sustainability.

Data collection methods, sources and tools used are summarized in Table 1.

The data collection effort involved field visits to the U.S., Mexico, Colombia and six CAM nations (Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama).

¹⁴ Tips on Conducting Focus Group Interviews, Handout 10-6 Number 10, USAID Center for Development Information and Evaluation, 1996.

¹⁵ USAID, 2013; Technical note: Focus Group Interview, *Monitoring and Evaluation Series*. November 2013

¹⁶Kumar, Krishna, "USAID Program Design and Evaluation Methodology Report: Conducting Mini Surveys in Developing Countries", USAID, December 1990, revised July 2006. The concept for the mini-survey as defined in this USAID report centers on a smaller-scale survey with fewer variables and a narrowly defined issue or problem set. The survey is designed with as few questions as possible to require minimal time for completion and sampling may or may not be a factor in respondent selection. Though respondent selection is kept small, thereby potentially limiting the statistical relevance of the data, mini-surveys can serve as a rapid and useful source of quantitative information.

Table 1: Data Collection Methods, Data Sources and Data Collection Tools

Data Collection Methods	Data Sources	Data Collection Tools (Refer to Annex II and III)
Desk study (Connect 2022 and country documentation)	Over 38 documents, including documentation provided by ENR, USAID and country-specific sources (Refer to Annex I)	Document review template.
Consultations	Interviews with over 108 key stakeholders from the U.S., as well as six CAM countries, Mexico and Colombia. (Refer to Annex IV)	Semi-structured questionnaires for key stakeholder groups (USG, CAM, Mexico & Colombia country governments, NGOs, donors and private sector members).
Focus Group Discussions	Three FGDs with key stakeholders across two countries.	FGD guides for NGOs, donors and governments.
Mini-survey of Connect 2022 Stakeholders	Of 110 stakeholders contacted electronically, 37 individuals responded to the mini-survey; 32 completed it in its entirety.	Questionnaire and online survey engine.

Table 2, below, provides a summary of the number of consultations, FGDs and organization types consulted in each country.¹⁷

Table 2: Number and Type of Stakeholder Consultations

Country	KIIs	FGDs	Number of Stakeholder Organizations Consulted			
			USG	GOV	PVT	INT
				(CAM)		
U.S.	6		4			2
Colombia	12			5	3	4
Mexico	6				2	4
Costa Rica	12		3	3	3	3
El Salvador	21	2	2	12	8	5
Guatemala	20	1		8	14	1
Honduras	7			3	1	3
Nicaragua	6		2	3	2	
Panama	13			8	5	
Total	108	3	11	42	38	22

Annex IV provides details on individuals consulted from stakeholder groups.

¹⁷The stakeholders are identified as being from U.S. government agencies (USG), Central American, Colombian and Mexican government agencies (GOV), private sector entities (PVT), and international agencies, NGOs and academia (INT).

Data Analysis

The evaluation team used multiple methods and data sources to answer sub-questions within each evaluation question, setting up a triangulation process that increased the robustness and credibility of findings. The Team developed and employed a comprehensive analytical framework to systematically answer evaluation questions, and considered the following for each finding:

- Analysis of internal and external documents for the desk study;
- Analysis of findings from KIIs and FGDs, in terms of evaluation sub-questions;
- Analysis of mini-survey results using Microsoft Excel tools; and,
- Triangulation of country evidence from the above sources leading to the consolidated finding.

Findings from KIIs and FGDs for each country were analyzed in terms of sub-evaluation questions and the level of support from each of the specific stakeholder groups. The Team used an internal scale to determine the level of agreement across stakeholders on each question or set of questions, which relate directly to the findings presented in the next section of the report. This information is presented as evidence in support of findings by showing the number of respondents who agreed with the finding, based on the structured interviews and FGDs. The information is further backed up by the desk study and mini-survey results.

The following analytical methods were particularly helpful in identifying key evidence-based findings and conclusions:

Hypothesis building and testing: Throughout the evaluation, the Team engaged in an iterative process of building and testing hypotheses. For example, working hypotheses were developed through interview feedback or desk review, then tested through additional evidence collection, including follow-up interviews and documentary review. This ongoing process continued through to the analytical phase of the evaluation, where specific analysis methods like triangulation helped finalize conclusions.

Qualitative analysis of stakeholder consultation information: Interview notes were systematically entered into data capture spreadsheets – organized by key topics and questions – along with key identifying information, like interviewee names, the type of stakeholder group they represented and their contact information. The Team used a modified approach to grounded theory¹⁸ to allow themes and hypotheses to emerge from consultation data. This approach entails evaluating data in order to identify themes and patterns, and iteratively testing those patterns to confirm or invalidate evidence. The Team also drew on the training and expertise of its team members in qualitative data collection and analysis.

Triangulation: Ultimately, the compiled evaluative evidence and results of the aforementioned analyses were triangulated through discussions between team members to identify key findings and conclusions. This process ensured that findings were supported by multiple evidence sources and analyses.

¹⁸ Strauss A and Corbin J., 1994. Grounded Theory Methodology - An Overview, In Handbook of Qualitative Research, N. K. Denzin and Y. S. Lincoln (Eds.), Sage Publications, Thousand Oaks, 1994, pp. 273-285.

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Evaluation Limitations

Complex multi-country evaluations like the performance evaluation of the Connect 2022 initiative inevitably face limitations. At the outset, it should be noted that the findings might be subject to a *social response bias*. Most stakeholders expressed strong appreciation for support from Connect 2022, and supported continuing or increasing Connect 2022 program activities. Overall, most interviewees were frank and forthcoming. Nevertheless, it is important to acknowledge that some were, at least partly, presenting material in a way that was consistent with their own institutional interests. Such bias is normal in qualitative research, and is one reason why it is critical to interview a range of individuals and triangulate results.

A compressed time schedule, adherence to field-visit protocols and the accommodation of stakeholder-requested changes in travel plans required reallocating resources away from originally planned analysis and reporting activities. In particular, an additional field visit was required to adequately cover all countries, and the duration of the field visits was extended to accommodate stakeholder schedules. Despite all efforts to meet them, several stakeholders were unavailable to meet with the Team, and had to be consulted via telephone and Skype. The Team required an extension of deadlines to complete its analysis and reporting.

While the Team is confident that it collected sufficient evidence to make strong and robust conclusions, it recognizes several limitations that may have affected the quality of the evaluation to varying degrees, including:

- *The inherent challenge of evaluating “softer” issues like diplomatic engagement and institutional capacity.* The USG’s core efforts concern strengthening diplomatic engagement and improving human and institutional capacity. It has pursued efforts like helping countries develop strategic energy plans and building the capacity of national governments and key personnel in climate finance and economics; facilitating access to data, research and information; and helping provide technical assistance on a wide range of topics. None of these aims lends itself to easy or straightforward measurement. Moreover, because Connect 2022 works on a disparate range of topics across a diverse region, suitable benchmarks for one country may not fit the circumstances of another. Rather than rely on predetermined or specific standards, the Team had to exercise considerable judgment to identify key findings across program sectors, scales and locations in order to derive evidence-based conclusions. This problem is compounded by the fact that there is no bona fide baseline per se against which to make comparisons.
- *Attribution versus contribution.* Given that many Connect 2022 efforts have been made with and through partners, it is difficult to confidently attribute specific improvements to the initiative. In many instances, stakeholders were unsure of Connect 2022’s role separate from that of other partners and contributors. Although the document review yielded valuable data, the Team faced challenges in evaluating the attribution of CAM “progress on the ground” to Connect 2022. This is, in large part, due to the fact that Connect 2022 is a diplomatic engagement between USG and CAM governments that, by design, lacks clearly defined implementation programs. The various technical assistance programs that do support Connect 2022 are outside the cope of this evaluation¹⁹.

¹⁹ USAID programs such as the Regional Clean Energy Initiative (RCEI), several bilateral technical assistance programs and investment programs supported by multilateral and bilateral agencies (such as the Inter-American Development Bank (IDB), GIZ and JICA) are actively supporting the Connect 2022 initiatives.

- *Lack of institutional memory at stakeholder institutions.* In several instances, staff turnover within stakeholder institutions limited the ability of the Team to comprehensively capture findings on a chronological basis. Staff turnover was noticeable within several national government agencies and international donor agencies. In some cases, individuals who had left an organization referred the Team to an alternate contact. Due to these gaps in “institutional memory,” relevant information was sometimes unavailable during the KIIs.

Findings, Conclusions and Recommendations

This section presents the findings and conclusions of the performance evaluation in the form of answers to evaluation questions 1 and 2. Taken together, these answers provide a baseline assessment of:

- a) Factors motivating Central American participation in regional power markets;
- b) Related investment decisions by power sector companies; and,
- c) Connect 2022's effectiveness in enabling these factors.

The answers to evaluation question 3 recommend steps to improve the initiative's effectiveness in spurring power trade and new investment in CAM.

Question 1: Did the Connect 2022 initiative affect the motivation and behavior of power sector agents to trade electricity in the Central American regional market (MER)? If so, how did it affect them? What factors affect their decisions to trade electricity?

Finding 1: Trading electricity in MER is considered a vehicle to achieve the overarching national goals of energy independence, energy security and lower end-user prices.

According to stakeholder interviews and the desk study, CAM government stakeholders want to lower energy costs for members of the voting public.²⁰ CAM power sector agents recognize that MER and the Sistema de Interconexión Eléctrica de los Países de América Central (SIEPAC) can facilitate the sale of electricity from energy rich to energy poor countries, thereby lowering energy prices. Furthermore, government stakeholders realize that regional trade can support the achievement of national energy independence targets, reinforce energy security and contribute to a reduction in end-user prices. This was clearly expressed by many CAM stakeholders during the Team's consultations, while also conveyed in the desk study literature. It should be noted, however, that several stakeholders noted that some national operators are "taxing" the energy that is wheeled on the MER by providing unequal treatment to energy trades via preferential dispatch and pricing rules.²¹ As a result, operationally, MER may not be able to live up to its full potential. Follow-up discussions with Guatemalan government stakeholders and IDB representatives suggested that the country is importing lower priced energy from Mexico and selling higher priced Guatemala-generated power on the MER. However, this power is still sold at a price that is lower than what is available elsewhere in CAM, thereby benefiting the region. This practice, while being market driven and benefiting the CAM, raises inter-country political tensions that could be eliminated via targeted diplomatic dialog.

Finding 2: Using the Connect 2022 initiative as a forum for diplomatic engagement, ENR has successfully promoted the benefits of developing national energy plans in CAM nations.

²⁰ Inter-American Development Bank (2013). "Energy integration in Central America: Full steam ahead" Available at <http://www.iadb.org/en/news/web-stories/2013-06-25/energy-integration-in-central-america,10494.html>.

²¹ Regional laws (such as Article 32) are interpreted differently by each nation. Even within a single country, different stakeholders have different interpretations of the same rules and regulations. There is no uniform system of adjudication to resolve such differences. Individual generators and distributors buy energy directly from the market and could be subject to unequal treatment if national operators impose non-market surcharges/tariffs over and above the market determined charges and wheeling tolls.

Depending on the structure of the energy sector, energy plans are either indicative plans (as with Guatemala, Panama and others with a combination of publicly and privately owned generation, transmission and distribution assets) or action plans (as with Costa Rica and Nicaragua, where the electricity sectors are vertically integrated with state ownership of assets). As pointed out by several CAM stakeholders,²² the process of developing short, medium and long-term energy plans supports the development of a robust electricity trading market and is a crucial first step in establishing a robust energy sector.

International donor agencies interviewed spoke very highly of the Connect 2022 initiative; they felt the initiative's strategic thinking and planning process contributed to the improved formulation of comprehensive long-term energy sector horizons which, in turn, helped donors plan and implement their own projects on the ground.²³

Connect 2022 was instrumental in supporting the mobilization of investment funds by the multilateral development banks. Connect 2022's diplomatic engagement and the supporting USG technical assistance to individual CAM nations has resulted in the streamlining of investment options in national power generation projects. The initiative's political declaration has also resulted in focused support of the MER by other donor nations. This is an issue on which there is universal consensus among international regional, national government and private sector stakeholders – following the 2012 Summit of the Americas, multilateral development banks' engagements in the CAM energy sector have been increasingly effective and results driven. While a lot more still needs to be accomplished, Connect 2022 has definitely streamlined and galvanized investor activities in the CAM energy sector.

CAM private sector energy market participants valued the element of predictability and guidance generated from the national energy planning process that facilitates long-term investment decisions.

Finding 3: The political stability, continuity and transparency of national government agencies determined the sophistication of designed and implemented national energy and related plans.²⁴

The level of technical competence and national experience working within a market-based system affect how stakeholders behave in MER. Finally, the geographic location of each nation within CAM critically influences how government decision makers view MER. Among others:

- Guatemala has built on its long history of working with an unbundled national energy system to develop relatively sound market principles that attract private investments. This has allowed the country to use MER effectively – it is currently the largest user of the SIEPAC line. Guatemala's proximity to Mexico, and the relatively strong bilateral relationship between the two nations provide Guatemala with an inexpensive source of energy. This allows the nation to provide its own power on the MER through market driven energy trades with its CAM neighbors.
- Panama enjoys a similar advantage because of its well-developed commercial and legal infrastructure,²⁵ proximity to the larger Colombian market and a relative abundance of domestic energy resources, and modern infrastructure. There currently is no electrical interconnection

²² While all groups of stakeholders acknowledged the importance of a national energy planning process, the government stakeholders were particularly emphatic about the role of energy plans in promoting regional energy trades.

²³ In particular, multilateral agencies such as the IADB and OLADE, clearly recognized the importance of the diplomatic engagement under Connect 2022.

²⁴ These related plans include the National Climate Action Plan and National Environmental Action Plan as well as other plans related to multilateral and bilateral initiatives such as LEDS.

²⁵ This is, in large part, related to the Panama Canal related initiatives.

between Panama and Colombia. However, there is one project under consideration that, if implemented, would allow for bilateral power trade.

- In principle, Guatemala, Panama and Costa Rica – all with good stakeholder experience working in a market-based environment – are enthusiastic about MER’s role and view it as a potential vehicle for expanded regional energy trading that could lead to achieving national objectives and increased economic activity. Even though Costa Rica has a vertically integrated energy sector that is under public control, the country has effectively used its national planning process to deploy large hydroelectric projects with private sector involvement²⁶.
- On the other hand, El Salvador, Nicaragua and Honduras view themselves as being at a geographic disadvantage relative to other CAM nations, because they do not have the ability to strike favorable bilateral deals with larger neighbors like Mexico and Colombia. Government stakeholders in these countries are cautious about the MER. They feel they are at a disadvantage when negotiating MER-related energy contracts with their neighbors, who have direct access to lower-cost energy either locally or from Mexico, while also being more conversant with energy market dynamics (given their depth of experience working with such markets).

Finding 4: Current national energy plans do not include specific strategies, timelines, targets or operational guidelines for regional trade in energy.

Though the MER was originally envisioned as a seventh energy market in CAM, this vision is far from being fulfilled. Current national plans generally do not include specific strategies, timelines, targets or operational guidelines for regional energy trade. Furthermore, national plans do not envision progress toward a strategic harmonization of national and regional targets and supporting regulations.²⁷ CAM governments tend to prepare national plans based on national priorities, while overlooking regional energy goals considerations. At best, nations like Honduras and Nicaragua have used the MER and the SIEPAC line to fulfill unanticipated short-term gaps to access lower priced energy from their neighbors.²⁸ Stakeholders in Costa Rica and El Salvador have, similarly, pointed out that the MER is a viable alternative to sell excess energy on the spot market “as needed.” As such, the strategy is to use MER on a case-by-case basis without any explicit commitment to build up the “seventh energy market” in CAM. Government stakeholders indicated that this situation is not expected to change in the foreseeable future. Private stakeholders agree that this is the case and that the situation prevents them from making investment decisions based on regional needs.²⁹

Finding 5: Typically, national energy plans include specific targets for introducing renewable energy resources into CAM energy matrices.

During KIIs, national stakeholders (especially in Costa Rica, El Salvador, Guatemala and Panama) insisted that the planned renewable (or cleaner) energy source growth reflected national natural resource

²⁶ This may limit the potential for future private sector investments in the national power sector given that the national demand is being adequately met through current power generation.

²⁷ In particular, stakeholders in Colombia pointed out that the CAM market is too small compared to Colombia’s own. As such, potential energy trades with CAM are deemed to be insignificant for planning purposes. Panama, Guatemala and El Salvador pointed out that the capacity of the SIEPAC line (at 300 MW) is too small and a very small proportion of the overall CAM market for there to be much value in including the role of the MER in national strategic plans.

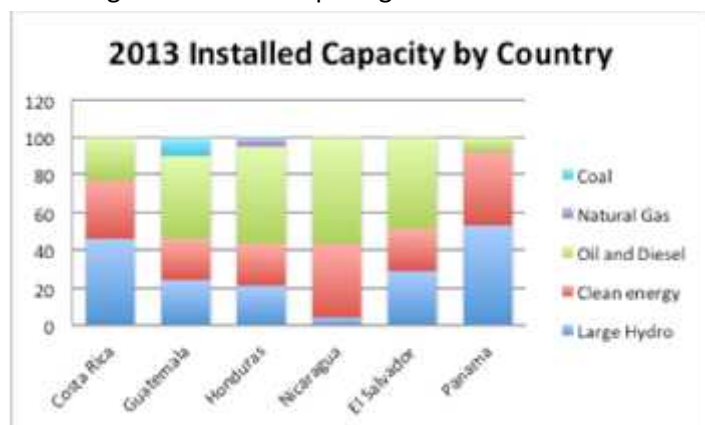
²⁸ Honduras successfully bought lower priced energy on the MER when faced with costly energy supplies from domestic generators. Nicaragua has bought energy on the MER and Costa Rica has been a consistent seller of electricity on the MER. All transactions have been on the spot market.

²⁹ As will be noted in the answer to question 2, this situation creates several obstacles to the growth of the MER.

endowments as well as an increasing national desire to use cleaner energy resources. The CAM nations view this as a way to increase national energy security. Stakeholders insisted that these decisions with CAM are not linked to international pressure. Yet, according to the mini-survey, 56 percent of respondents “strongly” and “somewhat” agreed that Connect 2022 activities supported the design and/or implementation of renewable energy policies, plans and tools in CAM countries.

The existing energy planning process has facilitated the identification and prioritization of exploitable renewable energy resources. As shown in Figure 1, the region displays an important renewable component in its energy matrix.³⁰ When examining the national Electricity Generation Indicative Plans, all reveal a projected shift toward more renewable energy sources in their generation matrix, while energy ministries emphasize a need to diversify the energy matrix, reduce hydrocarbon dependence over the medium and long term, promote use of renewable energy sources and increase energy efficiency.³¹

FIGURE 1: Share of Installed Capacity by Country – 2013
Source: global-climatescope.org



Projections for installed capacity are not uniformly available for all CAM countries.³² In most cases, where data is available, the share of renewable energy is projected to increase by 2022. On the other hand, in Panama, the share of thermal generation capacity is projected to increase because a new liquefied natural gas (LNG) project is expected to come online by 2022³³. El Salvador is planning a similar project. Discussions with national government stakeholders suggested that Connect 2022 and its support of MER and the SIEPAC line

did not significantly impact the existing trend toward increased reliance on renewable energy sources. Stakeholders, including the Central American Regional Regulator or Comisión Regional de Interconexión Eléctrica (CRIE) representatives, insisted that the goal of establishing the MER was to lower energy costs across the region, even if that led to increased reliance on fossil fuels.³⁴ Based on the Team’s analysis, Figure 2 illustrates the general shift toward more renewable sources in installed capacity for countries in the region that include projections in their indicative plans.

³⁰ It should be noted that, in a number of cases, the national plans use different categories of energy resources. Figure 1 shows comparable categories for the energy resources.

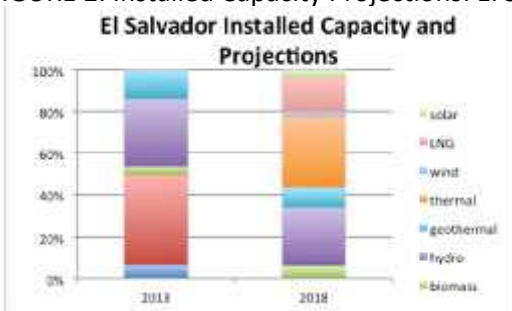
³¹ It should be noted that, in a number of cases, the national plans use different categories of energy resources. Figure 1 shows comparable categories for the energy resources.

³² Most projections are for power generation and not installed capacity.

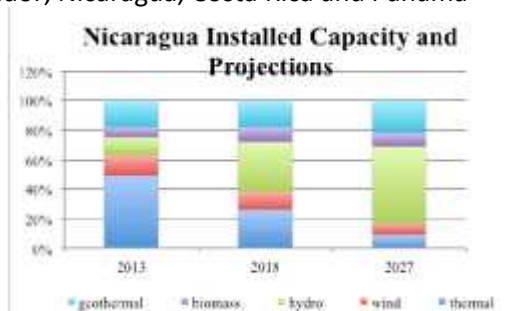
³³ Discussions at KIIs suggested that this LNG project might not come on line because of a lack of investor interest. The new Varela administration has cancelled this tender.

³⁴ If the resulting price signals led to increased use of renewable energy sources, then that would be recognized as a secondary (unplanned) benefit.

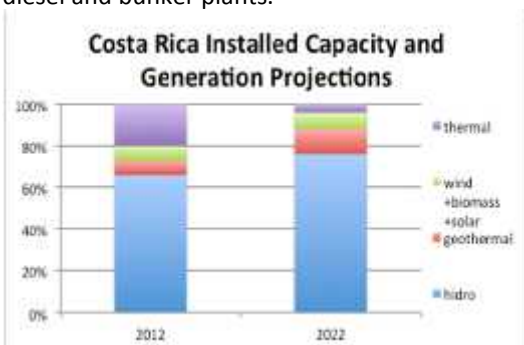
FIGURE 2: Installed Capacity Projections: El Salvador, Nicaragua, Costa Rica and Panama



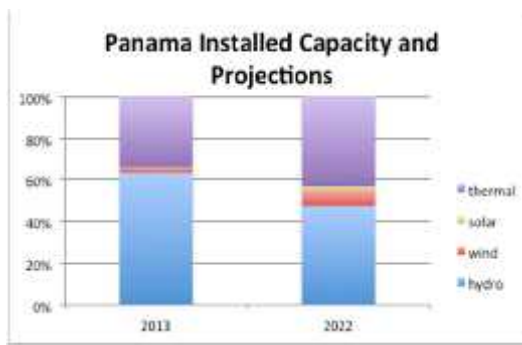
El Salvador projects a reduction from approximately 50% diesel and bunker generation in 2013 to 34% thermal in 2018. A 17% increase in LNG generation makes up for the removal of diesel and bunker plants.



Nicaragua displays a clear reduction in thermal generation from 49% in 2013 to 9% in 2027, and an increase in hydro from 12% to 52%, as well as growth of other renewable energy sources.



Costa Rica already counts on a largely renewable generation matrix. The shift toward renewable energy sources will continue as ICE projects an increase in hydro and a reduction in thermal generation over a 10-year period.



According to national projections, an increase in LNG capacity results in an increase in thermal generation. The LNG project included in the indicative plans, however, will likely not move forward.

Finding 6: Institutional mechanisms supporting MER are weak.

National and international stakeholders (including the private sector) at the KIIs as well as the literature reviewed as part of the desk study suggest that the CRIE, the market operator - Ente Operador Regional (EOR) - and other supporting institutions need strengthening. CRIE and EOR representatives acknowledged that they are under-staffed and heavily influenced by political changes at the national level.³⁵ With national interests dominating implementation of the regional market regulatory framework, and inconsistent harmonization of national and regional regulations in each CAM country, the, CRIE and EOR are largely unable to fulfill their respective missions. Enforceable regional regulations for energy trade would align regional and national priorities. It should be noted that, while regulations are already in place, they are often difficult to enforce because of the lack of harmony between national and regional regulations. CRIE and EOR should also have clearly defined mandates and adequate resources to revise and update regulations, rules of transactions, prices, and similar issues, although it should be noted that stakeholders did not indicate how this could be implemented.

As currently designed, the MER does not allow direct regional trade between private parties. Often, private generators sell power to distribution companies, who then trade on MER after national needs

³⁵ Lecaros M., J. M. Cayo, and M. Dussan (2010). Central America Regional Programmatic Study for the Energy Sector: General Issues and Options, World Bank Report no 554189-LAC, Sector Overview, Washington, D.C., USA.

are satisfied (using SIEPAC to transmit the energy across borders).³⁶ Distributions have complained about their inability to purchase more energy on the MER. During the stakeholder interviews, generators suggested that they too would like increased and direct access to the MER. In addition to facing pressures from internal energy-price trends, the MER faces potential competition from low-cost energy sourced from Mexico and Colombia. Currently, Colombia does not sell power to the MER and Mexico's sales are limited to some relatively small energy trades with Guatemala. However, the two nations are in bilateral discussions and negotiations with Panama and Guatemala respectively, to increase energy trades in the future. As long as these two nations do not work with the MER as a whole and continue to negotiate bilaterally with neighboring countries like Guatemala and Panama, the MER's full potential will remain untapped.

Conclusions: The Connect 2022 initiative *indirectly* affected the motivation and behavior of power sector agents to trade electricity in the MER. The initiative's diplomatic engagement *did* strengthen the long-term national energy planning and strategic thinking process in CAM countries. In turn, this set a series of changes in motion at the national level in each CAM country: to varying degrees, national laws, rules and regulations were formulated and implemented, and appropriate infrastructure was developed using public and private sector resources to support national goals. The degree of success in achieving national goals has varied greatly among MER members, a result of the different political structures and varying degree of stability of the governance mechanisms in each case. Ultimately, what affected the nations' decisions to trade electricity were nation-specific factors that were not part of an overall strategy aimed at regional energy market integration.

Question 2: How did the initiative influence Central American power sector agents' decisions on whether and how much to invest in power infrastructure (including generation capacity expansion, transmission, and distribution)? If no influence, why not? What other factors affected their decisions to invest?

International energy price trends, market and technology trends in infrastructure development as well as the increased competitiveness of renewable energy technologies play a significant role in determining how much and where to invest in CAM. Within CAM, power sector agents' investment decisions are influenced by several national and market factors.

Finding 7: Regional and international investors are constrained by their inability to secure long-term transmission rights.

During most KIIIs and in the literature reviewed, stakeholders emphasized that the lack of medium and long-term transmission rights limited the number and size of regional MER energy trades.³⁷ All stakeholders acknowledged that Connect 2022 has emphasized this issue in all of its diplomatic dialogs and messages. However, national governments have been unable to move forward because of their own domestic constraints. The inability to obtain guaranteed transmission rights for more than a year hinders investment in large, multi-country projects, and is an obstacle to executing medium and long-term bilateral and multilateral contracts. In addition, financial institutions are reluctant to lend money for projects lacking long-term contract security.

Supported by the regional bodies of the MER, Guatemala has started the process of granting annual rights for electricity transmission. Once the initial system is implemented, further modifications will be required to ensure smooth operation of the system with longer-term rights of electricity transmission.

³⁶ This constrains private investors' ability to raise capital for investments to support larger regional projects.

³⁷ Oseni, M and M. Pollitt (2014). Institutional Arrangement for the Promotion of the Regional Integration of Electricity Markets-International Experience, World Bank working paper, Washington D.C., USA.

Over time, all nations may agree to coordinate the process granting long-term transmission rights. Private investors indicated that transmission rights for 5-7 years are needed to sustain long-term investments in regional projects. However, national government stakeholders suggested that 1-3 year rights should be enough to enhance private sector investments. The lack of long-term transmission rights not only constrains power infrastructure investments, but also hinders MER's growth and long-term viability. This issue was flagged by all stakeholders.

Finding 8: Since 2012, Connect 2022 has successfully supported the development of a pro-investment business climate in the CAM energy sector.

Stakeholders noted that existing short-term energy sector contracts are well executed and that contract terms are fulfilled without significant disputes. A history of sound contract design and management exists in all CAM countries, despite the fact that they each have varying levels of experience working with the private sector related to different asset ownership structures, some of which are incompatible with market principles.³⁸ Connect 2022 has contributed significantly to ensuring that U.S. and international best practices are shared and adapted in CAM.

Through knowledge sharing initiatives like training seminars and workshops, orientation visits to the U.S., and peer-to-peer exchanges in CAM, Connect 2022 has hastened the adoption of relevant business practices. For example, while Costa Rica has had a long history of using good business practices to promote build operate transfer (BOT) ventures, Nicaragua and Honduras have adopted similar measures to promote energy sector investments. El Salvador has yet to work with BOT schemes. Guatemala is able to attract private investors, given the relative transparency of the country's business climate.

On the other hand, the support provided in building and operating the 300MW SIEPAC transmission line may have had the unintended effect of allowing Nicaragua and Honduras to delay upgrading and increasing their national transmission and distribution capacities.^{39,40} In these countries, the SIEPAC line is often used as part of the national transmission grid,⁴¹ reducing the capacity of the line to fulfill its envisioned role within the MER. Use of the SIEPAC line for national needs reduces the capacity available to the regional market. This creates an obstacle to establishing long-term transmission rights,⁴² and generates an additional hurdle for power sector agents to contract regional energy trades.⁴³

Conclusions: The Connect 2022 initiative has contributed to ongoing national and regional efforts to improve CAM's overall business regulation climate. The initiative has worked regionally to improve contract establishment and enforcement transparency. Though the effort has been somewhat successful, it has not contributed directly to power sector agents' decisions on whether and how much to invest in power infrastructure. The other factors listed above have been more influential in this context.

³⁸ In particular, countries with vertically integrated systems of generation, distribution and transmission (Nicaragua, Honduras and Costa Rica) may have been expected to exercise their monopoly power in their national markets. This has not been the case. It should be noted that each nation's ownership structure does influence the private sector's role as well as the size and types of transactions involving private entities – however, Connect 2022 cannot be expected to directly influence this situation.

³⁹ In times of budgets crises and political uncertainties, countries may be tempted to postpone plans to upgrade their power sector infrastructure.

⁴⁰ Lecaros M., J. M. Cayo, and M. Dussan (2010). Central America Regional Programmatic Study for the Energy Sector: General Issues and Options, World Bank Report no 554189-LAC, Sector Overview, Washington, D.C., USA.

⁴¹ Economic Consulting Associates (2010). The Potential of Regional Power Sector Integration: Central American Electric Interconnection System (SIEPAC) Transmission & Trading Case Study. http://www.esmap.org/sites/esmap.org/files/BN004-10_REISP-CD_Central%20American%20Electric%20Interconnection%20System-Transmision%20%20Trading.pdf.

⁴² Interview with Rafael Campo.

⁴³ To begin with, the 300MW capacity is miniscule compared to the overall regional energy needs (projected to double to 17,000 MW by 2022). A second SIEPAC line, if built, would increase the system-capacity to 600MW.

Question 3: What top three steps can be taken to improve the effectiveness of the initiative in spurring power trade and new investment in CAM?

The Connect 2022 initiative has established a diplomatic dialogue that has been instrumental in promoting and strengthening the MER. Decision makers in CAM nations, as well as those in regional and international agencies, have been able to determine relevant MER policy, regulatory, institutional and infrastructural needs. Stakeholders have noted that, in several instances, the initiative has supported specific activities leading to the adoption of laws, regulations and guidelines that allow MER to conduct energy transactions. Building on the initiative's support, implementing agents such as USAID, other USG agencies (OPIC, Ex-Im Bank, etc.) and other bilateral agencies (IDB, World Bank, GIZ) have successfully implemented power generation, transmission and distribution infrastructure. Private sector agents have also been able to participate in CAM power markets.

As noted in the answers to evaluation questions 1 and 2, the MER faces several constraints. The current capacity of SIEPAC transmission infrastructure is relatively small, compared to the region's energy needs and the energy capacity plans of some key nations. The fact that Colombia and Mexico are not part of MER restricts its ability to significantly influence CAM energy markets. While it is true that the SIEPAC member nations agreed to the launch of the MER and are actively trading in the MER when it supports their national interests, most CAM nations are facing domestic opposition to the idea of supporting the development of an independent "seventh energy market." Vested national interests do not want the increased competition in domestic energy markets that would result from further development of the MER. Rather, CAM decision makers envision continuing to use the MER as a convenient standby option when they need to satisfy unanticipated short-term needs. National stakeholders in all six CAM countries are not yet persuaded that they should maintain and expand the SIEPAC infrastructure⁴⁴ and their national energy sector infrastructure that is needed to fully support MER⁴⁵.

As such, national needs and priorities are more important than any perceived regional needs. Bilateral negotiations are preferred to multi-lateral negotiations. A common regional agenda on energy issues is not envisioned in the near future. Each nation expects to pursue national energy priorities independent of a regional approach? Resources allocated to the MER and the political support provided to MER institutions all reflect this state of affairs. In this context, there is little that Connect 2022 can do to directly influence MER's continued operation and possible expansion. Indirect influence via diplomatic engagement, however, is vital to the MER's long-term sustainability. The Connect 2022 initiative could work with CAM partners to:

1. Create an energy exchange (or an energy users' group) that buys the lowest-cost energy and increases the efficiency of dispatchers to clear markets.⁴⁶

In effect, this could move the MER and SIEPAC towards becoming an independent, semi-autonomous, entity owned partially by national governments, but operated on a commercial basis. This would allow the market to overcome the shortcomings of CRIE and other institutions that have very little experience operating a regional energy market. Decisions on transmission line investments and other related issues would then be market-driven without the need for top-down, central planning. The initiative could help CAM decision makers understand the

⁴⁴ The envisioned doubling of the SIEPAC capacity to 600MW is viewed as something that would be "good to have if the donors want to fund it". Stakeholders noted that, even with a doubling of capacity, the SIEPAC line would handle a very small fraction of energy trades in CAM. CAM nations are unwilling to sink too much political capital into the expansion of SIEPAC's capacity.

⁴⁵ So far, Connect 2022 has succeeded in persuading the CAM countries to buy into the SIEPAC infrastructure. However, future support for SIEPAC and other infrastructure and institutional support is uncertain.

⁴⁶ This could be modeled after the process in place at the NYSE.

intricacies of appropriate market mechanisms by introducing them to the experiences in more advanced regional markets in North America, Europe and Asia.⁴⁷ Given that the regional institutions are independent entities but the decisions need to be approved nationally because they impact national energy planning and supply options, the design and implementation of this mechanism will need to be vetted with the national decision makers.

The Connect 2022 initiative can spur power trade and new investments by working with CAM decision makers to ensure that they recognize that the MER must be viewed as a strong platform for energy trades and exchanges with a viable economic agenda that is largely separated from the influence of national political and the economic forces of CAM nations. It is in this context that the initiative can help the MER by establishing an energy exchange and vastly strengthening CRIE, EOR, and other institutions.

It should also be noted that a regional power market should exist alongside systems that allow for mini-grid and off-grid applications of renewable energy sources.⁴⁸ Given that the MER governs exchanges in the regional market over the SIEPAC line, it would be prudent for the existing regional and national bodies to coordinate their activities such that have a role in planning the deployment of mini and off grid systems.

2. Persuade the CAM to invite Mexico and Colombia to join a treaty that allows these two countries to work directly with the MER on energy trading issues and integrate national and regional energy planning into a larger dialogue on economic development, immigration and regional security issues.

Including Mexico and Colombia in the MER process, both having substantial, cheap energy resources, would promote regional trade within MER. Mexico and Colombia's ability to sell directly to all MER countries would increase the market potential of CAM countries, as they would no longer depend solely on bilateral contracts with their neighbors. Joining the MER process would allow Mexico to sell some of its gas production to other Central American countries, who would be more likely to enter into long-term agreements if they did not have Guatemala acting as a "middle man".⁴⁹ The ability to sell to the six countries would also support the financial feasibility of regional projects, like a gas pipeline connecting the region.

Power trade in the region will ultimately be driven by the economic development needs of CAM countries. Connect 2022 should strengthen its efforts to demonstrate specific co-benefits of increasing regional power trades.⁵⁰ Reliable, lower-cost energy can spur economic development, increase access to energy, and promote job creation and economic security. A systematic evaluation and continued discussion of these linkages will ensure that issues related to regional power trading will generate support from the highest decision-making levels.

⁴⁷ The NYSE commodity exchange and the EU's efforts at risk reduction while moving to standardized exchanges offer excellent starting points for examples of how the MER could evolve over time. Among other initiatives, the EU's Regulation of Wholesale Market Transparency and Integrity (REMIT) initiative aimed at strengthening European gas, LNG and carbon trading markets, should be examined to determine what protocols could be adapted for the CAM markets. The "best practices" could be used to initiate an effective dialog that ensures increased power trades and investments in CAM.

⁴⁸ Connect 2022 was designed at a time when technological options for min-grid and off-grid systems may not have been economically viable; this is not the case today.

⁴⁹ A number of stakeholders in Honduras suggested that Guatemala would charge a premium for gas delivered from Mexico. Therefore if Mexico joined MER it could contract directly with the entity demanding gas. This would "level the playing field" for all CAM nations participating in the MER.

⁵⁰ Connect 2022 has developed a reputation for providing useful opportunities for orientation visits, seminars and other forms of training and institutional capacity building. The initiative should build on these on-going initiatives.

Among other things, CAM decision makers may benefit from a reevaluation of the technical forecasting models that are currently being used to determine the viability of energy resources (conventional and non-conventional (renewable) sources). Stakeholders noted that the current methodology is biased towards large hydroelectric sources.⁵¹ Specific changes in technical evaluation models can lead to a fresh and more holistic understanding of energy-related issues in CAM. Similarly, energy sector trends and priorities could be linked to hot-button issues like migration and job security. Here, again, Connect 2022 can help guide the process of systematically evaluating such linkages at the national and regional levels. Perhaps even more importantly, the initiative could link these issues within the sub-national – city and municipal – context. This effort is needed to ensure that CAM leaders begin to “think and act regionally” while supporting the MER.⁵²

3. Help strengthen existing MER institutions, regulations and guidelines.

- *Foremost among these is the establishment of clear guidelines for long-term transmission rights.* One-year transmission rights do not provide the level of certainty needed to establish long-term contracts and regional supply agreements.⁵³ Long-term contracts between MER members would support generation capacity expansion and likely lower energy prices. Existing obstacles must be dealt with before embarking on the construction of a much-needed second SIEPAC transmission line.⁵⁴ Several stakeholders have suggested that the SIEPAC infrastructure needs immediate expansion. A doubling of capacity to 600MW would be very desirable given that the current capacity can be quickly exhausted within a fully operational MER. Recent energy trades, particularly by Nicaragua and Honduras, reflect a calculated use of the SIPAC infrastructure as a substitute for domestic transmission infrastructure that is overstretched. This further reduces the SIEPAC’s capacity to serve regional energy trades on the MER.
- *Regional energy priorities and a framework to align regional needs with national priorities should be agreed upon.* Guidelines should be implemented and strictly monitored to ensure that a truly regional approach to energy trade is firmly established. The operation of long-term, firm regional contracts is not compatible with the application of rules that give priority to domestic demand in the case of energy shortages. Some countries, like Guatemala and El Salvador, have adopted regulations that give preference to firm regional contracts but others maintain explicit norms giving priority to domestic demand.⁵⁵ CAM countries justify the subordination of other policy goals to a more aggressive pursuit of domestic supplies, price controls and trade restrictions as “defense of the domestic economy.” It is difficult for large plants to offer base-load power to neighboring countries, since there is always a risk of government

⁵¹ The Brazilian forecasting models that are currently being used are biased towards the use of these resources. The existing methodology may need to be updated in light of new technological developments that lower the costs of using solar, wind and small-hydro resources.

⁵² A coherent link between sub-national energy needs and generation options (including those related to renewable sources and off/mini grids) and national and regional priorities would allow for a grass roots participation in regional decision-making. Social and political pressure from this level along with the economic drivers would generate greater support for regional decisions on priority activities.

⁵³ Martin, J. (2013) Central America Unplugged, Americas Quarterly.

⁵⁴ Private and public stakeholders stated repeatedly the need to implement long-term contracts.

⁵⁵ Lecaros M., J. M. Cayo, and M. Dussan (2010). Central America Regional Programmatic Study for the Energy Sector: General Issues and Options, World Bank Report no 554189-LAC, Sector Overview, Washington, D.C., USA.

intervention and cuts in order to meet domestic needs and promote national interests over regional ones and contract obligations.⁵⁶

- *Transnational private ventures should be supported.* Stakeholders noted that the initiative’s support of ventures like the joint venture between Colombian and Panamanian entities – the ICP project that seeks to build an Colombian-Panamanian interconnection – is critical to its success, as well the success of other private sector operations.⁵⁷ The Connect 2022 initiative could use its convening powers to support potentially viable ventures in CAM. Given that CAM decision makers often do not agree with each other, viable cross-national initiatives are difficult to implement and sustain in the long run. This is where the initiative could help overcome national and regional constraints to higher investment in the energy sector.

Clearly, there are many additional steps that can be taken to ensure the long-term viability of the MER. Several key constraints have been identified in this document. In most instances, the CAM government decision makers need to take individual and collective action to ensure that regional priorities are agreed upon and prioritized. This will require that national rules and regulations be aligned – though not necessarily standardized – with those of other nations. Furthermore, new MER market rules and related guidelines need to be established so that regional needs can be prioritized relative to national goals. In the near term, this calls for a significant level of trust and collaboration among the regional partners. Connect 2022 can continue its diplomatic engagement to help foster collaboration among key stakeholders and focus on many of the items listed above. In this way, the initiative can help determine other related activities that need to be initiated in CAM. Through an effective collaboration with its partners, Connect 2022 can help the CAM countries achieve their objectives of increased power trade and infrastructure investment.

Proposed Timelines for Recommended Actions			
Recommended Actions ⁵⁸	Sub-actions	Proposed Timeline	
		Near Term (1-12 months) Outcomes	Medium Term (13-36 months) Outcomes
Create energy exchange to lower cost energy and improve market efficiency		“Best practices” report on energy exchanges.	MER establishes exchange.
Persuade Mexico and Colombia to join the MER & Integrate national and regional energy	Enlarge MER membership.	Study on impacts of incorporating Mexico and Colombia into MER.	Mexico and Colombia join the CAM, a treaty to coordinate activities on the MER, as part of a more comprehensive set of actions. (3+ years).

⁵⁶ Martin J. and Posadas, J. C. (2012). ‘Central America’s Electric Sector: The Path to Interconnection and a Regional Market’, Journal of Energy Security.

⁵⁷ Connect 2022 representatives have not only helped guide the process of establishing this entity but have also provided public support to the entity via press releases and public interviews. This support ensures that the CAM nations understand the importance of private sector investments in the energy sector.

⁵⁸ Stakeholders suggested some of the recommended actions. The evaluation team has developed the other recommended actions.

Proposed Timelines for Recommended Actions			
Recommended Actions ⁵⁸	Sub-actions	Proposed Timeline	
		Near Term (1-12 months) Outcomes	Medium Term (13-36 months) Outcomes
planning into larger dialog.	Integrate national and regional energy planning into a larger dialogue.	Technical forecasting models recalibrated to determine viability of alternative energy resources.	
		Studies on national & regional ability to absorb variable generation.	
		Energy sector trends and priorities linked to high priority issues such as migration & job security.	
Strengthen existing MER institutions, regulations and guidelines.	Strengthen CRIE.	Core technical team (Tiger Team) ⁵⁹ established to respond to all issues related to SIEPAC and MER.	
		Transmission operators able to propose modified regulations.	
	Implement new guidelines regarding long-term transmission rights.	Options for extending transmission rights evaluated.	Establish long-term transmission rights (5+ years).
	Agree on regional energy priorities and establish a framework aligning regional needs with national priorities.		Second SIEPAC transmission line constructed and operational (5+ years).
	Support trans-national private ventures.	Technical group establish to coordinate with EOR on the promotion of regional generation projects. Several studies on this issue are underway.	Construction of regional project(s) started.

⁵⁹ A team of relevant technical experts could be assembled at one location to respond to requests from ACM nations and the regional institutions associated with the MER to provide on-point advisory services that are consistent and relevant within the CAM regional context.

Annexes

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Annex I: Desk Study References

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Annex II: Data Collection Instrument – Phase I

Policy-related Questions

Question 1: Did the Connect 2022 initiative affect the motivation and behavior of power sector agents to trade electricity in the Central American Electricity Market (MER)? If so, how did it affect them? What factors affect their decisions to trade electricity?

Relevance & Quality of Design	<ol style="list-style-type: none"> 1. Were key international stakeholder(s) involved in the design of activities? Need boxes to “check-off”: USAID, CIDA, The World Bank/GEF, IADB, DANIDA, CIDA, GIZ, & other. 2. Were key country & regional stakeholders – power sector agents - involved in the design of activities? 3. To what extent have tasks/sub-tasks been designed to meet the needs of power sector agents?
Effectiveness	<ol style="list-style-type: none"> 4. Are the most suitable socialization methods used (to build awareness and generate popular buy-in) bearing in mind the operating context of the target countries? 5. Are the most suitable media tools applied bearing in mind the operating context and capacities of target countries?
Efficiency	<ol style="list-style-type: none"> 6. Has Connect 2022 appropriately balanced the allocation of resources between regional platforms; national and sub-national level participation in regional cooperation; national-level activities; and sub-national-level activities?
Partnerships	<ol style="list-style-type: none"> 7. Have appropriate institutional arrangements been established to enable Connect 2022 to play the role of regional Program Integrator? 8. Has Connect 2022 developed partnerships with the most relevant organizations at national and sub-national level in its target countries? 9. Has Connect 2022 identified synergies and developed partnerships with relevant bilateral, regional and international organizations (e.g. donors, development partners, NGOs and institutes)?
Impact & co-benefits	<ol style="list-style-type: none"> 10. To what extent has Connect 2022 been able to promote USG priorities in the target countries? 11. To what extent have Connect 2022 activities led to improved national capacities to promote private sector investments in RE? 12. To what extent has Connect 2022 supported the design or implementation of RE policies, plans, and tools in target countries?
Sustainability	<ol style="list-style-type: none"> 13. What is the likelihood that activities and results initiated by Connect 2022 will be continued beyond the Connect 2022 program period?

Question 2: How did the initiative influence Central American power sector agents’ decisions on whether and how much to invest in power infrastructure (including generation capacity expansion, transmission, and distribution)? If no influence, why not? What other factors affected their decisions to invest?

Relevance & Quality of Design	<ol style="list-style-type: none"> 14. To what extent have implementation delays and timeliness of activities had an impact on Connect 2022’s ability to support specific national initiatives?
Effectiveness	<ol style="list-style-type: none"> 15. To what extent are Connect 2022 activities aligned to the planning cycles of USG stakeholders (particularly bilateral missions)? 16. To what extent has timeliness of Connect 2022 activities affected the ability to use appropriate methods and means?
Efficiency	<ol style="list-style-type: none"> 17. What proportion of Connect 2022 activities has been implemented according to the time scales in the work plan?

Partnerships	18. To what extent has the timeliness of Connect 2022 activities affected partnerships and potential work plans with relevant organizations at the national and regional levels? 19. To what extent have activities been implemented according to the time scales specified by target countries?
Impact & co-benefits	20. To what extent are Connect 2022 activities at the country level aligned to the planning and decision making time cycles of these countries?
Sustainability	21. Have any implementation delays affected the ability to develop feasible hand over and exit strategies for Connect 2022 activities at regional and national levels?
Question 3: What top three steps can be taken to improve the effectiveness of the initiative in spurring power trade and new investment?	
Relevance & Quality of Design	22. To what extent has Connect 2022's processes been flexible to accommodate any changing needs/requests from countries?
Effectiveness	23. To what extent are institutional capacities developed as opposed to individual capacities?
Efficiency	24. To what extent has the achievement of outputs contributed to the achievement of expected results?
Partnerships	25. Has Connect 2022 been able to make use of the various strengths and capacities of USG stakeholders? 26. To what extent have the existing partnerships established by Connect 2022 enabled effective implementation and achievement towards expected results?
Impact & co-benefits	These sub-questions are being developed.
Sustainability	27. Are the activities/results cost effective for the national stakeholders to continue following completion of Connect 2022? 28. Do the stakeholders have plans to continue delivering the results of the initiative and if so, are they likely to materialize? 29. Are national stakeholders' abilities being developed (technically, managerially, and financially) in order to for continuing to deliver the outcomes beyond the current initiative?
MISCELLANEOUS QUESTIONS	
Relevance & Quality of Design	30. To what extent can Connect 2022 activities be better aligned with country specific development agendas and local needs? 31. Will Connect 2022'S impact and sustainability prospects improve through a focus on specific Central American countries?
Effectiveness	32. What local partnerships can be established or improved (e.g. with academia/training providers) to support and maximize scale-up of results? 33. Has Connect 2022 identified synergies and developed partnerships with relevant bilateral, regional and international organizations (e.g. donors, development partners, NGOs and institutes)?
Efficiency	These questions are in the process of being developed.
Partnerships	34. What synergies and partnerships with relevant bilateral, regional and international organizations can add value to the overall objective of Connect 2022?

Impact & co-benefits	<p>35. What adjustments in Connect 2022 activities are needed to spur power trade and new investments?</p> <p>36. What adjustments in relevant capacity building activities are needed to improve regional or national capacities to train personnel in skills supporting private sector investments on a large scale?</p> <p>37. What adjustments are needed so that Connect 2022 can support institutional arrangements/policy instruments to harvest long term co-benefits of the Connect 2022 approach in areas including:</p> <ul style="list-style-type: none"> - Improved economic opportunities in urban and rural regions? - New job opportunities (including clean energy jobs)? - Large scale application of new and more efficient technologies through improved access channels and financing mechanisms? - Creating opportunities for industry and SMEs to participate? - Creating opportunities for gender equality and disadvantaged groups? - Creating opportunities for improving the local environment (e.g. reducing air pollution concentration in urban areas through cleaner public transportation systems or improving indoor air quality through cleaner energy)?
Sustainability	<p>38. How can Connect 2022 activities be more strongly embedded in ownership structures of the national and regional stakeholders?</p> <p>39. How can Connect 2022 activities be more strongly integrated to support national/sub-national policies?</p>

Renewable Energy-related (RE) Questions

Question 1: Does the current transmission planning consider renewable energy (RE) scale-up?

Planning

1. Is there a national electrification plan?
2. If yes, does the electrification plan include both grid and off-grid?
3. When was the last update of the electricity plan?

Question 2: Does the Government publish a high quality validated national atlas on the potential for RE resources that includes the following resources?

Resource Potential Data

4. Wind
5. Solar PV
6. Solar CSP
7. Hydro
8. Geothermal
9. Biomass
10. Is an atlas published for any of these resources?
 - Wind
 - Solar PV
 - Solar CSP

	<ul style="list-style-type: none"> ○ Hydro ○ Geothermal ○ Biomass <p>11. If the Government publishes it, please check applicable attributes below.</p> <ul style="list-style-type: none"> ○ Modeling outputs are validated by ground measurements for more than a year, with publicly available documentation ○ Modeling outputs are validated independently, or using a peer-reviewed validation protocol that is in the public domain ○ Spatial resolution of 10 km or better ○ Temporal coverage equal to or greater than 10 years ○ Temporal distribution available through the Global Atlas (monthly, seasonal, yearly values or statistical quantities) <p>12. Does the government publish a strategic planning or zoning guidance on existing RE resources? Please check applicable resources below.</p> <ul style="list-style-type: none"> ○ Wind ○ Solar PV ○ Solar CSP ○ Hydro ○ Geothermal ○ Biomass <p>13. Does the Government publish the guidance? If the Government publishes it, please check applicable attributes below.</p> <ul style="list-style-type: none"> ○ Systematic process of considering RE mapping outputs alongside other relevant factors, including environmental, social, physical, infrastructural, and political constraints ○ Undertaken as part of a Strategic Environmental and Social Assessment or equivalent process ○ Process has included appropriate stakeholder engagement and consultation (please provide an assessment of this process). ○ Conclusions have been consolidated into government policy and communicated to relevant stakeholders.
<p>Question 3. Are there regulations explicitly allowing mini-grids to operate and outlining their rights?</p>	
<p>Policies and Mandates</p>	<p>14. If yes, check all applicable attributes of the existing regulations</p> <ul style="list-style-type: none"> ○ Procedures for getting connected ○ Provisional license ○ Final license ○ Retail tariff standards ○ Wholesale tariff for both sales and backup power ○ Exemption and deregulation under specific conditions ○ Reporting and compliance <p>15. Are there regulations applied when the main grid connects to mini-grids</p>

	<ul style="list-style-type: none"> ○ If yes, can mini-grid operators charge tariffs that exceed the national tariff level? ○ If yes, do mini-grid operators need prior regulatory approval of contract terms in order to enter into a power sales contract with businesses and residential consumers? ○ If yes, are there conditions under which they would be exempt? ○ If yes, please specify the conditions. <p>16. Are safety, reliability, and voltage and frequency standards for mini-grids made publicly available?</p> <p>17. Is there any general law that deal with expropriation?</p> <ul style="list-style-type: none"> ○ If yes, does it cover mini-grids? ○ If no, is there a specific mechanism to protect regulated mini-grids against expropriation (e.g. buyouts, termination payments, mini-grid conversion)? <p>18. Are there duty exemptions or subsidies for mini-grid RE technology?</p>
Question 4. Is there a target on RE?	
Quota Policies & Competitive Mechanisms	<p>19. If yes, what is the target year?</p> <ul style="list-style-type: none"> ○ If yes, what is the percent generation capacity from RE in targeted year? ○ If yes, provide percent contribution to RE target by type of technology: <ul style="list-style-type: none"> ▪ Biomass ▪ Wind ▪ Solar PV ▪ Solar CSP ▪ Hydro ▪ Geothermal ○ If yes, does the country/state have a RE action plan to implement the targets? What are the salient features of this plan?
Question 5. Is there a target on RE?	
Quota Policies & Competitive Mechanisms	<p>20. If yes, what is the target year?</p> <p>21. If yes, what is the percent generation capacity from RE in targeted year?</p> <p>22. If yes, provide percent contribution to RE target by type of technology:</p> <ul style="list-style-type: none"> ○ Biomass ○ Wind ○ Solar PV ○ Solar CSP ○ Hydro ○ Geothermal ○ Other <p>23. If yes, does the country/state have a RE action plan to implement the targets? What are the salient features of this plan?</p>

Question 6. Is there a RE purchase obligation?	
Quota Policies & Competitive Mechanisms	<p>24. If yes, please indicate whether these obligations are:</p> <ul style="list-style-type: none"> ○ (a) imposed on utilities, ○ (b) imposed on distribution companies or ○ (c) Others (specify). <p>25. Does the country use competitive bidding or auctions to promote RE development?</p> <p>26. If yes, does the design of the auction mechanism or bidding include compliance rules to ensure timely completion and deployment of RE projects?</p>

Access to the Grid Questions	
Question 1: Is there a prioritized access to the grid for RE and if so, how is this made operational?	
Question 2: What are the specific operational rules for managing variable RE?	

Questions on Connection, Wheeling and Curtailment	
Question 1: Is there secondary legislation or regulations for the allocation of connection costs? What are the features of this legislation/regulation?	
Question 2: Is there a proactive planning process or mechanism that allows the least cost expansion of transmission network infrastructure to connect one or more RE plants?	
Question 3: Are there rules defining who pays for the wheeling charges of transmission and distribution network? What are the rules and the enforcement mechanisms?	
Question 4: Are there rules defining the sharing of curtailment costs?	

Credit Enhancement and Risk Mitigation Mechanism Questions	
Question 1: Does the government offer credit enhancement or risk mitigation mechanisms to RE developers?	
	<p>1. If yes, please check applicable mechanisms:</p> <ul style="list-style-type: none"> ○ (a) reserve account; ○ (b) direct sovereign guarantee; ○ (c) partial risk guarantee; ○ (d) others (specify):
Question 2: Does the government back utility payments with specific mechanisms?	
	<p>2. If yes, please check applicable mechanisms:</p>

	<ul style="list-style-type: none"> ○ (a) letter of credit; ○ (b) Others (specify).
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Subsidy Budgeting and Sustainability Questions

Question 1: Do price subsidies or premiums exist to support RE generation?

	<p>1. If yes, please identify which mechanisms are applicable by typing in the number(s) ((1) Wind (2) Solar (3) Hydro (4) Geothermal (5) Biomass (6))</p> <ul style="list-style-type: none"> ○ Feed-in Tariff ○ Premium over wholesale electricity price ○ Renewable energy certificate ○ Feed-in Tariff or preferential price through net metering policy ○ Others (specify)
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Question 2: Is the RE price subsidy or premium passed through to the consumer tariff?

	<p>2. If yes, please specify the percent that is transferred.</p>
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Question 3: What is the level of the price incentive for different RE source based generation supported? (If applicable, provide price levels for different technology/project scales).

	<p>3. Wind 4. Solar PV 5. Solar CSP 6. Hydro 7. Geothermal 8. Biomass</p>
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Price Predictability Questions

Question 1: Do the legal or regulatory frameworks include a formula for price change/adjustment?

	<p>1. If yes, is the frequency of allowed RE price level modifications specified in the regulatory framework? 2. If no, is such formula included in standard contractual agreements? <ul style="list-style-type: none"> ○ If yes, is the frequency of allowed RE price level modifications specified in the contract? </p>
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Question 2: Is the RE price subsidy or premium passed through to the consumer tariff?

	<p>3. If yes, please specify the percent that is transferred.</p>
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Question 3: What is the level of the price incentive for different RE source based generation supported? (If applicable, provide price levels for different technology/project scales).

4. Wind
5. Solar PV
6. Solar CSP
7. Hydro
8. Geothermal
9. Biomass

Enabling Environment for Standalone Home Systems Questions

Question 1: Are there duty exemptions or subsidies for standalone home systems (solar PV systems and lanterns)?

1. If yes, please specify.

Question 2: Are there minimum performance standards for standalone home systems?

Question 3: What is the level of the price incentive for different RE source based generation supported? (If applicable, provide price levels for different technology/project scales).

Question 4: Are there national programs that promote the deployment of standalone home systems

Question 5: Does the Government have a dedicated funding line or budget for electrification (including a funded national program, budget item, rural electrification fund) to finance electrification including grid, mini-grid and standalone home systems?

Question 6: Does the utility or government subsidize a portion of the costs for the household connection?

Question 7: Do capital subsidies exist for utilities to provide distribution lines to villages?

Questions on Procedural Efficiency

Question 1: Please indicate procedures necessary for the following customers to connect to the grid. Identify the (a) procedural step, (b) order, (c) time involved, (d) authority/agency, (e) cost, and (f) comment.

1. Rural customers at a village where electricity service is available
2. Urban informal customers at a peri-urban, slum area

Question 2: Please indicate procedures necessary to provide licenses/permits to operate a mini-grid.

3. Large-scale mini-grids (over 100kW)
4. Small-scale mini-grids (up to 100kW).

Annex III: Data Collection Instrument – Phase II

Notes: All “to what extent” questions have to be reworded and turned into Likert scales.

Scale will be as follows for all Likert questions:

- 1 – Strongly Disagree
- 2 – Disagree
- 3 – Neither Agree or Disagree
- 4 – Agree
- 5 – Disagree
- 6 – Don’t Know

1. Where do you primarily work? (For example, SIGET, EDESAL, PROESA, etc.)
2. Which of the following options best describes your level within your organization?
 - a. President
 - b. Vice-President
 - c. Director
 - d. Manager
 - e. Analyst
 - f. Executive Assistant
 - g. Other (specify)
3. What is your gender?
 - a. Male
 - b. Female
4. Which of these international stakeholders were involved in the design of the Central American Energy Market's activities?
 - a. USAID
 - b. CIDA
 - c. The World Bank
 - d. Inter-American Development Bank
 - e. DANIDA
 - f. GIZ
 - g. Other (specify)
5. How involved were power sector agents (key country and regional stakeholders) in the design of the Mercado Eléctrico Regional (MER) under the "Connect the Americas 2022 (Connect 2022) initiative? Were they not involved at all, somewhat involved, or very involved?
 - a. Not involved at all
 - b. Somewhat Involved
 - c. Very involved
 - d. Don’t know

For the following questions, please tell us if you (1) strongly disagree, (2) disagree, (3) neither disagree nor agree, (4) agree, or (5) strongly agree with the following statements:

6. Connect 2022's activities are aligned with the planning time cycles in the target countries:
7. The timeliness of Connect 2022's activities affected potential work plans with relevant organizations at the national level negatively:
8. Connect 2022 tasks/sub-tasks are designed to meet the needs of power sector agents (key country and regional stakeholders):
9. Connect 2022 uses socialization methods to "build awareness and generate popular buy-in" that are ineffective:
10. The timeliness of Connect 2022's activities affected partnerships with relevant organizations at the regional level negatively:
11. The timeliness of Connect 2022's activities affected potential work plans with relevant organizations at the regional level positively:
12. Connect 2022 appropriately balances the allocation of resources between regional platforms:
13. Connect 2022 appropriately balances the allocation of resources between national and sub-national participants:
14. Connect 2022 has supported the development of appropriate institutional arrangements that allow for a Regional Program Integrator:
15. Connect 2022 has partnerships with the most relevant organizations at the national level:
16. Connect 2022 has partnerships with the most relevant organizations at the sub-national level:
17. Connect 2022 activities support the design and/or implementation of renewable energy policies, plan, and tools in Central American countries:
18. The activities of Connect 2022 will continue after the program ends:
19. The activities of Connect 2022 are not aligned with development agendas in your country and local needs:
20. The timeliness of activities has an impact on Connect 2022's ability to support specific national activities aimed at promoting the Mercado Eléctrico Regional (MER):
21. Connect 2022 activities are aligned to the planning cycles of USG stakeholders:
22. Connect 2022 activities are not aligned to the planning cycles of bilateral (US and other donor) missions:

23. The timeliness of Connect 2022 activities affected the ability to use appropriate methods and means (such as regulations, tariffs and investment credits) to promote the MER:
24. The timeliness of Connect 2022's activities affected partnerships with relevant organizations at the national level positively:
25. Connect 2022's activities have been implemented according to the time scales given in the target countries:
26. Connect 2022's activities are not aligned with the decision-making time cycles in the target countries:
27. Connect 2022 activities have not led to improved national capacities to promote private sector investments in renewable energy:
28. Connect 2022 **does not** appropriately balance the allocation of resources between national level activities:
29. Connect 2022 **does not** appropriately balance the allocation of resources between sub-national level activities:
30. Connect 2022 has not developed partnerships with relevant bilateral, regional, and international organizations (i.e. donors, development partners, NGOs, and institutes):
31. Connect 2022 has not promoted United States Government priorities in Central American countries:
32. Connect 2022's processes are not flexible enough to accommodate changing needs from the countries involved:
33. Institutional capacities have been developed by Connect 2022:
34. Individual capacities have not been developed by Connect 2022:
35. National stakeholders' abilities are being developed (technically, managerially, financially) in order for outcomes to be sustained after the Connect 2022 program ends:

The following questions should be open ended:

36. Have any implementation delays affected the ability to develop feasible hand-over strategies for Connect 2022 activities at the regional level? Please explain.
37. Have any implementation delays affected the ability to develop feasible hand-over strategies for Connect 2022 activities at the national level? Please explain.

38. How can Connect 2022 activities be better embedded in the ownership structures of national stakeholders?
39. How can Connect 2022 activities be better integrated to support national policies?
40. How can Connect 2022 activities be better integrated to support sub-national policies?
41. What local partnerships can be established or improved (e.g. with academia/training providers) to maximize scale-up of results?
42. What adjustments in Connect 2022 activities are needed to spur power trade?
43. What adjustments in Connect 2022 activities are needed to spur new investments?
44. If you have other useful information or suggestions, please write them here. Thank you very much for your participation.

Annex IV: Stakeholder List

Country	First Name	Last name	Organization
USA	Carlos	Jacome	IADB
	Tonci	Bakovic	IFC
Mexico	Victor Hugo	Ventura	CEPAL - Mexico
	Guillermo	Hernandez	World Bank
	Jose Enrique	Auffray	Gas Natural Fenosa
	Gavin	Strong	Control Risks
	Juan Carlos	Belausteguigoitia Rius	Centro Mariano Molina
Guatemala	Emilio Rolando	Lickez	Ministry of Mines and Energy
	Karin	Lorente	Ministry of Mines and Energy
	Luis	Chang	Ministry of Mines and Energy
	Monica	Perez	CNEE (Comision Nacional de Energia)
	Juan Carlos	Paiz	Pronacom (Programa Nacional de Competitividad)
	Maria Izabel	Cifuentes	Pronacom (Programa Nacional de Competitividad)
	Arq. Hugo Fernando	Gómez Cabrera	SEGEPLAN (Secretaría de Planificación y Programación de la Presidencia)
	Licda. Melissa	González	
	Licda. Astrid	Ibarra	BCIE (Banco Centroamericano de Integración Económica)
	Jose Ernesto	Salazar Pérez	Energuate
	David	Villeda Guerra	Energuate
	Rodolfo Renato	Cabrera	Energuate
	Licda. Anayte	Guardado	AGER (Asociacion de Generadores con Energia Renovable)
	Horacio	Fernandez	AGER (Asociacion de Generadores con Energia Renovable)
	Ing. Jorge F.	Alvarez	AMM (Administrador del Mercado Mayoritario)
	Ing. Jose Vicente	Espinoza R.	AMM (Administrador del Mercado Mayoritario)
	Byron Aroldo	Batz	AMM
	Oswaldo	Smith	Pantaleon
	Ghillermo J.	Mendina Ll.	Pantaleon
	Carlos Rodolfo	Pèrez E.	Pantaleon
Edward Enrique	Fuentes	Trecca	
Ing. Horacio	Fernandez	ANG (Asociación Nacional de Generadores)	
Florentino	Fernandez	BCIE (Banco Centroamericano de Integración Económica)	
Honduras	Alan	Cáceres	Empresa Nacional de Energia Electrica (ENEE)
	German	Henriquez	Comision Nacional de Energia (CNE)
	Angel	Napoleon Soto	Comision Nacional de Energia (CNE)

Country	First Name	Last name	Organization
	Mario Fernando	Cerna	Central American Bank for Economic Integration (BCIE)
	Jose	Magana	Banco Centroamericano de Integracion Economica (BCIE)
	Jorge	Sanz	Banco Centroamericano de Integracion Economica (BCIE)
	Juan Diego	Osorio	Asociacion Hondureña de Productores de Energia Renovable (AHPER)
El Salvador	Blanca	Coto	SIGET - Superintendente General de Electricidad y Telecomunicaciones
	Carlos	Canjura	SIGET
	Jose Luis	Regalado	SIGET
	Napoleon	Alfaro	SIGET
	Calixto	Arias	SIGET
	Enrique	Rosales	SIGET
	Luis Reyes	Reyes	CNE Consejo Nacional de Energía
	Oscar	Rivas Yanes	BANDESAL
	Esau	Sanchez	BANDESAL
	Cecilia	Segura	UCE-SG/SICA
	Angel Arturo	Diaz	CEL
	Ricardo	Artiga	PROESA
	Marlin	Castillo	EOR
	Rodolfo	Herrera	EOR
	Dr. Violeta	Barberena	EOR
	Abraham	Bichara	AES El Salvador
	Miguel	Campos	AES
	Roberto	Gonzalez	DELSUR
	Ingrid	Chavez de Mendoza	DELSUR
	Josue	Alvarenga	EDESAL
Angel	Salinas	EDESAL	
Rafael Ernesto	Galeano	GRUPO GM	
Rafael Augusto	Galeano Vargas	GRUPO GM	
Colombia	Dr. Carlos	Eraso Calero	Mines and Energy Ministry
	Eduardo	Sanchez Sierra	Mines and Energy Ministry/UNDP
	Rogelio	Ramires Reyes	Mines and Energy Ministry
	Alberto	Rodriguez Hernandez	Unidad de Planeacion Minera Energetica (UPME)
	Juan Sebastian	Arenas	National Authority for Environmental Licenses
	Miguel	Toledo	IFC
	Jairo	Salgado	IDB
	Rafael	Campo	Deloitte Consulting

Country	First Name	Last name	Organization
	John	Rey	CODENSA
	Nicolas	Moreno	Independent Project Developer
	Dr. Guillermo	Perry	Universidad de los Andes
	Jose Manuel	Mejia	Estudios Energeticos
Panama	Victor	Gonzalez	CND/ETESA (National Dispatch Center/Electric Transmission Company)
	Antonio	Guelfi	CND/ETESA
	Carlos	Bereto	CND/ETESA
	Ing. Hecor	Rodriguez	SNE (Secretary of Energy)
	Carlos	Iglesias	SNE
	Marta Raquel	Bernal	SNE
	Rebeca	Ramirez Acosta	SNE
	Daniel	Mina	ASEP (National Authority of Public Services - Department of Technology and Commerce Standards)
	Andres	Villegas Ramelli	Interconexión Eléctrica Colombia – Panamá S.A. -ICP Panamá
	Rodolfo	Barniol Zerega	Panama LNG Power
	Andres	Castillo	Panama LNG Power
	Julio	Fabrega	Panama LNG Power
Ricaurte "Catin"	Vasquez	General Electric	
Nicaragua	Cro Salvador	Mansell Castrillo	Energy and Mines Ministry
	Antonio	Palomares Fernandez	Disnorte/Dissur
	Gabriel	Sanchez	ProNicaragua
	Martin	Schaffer	ICPower
	Ing. Lal	Marandin	Pelican
	Karen	Bettencourt	U.S. Embassy
Costa Rica	Gilberto	de la Cruz	ICE (Costa Rican Institute of Electricity)
	Mario	Montero Arguedas	ICE (Costa Rican Institute of Electricity) -Centro Nacional de PlanificacionElectrica - CENPE
	Irene	Cañas	MINAET (Environment, Energy and Telecommunications Ministry)
	Jose Enrique	Martinez	EPR (Empresa Proprietaria de la Red)
	Edgardo	Calderon	CDMER
	Alden	Kitson	Grupo Cuestamoras
	Scott	Benson	Costa Rica Solar
	Jim	Ryan	ASI Power and Telemetry
	Ana María	Majano Guerero	INCAE Business School
	Maria	Sand	US Embassy
	Rebecca	Espinoza-Benson	US Embassy
Molly	Flores	US Embassy	

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Annex V: Evaluation Statement of Work

Bureau of Energy Resources (ENR): Evaluation for the Connecting the Americas 2022 Initiative (Connect 2022)

NATURE AND PURPOSE OF THE EVALUATION

The Bureau of Energy Resources (ENR) issues this solicitation for the purpose of obtaining the services of a contractor to conduct a performance evaluation of the Connect 2022 Initiative, specifically with regard to cross-border power trading and investment decisions by participants in the Central American Electricity Market (MER). The evaluation will require the contractor to design and implement a data collection regime to provide a baseline assessment of factors motivating Central American participation in regional power markets and related investment decisions by power sector companies and Connect 2022's effectiveness in enabling these factors. The contractor will then use this information to make recommendations for improving the effectiveness of efforts under Connect 2022 and specifically, in Central America and trade between Mexico and Central America. The audiences for the evaluation will be ENR, which manages the initiative, as well as the Bureau of Western Hemisphere Affairs (WHA) and regional partner institutions listed in the background section below.

BACKGROUND

At the 2012 Cartagena, Colombia Summit of the Americas, Heads of State supported a Colombian initiative to set a goal of increasing access to electricity and creating a more favorable environment for renewable energy sources by interconnecting power grids from Canada to the southernmost tip of South America by 2022. This hemispheric initiative, Connecting the Americas 2022 (Connect 2022), recognizes the uniqueness of national power markets and policy frameworks and distinct sub-regional efforts to expand electricity trade. Connect 2022 therefore is advanced differently across five sub-regions: 1) North America; 2) Mesoamerica (Mexico, Central America, and Colombia); 3) the Andes (including Chile); 4) the Southern Cone; and 5) the Caribbean.

Connect 2022 is a diplomatic and foreign policy initiative that promotes increased power sector integration, access to electricity, and greater uptake of renewables by interconnecting power grids throughout the western hemisphere, building regional power markets, and creating an attractive climate for investment in power sector infrastructure and clean generation capacity, including renewable energy sources. Within the U.S. Government, the initiative is led by the State Department's Energy Resources Bureau. In addition to governments, key partners are the Inter-American Development Bank and World Bank, which both provide power-related policy and technical assistance support to governments, and finance power sector infrastructure investment across the hemisphere. Other Connect 2022 stakeholders are the Organization of American States and private companies.

To fulfill President Obama's commitment to the Summit initiative, ENR is engaging with partner governments and regional institutions to further the integration of electricity transmission systems and the development of regional and sub-regional power markets that can facilitate electricity trade and investment. ENR has further advocated that partner governments take steps to improve policy

and regulatory frameworks to facilitate the integration of lower carbon energy sources, including distributed systems and renewable energy projects. ENR has also provided policy and technical advice to partner governments to help strengthen their commercial and investment environments, steps necessary to increase their access to private and multilateral financing. ENR, WHA the IDB, and the World Bank have convened several ministerial meetings to secure political support for Connect 2022's goals, and President Obama and Vice President Biden have also encouraged their counterparts on the same. These engagements should lead to increased power sector integration and investment, access to electricity, and greater uptake of renewables.

Within Connect 2022's broad hemispheric framework, the initiative's current priority is Mesoamerica, where it aims to consolidate progress on the Central American regional market and its institutions, expand and strengthen interconnections and power trade with its neighbors, and improve the climate for investment. Nearly 30 years ago, the six Central American governments (Panama, Costa Rica, Nicaragua, Honduras, El Salvador and Guatemala) embarked on a project to create a regional power market, with assistance from the Inter-American Development Bank (IDB) and Mexico, Spain, Colombia, and the United States. Despite the near completion of the project's physical infrastructure by 2012, progress in setting up a functional and effective set of regional institutions (such as the regional power regulator CRIE) was slow. Consolidating and enabling the Central American power market project therefore became a priority focus for the initiative.

Key milestones have included:

- The 2012 Summit of the Americas, where the Connect 2022 initiative was launched;
- The 2012 UN General Assembly, where Secretary Clinton and the Colombian Foreign Minister co-chaired a Connect 2022 ministerial meeting with regional foreign ministers;
- Entry into force on June 1, 2013 of the permanent power trading regulations on the Central American regional power market;
- The June 2013 Mesoamerican Energy Ministerial in Washington at the IDB, in which ENR and WHA, in partnership with the IDB, obtained ministerial level approval for an action plan to finalize the SIEPAC transmission line and eliminate obstacles to implementation of the regional Central American power market;
- President Obama's April 2013 Central America visit; and
- High-level visits (VPOTUS, Ambassador Pascual, DAS Ichord) and continuous staff-level visits.

Within the State Department, Connect 2022 is led by ENR's office of Electricity and Energy Efficiency (ENR/ETR/EEE), working in close coordination with WHA and U.S. Embassies in Latin America. In addition to the IDB and World Bank, several key regional institutions have been partners in this effort, including the regional Central American power market regulator (CRIE), the operator of the regional transmission line (EOR) and the executive council of the regional market (CD-MER).

SCOPE OF WORK, EVALUATION QUESTIONS AND CONTRACT PERIOD

The selected contractor will:

Conduct an evaluation with the objective of providing the Department of State with evidence of what factors have motivated participation of power sector agents (including generators, distributors, traders, utilities, and transmission companies) in the regional Central American power market. This information will be used to inform the decision-making of regional institutions and partner governments on the optimum policy framework for advancing private sector participation in the regional power market. This evaluation shall focus on the following questions:

1. Did the Connect 2022 initiative affect the motivation and behavior of power sector agents to trade electricity in the Central American regional market (MER)? If so, how did it affect them? What factors affect their decisions to trade electricity?
2. How did the initiative influence Central American power sector agents' decisions on whether and how much to invest in power infrastructure (including generation capacity expansion, transmission, and distribution)? If no influence, why not? What other factors affected their decisions to invest?
3. What top three steps can be taken to improve the effectiveness of the initiative in spurring power trade and new investment?

In determining answers to the above questions, to the extent possible, the contractors should seek to describe potential causal linkages between power trading in the MER and relevant factors.

This task order shall be effective on the date of the Contracting Officer's signature, and shall remain in effect for five months; final payment will be made after delivery of the final report.

EVALUATION DESIGN AND DATA COLLECTION METHODS

The evaluation will utilize key informant interviews, with a preference for field interviews. It is anticipated that many of the interviewees will speak only Spanish, so bilingual interviewers will be necessary. In responding to this statement of work, offerors shall include a description of how they will conduct the study and a description of the data collection methods they suggest using to answer the evaluation questions. ENR expects that it should be feasible to survey the entire population of Central American power sector agents (generators, distributors, traders, utilities, and transmission companies), but is willing to consider approaches involving representative samples should that prove infeasible. Mixed methods approaches are highly recommended. Data collection methods could include surveys, key informant interviews, focus groups, and content analysis of existing policy documents related to the initiative.

Offerors shall articulate the proposed data collection methodology planned for this evaluation. In accordance with the Department of State's Program Evaluation Policy, the evaluation must have methodological rigor and also have independence and integrity. During the preparatory stage of the evaluation, the Contractor will prepare and submit to the Contracting Officer Representative (COR) for approval, as part of its work plan, a planned methodology for the conduct of evaluation

work including explanation of specific methods to be used to collect information necessary for the evaluation of the Connect 2022.

EVALUATION TEAM

ENR expects that a team of two evaluators will be sufficient for the completion of this evaluation, but recognizes that the Contractor may propose a more efficient or effective team structure to include foreign nationals familiar with the technical aspects of the power sector. Offerors must provide resumes for each expert on the team, all of whom will be regarded as key personnel per the base IDIQ, and therefore are considered to be essential to work performance. ENR expects that the individual team members will be available to conduct the evaluation. ENR anticipates many of the interviewees will speak only Spanish, so the evaluation team must have the capability to conduct Spanish language interviews.

- 1) The Senior Consultant shall have (a) graduate degree in energy economics or in a related field, and (b) a minimum of fifteen (15) years' experience in evaluation of overseas programs and projects; and (c) experience managing rigorous field studies in a developing country context; previous work on energy issues would be an advantage.
- 2) The Mid-Level Consultant shall have (a) graduate degree in social sciences or in a related field, and (b) a minimum of ten (10) years' experience in participating in evaluation of overseas programs and projects.

At least one of the two team members must have extensive knowledge and expertise in either: evaluating programs that build recipient government regulatory or legislative capacity, or power sector issues.

REPORTING AND DELIVERABLES

The Contractor will observe the following timetable for deliverables. Except where otherwise noted below, ENR will respond with input on draft documents within 5 business days.

The beginning of the period of performance of this task order shall be the start of the evaluation.

Within 10 business days of the start of the evaluation, the Contractor will conduct **an initial planning meeting with ENR.**

Within 20 business days of the start of the evaluation, the Contractor will present to ENR for its comments and approval **a timetable/calendar and management plan** for the evaluation; ENR will provide comments and approval within 30 business days of the start of the evaluation.

Within 35 business days of the start of the evaluation, the Contractor will present to ENR/ETR/EEE for its approval **a literature review**. This review would include the state of the art with respect to (1) the economics of cross-border trade in energy, (2) the economics of power sector investment in developing country contexts such as Central America, and (3) seminal, recently completed, and/or ongoing field research which directly relates to the questions to be considered by this evaluation.

Within 45 business days the **proposed methodology with draft data collection instruments.**

Within 50 business days the **results of testing of the draft data collection instruments and any proposed changes**.

Within 55 business days of the start of the evaluation, the Contractor will **begin collection of field data**, to include key informant interviews and telephone surveys.

Within 100 business days of the start of the evaluation, the Contractor shall submit a **baseline dataset**, in Excel format with all quantitative and qualitative data in machine readable format.

Within 140 days of the start of the evaluation, the Contractor shall submit for ENR review the **Draft Evaluation Report**, to which ENR will respond within 15 business days.

Within 165 business days of the start of the evaluation, the Contractor shall submit to ENR a **Final Evaluation Report**. The report shall contain the following elements:

- A Table of Contents
- An Executive Summary – a two-to-three page, single-space document containing a clear concise summary of the most critical elements of the report;
- The Evaluation Report (no more than 25 pages), which presents the rationale for the evaluation and methods used to collect the data, and discusses the major findings and related issues and questions raised by the Statement of Work. In discussing these findings, the report should address the following:
 - Evidence/findings of the study concerning the evaluation questions;
 - Succinctly stated conclusions drawn from findings; and
 - Recommendations for the future management of Connect 2022 based on the evaluation’s findings and conclusions
- Evaluation Report Appendices, including:
 - Evaluation scope of work;
 - List of documents consulted and of individuals and agencies contacted; and
 - Questionnaires, interview questions, and other data gathering tools.

The Final Report shall contain no more than 30 pages, excluding Evaluation Report Appendices. The report shall be written in English. The Contractor shall provide a copy both in PDF and Microsoft Word formats.

On a mutually agreeable date after ENR’s acceptance of the Final Report, the Contractor shall prepare and deliver **oral presentations** and provide written materials to ENR and U.S. Government representatives in Washington, D.C. covering the key findings, conclusions, and recommendations drawn from the evaluation. The intended audience is the U.S. government implementing partners listed above. The total time spent delivering presentations is not expected to exceed 10 hours.

LOCATION AND PLACE OF PERFORMANCE

All work shall take place at the Contractor's own facilities. Access may be granted to Washington, D.C. Government facilities from time to time as approved by the COR to review existing reporting documents and monitoring data, and to interview relevant personnel.

GOVERNMENT FURNISHED EQUIPMENT OR INFORMATION

The Contractor will use its own equipment and materials to draft reports. ENR will provide access to data and documents related to the administration of Connect 2022, to include: trip reports; strategic planning documents; and briefing papers. ENR will also provide contact information for implementing partners, regional bureau stakeholders, and recipients, and will facilitate initial contact with these individuals as appropriate and agreed by the Contractor.

SECURITY

No Security Clearance is required for this task order.

PERFORMANCE STANDARDS

Performance Objective	Performance Standard
Timely, accurate, and complete deliverables	<ul style="list-style-type: none">All Deliverables are complete, accurate, and provided in timely manner in accordance with task order requirements.
Quality evaluation	<ul style="list-style-type: none">All reports are complete, comprehensive, authoritative, and suitable for the purposes outlined in the task order.All reports are subjected to rigorous quality controls and are devoid of typographical and grammatical errors.
Maintain records of data collected under this Task Order	<ul style="list-style-type: none">Records of all data examined under this Task Order are maintained.All records, including interview notes, can be retrieved quickly from an organized format, with electronic and physical copies provided to ENR/ETR/EEE as requested.
Logistics and Coordination	<ul style="list-style-type: none">All communications with U.S. government and private contractor implementers is vetted in advance through ENR/ETR/EEE.All logistical arrangements necessary to facilitate task order completion are made in a timely, cost-effective manner with minimal Government involvement.
Cost Control	<ul style="list-style-type: none">Task order is completed for the cost/price specified in the Contractor's cost proposal.Innovations and efficiencies are implemented resulting in cost savings to the Government, wherever possible.

PERIOD OF PERFORMANCE

- Base period will be 09/15/2014 through 02/14/2015;
- Option: 02/15/2015 to 05/15/2015

U.S. Department of State
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Washington, DC 20520