Summary
Sustainable Mekong Energy Initiative
USAID Regional Development Mission for Asia (RDMA)
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1. The Lower Mekong's Energy Challenge

Economic growth is driving the need for dramatic increases in energy production in the Lower Mekong region,[1] most of which is based on conventional energy sources: coal, natural gas, oil, and large-scale hydropower. The impacts will be far-reaching, both for global greenhouse gas emissions as well as for regional ecosystems, human health, fisheries and livelihoods throughout the Mekong basin.

A recent Asian Development Bank (ADB) study indicates that over the next 15 years, energy demand in Lower Mekong countries will nearly triple, from 317 terawatt-hours in 2012 to 815 terawatt-hours in 2025.[2] Existing Power Development Plans for countries in the Lower Mekong region show:

- The number of coal and lignite power plants will increase to 54 with a total installed capacity of nearly 60 gigawatts (GW);
- The number of gas-fired plants will increase to 49 plants with about 40 GW capacity; and,
- The number of large hydropower plants will increase to 38 plants with more than 45 GW total capacity.

While Lower Mekong countries expect to triple their renewable energy capacity in solar, wind and biomass in the next 10 years, they are starting from a very low baseline of only 3,500 megawatts (MW), so the increased capacity would still only account for 9 percent of installed capacity. Meanwhile, greenhouse gas emissions from the energy sector in the Lower Mekong region have steadily increased to approximately 900 million tons of carbon dioxide equivalent, or about 2.09 percent of the world total. This amounts to more than the total energy and industrial emissions from Indonesia or Canada. Yet even these calculations underestimate the impact of large-scale tropical hydropower plants, which release potent methane emissions that can exceed those of fossil fuel for decades.[3] The vast majority of the region's emissions are from Thailand and Vietnam which have experienced rapid economic growth in recent decades. Energy demand projections show continued exponential growth ahead for the region.

These trends are sobering. Yet they present a critical window of opportunity to assist Lower Mekong countries in meeting their energy needs over the coming decades through more environmentally-friendly technologies. Smarter choices in energy supply made now could greatly reduce both the global and regional environmental impacts and set the region on a path toward more sustainable low-emissions development.

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[1] The Lower Mekong countries include: Cambodia, Laos, Myanmar, Thailand and Vietnam.
[2] Asian Development Bank, "Impact Assessment Ensuring Sustainability of the GMS Regional Power Development Report," 2014.
[3] New York Times. A Dam Revival, Despite Risks. November 19, 2014. http://www.nytimes.com/2014/11/20/business/energy-environment/private-funding-brings-a-boom-in-hydropower-with-high-costs.html

Overall, these countries' current Power Development Plans are based on historical pathways that gravitate toward expansion of conventional energy generation, without fully considering the potential of renewable energy and energy efficiency. In addition to contributing to emissions mitigation objectives, scaling up renewable energy and energy efficiency in the Lower Mekong can deliver significant development co-benefits. It has the potential to provide reliable energy access, strengthen energy security, improve air quality and reduce health costs, boost economic growth, reduce transnational conflict, promote food security and biodiversity, and reduce direct energy costs.

To date, USAID support to Lower Mekong countries in the energy sector has focused heavily on reducing the environmental impact of large hydropower facilities. Although this is important, Lower Mekong countries have also requested and greatly need donor support for boosting renewable energy development and improving energy efficiency. Both approaches are necessary to drive low-emission development and sustainably meet the energy demands of the region's growing economies.

According to the *Southeast Asia Energy Outlook*, member states of the Association of Southeast Asian Nations (ASEAN) can deliver major energy savings over the next 20 years. Under the "Efficient ASEAN Scenario," by 2035, the region can take steps to produce significant results, including:[4]

- Removing barriers to energy efficiency deployment could deliver a 15 percent reduction in energy demand by 2035;
- Energy demand-side management and more efficient coal power plants could lower electricity demand by 25 percent;
- More efficient industrial equipment, stringent vehicle fuel-economy standards, and quicker phase-out of fossil-fuel subsidies could drive reductions in use of oil by 10 percent and natural gas by 11 percent;
- Phasing out fossil-fuel subsidies that amounted to $51 billion in 2012 could improve energy markets, encourage more efficient energy use, relieve burdened government budgets, and encourage clean energy investment; and,
- Reduced spending on energy could increase disposable income and stimulate economic activity elsewhere in the economy, delivering major energy security, economic and environmental benefits and boost regional GDP by about 2 percent in 2035.

Similarly, analysis by the ADB in the Greater Mekong Subregion (GMS) has concluded that aggressive action to both manage demand and promote new, clean supply technologies is needed to advance the cause of Asian energy security. But these advantages will not be fully realized without measures to bring demand and supply together more efficiently. Thus, cooperative programs that integrate energy delivery systems on a regional scale are required for achieving Asia's energy security. [5]

[4] *Southeast Asia Energy Outlook*, International Energy Agency (IEA) and Economic Research Institute for ASEAN and Southeast Asia (ERIA), September 2013.
[5] "Asia's Energy Challenge," Chapter 2 of *Asian Development Outlook 2013, ADB, Manila*

The ADB analysis explains how such programs have precedents, notably in Europe and notes that regional cooperation and integration are on the rise in Asia as countries respond to a multitude of common challenges by pursuing closer links. This is true especially within the Southeast Asian region. Growing regional ties are most visible in trade. East and Southeast Asian countries have formed a regional production network that has transformed the two subregions into "factory Asia." This increased the share of trade between ASEAN member states of from 21 percent of ASEAN's total trade in 1998 to 25 percent by 2010.

Regionally, it is clear that power trade through power grid interconnection in ASEAN and Lower Mekong countries will result in significant benefits for individual countries and for the region. Among the benefits are the following:

- Reduced dependency on national investment and increased alternative capital to invest in the power reserves to meet peak demand;
- A more reliable and alternative supply of electricity from interconnection network in case of power failure or shortage;
- Reduced operation costs and greenhouse gas emissions and other pollutants;
- More economical sources of energy, contributing to improved ability to access electricity; and
- Increased tax revenues from the sale of electricity and wheeling charge (i.e., use of transmission charges), contributing to national budgets and economies.

The economic benefits are clear, as shown by a recent study by Economic Research Institute for ASEAN and East Asia (ERIA) that estimated that the net annual economic benefits from Lower Mekong regional power trading will be $16.5 billion in 2015 and could grow to over $40 billion by 2030.[6]

2. Sustainable Mekong Energy Initiative

Goal

RDMA is considering the design of a project to support Lower Mekong countries **to direct current and future investment in power development toward environmentally-friendly renewable energy and energy efficiency, leading to significantly reduced or avoided greenhouse gas emissions** (measured in metric tons of carbon dioxide equivalent) **and increased investment in clean energy** (measured in $US public and private investment in clean energy). The Initiative intends to facilitate the move towards regional market-based electric power trading to complement ongoing work of the ASEAN Centre for Energy (ACE) and the GMS Power Development Program in coordination with multiple donors assisting power development in the Lower Mekong countries.

The Sustainable Mekong Energy Initiative is expected to advance two of U.S. Secretary of State John Kerry's foreign policy priorities in the region. First, it will promote robust economic development for a "Sustainable Mekong." Second, it will promote broad, catalytic low-emission

[6] Chea Piseth and Chea Sophearin, "Assessment of Power Trade Benefits in the Lower Mekong River Basin," ERIA Research Project Report, pp. 193-239, Jakarta 2013. (Net annual benefit is sum of the benefit from power supply and from export minus the cost of the project.)

clean energy development that mitigates greenhouse gas emissions, a key deliverable to the 2015 United Nations Framework Convention on Climate Change Conference of Parties in Paris.

Implementation Approach

During 2015, RDMA will explore opportunities for partnerships and undertake consultations with key national agencies, development partners and technical experts involved in Lower Mekong power development. If these consultations indicate there is a role for USAID assistance, RDMA will explore options for cooperating with ASEAN ACE and the ASEAN Regional Energy Policy and Planning Sub-Sector Network (REPP-SSN) as regional partners. The REPP-SSN has members from the national energy planning departments of relevant Ministries in each ASEAN country. RDMA will also explore how best to coordinate its assistance with the GMS Regional Power Trade Coordination Committee (RPTCC), which is comprised of representatives from member countries' energy ministries and electricity utilities, and directs an ADB-led multi-donor-supported power development program in GMS countries.

The initial concept for the Sustainable Mekong Energy Initiative is to use the approaches outlined in the "Efficient ASEAN Scenario" of the *Southeast Asia Energy Outlook* to provide technical assistance for Lower Mekong power development in three main areas: (1) policy and planning for power systems; (2) adoption of energy efficiency technologies and practices; and (3) increased renewable energy investment. The specific assistance to be offered under each area will be determined during the design process.

Within ASEAN, ACE is a regional institution of excellence with a mission to "accelerate the integration of energy strategies within ASEAN by providing relevant information, state-of-the-art technology and expertise to ensure that over the long term, necessary energy development policies and programs are in harmony with the economic growth and the environmental sustainability of the region." ACE is instrumental in preparing the *ASEAN Plan of Action for Energy Cooperation* (APAEC) and in coordinating its implementation by numerous Specialist Organizations of ASEAN, including the Forum of the Heads of ASEAN Power Utilities/Authorities (HAPUA), the Energy Efficiency and Conservation Sub-sector Network (EE&C-SSN), the New and Renewable Sources of Energy Subsector Network (NRE-SSN) and the Regional Energy Policy and Planning Sub-Sector Network (REPP-SSN). ACE manages assistance from donors to implement APAEC and support the work of the ASEAN Specialist Organizations.

Depending on the needs and desires of the Lower Mekong national energy organizations, the Sustainable Mekong Energy Initiative could coordinate assistance from a variety of U.S. or regional ASEAN sources including private sector firms, utilities or energy agencies, professional associations, or regional institutions. With the objective of helping Lower Mekong countries rapidly increase investments in renewable energy and energy efficiency, lower relative energy demand, and promote technology adoption, the technical assistance would emphasize both results in expanding clean power and in building human capacity. This assistance could also facilitate networking and the exchange of best practices to support key public and private sector actors to make better energy policies, plans and decisions that integrate energy efficiency and renewable energy options.

Through design consultations and organizational, technical and economic analyses, RDMA expects to define activities under the Initiative that also could complement ADB assistance planned with the new Regional Power Coordination Center (RPCC), a new institution for regional power development under the GMS RPTCC.

By working to restructure energy development planning and stimulate additional investment towards clean energy, RDMA would assist Lower Mekong countries in their combined regional efforts to shift significant public and private financial resources away from conventional power, and thereby achieve significant greenhouse gas emissions reductions and expanded clean energy investment over the near- and long-term. These activities would be designed with the Lower Mekong countries to elevate clean energy as a more viable and financially compelling alternative to conventional power, and to help accelerate the clean energy development efforts of the private sector, host-country governments, and the countries' development partners.