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USAID LOW EMISSIONS ASIAN DEVELOPMENT PROGRAM

FINAL REPORT

2011–2017



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The following Annexes are included as separate documents:

**Pull Out Section A:
USAID LEAD National GHG Inventory Systems Activities**

**Pull Out Section B:
Ensuring Effectiveness of USAID/RDMA Regional Programs**

**Pull Out Section C:
Thailand Greenhouse Gas Organization's Carbon Footprint
for Organizations Activities**

**Pull Out Section D:
Regional Support for LEADS Development and Implementation**

**Pull Out Section E:
Lessons for Building Effective and Sustainable Regional Platforms**

LIST OF ACRONYMS AND ABBREVIATIONS

ACES	American Clean Energy and Security Act
AFOLU	Agriculture, Forestry and Other Land Use
AGMC	Asian Greenhouse Gas Management Center
AIT	Asian Institute of Technology
BCCI	Bombay Chamber of Commerce and Industry
B-LEADERS	Building Low Emission Alternatives to Develop Economic Resilience and Sustainability program (USAID Philippines)
BPW	Business and Professional Women (Thailand)
BRT	bus rapid transit
BUR	Biennial Update Report
CDKN	Climate Development and Knowledge Network
CDM	Clean Development Mechanism
CE	clean energy
CEMS	continuous emission monitoring systems
CEnergy	Climate Change and Clean Energy program (USAID Philippines)
CERs	certified emission reductions
CESC	Clean Energy Solutions Center
CFO	Carbon Footprint for Organizations
CIFOR	Center for International Forestry Research
CIMMYT	International Maize and Wheat Improvement Center
EC-LEDS	Enhancing Capacity for Low Emission Development Strategies
ECN	Energy research Centre of the Netherlands
EFDB	Emission Factor Database
ERDI	Energy Research and Development Institute (Thailand)

ETS	emissions trading system
FAO	Food and Agriculture Organization of the United Nations
FiA	Forest Inventory and Analysis program (USFS)
FY	fiscal year
GCCI	Global Climate Change Initiative
GGAP	Green Growth Action Plan
GGGI	Global Green Growth Institute
GGTF	Green Growth Task Force
GHGMI	Greenhouse Gas Management Institute
GHGRP	Greenhouse Gas Reporting Program
GPP	Gross Provincial Product
GsT	GeoSpatial Toolkit
HEEIC	Hotel Energy Efficiency Initiative Committee
IA	Institutional Arrangements
IAARD	Indonesian Agency for Agricultural Research and Development
IAERI	Indonesian Agricultural Environment Research Institute
ICED	Indonesia Clean Energy Development program (USAID)
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
INDCs	Intended Nationally Determined Contributions
IPCC	Intergovernmental Panel on Climate Change
IPPI	Inventory Project Progress Indicator
IR	intermediate result
ISC	Institute for Sustainable Communities
ISO	International Organisation for Standardization

KCA	Key Category Analysis
LDCs	least developed countries
LEAF	Lowering Emissions in Asia's Forests program (USAID)
LEAP	Long-range Energy Alternatives Planning
LEDS	low emission development strategies
LEDS-SAT	LEDS Self-Assessment Tool
LULUCF	land use, land-use change and forestry
MACC	Marginal Abatement Cost Curve
MAPT	Measurement and Performance Tracking program
MCA	multi-criteria analysis
MDD	Methods and Data Documentation
MOU	Memorandum of Understanding
MPI	Ministry of Planning and Investment (Vietnam)
MRV	measurement, reporting, and verification
NAMAs	Nationally Appropriate Mitigation Actions
NDCs	Nationally Determined Contributions
NIIP	Archiving and National Inventory Improvement Plan
NIS	National Inventory System
NREL	National Renewable Energy Laboratory
OECD	Organisation for Economic Cooperation and Development
PDP	Partnership Development Plan
PMP	Performance Management Plan
QA/QC	Quality Assurance and Quality Control
RDCS	Regional Development Cooperation Strategy for Asia
RDMA	Regional Development Mission for Asia (USAID)

REAL	Remote Expert Assistance on LEDS
SEA GHG	Southeast Asia Greenhouse Gas Inventory Capacity Building Project
SEDP	Socio-Economic Development Plan
SIDS	Small Island Developing States
SL	sustainable landscapes
SPAD	Malaysia Land Public Transport Commission
SWAMP	Sustainable Wetlands Adaptation and Mitigation Program
TACCC	Transparency, Accuracy, Completeness, Comprehensiveness, and Consistency
TBL	triple bottom line
TCR	The Climate Registry
TICA	Thailand International Cooperation Agency
TERI	The Energy and Resources Institute (India)
TGO	Thailand Greenhouse Gas Management Organization
TVER	Thailand Voluntary Emissions Reduction
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
US EPA	United States Environmental Protection Agency
USFS	United States Forest Service
VFD	Vietnam Forests and Deltas program (USAID)
V-LEEP	Vietnam Low Emission Energy Program
WBCSD	World Business Council for Sustainable Development
WRI	World Resources Institute



USAID LEAD program countries

EXECUTIVE SUMMARY

Over its five-year duration, the U.S. Agency for International Development Low Emissions Asian Development (USAID LEAD) program established and strengthened institutions, platforms, and initiatives to catalyze climate-resilient, low-emission development in Asia.

At program completion in early 2017, the program partner countries are positioned to make well-founded commitments under the Paris Agreement to the United Nations Framework Convention on Climate Change (UNFCCC) to mitigate their greenhouse gas emissions. They can do so with confidence that as they achieve their commitments as articulated in Nationally Determined Con-

tributions (NDCs), they can do so while simultaneously meeting their goals for social and economic development.

In doing so, countries will call upon the foundational capacities that the USAID LEAD program has built, such as helping them to properly measure their greenhouse gas emissions, use state-of-the-art tools and approaches to assess their mitigation options, and identify and secure support for financing and implementation of specific measures. And they will actively share their lessons and learn from one another through continued participation in the Asia LEDS Partnership, which the USAID LEAD program launched and managed as a regional mechanism for South-South learning.

Through interventions such as training on the technical and institutional principles of greenhouse gas inventories, helping design and launch greenhouse gas registries, and showing how provinces, cities, and business can embed green growth approaches within their operations, the USAID LEAD program has responded to partner country needs to provide them with necessary tools, and built capacity so that they were able to confidently develop well founded NDCs, in concert with advancing their social and economic development goals.

While this is a key accomplishment, the USAID LEAD program began without the knowledge that the UNFCCC process would yield the outcomes of Paris, and GHG reductions were only one element of the broader program objective of preparing countries to achieve the core program outcome of sustainable low-emission, climate-resilient development in Asia.

In particular, the USAID LEAD program has provided assistance through the entire low emission development strategies (LEDS) cycle (see diagram), as outlined in the U.S. Government’s Enhancing Capacity for Low Emission Development Strategies (EC-LEDS) program.

Organize the LEDS Process

Beginning in year one, the USAID LEAD program worked hand-in-hand with countries, meeting them where they were and working together to move in their priority directions. The initial scoping activity of the USAID LEAD program helped countries to organize their LEDS process and to chart a path, which helped inform how USAID LEAD would design regional activities that addressed specific bilateral needs across country partners.

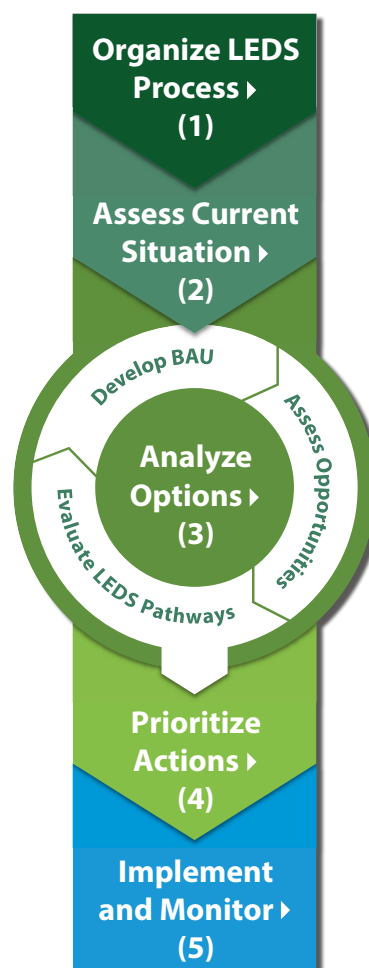
Assess the Current Situation

The USAID LEAD program created the LEDS SAT indicator, which was designed

to assess the current baseline and track advances in LEDS implementation by country. The indicator was used to demonstrate progress throughout the program. Based on the LEDS SAT indicator, five program countries improved their LEDS implementation by the end of the program’s period of performance.

Analyze Options

The industry adage states that you can’t manage what you don’t measure. In the case of USAID LEAD, our National Greenhouse Gas Inventory Systems training series has positioned partner countries to have robust, resilient national inventory systems and to bring the capacity to prepare routine greenhouse gas emission





The Asia LEDS Forum 2016 was held in Hanoi, Vietnam and brought together 250 policymakers, practitioners, and experts from 22 Asian and Pacific countries as well as international peers.

inventories into the relevant ministries. This highly successful workshop series has resulted in a community of practice consisting of ministry staff members across partner countries that are advancing the quality of their greenhouse gas accounting, not only to meet commitments under the UNFCCC but to track emission changes over time and prioritize greenhouse gas mitigation activities.

Prioritize Actions

Through intensive training sessions and tools, and several well-received regional LEDS forums, partner countries increased their ability to access finance, perform multi-criteria analysis, model future energy scenarios, and more.

Implement and Monitor

Using tools such as the LEDS Self-Assessment Tool (LEDS SAT), our Inventory

Project Progress Indicator (IPPI) tool, and others, partner countries can monitor their own progress in LEDS implementation. Additionally, activities such as the development of country-specific emission factors in the Philippines and Cambodia moves greenhouse gas emission monitoring to a much finer resolution, so that more precise mitigation decisions can be made and the impact of those decisions measured.

The USAID LEAD program worked regionally, nationally, and subnationally to align LEDS processes and objectives, and helped to build capacity to achieve that integration. Through these efforts, the program also emphasized the advantages of learning from one another and sharing lessons learned. A cornerstone of such efforts is the Asia LEDS Partnership. The partnership was built upon, and continues to respond to a thirst for learning

from countries in similar circumstances, so countries can understand what works and doesn't work in this region. The success of the Partnership is not only a USAID LEAD program accomplishment, it is a sustainable regional platform that will continue to provide training, technical assistance, and mutual learning as countries in Asia move to advance LEDS, greenhouse gas management, and sustainable development objectives.

What the USAID LEAD program leaves behind are countries that are able to sustainably achieve low emission development. The program built robust and resilient institutional systems that will continue to strengthen after closure of the program.

USAID/RDMA can build on the success of the USAID LEAD program to continue to accomplish great things. USAID and the LEDS community can apply these lessons to continue to achieve low emission development as the world looks to achieve the commitments made in Paris.



Presentation by official from Thailand on national low-carbon initiatives, part of an Asia LEDS Partnership side event at the 2013 Delhi Sustainable Development Summit in India.

USAID LEAD Program Countries*

- Bangladesh
- Cambodia
- China
- Indonesia
- India
- Laos
- Malaysia
- Nepal
- Papua New Guinea
- Philippines
- Thailand
- Vietnam



**USAID LEAD's level of engagement with these 12 countries varied significantly. In China, its work was limited to supporting capacity for measurement, reporting and verification of GHGs.*





Ho Chi Minh City, Vietnam

TASK I:

INITIAL REGIONAL ANALYSIS, STAKEHOLDER CONSULTATIONS ON PROGRAM PRIORITIES AND OPPORTUNITIES

Task I of the USAID LEAD contract aimed to assess the needs of counterparts and other stakeholders in the program countries, judge the receptiveness of these stakeholders to the various activities that the program could undertake to address the identified needs, and support the program team's preparation of a work plan that defined its planned activities.

USAID LEAD began these consultations by undertaking desk research for the program countries, including obtaining and reviewing

foundational documents such as national strategies and action plans for development, for environmental protection, and for key sectors such as energy, industry, agriculture, and forestry.

After completing its desk research, USAID LEAD conducted in-person visits in the program countries and engaged with prospective government counterparts and stakeholders such as representatives of USAID Missions, donor organizations, private sector firms, and civil society organizations, in order to better understand their LEADS-related needs and to discuss how the shape of specific program activities could

best support their transition to high-performance green growth economies.

Synthesizing the results of its hybrid approach, USAID LEAD prepared a well-grounded analysis of needs and priorities, and shared it with USAID RDMA, as the program concurrently developed a recommended strategy, approach, Performance Management Plan (PMP), and work plan.

While the USAID LEAD team submitted the full and robust set of process-oriented deliverables that the program contract specifies (e.g., “draft list of stakeholders for consultation”), two key deliverables in particular best encapsulate the results of Task I:

- a synthesis report of findings and recommendations titled Regional Priorities and Opportunities for Promoting Low Emission Development Strategies (LEDS) in Asia: Initial Regional Analysis and Stakeholder Consultations: Summary Report; and

KEY CONSULTATION AREAS

- Current state of GHG measurement, reporting, and verification (MRV), market readiness, and LEDS capabilities in Asia’s major emitting economies and in key regional organizations and institutions.
- Immediate priorities and opportunities for USAID LEAD to address in MRV, market readiness, and LEDS capabilities.
- Key multilateral, bilateral, academic, or other institutions with which USAID LEAD could leverage resources or partner:

- an accompanying Microsoft PowerPoint™ summary, “Low Emissions Asian Development (LEAD) Task I Report Overview”.

Based on USAID/RDMA’s acceptance of the Task I report and presentation, the program team prepared and finalized its first work plan and PMP.



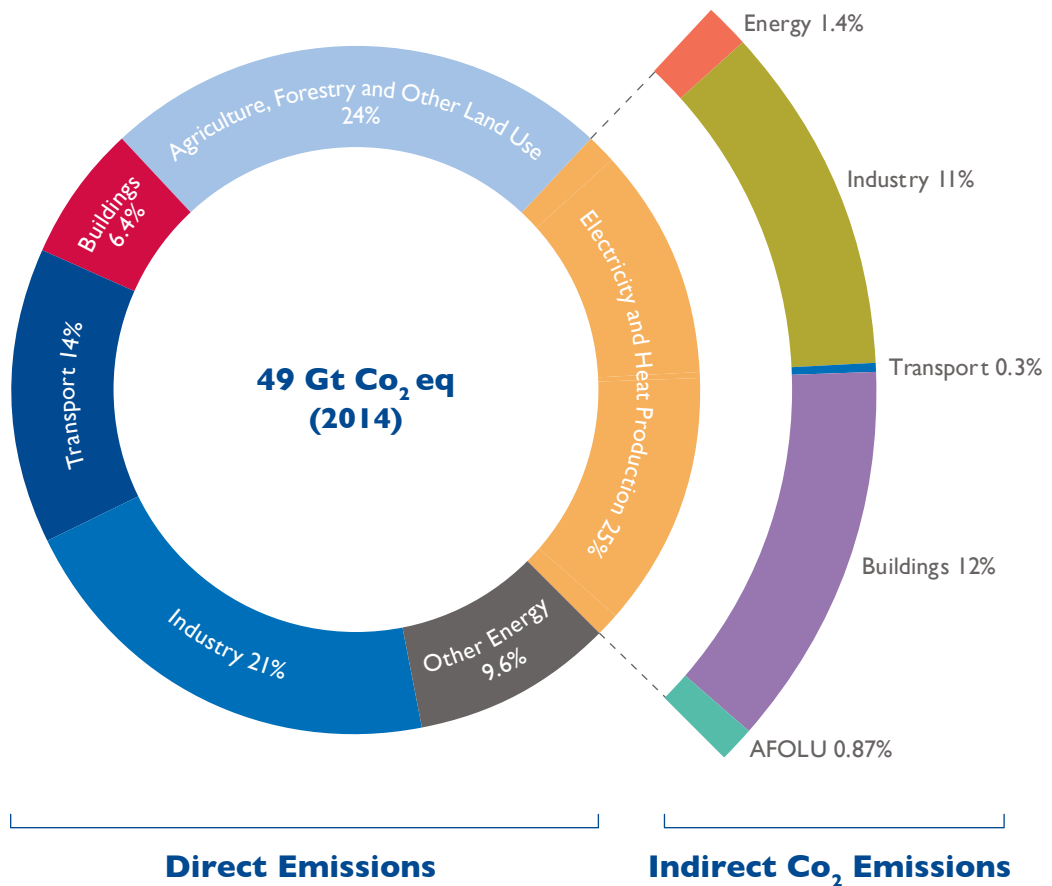
LESSONS

One bilateral USAID mission rejected the USAID LEAD program’s request to travel to the country in order to conduct in-country consultations for Task I. This rejection revealed an existing rift in the relationship between the USAID regional mission and USAID bilateral mission, underscoring the need for USAID LEAD, a new RDMA program, to develop effective principles and protocols for engaging with other U.S. Government entities. This report presents a full picture of the program’s approach in pull out section B “Ensuring effectiveness of USAID RDMA regional programs”, included as an annex.

The USAID LEAD program recognizes the importance of this initial Task and recommends that future activities put a routine consultation process in place that periodically involves consultation with stakeholders and partners. This continuous process should be based upon best practice and should ensure that the proposed interventions address current needs and priorities of stakeholders.

TASK 2:

REGIONAL SUPPORT FOR NATIONAL GHG INVENTORY CAPACITY BUILDING AND DEVELOPMENT



Illustrative example of a national GHG inventory summary (Graphic adopted from “Global estimates of GHG emissions from the IPCC Working Group III”, 2014.)

The aim of Task 2 was to improve the capacity of USAID LEAD program countries to prepare higher quality inventories of their national greenhouse gas (GHG) emissions.

The countries served by the USAID LEAD program have all ratified the United Nations Framework Convention on Climate Change (UNFCCC) and thereby have committed to sharing periodic National Communications that describe their climate change concerns, policies, and pro-

grams, including detailed estimates of their sources, sinks, emissions, and uptakes of carbon dioxide and other GHGs.

As shown in Table I, most of the USAID LEAD program countries had submitted one National Communication by the time the program commenced, and during the program period of performance made considerable progress on their Second National Communication and submitted it to the UNFCCC. While many of the countries have made progress on their Third National Communications, these are not yet publicly available.

Table 1: Status of USAID LEAD program countries' National Communications and Biennial Update Reports as of November 10, 2016

Country	National Communication 1	National Communication 2	Biennial Update Reports (BURs)
Bangladesh	12 November 2002	26 December 2012*	
Cambodia	8 October 2002	13 January 2016*	
China	10 December 2004	8 November 2012*	
India	22 June 2004	4 May 2012*	22 January 2016*
Indonesia	27 October 1999	14 January 2011 (updated 19 January 2012)	
Laos	2 November 2000	24 June 2013*	
Malaysia	22 August 2000	14 April 2011	3 March 2016*
Nepal	1 September 2004	4 December 2015*	
Papua New Guinea	27 February 2002		
Philippines	19 May 2000	29 December 2014*	
Thailand	13 November 2000	24 March 2011	29 December 2015*
Vietnam	2 December 2003	7 December 2010	8 December 2014*

*Indicates submissions after the start of the USAID LEAD program.

During the course of the USAID LEAD program, a new need to prepare GHG inventories emerged. At the 17th meeting of the UNFCCC Conference of Parties a decision was issued that required countries, consistent with their capabilities and the level of support provided for reporting, to submit updates every two years to their National Communications, beginning in December 2014. Known as Biennial Update Reports (BURs), these reports would summarize key changes to each country's national GHG inventory.

According to the UNFCCC, subsequent BURs should be submitted every two years, either as a summary of parts of the National Communication in the year when the national communication is submitted, or as a stand-alone update report. The UNFCCC gives flexibility to Least Developed Countries (LDCs) and Small Island Developing States (SIDS), which may submit such reports at their discretion.¹

The scope of the BURs is to provide an update of the most recently submitted National Communication and to provide additional information in relation to mitigation actions taken or envisaged, their effects, and needed and received.¹

In addition to fulfilling requirements and aspirations of the UNFCCC, countries benefit from improved GHG inventories because they help the country to assess its baseline sources and sinks, which is a key element in assessing and selecting actions to reduce net GHG emissions. The inventories also provide a basis to measure progress, as countries design and then implement various GHG mitigation policies and measures.

To improve national GHG inventories, USAID LEAD's approach was to concurrently:



By providing accurate, detailed, and complete information on GHG emission sources and sinks over time, GHG inventories allow governments to better manage emissions and evaluate the success of climate change policies.

- build technical understanding within USAID LEAD program countries of the technical principles, practices, and methodologies through which they should calculate their national stocks and flows of GHGs; and
- help USAID LEAD countries improve their institutional arrangements so that they can sustain improvements in inventory quality.

The UNFCCC recommends that member countries follow the technical principles and methodologies for national GHG inventories enshrined in detailed guidance documents of the Intergovernmental Panel on Climate Change (IPCC).²

¹ See http://unfccc.int/documentation/documents/advanced_search/items/6911.php?preref=600006772#beg

² This guidance is available online at: <http://www.ipcc-nggip.iges.or.jp/public/2006gl/>

To help the USAID LEAD countries better understand and apply the IPCC methodologies, the program developed and delivered a set of online courses on the latest comprehensive technical guidance documents, which the IPCC released in 2006. USAID LEAD engaged its specialized subcontractor – the Greenhouse Gas Management Institute (GHGMI) – together with expert reviewers from ICF (many of whom regularly help the US Environmental Protection Agency [US EPA] compile the United States national GHG inventory) to complete development of these online courses in 2015 and 2016. The IPCC online series includes an overview course and five sector-specific courses. GHGMI issues Certificates of Proficiency to those who complete both the overview course and

one sector-specific course, and also pass rigorous examinations for both. The courses, which remain accessible at <http://ghginstitute.org/ipcc/>, are:

- 50I IPCC: Introduction and Cross-Cutting Issues. (Passing this overview course remains a pre-requisite in order to take any of the sector-specific courses)
- 51I IPCC: Energy
- 52I IPCC: Industrial Processes and Other Product Use
- 53I IPCC: Agriculture
- 54I IPCC: Forestry and Other Land Uses
- 55I IPCC: Waste

Figure 1: Screenshot of one of the GHGMI IPCC online courses.

greenhouse gas management institute **Course 511 - IPCC Guidelines: Energy Sector**

Lesson 1: Overview

Introduction

Energy-related emissions are often the largest contributors to the total emissions of a GHG inventory.

On a global scale, energy sector typically contributes more than two thirds of the total greenhouse gas (GHG) emissions. Within the energy sector, CO₂ emissions resulting from the oxidation of carbon in fuels during their combustion dominates total GHG emissions.

In 2013, two sectors produced nearly two-thirds of global CO₂ emissions:

- Electricity and heat generation accounted for 42%
- Transport accounted for 23%.

Generation of electricity and heat worldwide relies heavily on coal, the most carbon-intensive fossil fuel. For transport, energy-related GHG emissions predominantly result from the consumption of petrol, diesel oil or compressed gas in various types of vehicles.

Share of global GHG emissions (2010)

Category	Share (%)
Energy	67%
Other	1%
Land Use, Land-Use Change, and Forestry	1%
Industrial Processes and Product Use	1%
International Aviation and Shipping	1%
Other	2%

* Other includes international aviation and shipping, and land use, land-use change, and forestry. ** Other includes international aviation and shipping. Source: IPCC estimates for GHG, land use, land-use change, and forestry, and other emissions. © 2006-2013 by GHGMI. All rights reserved.

[Click image to enlarge](#)

World CO₂ emissions by sector (2013)

Sector	Share (%)
Electricity and heat	42%
Transport	23%
Manufacturing and construction	12%
International aviation and shipping	1%
Buildings	1%
Other	1%

Note: Also shows allocation of electricity and heat to various sectors. * Other includes agriculture, forestry, fishing, energy produced other than electricity and heat generation, and other emissions not specified elsewhere. Source: International Energy Agency. © 2013 by GHGMI. All rights reserved.

[Click image to enlarge](#)

Reference: [International Energy Agency](#)

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Students taking online course on the IPCC Guidelines

USAID LEAD’s stakeholder consultations, both during the Task 1 work and during the IPCC methodologies course development, revealed resistance to the approach of online learning. The program, therefore, employed a hybrid approach in which course instructors personally led groups of students through the online curriculum. USAID LEAD piloted this approach in two countries, Nepal and Thailand, and subsequently convened learners from several countries in a two-week training session in Bangkok in February 2016 called “The Winter Institute”.

Supplementing the online courses with expert instructors drawn from the ICF national GHG inventory team in a blend-

ed approach helped to overcome resistance to online learning. It also provided immediate access to international expertise, and allowed national inventory compilers and sectoral experts to learn from one another. Table 2 presents the various training sessions during which USAID LEAD trainers led participants through the online courses. USAID LEAD also focused on helping countries to improve their institutional arrangements so that they can sustain improvements in inventory quality. The program centered its approach around the detailed recommendations that the US EPA issued for developing country institutional arrangements, contained in its workbook series *Developing a National Greenhouse Gas Inventory System*. From 2014 through 2016, USAID LEAD convened groups of national inventory compilers in a series of five one-week to two-week in-depth training sessions titled the “National Inventory System” (NIS) series.



The GHG inventories guidance documents by the IPCC.

**PLEASE SEE
PULL OUT SECTION A**

Details of these five NIS sessions, which are further discussed in the pull out section A “USAID LEAD National GHG Inventory Systems Activities”, are summarized in Table 3 below.

Table 2: USAID LEAD program e-Learning workshops

Course Title	Course Location	Date	# of Students	Topics Covered
Introduction to the e-Learning Course on the IPCC Guidelines for National Greenhouse Gas Inventories	Kathmandu, Nepal	8 March 2014	20	<ul style="list-style-type: none"> • Introduction to e-Learning Courses • Walkthrough of Lesson 1: Introduction and Cross-Cutting Issues • Introduction to Sector-Specific Courses
Introduction to the e-Learning Course on the IPCC Guidelines for National Greenhouse Gas Inventories	Bangkok, Thailand	15 May 2014	28	<ul style="list-style-type: none"> • Introduction to e-Learning Courses • Walkthrough of Lesson 1: Introduction and Cross-Cutting Issues
Winter Institute Week 1: e-Learning course on IPCC Guidelines: Introduction and Cross-Cutting Issues	Bangkok, Thailand	27 February to 8 March, 2015	31	<ul style="list-style-type: none"> • 501, IPCC Guidelines: Introduction and Cross-Cutting Issues
Winter Institute Week 2: e-Learning course on Sector-Specific Guidelines	Bangkok, Thailand	4-11 March, 2016	72	<ul style="list-style-type: none"> • 511, Energy • 521, Industrial Processes and Product Use • 531, Agriculture • 541, Forestry and Other Land Use • 551, Waste

Table 3: USAID LEAD National Inventory System training sessions

Course Title	Course Location	Date	# of Students	Topics Covered
1 st Regional Training on National Inventory System Components (NIS 1)	Pathumthani, Thailand	30 March to 5 April, 2014	27	<ul style="list-style-type: none"> • Provided in-depth coverage of the six components of a National Inventory System's Institutional Arrangements (IA), Methods and Data Documentation (MDD), Key Category Analysis (KCA), Quality Assurance and Quality Control (QA/QC), Archiving, and National Inventory Improvement Plan (NIIP). • Performed several hands-on exercises, modeled on the US EPA templates, to build understanding of the components. • Performed a detailed, hands-on exercise demonstrating the use of the US EPA's KCA tool for identifying and sorting key categories using trend and level assessments. • Participants prepared an action plan for country teams. Each action plan identified key activities/ action items for implementation of NIS components and milestones.
2 nd Regional Training on National Inventory System Components (NIS 2)	Bangkok, Thailand	21 - 23 July, 2014	33	<ul style="list-style-type: none"> • Provided in-depth coverage of the remaining two components of a National Inventory System Archiving and NIIP. • Each country reported to the group progress they have made on action plans developed during NIS1. • To build understanding of this component, trainers covered Archiving in-depth coupled with several hands-on exercises. • Participants identified national inventory system improvements, and created a country-specific action plan. Participants created a plan with the highest priority improvements identified to their national system and to their key categories, to be used in their inventory planning to guide improvements.
3 rd Regional Training on National Inventory System Components (NIS 3)	Bangkok, Thailand	25 to 27 February, 2015	27	<ul style="list-style-type: none"> • Covered the materials and templates in the US EPA Toolkit in-depth. This included the Inception Memo, Roles and Responsibilities, Memorandum of Understanding, Data Assessments, Statement of Work, and Archiving Tips and Recommendations. • Participants performed detailed hands-on exercises, modeled on the USEPA toolkit. Countries reported their results after each exercise.

Course Title	Course Location	Date	# of Students	Topics Covered
4 th Regional Training on National Inventory System Components (NIS 4)	Manila, Philippines	27 July to 1 August, 2015	35	<ul style="list-style-type: none"> Trainers delivered a presentation on the US EPA's data assessment tools, followed by an exercise on the tools and then a presentation on Intended Nationally Determined Contributions (INDCs). Trainers reviewed the UNFCCC requirements for National Communications and Non-Annex I Inventory reporting, and differences between the 1996 and 2006 IPCC Guidelines. The trainers discussed the challenges countries in attendance were encountering or expected to encounter that were related to the differences, and how they were being or could be remedied. Trainers presented on GHG inventory software, and trained the participants on the IPCC GHG Inventory Software. Trainers reviewed the necessary data inputs, demonstrated how to input data into the software, and concluded with how to export data and generate reports. Trainers covered how to manage a software team, such as coordinating multiple people who are inputting data, who should have access to the software, and how to perform data quality control. Countries participated in a collaborative group problem-solving exercise. Each country presented an inventory challenge its team was facing. After this, country teams "visited" each other to offer potential remedies for these challenges. At the end, countries presented to the group and discussed the remedies they found most helpful. Trainers discussed ways to leverage GHG inventories in national/sector development planning, subnational planning, and compliance with international obligations like INDCs.
5 th Regional Training on National Inventory System Components (NIS 5)	Hanoi, Vietnam	3 to 6 May, 2016	37	<ul style="list-style-type: none"> Participants started to perform an Inventory Project Progress Indicator (IPPI) self-assessment (that was concluded by June 30, 2016). Participants reported on either their improved inventory-related materials or committed to making specific improvements. Participants applied what they learned at NIS 1-4 to assess their progress on their NIS.



SPECIAL TOPIC

BLUE CARBON

Wetter soils hold more carbon than drier soils, and mangroves and other forested wetlands form much of the earth's blue carbon sinks, which hold more than half of the globe's biological carbon.¹

Recent studies confirm that mangroves, in particular, can store up to five times more carbon than tropical forests.² This high carbon storage suggests that mangroves can play a crucial role in mitigating GHGs. This function is in addition to the other ecosystem services that mangroves provide, such as providing breeding grounds and habitats to a variety of fish and other marine species of significant commercial value. In Southeast Asia, mangroves support 30% of the total fish catch and almost all of the total shrimp catch.³ These ecosystem services are worth an estimated USD 33,000-57,000 per hectare per year to developing Southeast Asian economies with mangrove forests.⁴

Forested wetlands are of particular importance to Cambodia, which has a 440 kilo-

meter-long coastline with mangrove forests, coral reefs, seagrass beds, and other coastal ecosystems, all of which are fundamental to the livelihoods of millions of Cambodians and to the nation as a whole.⁵ Many rural poor Cambodians rely on the collection of coastal resources for their livelihoods and household income. At Ream National Park almost all local residents depend on park resources in some way for their basic subsistence (e.g., 84% of the 5,500 households gather fuelwood from the mangroves) and studies show that this yields an annual income of USD 220 per household.⁶ Additionally, healthy mangrove ecosystems play a significant role in reducing vulnerability to hazards by acting as natural physical buffers to reduce the impacts of events such as flooding and high winds.⁷

To help these countries – and especially Cambodia – the USAID LEAD program partnered with the US Forest Service (USFS) to help scientists and inventory compilers understand

¹ Nellemann, C., Corcoran, E., Duarte, C. M., Valdés, L., De Young, C., Fonseca, L., Grimsditch, G. (Eds). 2009. *Blue Carbon. A Rapid Response Assessment*. United Nations Environment Programme, GRID-Arendal, www.grida.no.

² Daniel C. Donato, J. Boone Kauffman, Daniel Murdiyarso, Sofyan Kurnianto, Melanie Stidham & Markku Kanninen. *Mangroves among the most carbon-rich forests in the tropics*. *Nature Geoscience*, 2011; DOI: 10.1038/ngeo1123

³ Singh, H.R., Chong, V.C., Sasekumar, A., Lim, K.H., 1994. *Value of mangroves as nursery and feeding grounds*. In: Wilkinson, C.R., Suraphol, S., Chou, L.M. (Eds.), *Status Reviews. Proceedings of the Third ASEAN-Australia Symposium on Living Coastal Resources*, vol. 1. Chulalongkorn University, Bangkok, pp. 105–122

⁴ UNEP (2014). *The Importance of Mangroves to People: A Call to Action*. van Bochove, J., Sullivan, E., Nakamura, T. (Eds). United Nations Environment Programme World Conservation Monitoring Centre, Cambridge. 128 pp.

⁵ *Mangrove for the Future, 2012. Cambodia*. Accessed on July 14, 2016. <https://www.mangrovesforthefuture.org/countries/members/cambodia/>

how to apply the most recent detailed methodology of quantifying the carbon stored in forested wetlands. This protocol was developed through a collaborative effort of the Center for International Forestry Research (CIFOR), the USFS, and Oregon State University, with financial support from USAID. The IPCC formally included this forested wetlands protocol in its 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands.

To support understanding and application of this protocol, USAID created new materials to explain it, hosted training courses, and conducted field work to help countries begin to apply it.

The USAID LEAD program and USFS prepared an annotated version of the forested wetlands protocol, using an e-book format that integrates videos, photos, diagrams and voiceovers to explain how to apply the method. The e-book, titled Field Protocol for Measuring Carbon Stocks in Mangrove Forests, also contains downloadable documents such as data sheets that make the protocol easier to use. The annotated protocol is available

online at: <http://www.asialeds.org/training/field-protocol-for-measuring-carbon-stocks-in-mangrove-forests/>

The USAID LEAD program collaborated with the USFS to conduct a series of training workshops on principles and application of the protocol. Some of the workshops were for all relevant USAID LEAD program countries and some, conducted at the special request of the USAID bilateral mission, focused on Cambodia. The workshops included:

- a classroom course for government policy-makers on the importance of carbon stock assessment for forested wetlands, and the basic principles related to implementing it (Bangkok, Thailand, April 2013, two days); and
- field training for 31 scientists from eight Asian countries on application of the protocol in a mangrove ecosystem (Trang, Thailand, April-May 2013, nine days).

To capture additional value from its field-based training programs, the USAID LEAD team applied careful methods to data collection, and then devoted efforts to data analysis that would inform development of emission factors that countries could apply when making estimates of national carbon stocks. The USAID LEAD program efforts included:

- engaging Kasetsart University in Thailand to analyze the sediment samples that the program collected in Trang, Thailand during the April-May 2013 training session; and



⁶ Emerton, L., Seilava, R. & Pearith, H., 2012. *Bokor, Kirirom, Kep and Ream National Parks, Cambodia: Case Studies of Economic and Development Linkages. Field Study Report, Review of Protected Areas and their role in the Socio-Economic Development of the Four Countries of the Lower Mekong Region. Int. Cent. Environ. Manag. Brisbane IUCN – World Conserv. Union Reg. Environ. Econ. Program, Karachi*

⁷ Sudmeier-Rieux, K. and Ash, N. (2009). *Environmental Guidance Note for Disaster Risk Reduction: Healthy Ecosystems for Human Security, Revised Edition. Gland, Switzerland: IUCN, iii + 34 pp.*



Participants and trainers in the sediment lab analysis training, Bangkok, Thailand, September 2015.

- convening a regional training program on laboratory analysis of sediment samples, hosted by Kasetsart University during September 21-25, 2015 and attended by 18 specialized participants from six USAID LEAD countries who analyzed 75 samples from Thailand and Cambodia.

To apply the protocol in Cambodia, the USAID LEAD program focused attention on the specialized ecosystem of Tonle Sap Lake – an extremely productive fishery in Cambodia whose forests hold a large carbon stock (since they are flooded for a large portion of the year). The USAID LEAD program worked with US FS to apply the protocol to flooded forests and collect actual data that scientists and the Cambodian government could use to calculate the carbon stocks in Tonle Sap. The USAID LEAD program's special support for Cambodia included:

- *Scoping trip and allometric equation development.* In June 2015, USAID LEAD and USFS partnered with USFS's Forest Inventory and Analysis (FIA) program, the Food and Agriculture Organization of the United Nations (FAO), and other Cambodian-based organizations to conduct two weeks

of field work in Tonle Sap. The field team collected samples of shrublands in the flooded forests, in order to then develop an allometric equation by which scientists can estimate total biomass of shrublands based on height measurements.

- *Support for additional data collection and field training.* In Fiscal Year (FY) 2016, the USAID LEAD team and USFS began additional efforts to collect carbon stock data from the Tonle Sap area and to provide more detailed training to Cambodian researchers. Unfortunately, the USAID LEAD program's scoping visit in January and February 2016 revealed the risk of unexploded ordnance, which the program was unable to completely mitigate due to limitations of time and budget. USAID LEAD therefore suspended this additional support.
- *Workshop on integrating carbon stock assessment into national forest inventories and national GHG inventories.* The USAID LEAD program convened a four-day workshop to help the Cambodian government develop a detailed road map for incorporation of forested wetlands data into its national forest inventory and its national GHG inventory.



OTHER SPECIAL ACTIVITIES UNDER TASK 2

In addition to its core support on strengthening region-wide national GHG inventory systems through training on technical methodologies and institutional arrangements, and its featured work on blue carbon and the forested wetlands protocol, USAID LEAD undertook additional support for two program countries – Philippines and Cambodia – at the request of the respective USAID missions.

To supplement the national inventory support work of its own bilateral programs, particularly the Climate Change and Clean Energy program (CEnergy) and the Building Low Emission Alternatives to Develop Economic Resilience and Sustainability program (B-LEADERS), USAID Philippines provided USD 380,000 in dedicated “buy-in” funding so that USAID LEAD could offer more in-depth training and technical assistance on

national GHG inventories, including specialized support for development of emission factors for combustion sources (see section on Task 5 for additional details). A separate report will detail USAID LEAD’s dedicated support for USAID Philippines.

Additionally, USAID Cambodia requested that the USAID LEAD program provide additional support to help Cambodia improve its national GHG inventory. In addition to meeting a USAID Cambodia request to help the country apply the forested wetlands protocol to strengthen the national forest inventory and national GHG inventory, the USAID LEAD program offered more focused support to Cambodia’s Climate Change Department, including additional, more focused training sessions, and support for the IT infrastructure used by the inventory team.



ASSESSING IMPACT

Applying a new tool to assess impact

As described in the pull-out section A, the USAID LEAD team partnered with the US EPA to develop a specialized management and evaluation tool to more accurately and impartially assess improvements in national inventories. Known as the Inventory Project Performance Indicator, or IPPI tool, it assesses how well a country's GHG inventory document meets international standards for Transparency, Accuracy, Completeness, Comprehensiveness, and Consistency (aka the "TACCC" principles) and how they embody aspirations for Institutional Arrangements (IA) and include plans for Improvement.

Results

The results and impact of USAID LEAD work on Task 2 are more fully presented in pull out section A. In summary, before the USAID LEAD program implemented its multi-pronged approach to building capacity to sustainably prepare national GHG inventories, the program's target countries were producing national GHG inventories that could be improved. The USAID LEAD program's approach consisted of:

- utilizing the IPPI tool, which countries could use to evaluate their progress and set short-, medium-, and long-term goals;
- delivering a five-part series of workshops on national GHG inventory systems, and introducing countries to the US EPA Template Workbook and US EPA Inventory Toolkit;
- combining a hybrid online and in-person course on the 2006 IPCC Guidelines;
- providing specialized support for estimating carbon stocks in forested wetlands; and
- providing USAID LEAD program countries with the opportunity to practice use of the inventory systems and 2006 IPCC Guidelines in a setting of their regional peers that enhanced learning through each other's experiences.

As a result of USAID LEAD's training on national GHG inventory systems, seven countries increased their capacity to prepare high quality inventories, with the IPPI tool providing quantitative and qualitative evidence of this. For a summary of the quantitative results of the countries' baseline and final IPPI assessments, please see Table 4. Note that the points are out of 3, as the IPPI tool's results are on a 3-point scale, with higher scores indicating better performance.

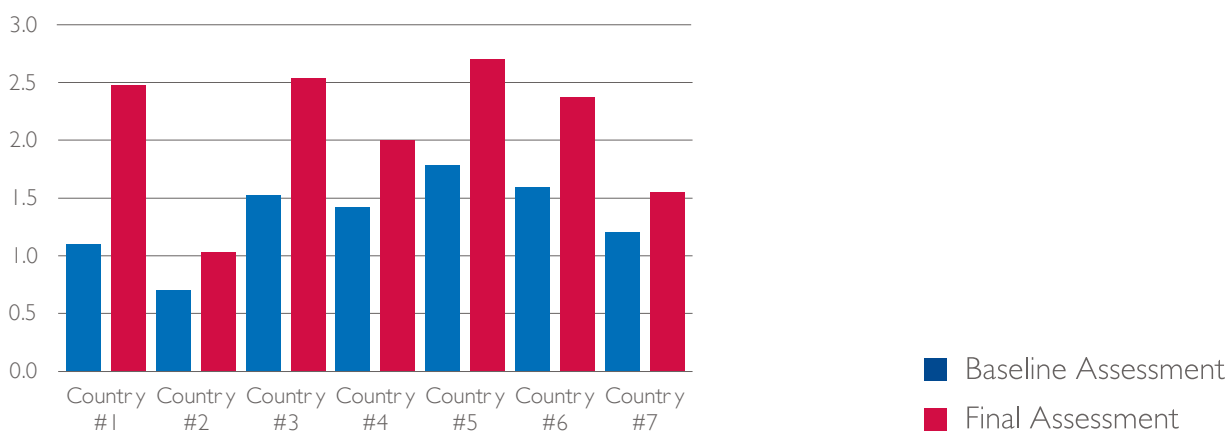
Figure 2 presents the seven countries' total baseline and final IPPI scores on the same 3-point scale.

Table 4. Baseline and final IPPI scores by country (anonymized), total, and disaggregated according to each of the seven indicators comprising the IPPI tool.

		Transparency	Accuracy	Consistency	Completeness	Comparability	Institutional Arrangements	Improvements	
Country #1	Baseline	1.5	0.9	0.7	1.0	3.0	0.7	0.5	1.1
	Final Assessment	2.8	1.9	2.0	2.6	3.0	0.7	3.0	2.5
Country #2	Baseline	0.7	0.0	3.0	1.5	0.7	1.0	0.0	0.7
	Final Assessment	0.7	0.5	0.7	2.1	1.7	0.6	1.5	1.0
Country #3	Baseline	0.5	0.6	2.3	2.4	1.7	2.7	1.5	1.5
	Final Assessment	2.3	2.4	3.0	2.9	2.7	2.4	2.5	2.5
Country #4	Baseline	1.2	0.5	3.0	2.5	1.7	1.1	1.0	1.4
	Final Assessment	1.2	1.4	2.7	3.0	2.3	2.3	1.5	2.0
Country #5	Baseline	3.0	0.5	3.0	2.6	2.0	1.3	2.0	1.8
	Final Assessment	3.0	2.4	2.3	2.8	3.0	2.9	3.0	2.7
Country #6	Baseline	1.5	0.7	3.0	1.4	2.0	3.0	0.5	1.6
	Final Assessment	2.3	1.9	3.0	2.5	2.3	3.0	1.5	2.4
Country #7	Baseline	0.5	0.7	0.7	1.9	1.0	2.2	1.0	1.2
	Final Assessment	1.5	1.0	1.0	1.8	1.3	2.1	3.0	1.6

This table does not identify which country received a particular IPPI rating, because USAID LEAD agreed with the participating countries that IPPI is meant as a tool for internal use in understanding and measuring areas for improvement, not as a public judgement on a country's inventory quality.

Figure 2. Bar chart representation of countries' IPPI score improvements from baseline to final assessment.





USAID LEAD staff with counterparts from government agencies and private sector organizations in Chiang Mai, Thailand.

TASK 3: REGIONAL SUPPORT FOR MRV PROTOCOLS AND TOOLS DEVELOPMENT, CAPACITY BUILDING, PILOT DEMONSTRATIONS, AND REPLICATION

The aim of Task 3 was to help stakeholders and counterparts in subnational entities adopt, refine, and develop various tools and approaches for GHG accounting, LEDS, and green growth.

During the USAID LEAD program's Task 1 planning and design work in 2012 and 2013, stakeholders and counterparts repeatedly emphasized the importance of working with provinces, states, and cities; and with the private sector (all grouped under the term "subnational") – both as a response to rapid trends of urbanization and decentralization in Asia, and because it is at the subnational level that many approaches to green growth are first proposed, piloted, adopted, and eventually scaled up. Therefore, the USAID LEAD program team, led by core subcontractor the Institute for

Sustainable Communities (ISC), recommended to USAID RDMA that the approach to Task 3 be selection of three to five subnational activities to assist stakeholders and counterparts adopt, refine, and develop various tools and approaches for GHG accounting, LEDS, and green growth.

In 2013 and 2014, the USAID LEAD program conducted consultations with USAID bilateral missions and other USG agencies to identify candidates for such support. USAID Vietnam requested that the USAID LEAD program work in the province of Thanh Hoa alongside its Vietnam Forests and Deltas (VFD) program. USAID Indonesia requested that the USAID LEAD program support the province of North Sumatra. One additional bilateral mission – USAID India – expressed interest in an activity to support either the states of Madhya Pradesh or Karnataka where its implementing partners

were carrying out LEADS-related activities. The USAID India mission also indicated its willingness for the USAID LEAD program to explore potential work in Mumbai with the Bombay Chamber of Commerce and Industry (BCCI). In addition, the USAID LEAD program considered subnational activities in Johor Baru, the Malaysian state that borders Singapore.

In 2014, the USAID LEAD program completed its site selection process, which in addition to desk research included site visits to India, Indonesia, Malaysia, Thailand and Vietnam. To recommend sites, the USAID LEAD program applied a decision framework that included considerations such as the regional relevance of lessons that would emerge, evidence of strong support within a jurisdiction, and the availability of qualified partners to support an activity. The program presented this analysis and secured USAID/RDMA approval for subnational activities in:

- Thanh Hoa Province, Vietnam, to support the province in developing its provincial green growth action plan;
- Mumbai, India, for work with the private sector through BCCI and its member companies, with a focus on environmental sustainability; and
- Chiang Mai, Thailand, for work on energy efficiency in the hospitality sector.

In addition to working directly on these three subnational activities, USAID LEAD proposed to share the resulting lessons regionally, through the Asia LEADS Partnership (e.g., through case studies and presentations, and presentations by counterparts at Asia LEADS Partnership events) and other channels.

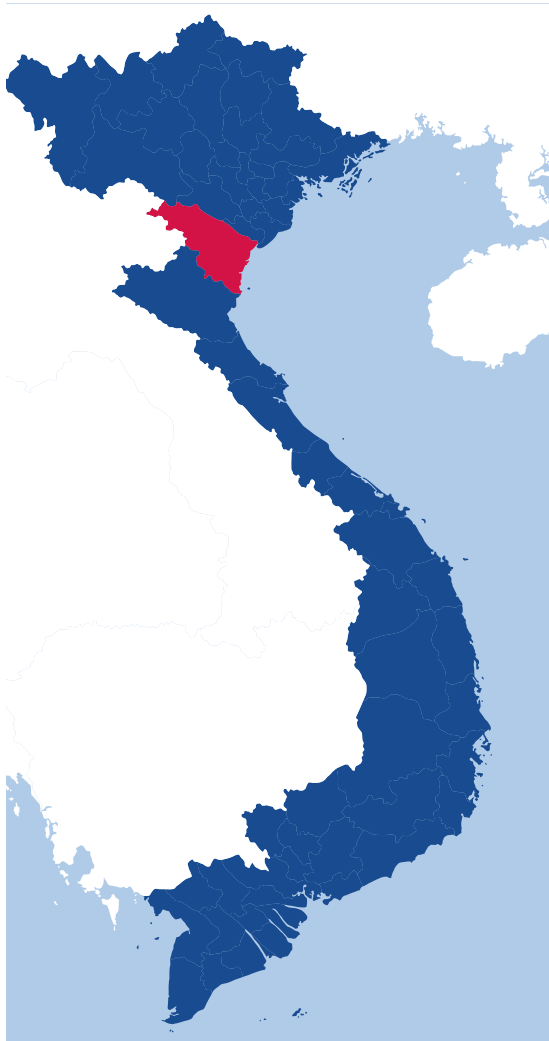
To develop and implement this set of three subnational activities, ISC followed a fixed process that included, for each site, intensive stakeholder engagement to prepare Partnership Development Plans (PDPs) that outlined the strategy, approach, and work plan for USAID LEAD program sup-

port, and detailed the associated activities by counterparts and stakeholders.

With ISC leading this process, the USAID LEAD program signed Memoranda of Understandings (MOUs) with BCCI, India in July 2014, and with Thanh Hoa Province, Vietnam in September 2014. The program submitted the final PDPs for these two sites to USAID/RDMA in September 2014. The USAID LEAD program suspended its consultations in Chiang Mai, Thailand in May 2014 due to U.S. Government restrictions following a military takeover of the central government. However, officials in Chiang Mai continued to express their interest in the support, and confirmed their readiness to resume collaboration with the USAID LEAD program as soon as the U.S. Government authorized such support. The program was able to resume work in Chiang Mai in October 2014 following authorization from USAID/RDMA, and invited Chiang Mai Municipality to form a partnership. Chiang Mai Municipality accepted the invitation and agreed to host the USAID LEAD program activities. The USAID LEAD program agreed to support Chiang Mai Municipality's Hotel Energy Efficiency Initiative (HEEI). The objective of HEEI was to strengthen energy efficiency within the hospitality sector and support hotels to establish energy benchmarks and adopt sustainable practices.

With the PDPs and MOUs forming a strong foundation for support, ISC managed an intensive stream of activities in the three sites over the remaining program duration of approximately two years. The section below summarizes the activities, results, and lessons for all three sites.





Thanh Hoa Province is located in the north of Vietnam. (Map By TUBS - Own work. This image includes elements that have been taken or adapted from Vietnam location map.svg by Uwe Dederig, CC BY-SA 3.0)

Thanh Hoa

One of USAID Vietnam's key priorities was to help the country assess and implement green growth policies that could improve the environment while also helping to meet goals of social and economic development. The bilateral mission had already initiated a program – VFD – that was employing this approach to support provincial green growth planning in the agriculture and forestry sector, and was already in discussions with the United Nations Development Programme (UNDP) about a potential USAID-UNDP partnership to support Vietnam's Ministry of Planning and Investment (MPI), which has lead responsibility to

develop the country's overall green growth strategy and to work with provinces so that they consider these national goals within their planning, and reflect them within their five-year plans for social and economic development.

VFD had selected Thanh Hoa as a province for in-depth support on green growth. VFD's overall agreement with USAID Vietnam, however, restricted its focus to forestry and agriculture, and therefore when the bilateral mission and VFD learned of USAID LEAD program support – which could span into other sectors such as energy and industry – the program made a special request for support. USAID/RDMA and USAID LEAD were looking for opportunities to say 'yes' to bilateral missions, and thus the approach came at a serendipitous occasion.

USAID LEAD evaluated the potential to support Thanh Hoa through discussions and meetings with VFD, USAID Vietnam, and then on-site assessment in the province itself. The USAID LEAD program concluded that with effective champions in place, existence of national policies and requirements and mandates, and effective partnership with a strong on-the-ground entity (VFD), the program could actually make a difference. A high potential for success was also anticipated given that USAID LEAD already had a strong relationship with MPI through the ministry's active leadership in the Asia LEADS Partnership that the USAID LEAD program was supporting. MPI's role was soon reinforced when USAID and UNDP reached agreement on a joint USD 3.6 million technical assistance program, funded through a USD 2.4 million contribution of USAID Vietnam and an additional USD 1.2 million contribution from UNDP. This support included placing an external advisor within the MPI green growth team, which further supported USAID LEAD's subnational effort under Task 5 and helped to ensure strong national-subnational integration.

Finally, in its evaluation of the opportunity, the USAID LEAD program team noted that the central government's mandate for



USAID LEAD and USAID Vietnam Forest and Deltas (VFD) programs cooperated with the Thanh Hoa Provincial Peoples Committee and the Ministry of Planning and Investment to organize a workshop in December 2013 to discuss green growth concepts, review case studies of successful low-carbon policies and plans, and kick-off a process to implement the national Green Growth Strategy at the provincial level.

a state/province to develop a green growth plan consistent with a national one is a mandate that is common in Asia and in the USAID LEAD countries (Indonesia is another example). As summarized below, working in a province created a beneficial balance of counterpart types – given that the other sites were a city (Chiang Mai, Thailand) and a regional business association (BCCI).

USAID LEAD followed a five-step process to help Thanh Hoa Province:

Step 1: Establishing a mechanism for planning, and coordination. The joint USAID LEAD-VFD team helped the province to form a Green Growth Task Force (GGTF) with representation from provincial departments, academic and research institutions, the private sector, and civil society organizations. One particular

intervention of USAID LEAD was to ensure gender representation through extending invitations to representatives of Vietnamese women's unions. GGTF served as the central point for the process of developing the Green Growth Action Plan (GGAP). The GGTF continues to have high-level leadership and has defined clear roles and responsibilities that help it link long-term national goals with local environmental risks and opportunities.

Step 2: Building capacity. USAID LEAD and VFD conducted need assessments of the capacity of key stakeholders to select and use tools necessary for developing an analytically robust GGAP. These tools included a GHG inventory tool, the Long-range Energy Alternatives Planning (LEAP) model for establishing baselines and green growth scenarios, the GeoSpatial Toolkit (GsT) for renewable



Thanh Hoa, Vietnam. Photo courtesy Thanh Hoa Investment, Trade, and Tourism Promotion Agency.

energy potential estimation, and the Marginal Abatement Cost Curve technique for assessing GHG mitigation options. USAID LEAD conducted introductory trainings on these methods and then followed up with a refresher course that provided more detail on how they were used in the GGAP. This final course included a review of the tools, specific data, and the results which the GGTF incorporated as the basis of the GGAP.

Step 3: Analysis. The GGTF members, with assistance from USAID LEAD and VFD sector specialists, developed the GHG inventory, established GHG baseline and green growth scenarios, and identified mitigation opportunities. The GGTF used the results of the analysis to set targets for provincial green growth.

Step 4: Developing an Action Plan. The GGTF developed the GGAP for the province through a multi-stakeholder consultation process, which promoted cleaner production, green lifestyles and low emission solutions, and

identified green growth projects that would form the foundation for such future growth. The findings of the GGAP will be integrated into the province's five year Socio-Economic Development Plan (SEDP), which is mandated by the central government.

Step 5: Implementation. Thanh Hoa identified a list of priority projects that met the objectives and targets of GGAP and were consistent with the provincial development planning process. This priority project information is now available to potential investors for support. USAID LEAD and VFD prepared brief project summaries that the province distributed at a high-profile public event in July 2016 with more than 125 people in attendance. In addition, USAID LEAD prepared detailed investment concept notes on two key priority projects in the energy sector – a corporate-sponsored solar photovoltaic project in an industrial zone, and a municipal program to upgrade street lights to LED lighting.



Workshop on development of green growth strategies for Thanh Hoa, 2013.

Did USAID LEAD’s work in Thanh Hoa make a difference?

Thanh Hoa embedded its approach for green growth within existing processes that have national and provincial mandates and are thus more likely to continue. Evidence such as Vietnam’s aggressive INDC submission under the Paris Agreement suggests a strong commitment by the central government to green growth, and a powerful ministry – MPI – is ensuring that provincial planning is consistent with this approach. MPI is working closely with the international community to achieve this, as evidenced by the USD 3.6 million joint US-AID/UNDP partnership mentioned above. In addition, even though the USAID LEAD program has ended, USAID Vietnam continues to support the province through its

VFD program, and other donors continue to be active in supporting efforts of Thanh Hoa and other Vietnamese provinces to design, finance, and implement programs that advance the principles of green growth.

Chiang Mai

As noted above, one objective of Task 3 was to work with different types of subnational entities. While work in Thanh Hoa was at a provincial (state) level, Chiang Mai was at a city/municipal level. Cities are of key interest to the LEADS community, and Asia in particular is experiencing high rates of urbanization.

Chiang Mai is both a city and a province in the north of Thailand. The province is Thailand's second largest by area at 20,107 sq. kilometers, and the fifth largest by population. Chiang Mai was ranked as the world's second most attractive city by Travel and Leisure Magazine, and each year the province attracts about 6.5 million tourists who stay in the city's approximately 300 hotels and generate income of about USD 1.5 billion, which is about one-third of province's entire Gross Provincial Product (GPP) at 163,828 million THB, according to the Office of Chiang Mai Province. The city and other areas of the province rely heavily on tourism to drive the economy and create jobs for the people.

The city of Chiang Mai and its business community – particularly the hotel industry – were strong advocates for USAID LEAD to work there, and they sustained their interests even during a half-year period when U.S. Government support for Thailand became problematic as a result of restrictions and slowdowns due to Section 7008 of the US Foreign Appropriations Act that was triggered by a military coup in May 2014.

USAID LEAD's initial scoping visits concluded that basic conditions were indeed in place for a support program focusing on LEADS and energy efficiency in the tourism sector to succeed. Strong interest in LEADS and green growth by the municipal government and the business association (Thai Chamber of Commerce) was motivated by concern about the significant



View of Chiang Mai city.



USAID LEAD staff in meeting with Chiang Mai officials.

economic and health impacts of regional air pollution and traffic congestion. Hotels were motivated by a desire to attract "green" tourists and by the potential to save on their energy costs. USAID LEAD also found that local technical capacity existed within the province – in particular at the Energy Research and Development Institute (ERDI) of Chiang Mai University – that could be strengthened to continue work on energy efficiency with Chiang Mai hotels.

Following USAID LEAD's decision to work in Chiang Mai, the program followed a five-step process aimed at motivating hotels to understand and reduce their energy consumption by helping them benchmark their performance against their peers.



Energy audit at Chiang Mai hotel.

Step 1: Establishing a mechanism for planning and coordination. The Chiang Mai Municipality formed a Hotel Energy Efficiency Initiative Committee (HEEIC). With the municipality providing high-level leadership, HEEIC emerged as a strong coalition of partners with clear roles and responsibilities. Members included the Thai Hotel Association, the Chiang Mai Chamber of Commerce, Chiang Mai University's Energy Research and Development Institute (ERDI), the Provincial Energy Department, the Chiang Mai Provincial Office and Environment Office, the Thailand Greenhouse Gas Management Organization, the Federation of Thai Industries: Chiang Mai Chapter, and the Tourism Authority of Thailand. HEEIC served as the central point of the process to develop an energy benchmark. The USAID LEAD team, with intensive involvement of ERDI, established a data collection system for hotels and the technical team, with assistance from the Thai Hotel Association.

Step 2: Building capacity. Based on the needs assessment, USAID LEAD helped build capacity among key stakeholders – including hotel managers, local university professionals, and energy practitioners – to understand and use the analytical tools necessary to develop a robust energy benchmark.

Step 3: Analysis. The USAID LEAD approach emphasized “on-the-job training” through

working with ERDI and energy managers to conduct energy audits of the participating hotels; and then to compile and analyze data, and to identify energy efficiency opportunities and quantify their costs and benefits. These data also form the basis of the initial energy benchmark model.

Step 4: Establishing the energy benchmark. The HEEIC, with technical assistance from USAID LEAD, established an energy benchmark for the hotels based on the data analysis conducted over a period of nine months. The energy benchmark serves as means of assessing energy performance, identifying opportunities for energy efficiency, and learning from peers.

Step 5: Implementation. Hotels participating in the energy benchmarking exercise identified priority projects for reducing energy consumption and developed hotel-specific implementation plans.

The technical findings of the audits confirmed a high potential for energy savings and reductions in GHG emissions, with the comprehensive recommendations estimated to save about 14% of energy consumed in the participating hotels, or about 5.6 million kWh per year. The measures to save energy were primarily in four major areas: air conditioning, lighting, boilers, and water pumping. Air conditioning measures accounted for 55% of the energy savings, followed by lighting at 37%.

Did USAID LEAD's work make a difference?

The municipality, the participating hotels, and the hotel association have made clear that they will continue this initiative, and ERDI plans to expand it – adding new hotels and improving its operation through a new generation of web-based reporting tools. Discussions in January 2017 revealed that the participating hotels are still using the energy audit tool developed by USAID LEAD to monitor their energy consump-



Mumbai, India

tion, and they are still working with ERDI to update and evaluate the benchmarks. Chiang Mai municipality will join UNDP/GEF's four-year project on Achieving Low Carbon Growth in Cities through Local Sustainable Urban Systems Management in Thailand. Chiang Mai will be one of the four participating cities and will draw upon USAID LEAD's prior support. Key to this high prospect of sustainability was a design that emphasized a strong planning and coordination mechanism that was driven by high-level government leaders who expressed their clear mandates and objectives, and roll-out of a program that allowed for an effective means for stakeholder engagement based on clear roles and responsibilities. USAID LEAD collaboration with a well-positioned technical partner – ERDI – and its approach of building ERDI staff knowledge through hands-on training in real world conditions, and working directly within participating hotels, proved instrumental in meaningfully mainstreaming energy efficiency in hotel operations. This helped ensure that the local institutions and professionals involved were highly engaged and positioned

for success following completion of the donor-funded phase of the program.

BCCI

About BCCI

Mumbai is the financial center of India. Mumbai and its immediate environs generate more than 20% of the country's gross domestic product, and 70% of India's international trade is associated with Mumbai in one way or the other. Based in Mumbai since the mid-nineteenth century, BCCI now has more than 4,000 corporate members, and is one of the most influential subnational industry associations in India.

BCCI and its members have long been interested in environmental stewardship, as evidenced, for example, by BCCI's "Raising the Sustainability Quotient" program and its governance structure that includes a Sustainability Committee and an Environment Group as advisory bodies for its activities. The corporate members of BCCI had also expressed interest in broader concepts of sustainability and green growth,

and therefore BCCI had been looking for partners to meet this demand. The USAID LEAD program objectives to promote LEDS matched well with the BCCI needs in the environmental sustainability space, and a partnership between USAID LEAD and BCCI offered a unique opportunity to leverage each other's strengths. In developing the partnership, the USAID LEAD program took the following approach:

Establishing a mechanism of planning, coordination, and implementation. The USAID LEAD program's central mechanism included identifying a strategic partner, establishing the partnership, and developing a working mechanism for coordination and implementation. The partnership targeted an industry association with a strong subnational presence and large private sector membership base. As mentioned above, the partnership aimed to leverage strengths of each partner: BCCI provided access to the private sector, and the USAID LEAD program provided access to knowledge products and resources on environmental sustainability for BCCI member companies. The USAID LEAD program intended to institutionalize environmental sustainability in the core functioning of BCCI by direct capacity building and handholding the associations core team through the process of implementing the environmental sustainability program.

Capacity building and needs assessment. A participatory method was adopted in determining the training needs of BCCI's members and the needs of BCCI itself to better support long-term engagement with the private sector on environmental sustainability issues. The program adopted an approach to provide targeted and demand-driven training to members of BCCI. During the identification of the strategic partner for the USAID LEAD program, two important criteria were used: i) commitment to address the knowledge and skill needs of the partners' members related to environmental sustainability; ii) existing means of en-

gagement with members, which could be improved by USAID LEAD.

Designing capacity building tools. Based on the needs identification, USAID LEAD supported development of scientific and technical tools to build the capacity of BCCI and its members in institutionalizing an environmental sustainability agenda into their operations. For member companies, capacity-building tools in the form of technical course curricula for the trainings were developed based on the feedback from BCCI on various aspects of the course curriculum. For BCCI, specific tools and knowledge products were developed to sustain and scale up engagement with the private sector.

Delivering training and technical assistance. A training curriculum involving international expertise was developed which responded to member company needs on environmental sustainability. The objective was to impart practical knowledge and skills that can be implemented in the target sectors. Trainings were delivered to the private sector participants that are members of the BCCI. Specific technical assistance clinics were part of the overall design of the course curriculum.

Institutional strengthening process. The entire roadmap for the USAID LEAD subnational program implementation was centered on institutional strengthening of BCCI through capacity building at two levels – the industry association itself, and its members. During the two-year partnership, the USAID LEAD program worked with the BCCI core team to engage and deliver trainings to its members. The USAID LEAD program identified the capacity building needs of BCCI and its members, designed tools and knowledge products, delivered trainings, provided a workable business model so that BCCI could run the trainings, and successfully incorporated environmental sustainability as one of the core areas of BCCI operations.



Key Activities of USAID LEAD with BCCI

Trainings and workshops. The USAID LEAD program nurtured BCCI's leadership in the area of green growth by delivering trainings and workshops on related topics to its member companies. The USAID LEAD program leveraged its relationship with green growth and sustainability experts, organizations and institutions to utilize world-class trainers and mentors. The topics covered at the trainings were from a broad spectrum of topics focusing on key themes such as green growth, sustainability, GHG reporting and accounting, resource conservation and management, and water management and waste management.

- *Direct technical assistance and expertise:* The USAID LEAD program provided technical assistance clinics to interested member companies on Online Continuous Environmental Monitoring Systems.
- *Regional networking:* The USAID LEAD program provided an opportunity to BCCI member companies to network and engage with peers in Asia to create sustainable businesses during the Asia LEADS Forum in Indonesia in November 2014. Two representatives from the Sustainability Committee participated actively in the Forum by sharing and exchanging knowledge on green growth strategies.

- Institutional strengthening of BCCI as an industry association. The approach adopted by the program is to work with BCCI and strengthen its institutional capacity to effectively engage with its members on the environmental sustainability agenda. As a part of strengthening the institutional capacity of BCCI, a needs assessment was conducted by the USAID LEAD program specialists, with participation from senior management of BCCI. Based on the need assessment, the following areas for capacity building were identified:
 - o Effective engagement with medium and small enterprise members;
 - o Revamping the existing database management systems; and
 - o Strengthening the monitoring and evaluation protocol for activities supported by BCCI.

Following completion of the USAID LEAD work, BCCI has continued its efforts, offering monthly events and activities on sustainability and green growth.





“Highly impressed with the amount of work done by USAID LEAD to combat climate change. I have been trying to implement a renewable energy based power system within our organization and post LEADS I have emerged successful in getting things to finalize soon. We are at the final stage

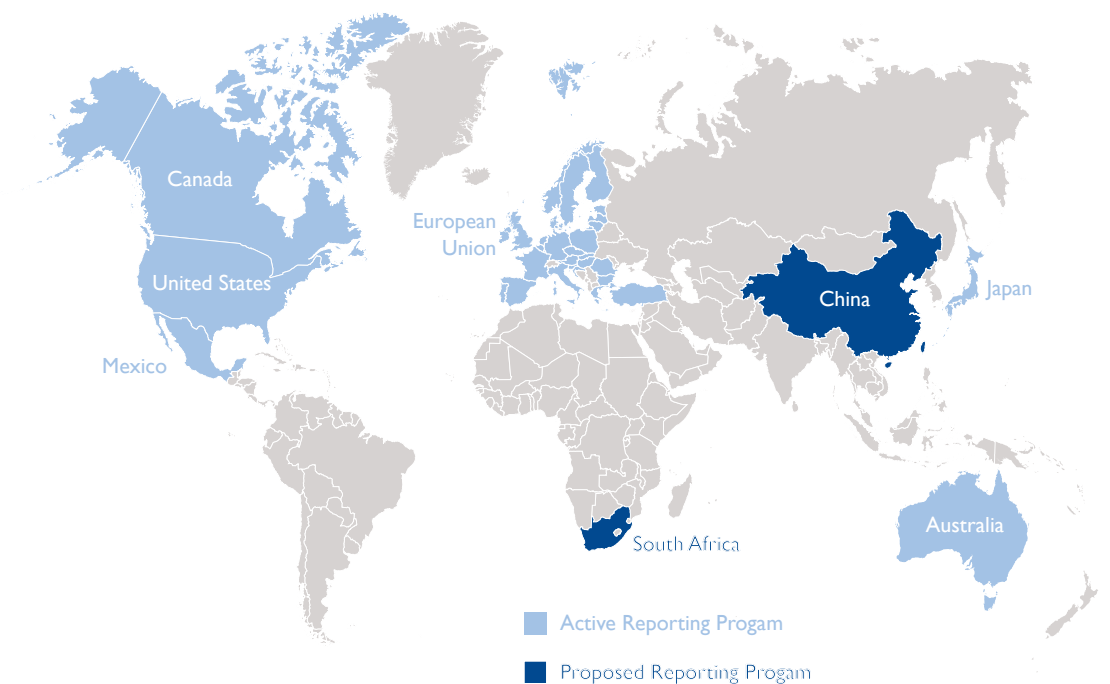
on installing a Rooftop Solar PV having a capacity to generate 400-500 kWh/day of power at one of our facilities.”

**Dr. Rajan Sharma, EHS Head,
Glenmark Pharmaceuticals Ltd**

“It has been my pleasure to be amongst a group of enthusiastic environment conscious individuals working for a common cause. In this connection, Bombay Chamber of Commerce & Industry is grateful to USAID LEAD for its support and appreciates its long term vision in supporting developing countries’ efforts to pursue long-term, transformative development and climate-resilient economic growth, while working to simultaneously reduce greenhouse gas emissions. The Bombay Chamber has been working actively in the environment and sustainability domain over the past few years and has contributed to national and sub-national policies via representations as an industrial voice on various aspects. The USAID LEAD program facilitated our venturing into a strat-

egy that addresses climate change in a more systematic way and expanded our horizon in environment and sustainability. The project plan, implementation methodology, and the subject experts engaged strengthened our ability to carry this legacy beyond the LEAD program; continuation being important success criteria of any such program/project. Environment and sustainability related activities have been and will continue to be a priority area for our Sustainability Committee. We will continue to engage with larger audiences via training, webcasts, site visits etc.”

**BCCI Director General
Mr. Vijay Srirangan**



Overview of active or proposed mandatory GHG reporting programs as of June 2016. Map from USAID LEAD program presentation “Organizational Greenhouse Gas Reporting Programs in Southeast Asia: Thailand and Philippine Initiatives”, 2016.

TASK 4: GREENHOUSE GAS MARKET DEVELOPMENT

When USAID designed the USAID LEAD program – in late 2009 and throughout 2010 – the Clean Development Mechanism (CDM) and other flexible market-based mechanisms³ of the Kyoto Protocol to the UNFCCC were in full operation. For example, the CDM Executive Board reported in November 2010⁴ that over 6,300 CDM project activities had been registered or were seeking registration and had the potential to deliver 1.84 billion CDM credits (certified emission reductions, or CERs) during the first commitment period of the Kyoto Protocol (2008-2012). Prospects seemed high that negotiators would reach

an international climate change agreement with binding limits on GHGs and that the agreement would extend Parties' ability to rely on GHG market mechanisms to meet its provisions. At the same time, in the United States, the House of Representatives in June 2009 passed comprehensive national legislation to establish an economy-wide GHG cap and trade system in the form of the American Clean Energy and Security (ACES) Act of 2009. Anticipating the need to help countries prepare to participate in a growing carbon market, USAID included in the LEAD contract a technical task for supporting GHG markets.

³The Kyoto Protocol contains three articles that provide for the use of flexible, market-based mechanisms to help meet the quantified emission limitation and reduction commitments of developed country Parties: Article 6, Joint implementation, enables developed country Parties to transfer or acquire emission reduction units resulting from projects in other developed countries aimed at reducing emissions or enhancing removals. Article 12, CDM, enables developing country parties to benefit from project activities resulting in certified emission reductions (CERs) and that developed country parties may use the CERs to contribute to compliance with part of their emission commitments. Article 17, Emissions trading, enables developed countries to participate in emissions trading to fulfill their emissions commitments.

⁴See <http://unfccc.int/resource/docs/2010/cmp6/eng/10.pdf>

By late 2011 and early 2012, when the USAID LEAD program was operational and the implementing team was considering its detailed work plan approaches, a fundamental shift had occurred. The progress of international negotiations had stalled, with COP15 in Copenhagen, Denmark failing to reach agreement on key issues and dashing the hopes of the international climate change community for a legally binding agreement and successor to the Kyoto Protocol. Negotiators were unable to reach agreement to adopt the Copenhagen Accord. The final outcome was a COP decision to “take note” of the Copenhagen Accord, with the Accord text attached as an unofficial document to the COP decision. In the United States, climate change legislation followed a similar trajectory. National legislation stalled in July 2010 when it became clear that there were insufficient votes in the Senate to pass cap and trade legislation, which was not brought to the Senate floor for a vote. With no significant policy to generate new international demand for emission reduction credits, the market for CDM credits – already suffering from the global downturn of 2008 – lost value, dropping from USD 2.7 billion in 2009 to USD 1.5 billion in 2010.⁵

With diminished prospects for near-term demand for carbon market development, yet facing a contractual requirement to support GHG market development, the USAID LEAD team sought activities that would support market development but that would also be useful for other GHG mitigation approaches, such as voluntary initiatives and regulatory control measures. It found such an approach in deciding to support development of GHG reporting, which is a necessary underpinning of any GHG mitigation strategy.

GHG reporting programs encompass the guidelines and tools through which participating entities can measure and calculate

their emissions of GHGs, the registries into which they report these emissions, and the procedures to verify their GHG emission reports. The USAID LEAD team considered that such GHG reporting systems are the “highest common denominator” since any type of GHG mitigation strategy – whether regulatory, voluntary, or market based – must lay out such provisions.

GHG reporting systems can be voluntary, such as the CDP (formerly the Carbon Disclosure Project), through which companies, cities, states and regions measure, disclose, manage and share information on their environmental performance. CDP motivates companies to disclose their impacts on the environment and natural resources and take action to reduce them. CDP notes that 5,500 companies responded to its annual climate change questionnaire in 2015.

GHG reporting systems can also be mandatory, such as the Greenhouse Gas Reporting Program (GHGRP) system. The US EPA requires most large sources that emit more than 25,000 tons of CO₂e⁶ per year to report to the GHGRP. While CDP allows companies to select (but state) the methodology they use to measure and estimate GHG emissions, the GHGRP is more detailed in its approach. For example, if a source (stationary combustion or power plant) is already using continuous emission monitoring systems (CEMS) per the Acid Rain Program, they should continue using it for GHGRP. However, GHGRP offers a flexible approach that is based on the size of the unit and fuel type for stationary combustion units.

The methodologies that organizations use when calculating GHG emissions can also vary. Most methods are based on the Greenhouse Gas Protocol that the World

⁵Linacre, Nicolas, et al. *State and Trends of the Carbon Market 2010*, The World Bank, Washington, DC, June 2011. See http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/StateAndTrend_LowRes.pdf

⁶The sum of emitted CO₂ and other GHGs, like CH₄, expressed in terms of CO₂ by multiplying the mass of the original gas by a factor called a Global Warming Potential

Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD) began developing in 1998, with input from a core steering group. Since the 2001 publication of The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Corporate Standard), six more GHG Protocol standards have been developed, along with guidance documents and calculation tools, including sector-specific tools and calculation tools for particular countries. The International Organisation for Standardization (ISO) adopted the Corporate Standard as the basis for ISO 14064, a three-part international standard released in 2006, specifying and providing guidance for the quantification and reporting of GHG emissions and removals at the organization and project levels, and the validation and verification of GHG assertions.

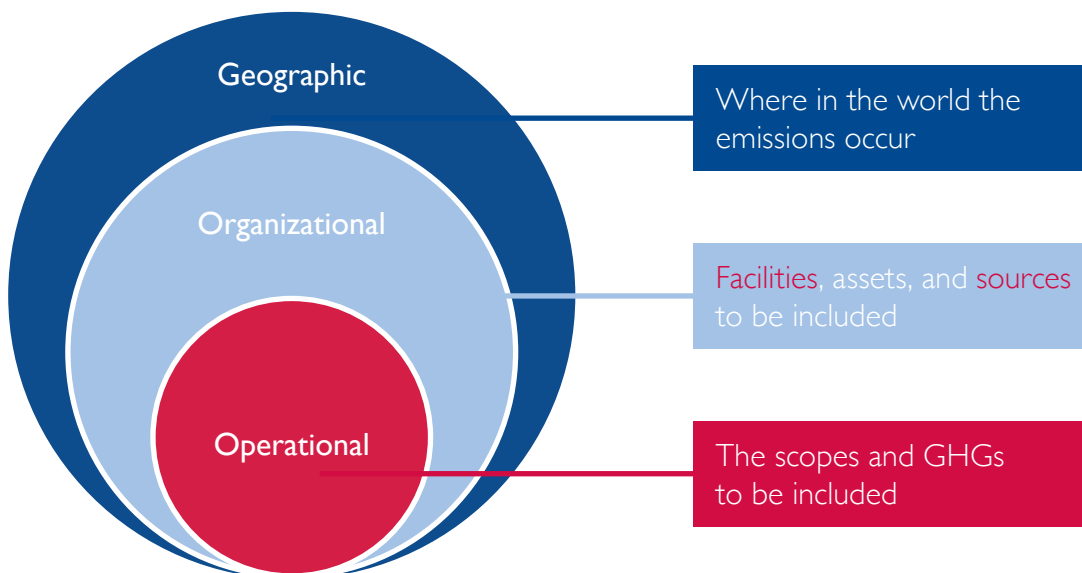
Requirements of review and verification can also vary. Companies that follow the GHG protocol and report their emissions, per-

haps as a standalone report and perhaps as an element of a corporate sustainability report, are not required to undertake external review. Nor are companies that report to the CDP, though they are scored higher if they have their inventories independently verified. Among mandatory programs there is also variance. For example, US EPA does not require any third party verification under the GHGRP. The facility that reports must self-certify the information reported, and US EPA performs the verification and communications any questions or changes that need to be made or verified. In California, the California Mandatory Reporting Regulation requires entities such as large power plants with annual emissions of over 25,000 metric tons of CO₂e to report their emissions, and to have their emissions reports verified by an accredited verifier.

To determine what type of support for GHG reporting systems would be of greatest value, and which USAID LEAD countries the program should focus on, USAID

Step I: Define reporting boundaries

Reporting boundaries determine which emissions to include.



USAID Low Emission Asian Development (LEAD) Program

Figure 3: Slide from the USAID LEAD program presentation “Organizational Greenhouse Gas Reporting Programs in Southeast Asia: Thailand and Philippine Initiatives”, 2016. The presentation is available at <http://www.asialeds.org/training/ghg-inventories-at-the-organizational-level/>.

LEAD subcontractor The Climate Registry (TCR), the developer and operator of one of the largest climate registries in the Americas, completed a systematic analysis of alternatives. TCR conducted interviews with a range of in-country national experts, reviewed existing efforts in the region to establish domestic GHG or emissions trading markets, and identified capacity needs/technical assistance in USAID LEAD program countries for establishing these markets. The report identified Thailand as a leading candidate among several potential contenders for demonstrating, designing, and implementing a GHG registry based on its national circumstances.

The report also provided overarching recommendations that can benefit multiple activities and facilitate GHG market readiness in multiple countries, such as:

- Developing standards for measurement, reporting, and verification (MRV);
- Developing toolkits for developing and operating effective MRV programs including:
 - o corporate reporting
 - o sub-national reporting
 - o offsets; and
- Capacity building by providing effective training and mentoring to support operation of these programs.

Finally, the report recommended coordination with other initiatives that are supporting low-emission development goals, in order to share work in progress, lessons learned, and to help maximize outcomes.

Based on the TCR report, USAID LEAD focused its support on helping Thailand meet a demonstrated commitment to building domestic capacity to implement its GHG management goals and objectives. For example, the Thailand Greenhouse Gas Management Organization (TGO) was leading Thai participation in the WRI

Measurement and Performance Tracking (MAPT) program. A MAPT scoping study (2012) identified financial and technical capacity building support required for all stakeholders on GHG-related data collection and management. Thailand was also preparing for the launch of a voluntary domestic GHG crediting mechanism — the Thailand Voluntary Emissions Reduction (TVER) program — at the end of 2013. TGO had requested assistance with corporate capacity building for this program. While TGO had not conducted a formal assessment of potential participation in such a program, it expressed its belief that through its outreach to the ministries of energy and industry, companies regulated by this ministry would be interested to participate. At the time of this decision, USAID LEAD anticipated that Thailand would be the first of three countries that the program would support to develop GHG reporting systems.

To design and implement a stream of support activities for TGO, the USAID LEAD program continued to assign specialized subcontractor TCR to lead Task 4, pairing the TCR team with experts from ICF who are leaders in GHG policy formulation and implementation. USAID LEAD took a structured, process-oriented approach to supporting the development and launch of a GHG registry that would build on some prior efforts of TGO. The registry and its associated guidance would serve as the backbone of a voluntary GHG reporting system for private companies, which the Royal Thai Government might in the future revise to serve the needs of a regulatory program. USAID LEAD's registry development efforts are further detailed in the pull-out section C titled

**PLEASE SEE
PULL OUT SECTION C**

USAID LEAD Support for Thailand's Carbon Footprint for Organizations, and include the following elements:

- Initial consultations
- Needs assessment
- Definitions for design
- Specifications development
- Coding
- Testing and launch

In addition to supporting system design and development, USAID LEAD provided detailed guidance on how TGO could conduct outreach to potential reporters, and could recognize their participation.

USAID LEAD's two-year engagement with TGO led to the launch of a Carbon Footprint for Organizations version 2.0 (CFO 2.0) including an online GHG registry in the spring of 2016. As a result of the launch, approximately 62 organizations that had not previously reported their GHG emissions to TGO are working to report their FY 2015 GHG emissions.

Following the launch and internal discussions, TGO determined in the fall of 2016 that it would like to make additional refinements to CFO 2.0, and secured an initial commitment of development funding from the central government to do so. TGO plans to initiate this effort in early 2017, after which

it will open the platform for reporting and will actively promote its use.

So that this intensive work in Thailand would benefit other program countries, the USAID LEAD program embarked on an effort to share the work and success with neighboring countries that had expressed interest in registries and reporting systems. Together with TGO, USAID LEAD staff delivered targeted presentations in Vietnam, Malaysia, and Philippines that featured the TGO registry. Ironically, despite waning interest early in the USAID LEAD period of performance, towards its end, the success of the Paris Agreement yielded renewed interest in GHG reporting and registries.

USAID LEAD followed up the presentations mentioned above with introductions to other donors that might support similar efforts, such as the Partnership for Market Readiness managed by the World Bank, and the Climate Technology Center and Network, which is the technical assistance facility of the UNFCCC. Early indications suggest that as a result of this sharing and set of introductions, the Government of Vietnam is now poised to develop a GHG registry.

The screenshot shows the 'Revised CFO Program (Version 2)' interface. At the top, there is a navigation bar with the TGO logo and links for Home, Reports, My Account, and Logout. Below the navigation bar, there is a section titled 'Revised CFO Program (Version 2)'. This section contains an 'Instructions' table with the following data:

Entity	Emissions Year	Inventory Status	Reporting Progress
USAID LEAD	2014	Not Locked	Draft

Below the table, there are two buttons: 'Graph my emissions by year' and 'Graph my emissions by activity type'. At the bottom, there is a 'Report History' table with the following data:

Entity	Emissions Year	Reporting Progress	Date
USAIDLEAD	2014	Draft	10/30/2015

Screenshot of page from the TGO online CFO 2.0 program.

Figure 4: Slide from the USAID LEAD program presentation “Organizational Greenhouse Gas Reporting Programs in Southeast Asia: Thailand and Philippine Initiatives”, 2016.

CFO’s measurement procedure



USAID LEAD’s work in China*

Under Task 4, the USAID LEAD program also completed a modest set of activities in China. While initial expectations were for a substantial USAID LEAD role in China, as reflected in the 15% of the budget estimated for China activities in the USAID Request for Proposals that preceded contract award (equivalent to over USD 3 million), the actual funding that USAID designated for work in China was USD 375,000.

As directed by USAID, the LEAD team dedicated this funding to a program of support for GHG MRV in China. USAID LEAD’s work reinforced one of the five formally-designated initiatives of the US-China Climate Change Working Group – improving GHG data collection and management – and reflected ongoing collaboration of China’s National Development and Reform

Commission and the US EPA, which had developed and finalized a work plan on capacity building activities to support China’s national, regional and provincial-level GHG reporting efforts. From May 2015 through fall/winter 2016, the USAID LEAD program conducted three types of activities in China:

- capacity building workshops and GHG MRV design sessions;
- production of GHG MRV white papers; and
- translation of key GHG MRV materials.

As shown in Table 4, USAID LEAD conducted five specialized workshops on GHG MRV approaches in the oil and gas sector, and the power sector, on MRV and mitigation for methane emissions, as well as two sessions on best practices for electronic reporting systems.

* to a limited extent, for designated activities related to measurement, reporting and verification.

Table 4: USAID LEAD Capacity Building Workshops and Design Sessions in China

Event	Location	U.S. Experts	Participants
Oil and Gas GHG MRV	Beijing, China	US EPA	46 from government, NGOs, academia, industry
Power Sector GHG MRV	Beijing, China	US EPA, ICF, Resources for the Future, National Governor's Association	53 from government, NGOs, academia, industry
Electronic Data Reporting System Design Session 1	Nanjing, China	US EPA, ICF	25 from government, industry (IT firms)
Methane GHG MRV and Mitigation	Beijing, China	US EPA, ICF, Clearstone	81 from government, NGOs, academia, industry
Electronic Data Reporting System Design Session 2	Beijing, China	US EPA, ICF	21 from government, industry (IT firms)

In collaboration with US EPA, USAID LEAD drafted and finalized a series of six white papers on various technical issues related to GHG MRV:

- Designing the Overall GHG Program Framework
- Developing GHG Emissions Monitoring and Estimation Methods
- Monitoring Compliance and Implementing Enforcement Actions
- Defining Reporting and Record Keeping Requirements
- Designing and Developing an Integrated Data Management System
- Engaging with Stakeholders



Finally, USAID LEAD prepared English-to-Chinese translations of key U.S. GHG MRV materials, including about ten existing EPA GHGRP materials totaling over 250 pages.



TASK 5: EMISSION FACTOR IDENTIFICATION AND DEVELOPMENT

The aim of Task 5 was to improve GHG inventories and GHG accounting systems in USAID LEAD program countries by building capacity to select and develop emission factors⁷ that more accurately represent country conditions.

The calculation of GHG emissions from a source generally involves two main components: activity data and GHG-specific emissions factors. The quality of GHG inventories depends on reliable and accurate inputs of these two components. As part of improving the quality of GHG estimates in their National Communications to the UN-FCCC, countries are interested in continu-

ally refining the methodologies applied for activity data collection and estimates and in developing improved country-specific emission factors.

The national GHG inventories in South Asian and Southeast Asian countries exhibit diversity in their methodological complexity, accuracy, and specificity to national circumstances, with the majority of GHG inventory estimates in the region relying on default emission factors provided by the IPCC, as opposed to the preferred approach of using country-specific emission factors tailored to country conditions. The use of simplified representations of emission factors with default values that do not perfectly reflect in-country conditions is

⁷In the most general terms, an emission factor is an expression of the mass of a given GHG per a unit of the activity or substance that emits that GHG. For example, an emission factor related to coal could be the mass of methane that would be released were a kilogram of coal combusted in a furnace to produce electricity. The IPCC guidelines offer default emission factors that will typically be less accurate than emission factors developed “locally.” In the vein of the current example, the IPCC Guidelines offer emission factors for various types of coal; however, even within a single coal type, there are varying quantities of GHGs. The most accurate emission factor for coal will likely come from a reputable and well-equipped laboratory testing several samples of the exact coal the power plant of interest is combusting.

one of the main sources of uncertainty (and inaccuracy) within national GHG inventories.

To improve the capacity of USAID LEAD program countries to develop country-specific emission factors, the program:

- performed consultations and a desk review of national GHG inventories in National Communications to determine a prioritized list of emission factor improvement, by need area; and
- engaged international experts and regional institutional partners to develop a regional training curriculum delivered through a series of workshops.

In addition to the emission factor work, the USAID LEAD program also addressed specific capacity building needs related to GHG inventories of forested wetlands, including mangroves, peat swamps, cypress domes, flooded forests, and related ecosystems, as detailed in the Blue Carbon section above. These are believed to hold some of the highest carbon densities among terrestrial (soil and vegetation) systems. A series of trainings on mangrove carbon stocks assessment were conducted in Thailand in 2013 and Cambodia in 2014-2015, and 2016. These activities focused on the data collection aspect of carbon stocks assessment, based on the USAID Sustainable Wetlands Adaptation and Mitigation Program's (SWAMP) protocol. Given the importance of accurately assessing mangroves and other forested wetlands, the objective of this activity was to build regional capacity and interest in applying this protocol while developing national GHG inventories.

Emission Factor Improvement Report

The use of country-specific emission factors not only improves the accuracy of emis-

sions estimates, but also allows countries to apply higher tier IPCC methods. IPCC Guidelines categorize methodologies used for GHG emissions estimation in terms of tiers, and recommend more detailed, higher tier methods be implemented for key categories.⁸ The IPCC tiers range from basic methodologies for Tier 1 estimates, using default emission factors (that may be based on national, regional, or international data) and usually more generic activity data (that may be based on national or regional statistics), to Tier 2 estimates utilizing country-specific emission factors and usually more detailed activity data, and finally Tier 3 methods using detailed emission models or actual direct measurements of emissions. IPCC guidelines state that “the inventory compiler should use different tiers for different source categories, depending on the importance of the source category within the national total and the availability of resources in terms of time, work force, sophisticated models, and budget.” In other words, the effort of developing more detailed, higher tier methods should be focused on key categories, and those emission sources that represent the greatest share of national emissions.



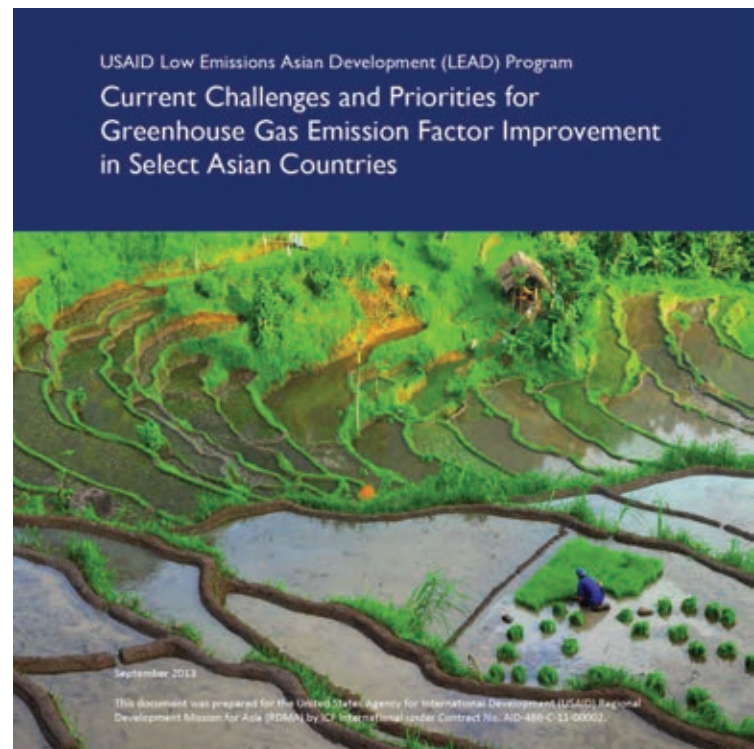
⁸A key category is one that is prioritized within the national inventory system because its estimate has a significant influence on a country's total inventory of GHGs in terms of the absolute level, the trend, or the uncertainty in the emissions and removals. Whenever the term key category is used, it includes both source and sink categories.

To identify the emission factors with greatest need for development, the USAID LEAD program consulted with regional stakeholders and country experts to gather input on emission factors that were being used in 10 USAID LEAD program countries, while concurrently conducting a desk review of GHG inventories included in each country's most recent National Communications. Based on these activities the USAID LEAD program developed a selection framework that resulted in prioritizing emission factors for improvement.

The country consultation process required interviewing key stakeholders involved in the development of the National Communications for each country, and identifying their expressed need to improve certain country-specific emission factors for their GHG inventory development.

Recommendations for regional support emerged from a combination of the consultations and the desk study. The USAID LEAD program released a report, *Current Challenges and Priorities for Greenhouse Gas Emission Factor Improvement in Select Asian Countries*, which recommended the following six emission factors as regional priorities for improvement:

1. CH₄ emissions from rice cultivation
2. CO₂ emissions from land use, land-use change and forestry (LULUCF), in particular, changes in woody and forest biomass, conversion of forestland to grassland, soil carbon. Specific LULUCF category(s) identified by each country depend on the country and associated land use types
3. CH₄ emissions from enteric fermentation
4. CO₂ emissions from mobile combustion
5. CO₂ emissions from coal and natural gas stationary combustion
6. Nitrous oxide (N₂O) emissions from agricultural soil management



The report is available online at http://pdf.usaid.gov/pdf_docs/pnaec560.pdf

The relevance and priorities for improving these factors varied by USAID LEAD program country, and the approach for developing emission factors also varied based on availability of country-specific data and resources. To further assist USAID LEAD program countries in developing these priority emission factors, the program conducted regional workshops and provided technical assistance to program countries seeking to develop country-specific emission factors.





Participants and trainers at USAID LEAD workshop on stationary and mobile combustion emission factors in Manila, Philippines, June 2014.

Emission Factor Regional Workshops

The USAID LEAD program engaged international experts and regional institutional partners to develop a regional training curriculum that included a general overview on emission factor-related needs, gaps, priorities, institutional arrangements, and data issues; approaches to select and develop country-specific emission factors; and practical exercises that illustrate these issues and approaches. The trainees can now use the knowledge gained during the workshops to develop emission factors that will improve the accuracy and quality of their respective country's national GHG inventories. The key outputs of the regional workshop effort included:

- a highly trained group of government officials, academics, and other stakeholders who understand available methods for estimating emission factors, including the data required for each of the methods; and,
- a network of subject matter experts and peers with whom they can collaborate as they develop country-specific emission factors.

To provide capacity building support for emission factor development to address the priorities from the emission factor report, the USAID LEAD program conducted regional workshops on the following emission factors:

- Stationary and Mobile Combustion Emission Factors (June 2-4, 2014, Manila Philippines)
- CH₄ from Enteric Fermentation (December 7-11, 2015, Bogor, Indonesia)
- CH₄ from Rice Cultivation (February 1-4, 2016, Pati, Indonesia)
- Carbon Stock from Mangroves (March 21-23, 2016, Siem Reap, Cambodia)
- N₂O from Agricultural Soil Management (June 14-17, 2016, Hyderabad, India)

The USAID LEAD program also conducted an additional two-day training for the development of on-road transport and coal/natural gas stationary combustion emission factors (in FY 2015) in Manila, as requested by USAID Philippines and as part of the USAID Philippines buy-in.

Target participants for the workshops were primarily representatives from government agencies and academia, and experts working on identification and development of emission factors for their National Communications. Participants came from seven USAID LEAD program countries: Cambodia, Indonesia, Malaysia, Nepal, Philippines, Thailand, and Vietnam.

Stationary and Mobile Combustion

In 2014, the USAID LEAD program focused regionally on emissions from stationary and mobile combustion by conducting a three-day regional workshop in the Philippines, on improvement and development of emission factors from these sources. During this course, participants learned methodologies for developing country-specific emission factors for stationary and mobile combustion source categories, and participated in hands-on exercises to develop and apply country-specific emission factors to the GHG inventory within their respective country's National Communications.

Specific focus was placed on coal and natural gas fuels for stationary combustion, as these are the most prevalent fuels consumed in the region. All relevant fuels for mobile combustion sources were included, depending on the area of focus within the transport sector.

Throughout the three days, participants developed an action plan to implement and communicate the action items required to develop country-specific emission factors.

Enteric Fermentation

In 2015, the USAID LEAD program focused on CH₄ emissions from enteric fermentation by conducting a five-day regional workshop in Indonesia on improvement and development of an emission factor for methane emissions from enteric fermentation. Scientists and trainers from the USAID LEAD program, in collaboration with

researchers from the Indonesian Agency for Agricultural Research and Development (IAARD), reviewed methodologies for developing country-specific emission factors for methane from enteric fermentation and conducted exercises to develop and apply country-specific emission factors to their National Communications.

The regional workshop was held over five days, and key outputs included:

- A highly trained group of government officials, academics, and other stakeholders who understand available methods for estimating emission factors, including the data required for each of the methods; how to alter their approaches to the development of the inventory for methane emissions from enteric fermentation through data collection, and the use of that data; and
- A network of subject matter experts and peers with whom they can collaborate as they develop country-specific emission factors following the training course.

Rice

In 2016, the USAID LEAD program focused regionally on CH₄ emissions from rice cultivation by conducting a five-day regional workshop in Indonesia, on improvement and development of emission factors for methane emissions from rice cultivation. Scientists and trainers from the USAID LEAD program, in collaboration with researchers from the IAARD research center and the Indonesian Agricultural Environment Research Institute (IAERI), delivered the training. Participants learned methodologies for developing country-specific emission factors for methane rice cultivation and conducted exercises to develop and learn to apply country-specific emission factors to their National Communications. Emission factor development methodology for rice emission factor will further strengthen implementation of LEDS in country.

Carbon Stock from Mangroves

In response to a need to enhance the quality and completeness of national GHG inventories, the USAID LEAD program, the USFS, and the Agriculture, Forestry and Other Land Use Working Group (AFOLU WG) of the Low Emission Development Strategies Global Partnership organized a workshop that consolidated skills in carbon calculations from forested wetlands data, and discussed how to integrate these data into national GHG inventories. The workshop provided training on mangroves data calculation for GHG inventory development including development of specific emission factors, and provided training on the integration of carbon stock data into national GHG inventories. The regional data integration workshop was held on March 21-23, 2016 in Siem Reap, Cambodia.

Following the training, participants were able to:

- Perform data analysis and calculations of carbon stocks and emissions for mangrove forests;
- Identify challenges, gaps, and needs for the integration of carbon stocks data into national GHG inventories; and
- Develop plans for integrating mangrove carbon stock assessment into national GHG inventories.

Agricultural Soil Management

In 2016, the USAID LEAD program focused regionally on N₂O emissions from agricultural soil management by conducting a four-day regional workshop in India on improvement and development of an emission factor for nitrous oxide emissions from agricultural soil management. Scientists and trainers from the USAID LEAD program, in collaboration with researchers from the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and the

International Maize and Wheat Improvement Center (CIMMYT), organized and delivered the training. In addition, lecturers from King Mongkut's University of Technology Thonburi and Srinakarinwiroj University, both located in Thailand, contributed to the workshop.

The principal objective of this training workshop was to build capacity of government officials and practitioners to develop country-specific emission factors for nitrous oxide from agricultural soil management that could be used to improve the accuracy and quality of each country's national GHG inventory.

The regional workshop was held at the ICRISAT research facilities over four days. A one-day field visit was conducted to provide participants with hands-on training to better understand data requirements and perform field measurements for emission factor estimation.



Display by delegation from the Philippines at a regional event organized by the USAID LEAD program.

TASK 6: REGIONAL SUPPORT FOR LEDS DEVELOPMENT AND IMPLEMENTATION

The objective of USAID LEAD’s work under Task 6 was to support regional development and implementation of LEDS. The program took a two-fold approach:

- **support regional knowledge sharing; and**
- **deliver targeted, fit-for-purpose training and technical assistance on LEDS.**

To support regional knowledge sharing, USAID LEAD focused on assisting program countries to learn from one another and from other developing countries that have with similar circumstances. USAID LEAD created, as its primary platform for collab-

orative learning, a new regional platform – the Asia LEDS Partnership. This initiative was part of larger global effort under the LEDS Global Partnership (LEDS GP). This approach was consistent with USAID LEAD’s designated contractual role as Program Integrator for USAID/RDMA and related U.S. Government programs, since the larger effort – the LEDS GP – is operated by two entities specifically listed in the USAID LEAD contract: the U.S. National Renewable Energy Laboratory (NREL) and the U.S. Department of State. Most of USAID LEAD’s work on Task 6 – and its major achievement – was focused on the launch of Asia LEDS Partnership, its operation, and ensuring its continued success. USAID LEAD’s support for the Asia LEDS Partner-

ship, and the platform’s activities, are elaborated in the pull-out section D “Regional Support for LEDS Development and Implementation”.

**PLEASE SEE
PULL OUT SECTION D**

Evidence of USAID LEAD’s success with the Asia LEDS Partnership is illustrated by the external evaluation of the LEDS GP that an independent organization – the Energy and Resources Institute (TERI) – released. This evaluation stated that the “Asia LEDS Partnership was the most successful in contributing to the progress of LEDS GP towards its objectives based on the data collected. According to the data, the Asia LEDS Partnership had the highest level of participation, the highest application of learning by government agencies, and the highest amount of leveraged funding” among all the LEDS GP regional platforms and working groups.

To ensure the continued success of the Asia LEDS Partnership, in February 2016 USAID LEAD engaged a regional organization – ICLEI - Local Governments for Sustainability – to operate the Asia LEDS

Partnership Secretariat, and to do so at a reduced cost in order to make continued funding more attractive to donors. There are initial indications of success of this strategy, with the LEDS GP Secretariat expressing its satisfaction with the approach and selection of ICLEI, and indicating that it can contribute to the partnership’s funding in calendar year 2017.

Other donors have also stepped forward with indications of interest and funding. This includes the Climate Economic Analysis for Development, Investment and Resilience (CEADIR) program of USAID, which is jointly funded by USAID RDMA and USAID’s E3 Bureau. CEADIR anticipates providing about USD 50,000 in 2017 for the Asia LEDS Partnership to support organizing and convening two regional meetings on LEDS approaches for NDCs. In addition, another major international organization that advances green growth has indicated its intent to provide approximately USD 150,000 in co-funding for similar regional workshops and events on NDCs and the Sustainable Development Goals.



A graphic drawing from the Asia LEDS Forum 2014: Development through Low Emission Development Strategies and Green Growth, held in Yogyakarta, Indonesia, November 2014.

KEY FEATURES OF THE ASIA LEDS PARTNERSHIP



Attendees from around the Asia and Pacific region learn about Malaysian low-emission transport initiatives at the Asia LEDS Forum 2012 in Bangkok, Thailand.

Among the more unique features of the Asia LEDS Partnership are its diverse and growing participants, country ownership, active programming, curated trainings, and high amounts of financial leverage.

Diverse and Growing Participants— Members of the Asia LEDS Partnership comprise individuals and organizations working within the public, private, and non-governmental sectors to advance low emission development in Asia. This includes members from both developing and developed countries, as well as international partners supporting LEDS in Asia from any region around the world—such as Asian government ministries and departments, development organizations, non-governmental organizations, technical or research institutes, and businesses. Membership is voluntary and has increased

significantly, well beyond expectations (see Table 5 below).

Country Ownership — The Asia LEDS Partnership was designed to ensure that the developing country members feel ownership of the platform, and have an effective means to guide it. To this end, the Asia LEDS Partnership leadership is composed of at least one-half developing country government representatives; this includes the requirement that one of the two Co-Chairs is from a developing country government, and that one-half of the Steering Committee members are as well. The Steering Committee is responsible for defining the vision of the Asia LEDS Partnership and ensuring its implementation. Steering Committee members for 2015-2016 are listed on the following page.

Table 5: Asia LEDS Partnership Indicator Target and Actual Results (FY 2012 – FY 2016)

Program Indicator	Program Target	End of Program Result	Percent of Target Met
Number of organizations participating in the Asia LEDS Partnership	92	145	158%

ORGANIZATIONAL MEMBERS OF THE ASIA LEDS PARTNERSHIP STEERING COMMITTEE FOR 2015-16



Cambodia Ministry of Environment, Climate Change Department



Center for Study of Science, Technology and Policy (India)



Clean Air Asia



Climate Change Division, Pakistan



Climate & Development Knowledge Network (CDKN)



Energy research Center of the Netherlands (ECN)



Japanese International Cooperation Agency (JICA)



Lotus Impact



Prasarana Malaysia Berhad



Nepal National Planning Commission



United Nations Development Programme (UNDP)



US Agency for International Development



Vietnam Ministry of Planning and Investment, Department



World Bank Institute



World Resources Institute EMBARQ

Active Programming — The Asia LEADS Partnership has organized 10 high-turnout events from 2012 to 2016, including:

Event Title	Year	Location	Number of Participants	Number of Countries Represented
2012 Asia LEADS Forum	2012	Bangkok, Thailand	>150	17
Delhi Sustainable Development Summit	2013	New Delhi, India	>100	>20
Preparing for Scaled-up Climate Financing	2013	Manila, Philippines	>100	12
2013 Asia LEADS Forum	2013	Manila, Philippines	250	22
Accessing Finance for Green Growth and LEADS	2014	Hanoi, Vietnam	~150	7
Quantifying Benefits of Bus Rapid Transit (BRT)	2014	Kuala Lumpur, Malaysia	70	7
2014 Asia LEADS Forum	2014	Yogyakarta, Indonesia	250	19
Mobilizing Investment for Low-Emission Development in Asia's Agriculture Sector	2015	Ho Chi Minh City, Vietnam	>150	15
2016 Asia LEADS Forum	2016	Hanoi, Vietnam	>220	23*
Catalyzing Finance for Clean Energy	2016	Hanoi, Vietnam	>200	18*



USAID LEAD staff worked with representatives of India, Nepal, Thailand, and Vietnam to prepare presentations on innovative LEADS initiatives to share at a special session of the Delhi Sustainable Development Summit in India in 2013. A video about the session is available at: <https://youtu.be/GvxYh4W9-Mc>

Curated Trainings — The Asia LEADS Partnership Online Training Curricula were developed by the Asia LEADS Partnership in response to members’ requests to have access to current and concise guidance in one location for LEADS practitioners working in Asia. These curricula comprise a synthesis of freely available online materials from a wide range of source organizations, with attention given to selecting training resources that help to answer key questions on “how to” advance LEADS action in Asia.

The curricula includes over 200 training resources across three tracks: (1) Overview of LEADS and the LEADS Process, (2) Low Emission Energy Planning, and (3) Low Emission Strategies in the AFOLU Sector. Types of training resources include webinars, e-learning modules, PowerPoint presentations, guidebooks, and supplementary materials. These training resources are geared for planners, policymakers, and implementers at the national and subnational levels, as well as



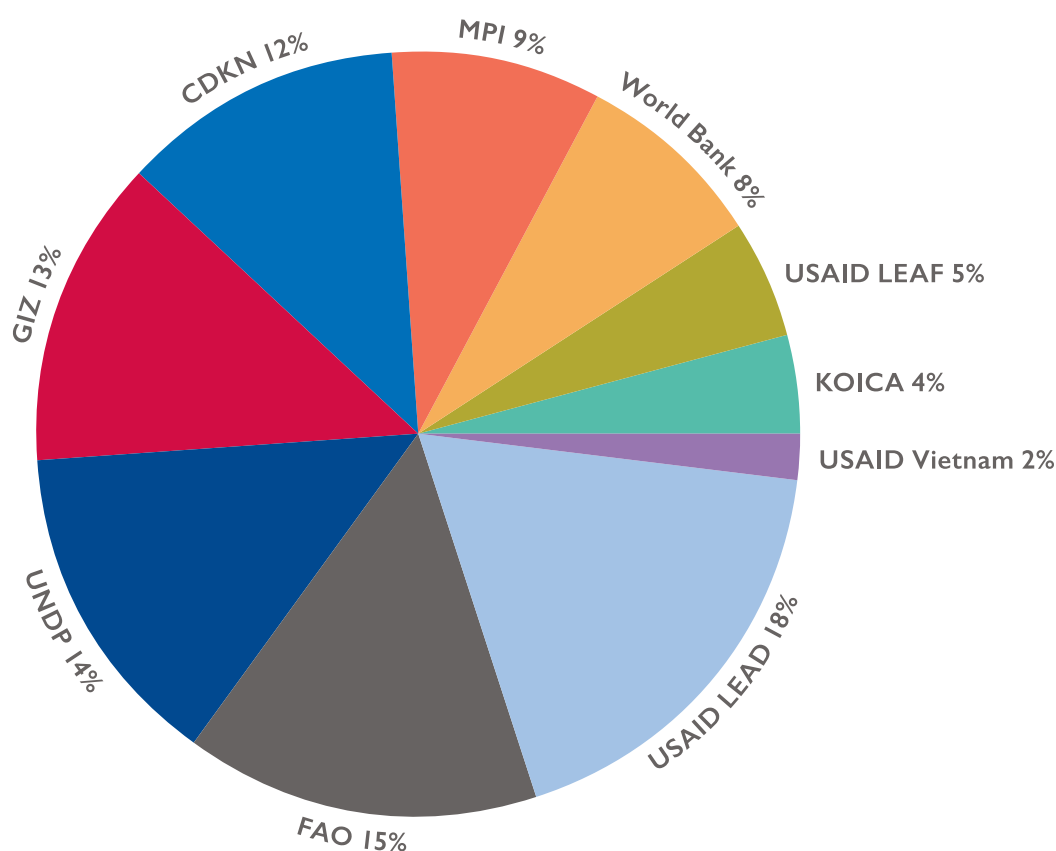
Example of resources available as part of the Asia LEADS Partnership Online Training Curricula.

technical analysts, modelers, researchers, businesses, project developers, and financial institutions.

Financial Leverage —The Asia LEADS Partnership has enjoyed effective donor coordination and partnering, as evidenced by the high amounts of financial leverage.

For example, the Asia LEADS Partnership workshop on Mobilizing Investment for Low-Emission Development in Asia's Agriculture Sector, held in Ho Chi Minh City, Vietnam in October 2015, achieved over 80% financial leverage, as shown in the figure below.⁹

Figure 3: Example of Financial Leveraging: Financing for the Asia LEADS Partnership Workshop on Mobilizing Investment for Low Emission Agriculture



The results of these unique features have been noteworthy. TERI, the well-known Indian-based global environmental think tank, conducted an external evaluation in 2014 of the LEADS GP and concluded that, among all the LEADS GP regional platforms and working groups “The Asia LEADS Partnership was the most suc-

cessful in contributing to the progress of LEADS GP towards its objectives based on the data collected. According to the data, the Asia LEADS Partnership had the highest level of participation, the highest application of learning by government agencies, and the highest amount of leveraged funding.”

⁹These estimates do not include quantified in-kind contributions such as: value of Secretariat time spent on planning and coordination, costs of self-funded attendees, and costs associated with general presentation and materials (non-training) development by workshop speakers.

The meaningful contributions and success of the Asia LEDS Partnership have been noted by many others as well.

“The USAID LEAD program has a good reputation and the Secretariat was timely, organized, helpful, and useful to advance LEDS in the region.”

Andrew Spezowka
Senior Technical Advisor
at UNDP Vietnam

“The Asia LEDS Partnership is working very well and is efficient and facilitates dialogue between country members; good cooperation has been established”

Ms. Nguyen Dieu Trinh
Department of Science, Education,
Natural Resources and Environment,
Ministry of Planning and Investment,
Vietnam

USAID LEAD’s delivery of targeted, fit-for-purpose training and technical assistance on LEDS drew on the leveraging of expertise from partners. Initially, USAID LEAD devoted significant efforts to launching a new training center – the Asian Greenhouse Gas Management Center (AGMC) within the Asian Institute of Technology (AIT), a USAID LEAD subcontractor. Following guidance of USAID RDMA after its mid-term evaluation, however, USAID LEAD adjusted its training approach to link efforts more closely to the Asia LEDS Partnership, and to serve as curator and distributor of existing high-quality training content on LEDS. Other targeted trainings that USAID LEAD conducted included:

- *Overview of LEDS for policymakers.* USAID LEAD worked with NREL to develop and deliver a general introduction to principles and practices of green growth that it termed the “LEDS-101” curriculum.
- *GeoSpatial toolkit.* USAID LEAD facilitated training sessions by NREL in the region on how to use this tool to conduct renewable energy resource assessments.
- *Long-range Energy Alternatives Planning (LEAP) modeling.* USAID LEAD engaged the developer of the popular LEAP model

(Dr. Charles Heaps of the Stockholm Environment Institute) to provide regional training on its application – particularly for creation of scenarios that integrate provincial and state models with central government models. In addition, USAID LEAD helped assemble a more vibrant community of practice in Southeast Asia and South Asia focusing on the use of LEAP.

- *Triple bottom line (TBL) and multi-criteria analysis (MCA).* USAID LEAD developed easy-to-use spreadsheet-based tools, and trained developing country officials on how they could use them to consider and balance social, economic, and environmental considerations when formulating policies, particularly for land use.

Also under Task 6, USAID LEAD conducted several other LEDS-related activities:

AFOLU Working Group. USAID LEAD supported the creation and initial operation of a new Agriculture, Forestry, and Other Land Use (AFOLU) Working Group of the LEDS GP to ensure that USAID LEAD countries and other developing countries have an effective vehicle for knowledge sharing on sustainable landscapes and LEDS/green growth. USAID LEAD formed this new AFOLU Working Group



USAID LEAD regional training on the Long-range Energy Alternatives Planning (LEAP) model, Medan, Indonesia, 2014.

together with the USFS and the USAID RDMA Lowering Emissions in Asia's Forests (LEAF) program. The USAID LEAD Forest Carbon Advisor served as one of the two co-chairs of the AFOLU Working Group.

LEDS and Gender. USAID LEAD supported efforts to embed gender considerations in LEDS by helping a premier Asian association – the Business and Professional Women (BPW) Thailand – incorporate sustainability and green growth considerations into an existing high profile awards program (i.e., that includes royal recognition), which is likely to become adopted regionally and then globally. In addition, USAID LEAD helped organize accompanying programs to expose BPW members and stakeholders to principles and practices for green growth.

Provincial Green Growth Planning. In response to request of a bilateral mission (USAID Vietnam) USAID LEAD provided expanded

support for green growth activities in a Thanh Hoa Province.

Demand-Driven Webinars. The Asia LEDS Partnership hosted or supported 10 webinars in collaboration with the LEDS GP and affiliated organizations in 2014 through 2016, as summarized in Table 7 below.



USAID LEAD workshop on green growth in Nakhon Ratchasima Province, Thailand in May 2016 organized in cooperation with the Business and Professional Women (BPW) Thailand and the U.S. Government's Young Southeast Asian Leaders Initiative (YSEALI).

Table 7. Webinars hosted or supported by the Asia LEDS Partnership, 2014-2016

Webinar Title	Date	Partner
Pioneering and Scaling Up Solar Energy in India	21 June 2016	LEDS GP Sub-National Integration Working Group
Gender Mainstreaming in the Energy Sector: Framework and Applications	2 June 2016	LEDS GP's Energy Working Group
Assessing Renewable Energy Potential Using the Geospatial Toolkit (GsT): Applications in Vietnam's Thanh Hoa Province	21 April 2016	LEDS GP's Energy Working Group
Long-range Energy Alternatives Planning (LEAP) System: Applications in Vietnam and Indonesia	29 March 2016	LEDS GP's Energy Working Group
Addressing Air Pollutants and Climate Relevant Emissions in the Transport Sector	28 January 2016	LEDS GP's Transport Working Group
Fuels and Technologies to Mitigate Emissions	10 November 2015	LEDS GP's Transport Working Group
Leveraging the Capital Market for Climate Change: Exploring the Opportunity of Green Bonds in Asia	16 December 2014	World Bank
Energy LEDS in Asia: A Regional Overview and Experiences from Thailand	29 October 2014	LEDS GP's Energy Working Group
Bus Rapid Transit (BRT) and Urban Development in Latin America and India	18 June 2014	LEDS GP's Transport Working Group
Mainstreaming Low Carbon Path in the Transport Sector in the National and Local Levels: Case of the Philippines	6 May 2014	LEDS GP's Transport Working Group and the Asia LEDS Partnership



ANNEX I: USAID LEAD'S PERFORMANCE MANAGEMENT PLAN AND RESULTS

Overview of USAID LEAD's Performance Management Plan

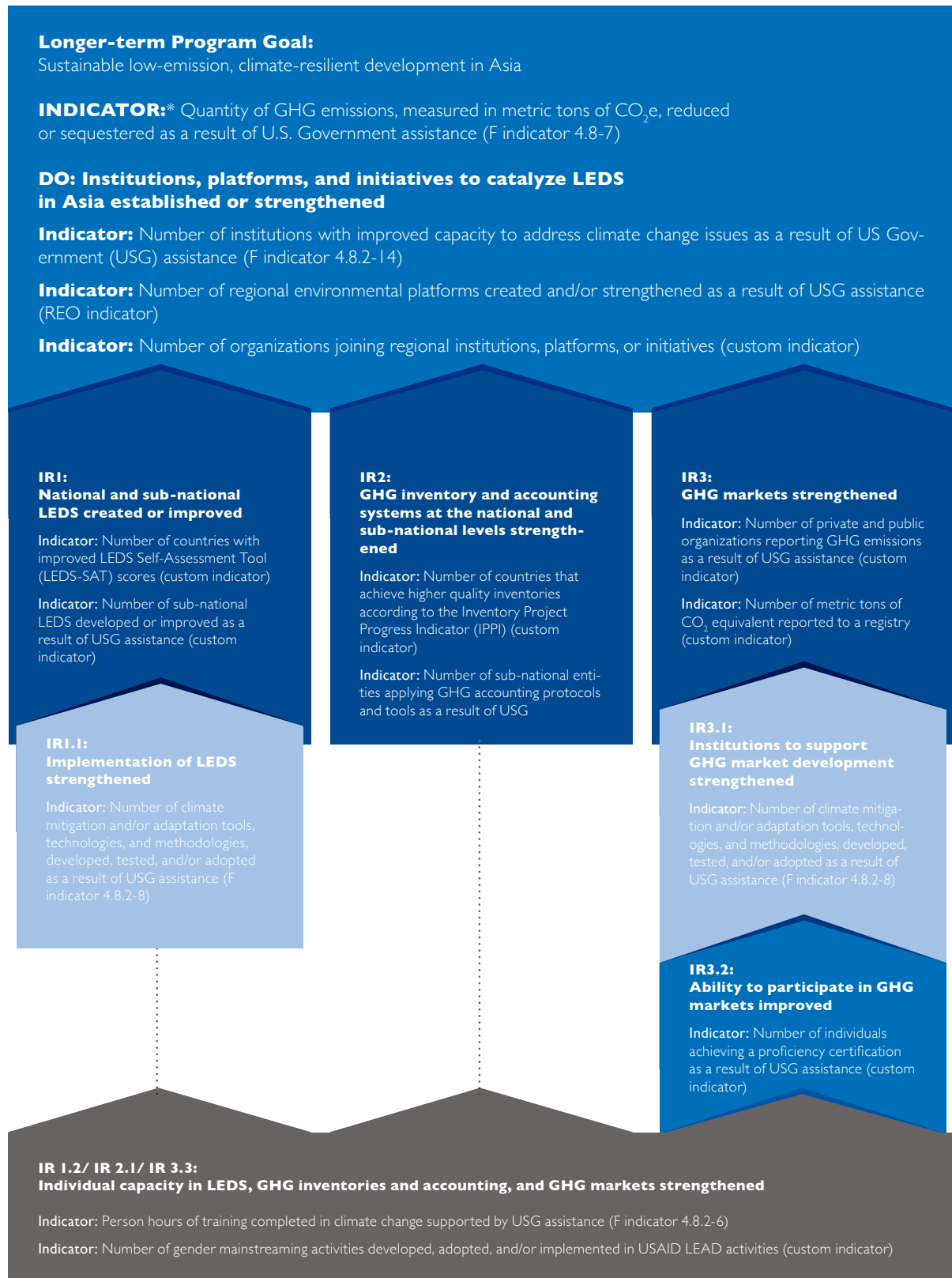
The Performance Management Plan (PMP) is an important tool for managing and documenting a program portfolio and for reporting on its performance. It enables timely and consistent collection of comparable performance data in order to make informed program management decisions.

USAID LEAD's PMP was designed to help the program achieve its objectives and to meet its overall goal by mea-

suring progress and supporting refinements to the program's approach. The PMP included three intermediate results (IRs) and associated sub-intermediate results (sub-IRs) that the USAID LEAD team selected to support achievement of the program's Development Objective (DO). The USAID LEAD team also identified program performance indicators that it reported to USAID/RDMA on a quarterly basis for the DO, IRs and sub-IRs, to measure program processes and outcomes. These indicators are a mix of required USAID/Washington, USAID/RDMA Regional Environment Office (REO), and custom indicators for the USAID LEAD program.

RESULTS FRAMEWORK - VERSION 2.0

FIGURE A.I: USAID LEAD Results Framework



*USAID reporting guidelines provide that all programs that receive any funding for “Clean Energy” support should include the following indicator in their Performance Management Plan: “Quantity of GHG emissions, measured in metric tons of CO₂e, reduced or sequestered as a result of U.S. Government assistance (F indicator 4.8-7)”. Because USAID LEAD is an economy-wide, broad-based training and capacity-building activity, RDMA agreed that this would not be a relevant measure of success for this program.

TABLE A.1: Summary of Indicator Targets and Actual Results (FY 2012 – FY 2016)¹

Program Indicator	Program Target	End-of Phase (EOP) Result	Percent of Target Met
Number of institutions with improved capacity to address climate change issues as a result of USG assistance	153	193	126%
Number of regional environmental platforms created or strengthened as a result of USG assistance	7	9	128%
Number of organizations participating in regional institutions, platforms, or initiatives	92	145	158%
Number of countries with improved LEADS Self-Assessment Tool (LEADS-SAT) scores	5	5	100%
Number of sub-national LEADS developed or improved as a result of USG assistance	5	4	80%
Number of climate mitigation and/or adaptation tools, technologies, and methodologies, developed, tested, and/or adopted as a result of USG assistance	11	13	118%
Number of countries that achieve higher quality inventories according to the Inventory Project Progress Indicator (IPPI)	7	7	100%
Number of sub-national entities applying GHG accounting protocols and tools as a result of USG assistance	225	52	23%
Number of private and public organizations reporting GHG emissions as a result of USG assistance	75		
Number of metric tons of CO ₂ equivalent reported to a GHG registry	3,750	As discussed below, the CFO registry system supported by USAID LEAD is undergoing revision and results for these indicators will not be available until late 2017.	0%
Number of GHG registries established as a result of USG assistance	1		100%
Number of individuals achieving a certification of proficiency	329	250	76%

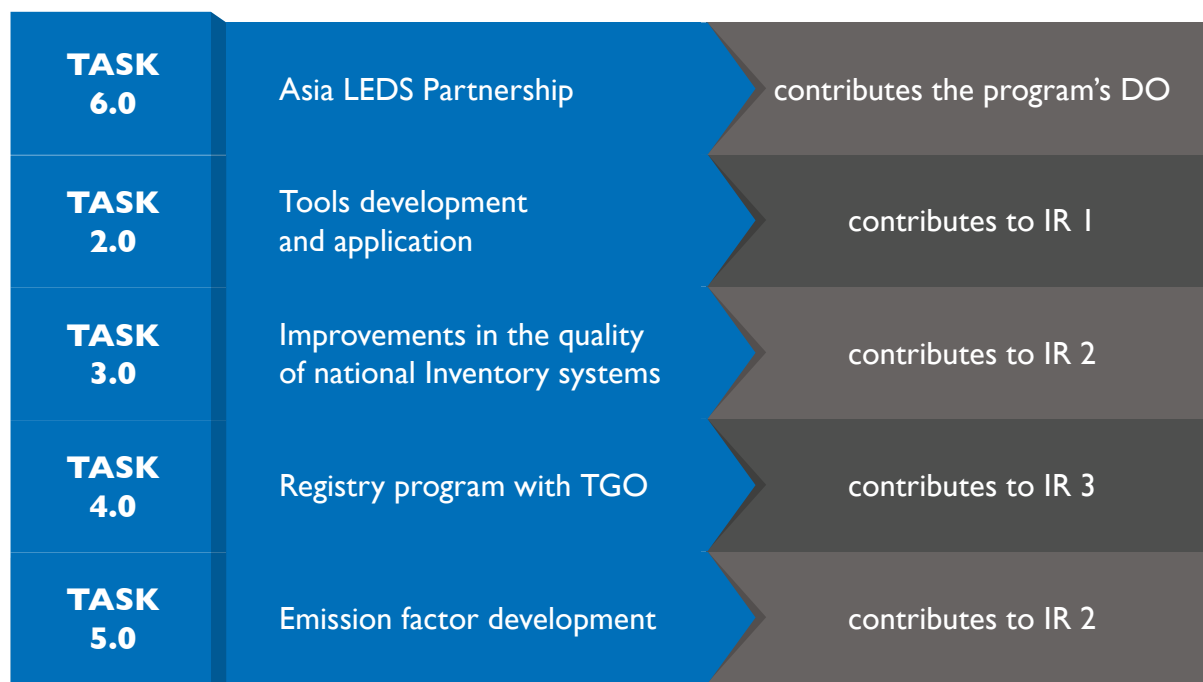
TABLE A.1: Summary of Indicator Targets and Actual Results (FY 2012 – FY 2016)¹ Cont'd

Program Indicator	Program Target	End-of Phase (EOP) Result	Percent of Target Met
Person hours of training completed in Global Climate Change (GCC) supported by USG assistance ²	19,934	31,508	158%
Person hours of training completed in GCC supported by USG assistance (USAID Philippines)	4,400	4,856	110%
Number of gender mainstreaming activities developed, adopted, and/or implemented in LEAD activities	5	5	100%

¹ Original targets for selective indicators from USAID LEAD's PMP Version 1.0 are in shown in parentheses.

² Targets from FY 2013 onwards were revised to be only USAID/RDMA-supported training events; original targets are in parentheses.

Figure A.2: Narrative Highlights of Key Targets and Results (from annual and quarterly progress reports)



USAID LEAD'S CONTRIBUTIONS TO USAID AGENCY PERFORMANCE GOALS

USAID's Agency Performance Goals highlight the Agency and the Department of State priorities and provide illustrations of these priorities to achieve measurable results. USAID LEAD contributions to USAID and the State Department Agency Priority Goals (APGs) included the following:

FY 2014 MILESTONES:

- GHG registries established as a result of USG assistance (Assistance to Thailand Greenhouse Gas Management Organization (TGO) to finalize developing the GHG registry system, especially for NAMAs) (Thailand): The GHG registry system in Thailand is partially developed and activities have been delayed due to the restrictions.

FY 2015 MILESTONES:

- Improved GHG inventory: Philippines achieves a higher quality national GHG inventory due to USG assistance, as measured by the Inventory Project Progress Indicator (IPPI) tool by implementing QA/QC, Methods and Data Documentation, and Archiving plans (reported as on target and completed in FY 2016)
- MRV: GHG registries established as a result of USG assistance (Assistance to Thailand Greenhouse Gas Management Organization (TGO) to finalize

developing the GHG registry system, especially for NAMAs) (reported as delayed but was achieved in FY 2016)

- GHG tools: Carbon stock assessment for forested wetlands completed independently using IPCC guidelines supplement using a protocol developed with USG assistance (Cambodia).

FY 2016 MILESTONES:

- Improved GHG inventory - Philippines achieves a higher quality national GHG inventory due to USG assistance, as measured by the Inventory Project Progress Indicator (IPPI) tool.
- Improved GHG inventory - Malaysia achieves a higher quality national GHG inventory due to USG assistance, as measured by the Inventory Project Progress Indicator (IPPI) tool.
- Improved GHG inventory - Bangladesh achieves a higher quality national GHG inventory due to USG assistance, as measured by the Inventory Project Progress Indicator (IPPI) tool.
- The Thailand Greenhouse Gas Management Organization's (TGO) GHG registry program established as a result of USG assistance and has registered at least 75 organizations who are reporting at least 3.75 million tonnes of CO₂ equivalent.



MONITORING AND EVALUATION RESULTS AND APPROACH

USAID LEAD's monitoring system was developed in close collaboration with the program's technical task managers and senior management to support the program's decision-making and reporting process. Data for all indicators was collected from various USAID LEAD program documents and monitoring tools depending upon the specific technical area, proposed activity, and specific partners that were involved. Routine

monitoring data was actively used by program staff, in dialogue with stakeholders and program management, to provide program direction, assist with planning, and assess progress. Technical managers regularly met with the program's M&E Manager to discuss and review progress to date. Data sources were specific to technical tasks and activities and included program reports, tracking tools, sign-in sheets and other materials.

RESULTS AND APPROACH BY INDICATOR

Indicator:

Number of institutions with improved capacity to address climate change issues as a result of USG assistance (F indicator)

Approachⁱ

This outcome level indicator captured the program's key results in building capacity in institutions spanning the program's key technical areas. Institutions with improved capacity are better able to govern, coordinate, analyze, advise, or make decisions related to clean energy or sustainable landscapes. For USAID LEAD, improvement in partner institutions was ascertained by proxies that assessed increase in capacity by:

- Providing input to relevant assessment or planning exercises;
- Having certified or technically trained staff;
- Engaging with stakeholders to ensure that policies, plans, budgets, and investments reflect local realities and ensure that local communities benefit from climate change efforts and investments;

ⁱ Approach description uses indicator definitions that are included in USAID LEAD's PMP version 2.0.

- Having access to equipment or other inputs necessary for planning, assessment, and management of climate change topics; and/or
- Collaborating with scientists and policymakers, or hosting workshops involving relevant sectors or themes (e.g., agriculture, environment, forestry, energy, and water) to engage with climate change assessments, plans, or activities.

Relevant institutions included: public sector entities (ministries, departments); private sector entities (hotels, businesses); national universities; and others (women's groups).

Measurement tools

Monitoring tools were task-specific, and formats and content were dependent upon the nature of the activity. The tools documented specific capacity building and technical support activities, timeframes, key stakeholders, learning outcomes for training events, and other relevant information. Examples are provided below of monitoring tools that were used for tracking the online IPCC course for inventory strengthening and the Thailand GHG registry development.

Task 2.0: Activity tracking for IPCC courses by country.

Country	Task	Task	Expected Start Date	Expected End Date	Actual Start Date	Actual End Date	Team	Technical areas	Learning outcomes	Organizations in attendance (if applicable)	Status/Comments
Bangladesh	2.1	Training on 2006 IPCC guidelines initial kickoff for the Overview course in-country.	N/A	N/A	29-Mar-15	29-Mar-15	USAID LEAD/ICF	2006 IPCC Guidelines	Attendees gained an understanding of the contents and mechanism of the course.		Completed. USAID LEAD and USEPA corresponded with the necessary inventory staff of the government of Bangladesh to determine their interest in the 2006 IPCC Guidelines online course, and hosted a half-day in-person introduction to the course on March 29, 2015 in Dhaka for key and sectoral contributors to the national GHG inventory of Bangladesh. The reception was positive and indicated that

Task 4.0: Thailand GHG registry development tracker

A	B	C	D	E	F	G
Area	Description of Activity	Due Date	Status of Activity	Next steps	Verification of delivery	Source Document Name/Location
II. Reporting Guidance						
Reporting Guidance	Detailed reporting guidance document that provides clear direction for participating reporters and addresses: a) Acceptable methodologies b) Treatment of GHG sinks c) Default values d) Process for submitting and updating emission factors e) Treatment of offsets f) Reporting	4.16.2015	Complete. Revised draft provided to TGO 2/17/2015. Public consultation deck delivered 3.11. TGO conducted the public consultation process on 3/17/2015. A conference call between TGO/ICF/TCR was conducted on 4/1/2015 to discuss the feedback. TCR provided final version of GRP to TGO on 4.15.2015. TGO then requested additional fuels to be incorporated into the reporting platform; TCR updated GRP to include these. Finalized document dated week of 8/15 per TGO.	Complete	Delivered to TGO 8/7/2015.	TGO GRP Final, TGO GVP Final, TGO Accreditation Guidance
III. Registry/Reporting Platform						
Registry/Reporting Platform	Determine scope of customization	4.17.2015	Complete.	Complete	Delivered gap analysis to ICF 8/11/2015.	Software Gap Analysis
Registry/Reporting Platform	Design & functional requirements document: Deliver document to define the overall system architecture and describe its various modules, overall product and its functions, user characteristics and	May	Complete. Delivered to TGO 7/30/2015	Complete	Delivered to TGO 7/30/2015	Admin - Online Reporting Platform Technical Requirements

Table A.3: EOP Results - Institutions with improved capacity

Relevant Task Activity	Technical Area	Type of Institutions
Task 2: Winter Institute	National inventory system improvements	Government ministries and departments
Task 2: NIS Series	National inventory system improvements	Government ministries and departments
Task 2: Carbon stock assessments in Cambodia	National inventory improvements	Government ministries and departments
Task 3: BCCI Sustainability Committee	Regional Support for protocol and tools development, capacity building, demonstrations in India	NGO/trade associations
Task 3: Energy efficiency program	Regional support for protocol and tools development, capacity building, demonstrations in Thailand	Private sector/hotels, universities, and municipality governments
Task 3: Provincial green growth planning and implementation	Regional support for protocol and tools development, capacity building, demonstrations in Thailand	Provincial government departments/women's groups
Task 4: Registry development and implementation	GHG market development	Government agencies and private sector partners
Task 7: Gender integration	Gender integration	NGO and Thai private sector companies
Task 5: Emission factor development in Philippines and others	National inventory improvements	Government ministries and departments

Indicator: Number of regional environmental platforms created or strengthened as a result of USG assistance (USAID/RDMA/REO indicator)

Approach

This indicator measured USAID LEAD's progress to design, launch, manage, and strengthen the Asia LEDS Partnership and the Asia LEDS Knowledge Portal. According to the PMP indicator definition, strengthening refers to improved organizational structure, clarification of platform goals and vision, development of platform agenda and action plans, training of platform members, or increased awareness of platform activities including workshops and forums.

Measurement tools

In close coordination with the Asia LEDS

Partnership Secretariat staff, several monitoring tools and program reports were developed to document the creation and strengthening of both platforms as well as terms of reference (TORs) that outlined the specific areas for improvement. The Asia LEDS Partnership Secretariat staff were responsible for collecting and analyzing information, in conjunction with the USAID LEAD's M&E Manager. Together they put in place the Asia LEDS Partnership Strengthening Plan (see below) as the primary monitoring and evaluation tool to document improvements by measuring clearly established calendar year milestones.

Task 6.0: Asia LEDS Partnership Strengthening Plan

ALP Objectives (LogFrame)	Sustainability Focus	Secretariat Activities	CY2014 Milestones	CY 2014 Status	CY2015 Milestones	CY 2016 Milestones
Coordination, collaboration, partnerships: Enhanced coordination and	Establishment of a self-managed and funded regional network of public and private	Facilitate the development of a longer-term sustainability plan that addresses the ongoing financing and management of the ALP Secretariat	By the end of CY2014, a sustainability plan will be approved by the Steering Committee	Ongoing. Developed resource mobilization plan. Determined that high-potential (and donor-	By the end of CY 2015, the ALP, in close coordination with potential donors, will have selected an Asian institution to serve as	By the end of CY 2016, a third-party Secretariat that is funded by multiple donors will have taken over full management

Indicator: Number of organizations participating in regional institutions, platforms, or initiatives (custom indicator)

Approach

This output level indicator contributed to the program's Development Objective and measures the number of organizations participating in regional institutions, platforms, or initiatives. For quarterly and annual reporting purposes, platforms was solely defined as the Asia LEDS Partnership. The partnership identified organizations (including government agencies, academic institutes and universities, businesses, and non-profit organizations) and their representatives as members, and encouraged their active participation in development and/or delivery of partnership activities. "Participation" was defined as meeting one or more of the following criteria:

- membership on the Steering Committee;
- provision of direct funding for partnership activities; and/or

- provision of in-kind support in the form of technical content, such as by contributing to a knowledge product (e.g., case study) or providing resource persons to present at an Asia LEDS Partnership event.

Measurement tools

Interested organizations and individuals can use the Asia LEDS Partnership website to apply for membership. This online registration system produces Microsoft Excel spreadsheets to monitor the number of new members by quarter. The program established the Asia LEDS Partnership membership database to track: membership requests from organizations and individuals; workshop and other event agendas; participant lists; and sign-in sheets.

Table A.4: EOP Results - Participating organizations

Targets/Actuals	FY 2013	FY 2014	FY 2015	FY 2015	EOP Result
Annual Targets	30	24	21	17	92
Annual Actuals	44	31	43	27	145
Over Target	14	7	22	10	53

Indicator: Number of countries with improved LEADS Self-Assessment Tool (LEADS-SAT) scores (custom indicator)

Approach

This custom indicator aimed to measure in an effective and objective way USAID LEAD's progress and to support refinements to the program's approach to IRI, "National and sub-national LEADS created or improved." To support this work, the program developed the LEADS-SAT as an assessment tool to document the program's effectiveness of LEADS-related technical assistance and training. The tool was applied at baseline in FY 2014 and final assessments were conducted in FY 2016 in five USAID LEAD program countries (India, Cambodia, Thailand, Vietnam, and the Philippines).

Measurement tools

The program's Low Emission Development Strategies Self-Assessment Tool (LEADS-SAT): Guidance document presents the tool and guidance on its use. This document has:

- Background information including the tool's objective, intended use, and limitations. It also describes the five categories of LEADS used to assess LEADS performance;
- Information about tool's approach to asking standardized questions, and describes the scoring mechanism;
- A Delivery Protocol that presents a step-by-step process for how to use the tool, including how to document responses to meet data verification requirements and to avoid double counting, and a proposed schedule to apply the tool; and
- Guidance on scoring and how the results can be interpreted and used to identify areas for further technical assistance and training.

Table A.5: EOP Results: LEADS-SAT

Final LEADS-SAT assessments conducted in FY 2016 resulted in an increase in scores when compared to baseline assessments in all five countries.

USAID LEAD Program LEADS-SAT Score		
Countries	Baseline Assesments FY 2014	Baseline Assesments FY 2016
Philippines	30%	900%
Vietnam	117%	950%
Thailand	60%	540%
Cambodia	86%	329%
India	-29%	57%

Indicator: Number of sub-national LEDS developed or improved as a result of USG assistance (custom indicator)

Approach

This custom indicator tracks the number and improvement in USAID LEAD's sub-national LEDS activities. These activities include the development of a green growth action plan in Thanh Hoa Province, Vietnam; the hotel energy efficiency program in Chiang Mai, Thailand; and the program's work with BCCI.

Measurement tools

Site-specific tracking and program reports were used to document the development and improvement of sub-national LEDS in all three sites. For activities in India, standard training materials and sign-in sheets (as detailed in Indicator #14 below) were used to document results.

Indicator: Number of climate mitigation and/or adaptation tools, technologies, and methodologies, developed, tested, and/or adopted as a result of USG assistance (F indicator)

Approach

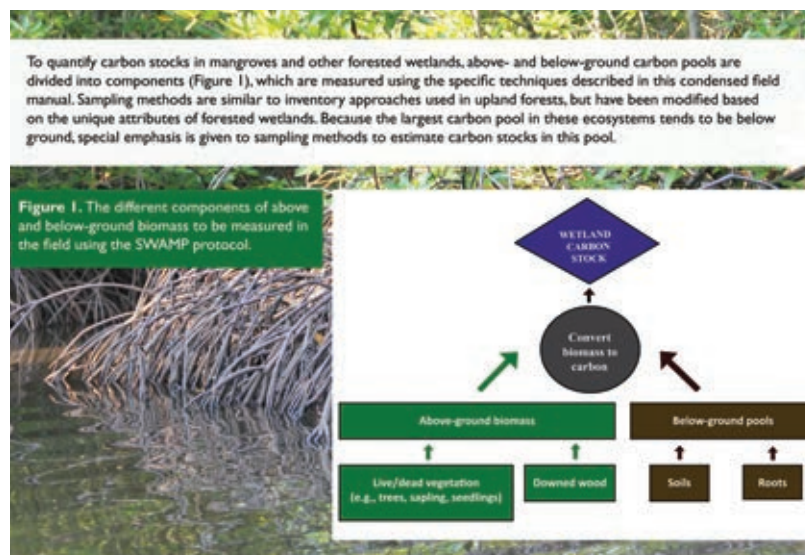
This standard output level indicator documented the tools, technologies and methodologies that were developed, tested and/or adopted during the program's capacity building and training activities. Each tool and/or method was instrumental in the measurement and calculation of carbon emissions at a national, subnational and/or entity level.

the stage and development process. Training curricula and detailed reporting were prepared to document development, testing, and/or adoption stages.

USAID LEAD and the U.S. Forest Service (US FS), along with the Cambodia Ministry of Environment's Climate Change Department, produced an electronic field protocol that illustrates the application of a carbon stock assessment in mangrove forests in Tonle' Sap region in Cambodia. This field protocol was developed during the protocol's development and testing stages.

Measurement tools

The technical team for each tool or methodology developed protocol documents that provided detailed information about



Screenshot from the annotated field protocol for carbon assessment of forested wetlands.

Table A.6: EOP Results: Tools and methodologies

Task/Activity	Tool or Methodology	Description
Task 2.6, Carbon Stock Assessment in Cambodia (development, testing and adoption)	Mangrove carbon stock protocol	Protocols for measuring and monitoring carbon stocks and GHG emissions of mangroves and other forested wetlands.
Subtask 3.1: Protocol and Tools Development, Capacity Building, Demonstrations, and Replication in Vietnam (testing and adoption)	Long-range Energy Alternatives Planning System (LEAP) tool	Tool to assess and screen potential GHG mitigation options and create national-scale energy scenarios that can be used to help design LEDs.
Task 5.0, Emission Factors (development)	Emission factors by sectors	Emission factors included stationary and mobile combustion sources, rice cultivation, enteric fermentation, and nitrous oxide from agricultural soil management and wetlands.
Subtask 3.1: Protocol and Tools Development, Capacity Building, Demonstrations, and Replication in Vietnam (development and adoption)	GeoSpatial Toolkit (GsT)	Map-based software application that provides a visual platform for exploration and analysis of a country's renewable energy potential.
Subtask 3.1: Protocol and Tools Development, Capacity Building, Demonstrations, and Replication in Vietnam (development and adoption)	Triple bottom line (TBL) valuation method	Approach used to assess the full value of protected natural resource areas, such as national parks, accounting for the economic, social, and environmental benefits they provide to society.
Subtask 3.1: Protocol and Tools Development, Capacity Building, Demonstrations, and Replication in Vietnam (adoption)	Marginal Abatement Cost Curves (MACC) using MACC Builder Pro	Analysis results are used to present low-carbon options as alternatives to business as usual or baseline economic activity.
Subtask 3.3: Protocol and Tools Development, Capacity Building, Demonstrations, and Replication in Thailand	Energy efficiency benchmarking tool	Analysis of monthly data submitted by the hotels; determines impacts of specific energy efficiency-related actions taken by partner hotels.

Indicator: Number of countries that achieve higher quality inventories according to the Inventory Project Progress Indicator (IPPI) tool (custom indicator)

Approach

This custom indicator is a Microsoft Excel-based tool that evaluates the quality of national GHG inventories using the criteria of Transparency, Accuracy, Consistency and Completeness (TACCC). Institutional Arrangements and Inventory Improvements have also been considered in the tool's application. Baseline and final assessments using the IPPI tool were conducted in seven USAID LEAD countries: Bangladesh, Malaysia, Nepal, Philippines, Thailand, and Vietnam.

Measurement tools

The IPPI tool has an accompanying guidebook that provides guidance on the use of the tool for USAID LEAD's assessment of its GHG inventory capacity building programs. The guidebook is organized as follows:

Section 1 *IPPI Overview* provides a background about development of the IPPI Tool, its objectives, the overall implementation approach and limitations associated with its use.

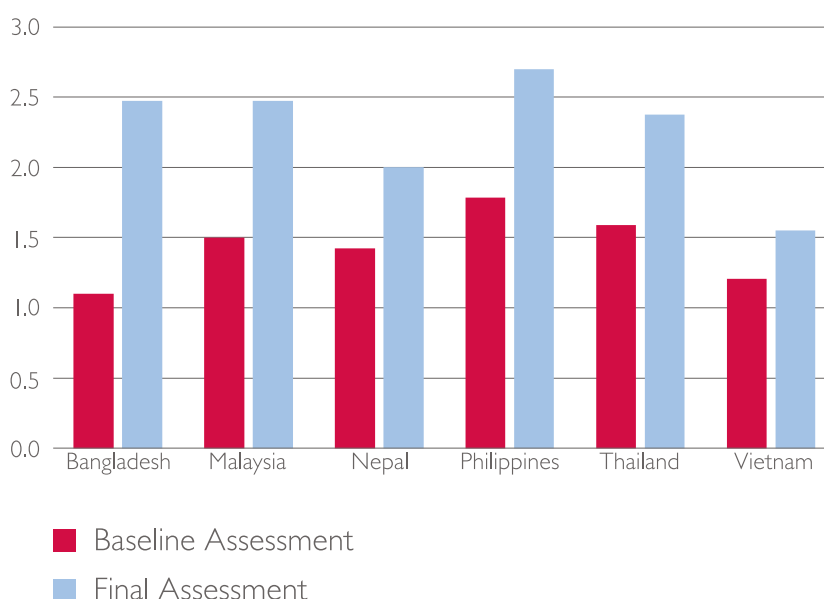
Section 2 *IPPI Assessment Criteria* defines the assessment criteria, and its definitions for GHG inventories, and qualitative and quantitative assessment of indicators under TACCC; and provides an assessment worksheet and also a sample assessment.

Section 3 *Applying Assessment Results* provides guidance on application of IPPI assessment results and how these can results be used to inform future capacity building activities

EOP Results: Tools and methodologies

USAID LEAD countries with higher quality inventories are summarized in Figure A.3 below.

Figure A.3: Impact of USAID LEAD capacity building efforts



Indicator: Number of sub-national entities applying GHG accounting protocols and tools as a result of U.S. Government assistance (custom indicator)

Approach

This custom indicator captured the number of sub-national entities that used GHG accounting protocols and tools to develop and implement LEDS.

Measurement tools

Application was determined by the existence of documents such as inventory reports, green growth planning documents, energy audit reports, and other program reports.

EOP Results: Application of GHG accounting protocols and tools

- 33 hotels in Chiang Mai and Bangkok, Thailand applying GHG accounting protocols (energy audit tools)
- 19 provincial-level government entities

in Thanh Hoa Province, Vietnam applying GHG protocols to support the development and implementation of the provincial Green Growth Action Plan (GGAP).



Photo: Chiang Mai energy audit

Indicator: Number of private and public organizations reporting GHG emissions as a result of USG assistance (custom indicator)

Approach

This custom indicator measures the number of private and public organizations reporting GHG emissions to a registry. The results under this indicator was solely based the collaboratively work conducted with TGO that estab-

lished the Carbon Footprint for Organizations (CFO) Version 2.0.

Measurement tools

The results for this indicator are reported by the counterpart, TGO.

EOP Results: Reporting of GHG emissions

In October 2016, the Director of Carbon Business for TGO advised that it wants to make some changes in the configuration of the CFO system. TGO has requested budget to do so, and will

continue to support the registry and encourage companies to use it. Due to these timing considerations, results for this indicator will not be available until late 2017.

Indicator: Number of metric tons of CO₂ equivalent reported to a registry (custom indicator)

Approach

This output-level indicator documents the amount of carbon dioxide equivalent (CO₂e), which is a measure used to compare the emissions from various GHGs based upon their global warming potential. This result is calculated according to a GHG registry's accounting protocols and reported to that registry.

USAID LEAD's result is from TGO's CFO, Version 2.0.

Measurement tools

The results for this indicator are reported by the counterpart, TGO.

EOP Results: Reporting of metric tons of CO₂

In October 2016, the Director of Carbon Business for TGO advised that it wants to make some changes in the configuration of the CFO system, has requested budget to do so, and will continue to support the registry and encourage companies to use it. Due to

these timing considerations, results for this indicator will not be available until late 2017.

Indicator: Number of GHG registries established as a result of U.S. Government assistance (custom indicator)

Approach

This custom indicator established that the program developed an organized accounting system for inventories where companies and organizations can quantify and report their emissions or emissions reductions from various individual sources according to a uniform accounting standard.

Measurement tools

USAID LEAD developed the Thailand GHG Registry Development Tracker as a monitoring tool to measure progress to-

wards the development of TGO's CFO, Version 2.0. The tool measured the development of the following key deliverables and/or design stages:

- GHG reporting program design
- Reporting guidance
- Registry/report platform
- Verification and accreditation guidance
- Training and education
- Communications and outreach
- Recognition

EOP Results: Establishment of a registry program

USAID LEAD and TGO established and carried out activities under a joint work plan that outlined seven areas of techni-

cal assistance for a voluntary corporate reporting program, CFO Version 2.0.

Indicator: Number of individuals achieving a certificate of proficiency (custom indicator)

Approach

The program offered a Certificate of Proficiency to all participants who mastered relevant subject matter as demonstrated by meeting course requirements and passing examinations as set by the course trainer. Requirements for a Certificate of Proficiency were: completion of each course (including meeting participation expectations) within a program, demonstrated proficiency with material by passing an exam for each course within a program, and completing the program capstone (if applicable).

Measurement tools

Training protocols, curriculum, and/or detailed training agendas were used to provide the justification that course requirements met the requirements for proficiency. Each course also had robust learning objectives that were evaluated during the course to determine if participants demonstrated proficiency of the relevant subject matter.

Table A.7: EOP Results: Number of certificates

Year	Activities	Number of Certificates
FY 2013	LEAP training numbers	39
FY 2014	LEAP training, LEAP for Regional GHG Mitigation at Sub-national Scale, Medan, Indonesia, March 25-28, 2014	40
FY 2015	Carbon Stock follow-up activity in Cambodia and the Soil Analysis training	49
FY 2016	Task 3 (Chiang Mai hotels) in Quarter 4	101
End of Program Result	All activities	250



Indicator: Person hours of training completed in climate change supported by U.S. Government assistance (F indicator 4.8.26)

Approach

This standard indicator documented the program’s training results disaggregated by funding streams.

Measurement tools

Templates were created to capture and verify training numbers related to this indicator (person hours of training). All in-person training events used a daily sign-in sheet (see sign-in sheet template below) that requested that all country national participants complete each cell and provide a daily signature at the end of each training day to verify attendance. Each sign-in sheet was pre-populated using information collected on an electronic registration form with the participant’s first and last names and organizational affiliation. The organizational information helped to disaggregate numbers for sustainable landscapes (SL), clean energy (CE) and

other general climate change (GCC). In addition, sign-in sheets also asked that participants identify their gender and contact information. Post-training follow-up assessments were conducted on an event-by-event basis depending upon work plan activities. Specific assessment protocols were developed to determine the outcomes and impact of training activities over an identified period of time.

Specific tracking tools included:

Sign-in sheet template. This document provided clear instructions on completing sign-sheets in order for the program to comply with USAID documenting guidance for training results. Sign-in sheet information also informed the completion of USAID’s Trainet database.

[Event Title (enter full name of event)]

[Date (state the beginning and ending dates of event)]

[Venue information (specify venue and include city and country)]

INSTRUCTIONS:

- Please ensure that ALL participants fully complete this table and provide a signature at the end of each day of training.
- Institutional logos, which are not required, can be inserted on the top of each page.
- Each sheet should identify the Event Title, daily Date and Page Number in the Footer Section below.
- Please send all completed a) original sign-in sheets and b) final meeting agenda or training curriculum to Sujata Ram, LEAD’s M&E Manager at Sujata.Ram@icfi.com.

No.	Gender (✓)		Full Name (First and Last)	Organization Name	Email Address	Signature
	Male	Female				

Training database. This is a Microsoft Excel-based spreadsheet that tracks the number of participants who have completed training hours. The hours can be seen by disaggregation areas such as

SL, CE and GCC and by gender (male or female). The database was managed solely by the M&E Manager and was the source of reporting information for quarterly and annual performance data.

Table A.8: EOP Results: Person hours of training

Fiscal Year	USAID/RDMA Results	USAID/Philippines Results
FY 2012	760	N/A
FY 2013	4,928	1,696
FY 2014	8,316	1,128
FY 2015	6,616	2,032
FY 2016	10,888	N/A
Total (% of Target)	Total (% of Target)	4,856 (110%)

Indicator: Number of gender mainstreaming activities developed, adopted, and/or implemented in USAID LEAD activities (custom indicator)

Approach

This custom indicator measured the number of gender mainstreaming activities developed, adopted, and/or implemented across USAID LEAD program activities described in the program's Gender Strategy. This cross cutting indicator documented the program's gender activities in improving capacity of USAID LEAD staff and partners to better assess gender

inequalities; document gender considerations in policies such as the Thanh Hoa GGAP; and address gender in the program training and technical activities.

Measurement tools

Gender mainstreaming activities were documented in program, training, quarterly, and annual performance reports.

Table A.9: EOP Results: Gender Mainstreaming

Fiscal Year	Gender Mainstreaming Activities
FY 2015	Development of Business and Professional Women (BPW) of Thailand Green Growth Leadership award
FY 2016	Partnership with BPW on developing and implementing the third annual green growth leadership award
FY 2016	Integration of gender in investment proposals for Thanh Hoa
FY 2016	Partnership with BPW for a study tour and mentorship program
FY 2016	Integration of gender in the LEADS 101 course



USAID
FROM THE AMERICAN PEOPLE

Low Emissions Asian Development Program
ICF (USAID Contractor)



USAID
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**LOW EMISSIONS ASIAN
DEVELOPMENT PROGRAM**



PULL OUT SECTION A

**USAID LEAD NATIONAL GHG
INVENTORY SYSTEMS ACTIVITIES**

USAID LEAD

NATIONAL GHG INVENTORY SYSTEMS ACTIVITIES

Global greenhouse gas emissions by economic sectors, 2014

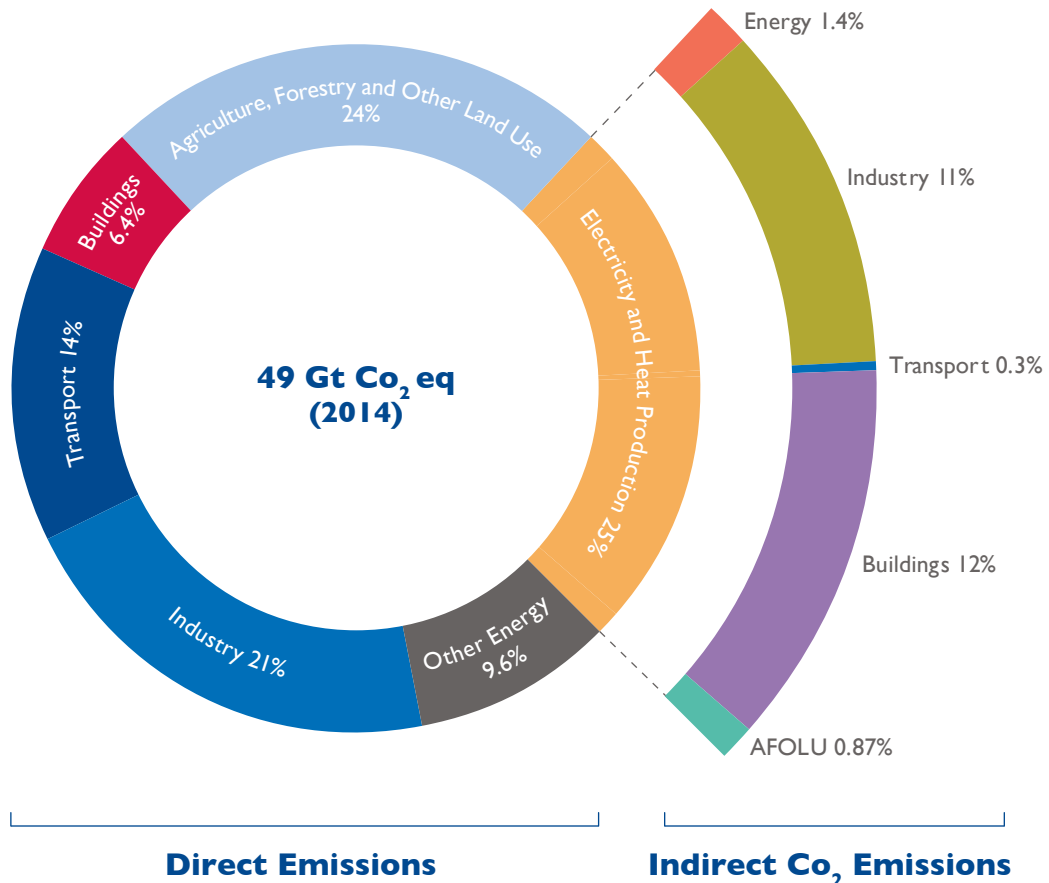


Figure 1: Illustrative national GHG inventory summary.

National inventories provide data for global estimates, but more importantly they provide a basis for national strategic plans to help countries meet long-term GHG emission goals while continuing to grow economically and raising living standards. (Graphic adopted from “Global estimates of GHG emissions from the IPCC Working Group III, 2014.”)

Introduction

In every country, hundreds or even thousands of activities and processes take place that emit greenhouse gases (GHGs) or remove them from the atmosphere. A power plant emits

GHG emissions when it burns fuel to produce the electricity that powers the lights, refrigerators, and computers in our homes. As forests grow, they absorb GHGs.

GHGs are responsible for global climate change, so knowing how many tonnes of CO₂e¹ those activities and processes emit or remove every year is critical to efforts to limit the quantity of GHGs in the atmosphere, and thereby limit the extent of human-induced climate change.

The United Nations plays the leading role in this effort through its Framework Convention on Climate Change (UNFCCC), the primary mission of which is to “stabilize greenhouse gas (GHG) concentrations in the atmosphere at a level that would prevent and reduce dangerous human-induced interference with the climate system.”²

To do that, the UNFCCC keeps track of global GHG emissions over time to ascertain their overall quantity and expected rates of growth or decline by individual activity or process. It does not do this alone. Every country that is party to the Convention must help by periodically sending the UNFCCC a country report of its GHG emissions for a given year or years. The more accurate these reports are, the more informed the UNFCCC is, and thus the better prepared to accomplish its mission.

This is a primary reason why it is of utmost importance for every party to the Convention to know how to create an account of the GHG emissions and removals that take place within its national boundaries, or what one typically calls a national GHG inventory. Another critical reason is because a high quality national GHG inventory offers its authoring nation the means to measure its performance against a metric rife with prospects: GHG emissions.



Robust GHG accounting efforts of the kind that underpin national GHG inventories are at the heart of a country's strategic plans to meet its long-term GHG emission goals while continuing to grow economically and raise the standard of living. A high-quality report on national GHG emissions – or better yet, a series of such reports that reveals emissions trends over time – should highlight sectors that can benefit the most from domestic policies targeting emissions reductions. In other words, a robust inventory allows a country to identify its GHG emission sources and removal sinks, and the direction they are going, and thus design programs to reduce emissions growth, target specific sectors with programs, policies, or regulations, and/or develop what are called Nationally Appropriate Mitigation Actions (NAMAs). Once these programs have been in place for the desired length of time, an evaluator may measure impact by comparing the most recent inventory to that which originally informed the program design.

¹ The sum of emitted CO₂ and other GHGs, like CH₄, expressed in terms of CO₂ by multiplying the mass of the original gas by a factor called a Global Warming Potential.

² http://unfccc.int/national_reports/annex_i_ghg_inventories/items/2715.php.



The same high-quality inventory may also help mobilize investment capital, or give countries a way to guide and track their progress towards meeting their national mitigation goals, especially with the Paris Agreement in place. Finally, it may demonstrate the quality of a country's emission reduction projects, and thereby attract investors on the lookout for high-quality GHG emission credits, like CERs (Certified Emissions Reductions).

National GHG inventories should be of great interest to the governments of developing nations in South and South-east Asia, the focal region of the USAID LEAD program. Yet, despite how vital inventories are, many countries are still learning how to prepare them to the level of quality the UNFCCC needs to meet its objectives, or even to the level that the countries themselves need to create domestic opportunities.

The UNFCCC has published several guidelines intended to help countries improve their inventories. In the official *Report Of The Conference Of The Parties On Its Eighth Session*³ Decision 17/CP.8, "Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention,"⁴ includes a variety of high-level instructions. This includes advice to use the Revised 1996 *Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories* to:

- estimate and report national GHG inventories;
- use methods and data that are likely to deliver the most accurate account of GHG emissions;
- determine which sources of emissions are the greatest; and

³ FCCC/CP/2002/7/Add.2, 28 March 2003.

⁴ <http://unfccc.int/resource/docs/cop8/07a02.pdf#page=2>.

- include the preceding and other information in the national inventory report to the UNFCCC to ensure that it is as transparent, accurate, consistent, comparable, and complete as possible (together, these are called the TACCC principles).

These are high-level instructions. In contrast are the IPCC Guidelines to which

Decision 17/CP.8 refers. These are at the other end of the spectrum from the Decision because they comprise a set of exacting methods and procedures which allow a country to estimate the emissions from just about any source using as complex – and therefore potentially accurate – a technique as the country’s resources permit.



USAID LEAD supported development of an online training course on the IPCC Guidelines.

A principal goal of USAID LEAD was to build capacity among its stakeholders to prepare better national GHG inventories than they could before the program began. When the program began, staff found that the national GHG inventory authorities in the South and Southeast Asian countries that the USAID LEAD program was intended to support could access the UNFCCC decisions well enough and knew generally what was expected of them. However, they had not yet developed their internal capacity to use the IPCC Guidelines to estimate their countries’ GHG emissions. Nor had they established a long-term

partnership with outside experts in the IPCC Guidelines who could be successively engaged to contribute to their countries’ inventories.

Thus, it was clear that the diverse personnel involved in national GHG inventory preparation could benefit from technical support introducing them in a hands-on manner to the IPCC Guidelines in order to increase their fluency in the language and concepts on those Guidelines. With this foundation of understanding, they would be able to reinforce and hone their knowledge by applying it on the job.

This intermediate step still required overcoming challenges the USAID LEAD staff uncovered that countries were facing, such as weak or non-existent institutional arrangements clearly stating – or even mandating – the roles and responsibilities in the inventory preparation process; a history of preparing inventories without applying quality assurance or control; an inability to access and thereby learn from the materials that went into prior inventories (owing to a lack of archiving); no efforts made to catalog weaknesses of prior inventories and to turn those lists into improvement plans; incomplete documentation of data sources or assumptions; or a scarcity of emission factors.⁵



Participants from Cambodia at a USAID LEAD training on GHG inventories.

With such challenges to confront, it is not surprising that when the program commenced low emissions development strategies (LEDS), like nationally appropriate policies, technologies, or practices to reduce GHG emissions, were in a nascent state in USAID LEAD's countries of interest, or that those countries expressed to USAID LEAD staff their desire for assistance with developing national GHG inventory systems. With such a system, they could repeatedly produce inventories that would constitute the groundwork for eventually adopting sophisticated modeling techniques to plan near- and long-term GHG emission reductions.

Cognizant of these challenges, the USAID LEAD team devised a technical approach tailored to its stakeholders. The program staff identified relevant partner country personnel, gave them the tools that would help them build their capacity, taught them how to use the tools, and gave them the opportunity to study and begin to master the IPCC Guidelines.

In close coordination with the US Environmental Protection Agency (US EPA), which was also targeting capacity building for national GHG inventory staff in several USAID LEAD countries, and key USAID bilateral missions, USAID LEAD set out to provide regional technical assistance and training to country counterparts to support individual and institutional capacity building, and improve

⁵ In the most general terms, an emission factor is an expression of the mass of a given GHG per a unit of the activity or substance that emits that GHG. For example, an emission factor related to coal could be the mass of methane that would be released were a kilogram of coal combusted in a furnace to produce electricity. The IPCC guidelines offer default emission factors that will typically be less accurate than emission factors developed "locally." In the vein of the current example, the IPCC Guidelines offer emission factors for various types of coal; however, even within a single coal type, there are varying quantities of GHGs. The most accurate emission factor for coal will likely come from a reputable and well-equipped laboratory testing several samples of the exact coal the power plant of interest is combusting.

their understanding of GHG estimation methodologies, data collection and management systems, inventory preparation and reporting processes, and related activities via regional and country-level workshops and seminars. The regional aspect of the strategy owed its inspiration to the conviction that by bringing together people from across South and Southeast Asia, the program would enable participants to learn from many more experiences than they would encounter were they to receive instruction in a single-country setting.

USAID LEAD's approach was three-fold:

1. Create and apply a tool with which to quantitatively and qualitatively evaluate inventory performance – that is, the quality of an inventory – before and after USAID LEAD's technical support activities. This was the Inventory Performance Progress Indicator (IPPI) tool. The US EPA and USAID LEAD program collaborated on the design of this Microsoft Excel-based tool, which was majority-funded by USAID, with a contribution from the UNFCCC.
2. Design and implement a regional solution to the challenge of low capacity to sustainably prepare national GHG inventories, thus facilitating the founda-

tion from which the countries could proceed to the next stage: studying and using the IPCC Guidelines. In essence, this aspect of the approach would involve a series of multi-country workshops focused on core national GHG inventory principles and practices.

3. Design, create, and deploy a comprehensive course on the 2006 IPCC Guidelines that students could take either online, in a group setting, or as a hybrid of these two approaches (both online and in-person). For this, USAID LEAD engaged the Greenhouse Gas Management Institute (GHGMI) to create the online course. GHGMI offers the finalized course on its website in six parts, the first providing an introduction to the guidelines, as elaborated in Volume I of the IPCC Guidelines, and the second through sixth consisting of individual courses on preparing an inventory for the energy, waste, agriculture, forestry and other land use, or industrial processes and product use sectors, drawing on Volumes 2 through 5 of the Guidelines.

These three elements of USAID LEAD's strategy are presented in greater detail below.

How we know what we accomplished: The Greenhouse Gas Inventory Performance Progress Indicator (IPPI)

As previously stated, USAID LEAD coordinated its activities with the US EPA. During USAID LEAD's tenure, US EPA was implementing the Southeast Asia Greenhouse Gas Inventory Capacity Building Project (SEA GHG) in cooperation with the UNFCCC. SEA GHG took a one-on-one approach with national GHG inventory teams, emphasizing learning by doing.

Of the partner countries of the USAID LEAD program, the SEA GHG project supported national GHG inventories in Cambodia, Malaysia, Philippines, Thailand, and Vietnam. A main component of the SEA GHG project was to improve national inventory management systems by offering instruction through knowledge application on the six themes of US EPA's GHG inven-

tory workbook, *Developing a National Greenhouse Gas Inventory System*: (1) institutional arrangements; (2) methods and data documentation; (3) quality assurance/quality control (QA/QC); (4) archiving systems; (5) key category analysis; and (6) national inventory improvement planning.

Since USAID LEAD and US EPA were striving toward a common goal – building capacity for the sustained preparation of national GHG inventories – they had an interest in evaluating their impact using a common method. The solution was to create the IPPI tool, which would measure the effectiveness of GHG inventory capacity building efforts country-by-country by comparing GHG inventory documents a country prepared before the programs’ capacity building efforts started against inventory documents that the country prepared following the two program’s efforts.

The IPPI tool gives users a qualitative and quantitative way to measure an inventory’s TACCC principles that the UNFCCC and IPCC promote as the standard to which inventory authors should strive. In addition, the IPPI tool includes two additional principles, Institutional Arrangements and Inventory Improvement Plans, because these shed light not only on inventory quality, but also on the sophistication and strength of inventory systems. Taken together, these seven principles are defined as follows:

1. *Transparency*: The data, assumptions, and methods in the inventory are presented clearly.
2. *Accuracy*: Emission and removal estimates are as close as possible to their true values.
3. *Consistency*: “Consistent” inventories are based on the same assumptions and equations as one another.

4. *Completeness*: The inventory includes estimates for each of the country’s emission sources and removal sinks.

5. *Comparability*: The emissions and removals in the inventory have been estimated in accordance with the IPCC Guidelines.

6. *Institutional Arrangements*: The inventory has been prepared systematically, in that the entities involved have effectively coordinated their varied roles.

7. *Improvements*: The inventory identifies future needs and prioritized actions, which are explained in an inventory improvement plan.

In the IPPI tool, the practitioner evaluates each of these seven principles by examining the inventory of interest through the lens of several criteria, the idea being that the inventory that best meets these criteria will be the most transparent, accurate, consistent, complete, and comparable inventory, and therefore the most useful inventory.

USAID LEAD and US EPA conducted several baseline IPPI assessments in 2013, and thus gained a clear picture of the status of inventory capacity in the countries of interest. This provided a sound and evidence-based logic for the work plans that USAID LEAD and US EPA subsequently developed and implemented. With this knowledge, the programs tailored their workshops to the participants’ needs. USAID LEAD’s workshops are described in the following section.

Emphasizing participation in USAID LEAD's series of five regional workshops on national GHG inventory systems

You don't get a workout by watching your coach swim. This was the philosophy that ran through USAID LEAD's series of workshops on national GHG inventory systems, or "NIS" for short. Rather than present slide after slide, day after day, USAID LEAD's national GHG inventory experts limited themselves to introducing the core themes and then gave workshop participants the opportunity to absorb them and discover how they applied to their jobs through creative hands-on

exercises. This approach capitalized on the multi-country nature of the workshops by emphasizing cross-country discussion and collaboration.

USAID LEAD developed a rich, comprehensive, and easy-to-follow curriculum for the NIS workshop series, and have made it available as a freely downloadable set of Microsoft PowerPoint, Word, and Adobe PDF files. Each of the five workshops is described below.



Training team at the Third Regional Training on National GHG Inventory Systems in Pathumthani, Thailand, 2014.

NIS Sessions 1 and 2

A core component of the NIS series was US EPA's workbook *Developing a National Greenhouse Gas Inventory System*. In 2014, during NIS Sessions 1 and 2 (out of 5), participants from USAID LEAD countries learned how to use each of the chapters in the workbook.

Session 1 consisted of an overview of each of the chapters and in-depth exercise-based

training on the following four chapters: Institutional Arrangements (IA); Methods and Data Documentation (MDD); Key Category Analysis (including the Key Category tool); and Quality Assurance/Quality Control. During Session 2, participants studied the remaining two chapters, Archiving Systems and National Inventory Improvement Plans (NIIP).



Participants from Indonesia and trainers at the conclusion of NIS Session 2 training in Bangkok, Thailand, July 2014.

Over the two sessions, participants performed exercises individually and in rotating groups. This encouraged them to learn from each other and planted the seeds of an informal community of practice for ongoing technical collaboration within the region. Through these

means, participants completed drafts of the US EPA workbook chapters that they could use to guide their GHG inventory development processes, and created action plans to implement and communicate their findings to their colleagues at home.

NIS Session 3



NIS Sessions 1 and 2 revealed significant demand for in-depth knowledge of the themes they covered. In response, USAID LEAD offered a third session in February 2015.

Session 3 introduced participants to the US EPA inventory toolkit, a robust set of tools that could help national inventory teams implement successful institutional arrangements and inventory systems. It also focused on data collection challenges and ways to overcome them. USAID LEAD selected these themes on the basis of explicit participant demand for more in-depth training on what they identified during Sessions 1 and 2 as the principal challenges confronting inventory teams: taking institutional arrangements from theory to application, and emission/removal data collection in countries that previously collected little such data and remained without the mandate or systems to do so.

The intended outcome was that participants would put the US EPA inventory toolkit to use in their respective countries by using it to move from inventory planning to implementation. This was to be accomplished by: (1) alerting all interested parties to the launch of the inventory preparation process; (2) defining sector-specific roles and responsibilities in writing; (3) using memoranda of understanding (MoU) or similar to formalize IAs; and (4) using agreements, such as MoUs or non-disclosure agreements, to obtain data sharing commitments that take confidential or sensitive data into account, amongst other goals. The timing of Session 3 was opportune in that it coincided with participants' early work on preparing their Third National Communications and first Biennial Update Reports (BURs), giving them the occasion to put its lessons to immediate use.

NIS Session 4



This session took place in July 2015. As with Session 3, USAID LEAD selected its topics on the basis of the needs participants reported during the previous session and during post-workshop, in-country interviews that USAID

LEAD performed. The USAID LEAD team reviewed the results of this input to select three topics that represented the highest priorities of multiple country teams, and addressed critical knowledge gaps. They were:

1. An overview of the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*, focusing in particular on differences with the 1996 version. Participants discussed the challenges they encountered or expected to encounter that were related to those differences, and how they thought they could remedy them.
2. Using IPCC inventory software. Participants reviewed the software's necessary data inputs, and practiced how to input data into the software, export data, and generate reports. USAID LEAD instructors discussed how to manage a software team, for example, including coordinating multiple people who are inputting data, who should have access to the software, and how to control the quality of the data.
3. Using inventories and inventory systems for purposes like sector, subnational, or national planning, or developing or tracking Intended Nationally Determined Contributions (INDCs) or NAMAs. Participants discussed how principles used for a national inventory – such as completeness, information sharing, and archiving –

were applicable to other GHG reporting commitments like NAMAs or INDCs. USAID LEAD instructors gave examples from the U.S. of additional inventory applications, and led a discussion of ways to leverage GHG inventories in national/sectoral development planning, database management, subnational planning, or compliance with international obligations.

A highlight of Session 4 was a day of group problem-solving using real-life examples from country inventory teams.

The outcome of Session 4 was that participants: (1) understood how moving from the 1996 to the 2006 IPCC Guidelines could impact their inventory preparation processes; (2) were familiar with the basic structure and functionalities of the IPCC inventory software; (3) identified and shared solutions to common problems encountered during inventory preparation; and (4) were able to assess the benefits and potential uses of national inventories that met the principles the TACCC principles, in the context of planning, INDCs, or NAMAs, and, in consideration of that assessment, ensure they could dedicate sufficient resources to these efforts.

NIS Session 5

USAID LEAD conducted its fifth and final Regional Workshop on National GHG Inventory Systems in May 2016. Participants consisted of core national GHG inventory staff from the governments and supporting entities – such as academia and consultancies – of Bangladesh, Cambodia, Malaysia, Nepal, the Philippines, Thailand, and Vietnam, many of whom had attended at least one of the previous sessions. The express purpose was to lead the participants through a self-assessment of their latest national GHG inventories, or inventory preparatory materials, in order to identify the strength areas and potential areas for improvement.

The event's facilitators introduced the IPPI tool to the participants, who studied each of its seven principles and the 40 criteria of which they were comprised; learned how their regional peers had worked to meet them (or what challenges they faced in trying to meet them); and assessed their own recent national GHG inventories or preparatory materials according to the criteria, taking comprehensive notes of their findings. In this way the participants completed the workshop with hands-on experience in applying the IPPI tool to the evaluation of their inventories.

Over the course of the two-year training series, participants gained meaningful insights into how to improve their national GHG inventories and establish the systems that those inventories would depend upon to realize consistent improvement over time. By acquainting themselves with the IPPI tool at the fifth session, participants adopted a new and easy-to-apply method to quantify and

describe the improvements they had made to their GHG inventories, thanks to their involvement in USAID LEAD's training series and related capacity building initiatives.

Learning a new language: The 2006 IPCC Guidelines

As we have seen, developing a GHG inventory is an essential step in managing emissions in that a complete and transparent national GHG inventory explains emissions and trends, helps project future emissions, and identifies sectors for cost-effective emission reduction opportunities. Also, compliance with international conventions such as the UNFCCC is of critical global importance. At the UNFCCC 17th Conference of Parties, it was decided that beginning in 2014, developing country parties to the convention would have to submit BURs that included a national GHG inventory, and that these would be subject to a process of international consultation and analysis, with the explicit goal “to enhance the transparency and accountability of information reported in BURs by Non-Annex I Parties.”⁶ In light of these reasons to prepare a high-quality national GHG inventory, the growing interest observed by USAID LEAD personnel in how to use the 2006 IPCC Guidelines observed was understandable.

To help countries satisfy this interest, USAID LEAD created and offered a two-week, certificate-bearing, in-person program on the 2006 IPCC Guidelines in early 2016. As its main lecture



materials, this program employed the online courses GHGMI created during its engagement with the USAID LEAD program over the preceding two years.

In the first week, participants took a course on Volume I of the 2006 IPCC Guidelines.⁷ In the second week, participants divided themselves into five classrooms according to their sectors of expertise and responsibility, and took an advanced course on either the Agriculture, Energy, Forestry and Other Land Use, Industrial Processes and Product Use, or Waste sector guidelines.

⁶ See http://unfccc.int/national_reports/non-annex_i_natcom/cgel/items/8621.php for more information on the international consultation and analysis process and its purpose.

⁷ Literature describing the course in detail is available from the GHGMI website at <https://ghginstitute.org/product/501-ipcc-introduction-to-cross-cutting-issues/>



551 IPCC: WASTE

\$250-\$395

ENROLL NOW

This course provides a rigorous training on the emission sources and estimation methodologies for the waste sector based on the internationally endorsed *2006 IPCC Guidelines*. This course should be combined with the Institute's 501 IPCC: Introduction to Cross-Cutting Issues course.

[Click to Read More](#)

Course Lessons:

1. Introduction and overview
2. Solid waste disposal
3. Biological treatment of solid waste
4. Incineration and open burning
5. Wastewater treatment and discharge

Screenshot of the GHGMI training course on the IPCC Guidelines for Waste.

These courses were applicable across a wide array of GHG measurement, reporting, and verification (MRV) frameworks at many levels, and can be applied at the national, municipal, sectoral, or program level.

Participants consisted of national GHG inventory coordinators, sector leads, and other staff involved in estimating national GHG emissions and removals, who wished to enhance their ability to contribute to their countries' national GHG inventories by mastering the 2006 IPCC Guidelines. At the end of the two weeks, all participants had completed the introductory course and the sectoral course of choice. They gained a command of the guidelines and therefore could apply the knowledge immediately to their daily work.

The following outline of the first course, which covered Volume I of the guide-

lines, offers a glimpse into the level of detail the course offered:

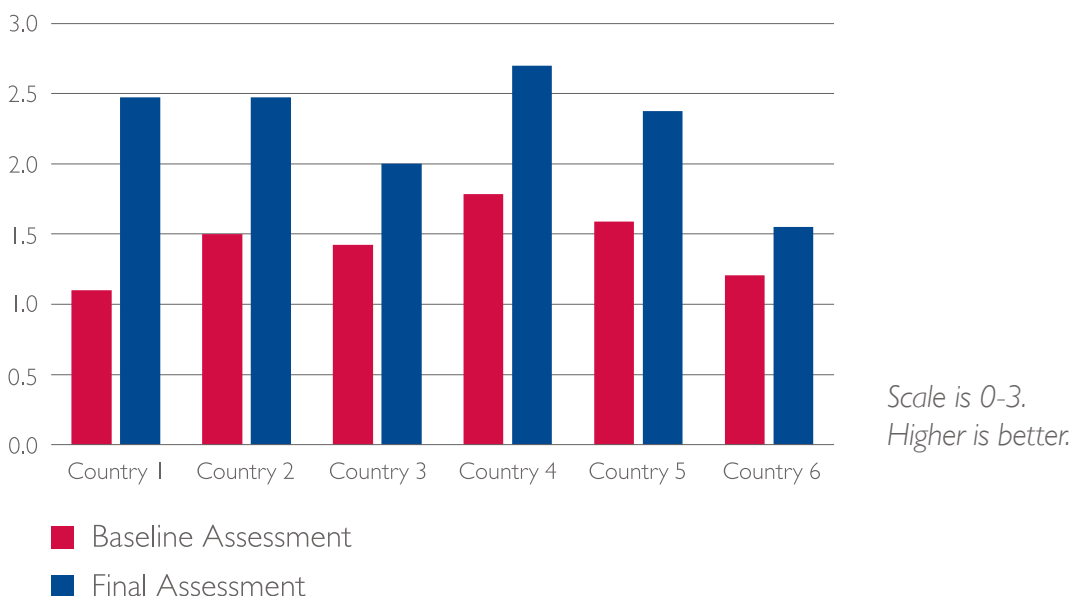
- Climate change science, mitigation, and adaptation
- The value of national GHG inventories
- The development of the IPCC Guidelines
- How to establish institutional arrangements
- How to collect activity data
- Key category analysis (mathematically identifying the most important GHG emission and removal activities)
- How to choose emission estimation methodologies
- Uncertainty analysis
- Time series
- What to include in QA/QC and verification systems
- The IPCC's GHG inventory software
- How to use the IPCC's Emission Factor Database (EFDB)

Results

The results of the baseline and final IPPI assessments, and of the two-week course on the 2006 IPCC Guidelines, best illustrate the impact of the USAID LEAD program and US EPA's related work in the region.

Beginning with the IPPI assessments, we see in Figure 2, below, that USAID LEAD and US EPA helped six countries to improve their capacity to prepare better national GHG inventories.^{8,9}

Figure 2. Impact of USAID LEAD and US EPA capacity building efforts: Final IPPI ratings of six countries' national GHG inventory materials.



Qualitatively speaking, the seven countries that learned how to use the tool at USAID LEAD's Fifth Regional Workshop on National GHG Inventory Systems (NIS Session 5) said they would use it to plan their future inventories. The UNFCCC representative at the workshop notably predicted that the UNFCCC would use the IPPI tool for the review of developing countries' GHG inventory management systems.

Participants from one country that recently published its BUR I efficiently captured the general mood when they said they wished they had had the tool before they started their BUR I. In short, participants' reactions suggested that they found the IPPI tool a valuable way to assess their inventory progress and set improvement targets for their future inventories.

⁸ The countries are not named here due to the confidential nature of the IPPI assessment, as described in the guidelines that govern the tool's use.

⁹ A seventh country (out of the seven on which USAID LEAD focused its efforts) was only just getting started on its first BUR during the final months of the USAID LEAD program; therefore it was not possible to perform an assessment of inventory materials created during the program's lifespan. That said, interviews and observations did indicate that the country had experienced a growth in its capacity to sustainably prepare national GHG inventories, even if it lacked suitable materials to assess.

With respect to USAID LEAD's two-week in-person course on the 2006 IPCC Guidelines, USAID LEAD evaluated its impact by asking all participants at the beginning of each course to take a brief quiz to measure their existing knowledge of the topics covered by the courses, followed by a final exam at the end of each course. By comparing each participants' before and after scores, USAID LEAD was able to quantify the extent of improvement.

As is evident in Figure 3 below, participants began the first week's course on Volume I of the 2006 IPCC Guidelines with a relatively high knowledge of the basics of national GHG inventories. This was expected, given the USAID LEAD participant selection process favored applicants with clear and certain duties re-

lated to their countries' national GHG inventories. Also, several of the applicants had participated in USAID LEAD's NIS workshop series, which covered many of the fundamentals of national GHG inventories. Thus, these participants had some relevant pre-existing knowledge. USAID LEAD found that participants' command of the subjects covered in Volume I of the Guidelines improved on average 19% over the first week of the course.

This contrasts significantly with the results evident in Figure 4. During the second week of the course, participants studied and practiced using the 2006 IPCC guidelines' sector-specific instructions. This is where USAID LEAD's course made the greatest difference, with an average improvement of 49% among participants.

Figure 3. Introductory class on the 2006 IPCC Guidelines: Change in knowledge from before to after the class.

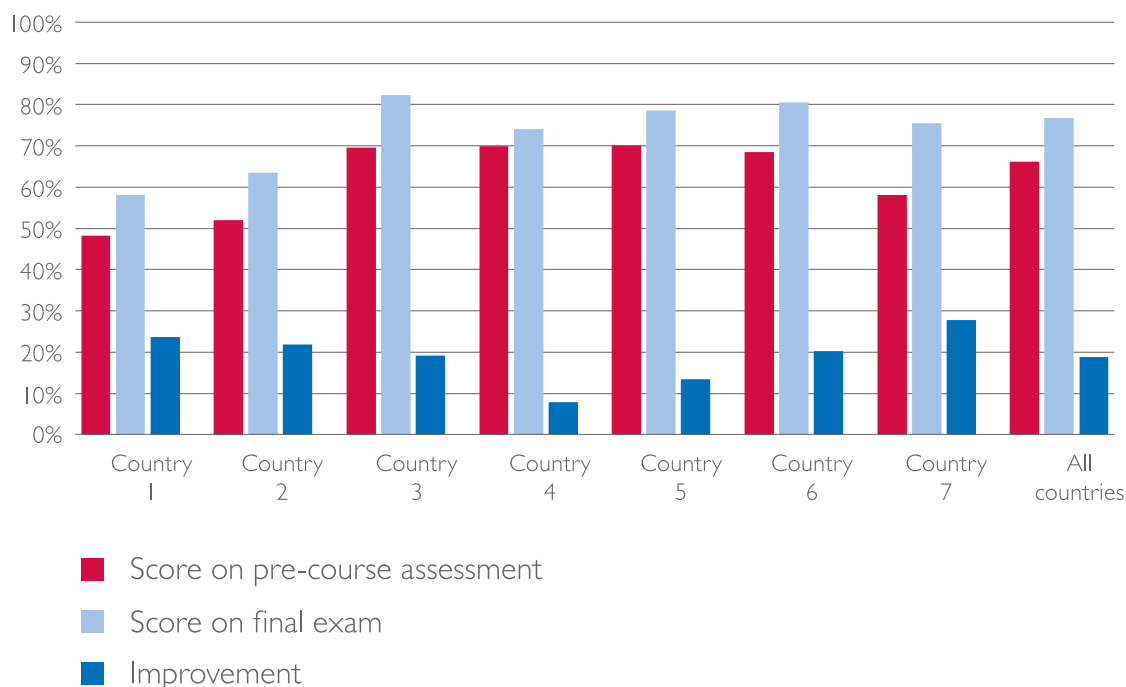
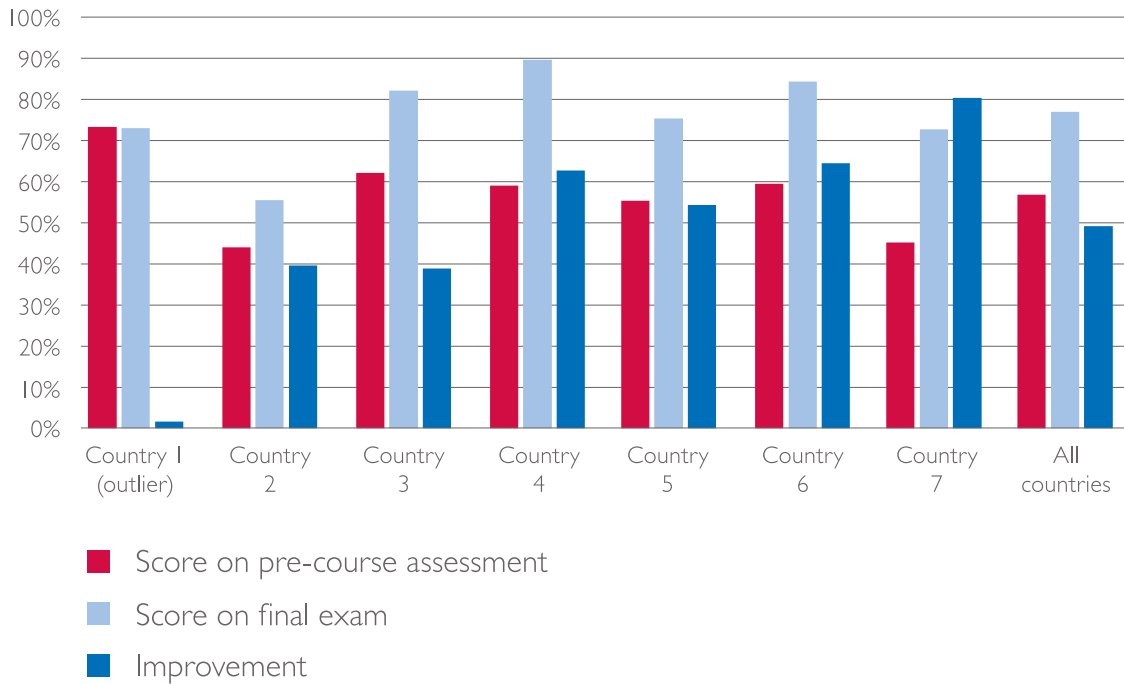


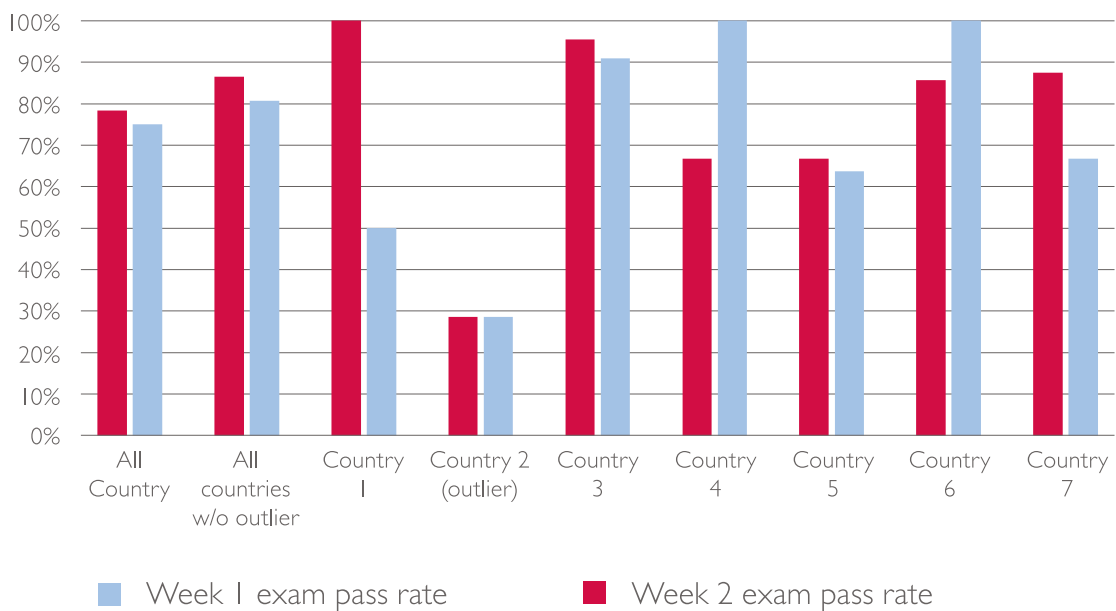
Figure 4. Sectoral classes on the 2006 IPCC Guidelines: Change in knowledge from before to after the class.



Ultimately, most participants passed the introductory Week 1 class and the sectoral classes they selected during Week 2, at a rate of 78% and 75%, respectively. One country did have a low pass rate

during both weeks. Excluding that country's outlying results from the calculation of the average pass rate changes the Week 1 and Week 2 pass rates to 87% and 81%, respectively.

Figure 5. Final exam pass rates for weeks 1 (Introductory class) and 2 (Sectoral classes) of USAID LEAD's two-week in-person course on the 2006 IPCC Guidelines



All participants who passed the final exam earned a Certificate of Proficiency from GHGMI in the respective volume(s) of the 2006 IPCC Guidelines, adding to their credentials and reflecting their significantly enhanced capacity to contribute to their countries' national GHG inventories. USAID LEAD and GHGMI awarded 95 Certificates of Proficiency to 57 people at the end of this two-week in person course. It should be noted that prior to the two-week course, USAID LEAD and GHGMI awarded Certificates

of Proficiency to 19 people who USAID LEAD had enrolled in the online version of the introductory class.

All told, USAID LEAD's efforts resulted in 70 people from six South and South-east Asian countries earning a Certificate of Proficiency in the 2006 IPCC Guidelines, indicating they had gained a working command of them, and ensuring that their countries would much more easily make a transition from the 1996 IPCC Guidelines.

Conclusion and Recommendations

Before the USAID LEAD program implemented its three-pronged approach to building capacity to sustainably prepare national GHG inventories, the program's target countries were producing national GHG inventories that could be improved. After the USAID LEAD program, these national inventories did improve. This was because: i) USAID LEAD and US EPA created the IPPI tool and invited staff from partner countries to adopt it, allowing them to evaluate their progress and set short-, medium-, and long-term goals; ii) the programs introduced partner country inventory staff to the US EPA Template Workbook Developing a National Greenhouse Gas Inventory System and the US EPA inventory toolkit, and gave them the chance to practice using both in a setting of their regional peers; and

iii) the programs' staff spent two weeks with participants to help them learn all about the 2006 IPCC Guidelines.

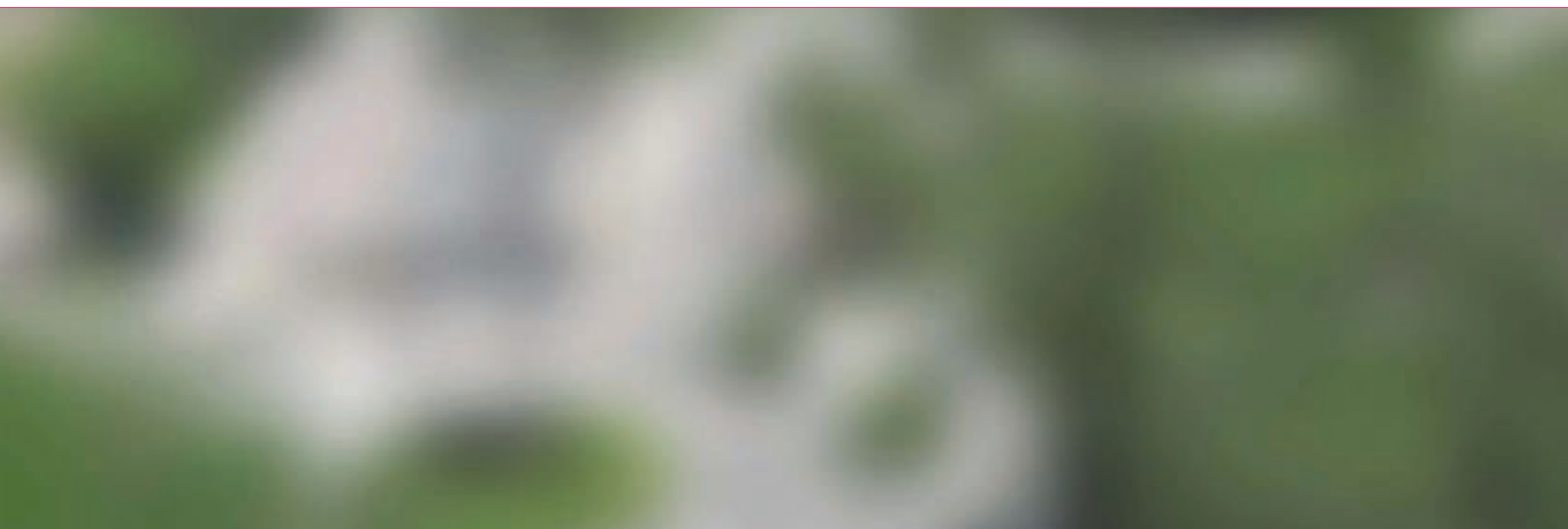
The foundation for ongoing and accelerated improvement is there. Several factors will ensure this success continues going forward:

- ensuring there is a sustainable enabling environment so built capacity stays;
- solidifying cross-ministerial arrangements and agreements for data-sharing; and
- using improved national GHG inventories to create evidence-based policies, and helping countries meet their NDCs, thus incentivizing further improvement and increasing the value of national GHG inventory teams.



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DEVELOPMENT PROGRAM**



PULL OUT SECTION B

**ENSURING EFFECTIVENESS OF
USAID/RDMA REGIONAL PROGRAMS**



Representatives from the Philippines at the Asia LEADS Forum 2014 in Yogyakarta, Indonesia next to a display a USAID-supported initiative in Roxas, Palawan on climate resilient island communities.

ENSURING EFFECTIVENESS OF USAID/RDMA REGIONAL PROGRAMS

The United States Agency for International Development Regional Development Mission for Asia (USAID/RDMA) recently released its Regional Development Cooperation Strategy for Asia, 2014 – 2018 (RDCS) which describes the overall approach through which it seeks to “help connect, convene, and catalyze Asia’s expertise and capital to find solutions to...substantial development challenges”, with an emphasis on “transboundary problems that cannot be solved at the national level”.

The RDCS acknowledges the importance of close collaboration and constant coordination with other U.S. Government entities active in the region – particularly the USAID bilateral missions – and points to the detailed “Coordination Procedures between

USAID/RDMA and Bilateral Missions for Regional Project Design and Implementation” that guide its activities.

This section shares lessons about coordination and collaboration from the USAID LEAD program. In an official assessment of its implementing contractor, USAID acknowledged that the LEAD program’s “communication and coordination of a large number of regional and country-specific activities has continued to be handled with exceptional efficiency and advance preparation, particularly when engaging USAID bilateral missions and selected U.S. Government agencies”, and the program believes that it indeed illustrated the benefits of effective coordination and collaboration with other U.S. Government organizations. As with any program,

AN EXAMPLE OF THE GOOD

STRONGER AND MORE FEASIBLE CLIMATE CHANGE COMMITMENTS

In 2015, prior to convening in Paris for the 21st meeting of members of the United Nations Framework Convention on Climate Change, countries began to consider the greenhouse gas (GHG) reduction targets they would announce as their Intended Nationally Determined Contributions (INDCs). This collection of pledges is now a cornerstone of the groundbreaking Paris Agreement.

USAID LEAD's close collaboration with USAID bilateral missions and their implementing programs helped prepare two developing countries – Philippines and Vietnam – to make stronger pledges, with a well-founded confidence that they could meet their targets while still meeting their goals for social and economic development.

For the Philippines, setting an ambitious target for GHG reductions from the energy and transportation sectors required a strong understanding of how the various sources in the country currently emit GHGs. Staff from government and research institutes that prepare the national GHG inventory were active participants in multi-year technical assistance and capacity building programs that were collaborations of USAID LEAD and two programs of the bilateral mission (Cenergy and B-LEADERS) that covered both technical and institutional aspects of estimating and reporting emissions from energy sources.

Additionally, through a special “buy-in” from the bilateral mission, USAID LEAD provided supplemental, in-depth training in the Philippines – working with the researchers on real data and real calculations. This intensive work helped the Philippines to use more accurate emission factors to calculate GHGs from sta-

tionary combustion (e.g., coal-fired electricity generation plants) and from mobile combustion (e.g., the unique “jeepneys” in Manila). The country's confidence that its starting calculations were accurate helped it set an ambitious target that it felt confident it could meet. As a stakeholder noted, USAID LEAD support led to “a clear path and direction forward where preparation of GHG inventory has been institutionalized for the Philippines.”

In settings its INDC, Vietnam used a policy analysis tool known as the Marginal Abatement Cost Curve (MACC) approach that allows countries to rank GHG reduction options by their estimated costs. USAID LEAD had worked in close association with the USAID Vietnam bilateral mission – and one of its implementing programs, Vietnam Forests and Delta (VFD) – to offer in-country training on such tools for both national and provincial researchers and analysts. This support directly allowed the country to use MACC modelling to inform a more rational analysis of options to reduce GHGs and calculate the total emissions possible within a reasonable cost – informing the very foundation of the country's main commitment to the Paris Agreement. This collaborative effort resulted in the development and approval of the Thanh Hoa Province Green Growth Action Plan.



Participants from Philippines at a regional GHG inventory training workshop in 2015.

AN EXAMPLE OF THE GOOD

BLUE CARBON

Wetter soils hold more carbon than drier soils, and mangroves and other forested wetlands form much of the earth's blue carbon sinks, which sequester more than half of the globe's biological carbon.

Recent studies confirm that mangroves, in particular, can store up to five times more carbon than tropical forests. This high carbon storage suggests that mangroves can play a crucial role in GHG mitigation, and this valuable function is in addition to the other ecosystem services that mangroves provide, such as providing breeding grounds and habitats to a variety of fish and other marine species of high commercial value.

The USAID LEAD program was able to help Lower Mekong countries – particularly Cambodia – understand the value of mangroves by working in close partnership with the US Forest Service (US FS) and the Sustainable Wetlands Adaptation and Mitigation Program (SWAMP) that USFS had earlier formed with the Center for International Forestry Research (CIFOR), Oregon State University, and USAID's Bureau for Economic Growth, Education, and Environment. Under the SWAMP program, researchers developed the Forested Wetlands Protocol – now a recommended methodology of the Nobel prize-winning Intergovernmental Panel on Climate Change – that details how to measure, calculate, and report stocks and flows of carbon from mangroves.

In its contractually designated role as Program Integrator for USAID/RDMA and related U.S. Government programs in the region, USAID LEAD was a linchpin to the introduction and application of the Forested Wetlands Protocol in Asia. Following a four-year intensive effort,

researchers and scientists now understand how to take the required field measurements and samples, how to work with the samples in a laboratory, and how to use the resulting data to calculate carbon stocks and flows. In Cambodia, the government is now incorporating field data and results from this collaboration into its official national GHG inventory.

The USAID LEAD approach – which relied on collaboration – helped achieve these results by:

- housing the US FS Regional Forests Advisor in its Bangkok office, allowing for closer real-time collaboration;
- intensively coordinating with the bilateral USAID Cambodia mission that advised on all interactions within the country and ensured that relevant stakeholders were at the table;
- convening six training sessions for 157 researchers from at least five countries – both in the classroom and in the field – that covered the principles and application of the Forested Wetlands Protocol;
- organizing data collection and training exercises in areas around the region's largest freshwater lake – Cambodia's Tonle Sap – to apply the Protocol to these unique ecosystems; and
- working directly and intensively with Cambodian researchers to help them incorporate the results into the national GHG inventory.



USAID LEAD training on carbon stock assessment of forested wetlands in Cambodia.

USAID LEAD provided examples of what can happen when approaches fall short, and this section also shares cautionary tales.

USAID LEAD employed several specific techniques aimed at building and maintaining productive, collaborative relationships with bilateral missions. The program's approach complied with the established USAID/RDMA protocol that is prescribed in its "Coordination Procedures between RDMA and Bilateral Missions for Regional Project Design and Implementation", and went beyond compliance through consistently taking other steps aimed at building and maintaining trust. These included:

Soliciting advice for program design. The USAID LEAD team sought suggestions from USAID bilateral missions and their implementing programs as it developed its initial work plan and its work plan for the remaining years. To prepare its first year work plan, program staff met in person with USAID mission staff during the Task 1 scoping missions. The program's attempt to coordinate with one

mission failed completely, as its request to conduct the trip was denied. In 2014, USAID LEAD posted an online survey aimed at eliciting input from key bilateral mission staff. This structured approach was not as successful, however, as only about three mission staff completed the survey - probably due to competing demands for their time. The program concluded that it was best to solicit input during occasions that it was otherwise visiting the mission offices.

The program concluded that it was best to solicit input during occasions that it was otherwise visiting the mission offices.

Offer in-briefings and out-briefings. USAID/RDMA's protocol requires that implementing partners offer such briefings. USAID LEAD always sought to follow this requirement, informing mission staff in advance of their receipt of formal Country Clearance Requests. And USAID LEAD staff arranged schedules so that the bilateral missions would receive the very first briefing meeting, and so that there would be time for them to be the very last meeting.

A TALE OF THE BAD

REQUEST DENIED

As USAID programs first begin, the implementing partners develop detailed work plans that specify how they will undertake particular activities, prepare specified products, meet stated deadlines, measure their results, and use their budgets - to achieve the broad objectives and results that USAID seeks.

In almost all cases, the implementing partners begin, as did USAID LEAD under Task 1, with intensive in-person meetings with potential host country counterparts and stakeholders. These in-person discussions reveal valuable nuances that are necessary to inform an effective work plan.

In the fall of 2011, the USAID LEAD program began to conduct such missions to the countries that fell within its scope.

One bilateral mission – in a country of great importance to USAID LEAD – denied the team’s request to enter the country and hold these sessions. This denial was within its rights - bilateral missions hold approval authority over mandatory Country Clearance Requests – and it reflects what a mission can do when it feels that coordination and collaboration is not adequate.

As a result of this denial, USAID LEAD was unable to solicit firsthand input from key officials and stakeholders in the country, and this ultimately led to less effective support.

Ask missions to join meetings. Through working in advance of formal requirements, USAID LEAD staff sought advice from the missions on which organizations and individuals to meet, and invited mission staff to participate in all the meetings. While the staff were often too busy to join all these meetings, they clearly appreciated the offers, and expressed sincere thanks on some occasions when the program was able to secure meetings that they had sought but been unable to secure themselves.

Customize the protocol. While following the USAID/RDMA guidance, the program also asked the missions themselves if there were additional steps they would prefer that USAID LEAD staff follow, and asked for mission preferences on means and frequency of follow-up communications.

Share developments. USAID LEAD informed the missions of its activities and follow-up communications. For each trip

it prepared formal trip notes, and it shared them with the missions. The program also proactively shared forecasts of its upcoming activities via email and e-newsletters.

Ask missions to help decide on events. USAID LEAD regularly consulted with USAID staff and partners on design of in-country events, offering opportunities to shape them to suit their priorities. The program considered the siting and timing of events to advance the needs of in-country missions. For example, USAID LEAD had committed to organizing an Asia LEADS Partnership event on clean energy, but had not decided when or where. It was receptive to the suggestion from USAID Vietnam to conduct the event in Hanoi as one of the ways the newly launched Vietnam Low Emission Energy Program (V-LEEP) program could build relationships with its prospective counterpart during its process of securing host government approvals and program registration.



USAID LEAD facilitated the involvement of bilateral USAID programs in regional events and consulted with missions to try and align activities with country priorities.

Clear event participants with missions and implementing programs. For participant clearances, USAID LEAD tried to give sufficient notice – three months when possible – and background information (e.g., concept notes for events, desired outcomes, target participant types, number of funded slots available) on upcoming events to missions and implementing programs. USAID LEAD staff would send draft participant lists based on existing contacts and/or the mission’s prior recommendations to spur the discussion. USAID LEAD would also ask – early – if mission sponsorship for traveling participants was possible.

Follow up post-activity. USAID LEAD found that bilateral missions like to have a final list of which country partners participated, and also appreciated learning the broad outcomes and lessons of the activities.

Help promote success. USAID LEAD asked bilateral missions for lessons to share and counterparts to feature in programs and social media, even outside their countries.

Help organize and share regional information. USAID LEAD provided a central service on LED-related topics. It maintained a centralized list of points of contact and a shared calendar on relevant events, sharing them with designated staff at the bilateral missions. And in June 2016 USAID LEAD co-hosted a regional coordination session of USAID missions and other U.S. Government regional teams. This leveraged the presence of the appropriate teams, and provided an annual opportunity to re-convene. Plans are underway to continue this meeting after the program concludes.

Work with implementing partners. USAID LEAD established and maintained per-



sonal relationships with implementing partners, in addition to bilateral mission staff. In many cases, bilateral USAID programs can help regional programs better identify and reach appropriate counterparts, and better craft their approaches to suit country needs. The bilateral programs also appreciated the opportunity to nominate their counterparts to participate in regional events, and to promote their successes in regional forums. For example, the USAID Indonesia Clean Energy Development (ICED) program suggested several government officials to participate in Asia LEADS Partnership events organized by USAID LEAD.

Chief of Party (COP) to COP / Deputy Chief of Party (DCOP) to DCOP cooperation. These individual relationships help to address both administrative/contractual challenges, and extends technical excellence amongst implementing partners. During USAID LEAD's initial registration with the Thailand

International Cooperation Agency (TICA), the program benefited considerably from the outgoing COP of the USAID ECO-Asia program, who shared hard-won lessons on how to secure TICA registration (including a detailed process map). Later examples show intensive collaboration among programs, built on a web of personal relationships – e.g., collaboration between USAID LEAD and the USAID LEAF program on “trip bottom line” (TBL) and gender training; USAID LEAD sponsorship of relevant counterparts in USAID LEAF-organized regional programs such as the Regional Gender Leadership initiative; and also identification of government staff who shared lessons that were well received, such as the design principles and implementation approach of the Indonesia Climate Trust Fund.

The USAID LEAD contract stated that the implementing contractor would serve as Program Integrator to

help facilitate a whole-of-government approach to advance LEDS in Asia, and the USAID LEAD program instituted several techniques to ensure smooth and effective collaboration with other U.S. Government agencies, in particular with the National Renewable Energy Laboratory (NREL), the US Environmental Protection Agency (US EPA), and the US Forest Service (USFS).

Providing an operating base. USAID LEAD's presence in Bangkok provided an operational hub for other U.S. Government agencies, allowing them to better manage on-the-ground activities. USAID LEAD actually provided office space for the full-time regional coordinator of the USFS and a full-term coordinator for the U.S. Government's SilvaCarbon program. This physical proximity allowed for deepening of ties and understanding, thereby contributing to a more effective team approach. For US EPA and NREL, USAID LEAD's operational presence in Bangkok allowed it to handle the logistical needs of activities such as workshops and training sessions.

Smoothing stakeholder and counterpart relations. USAID LEAD was able to help other U.S. Government agencies better identify appropriate counterparts and stakeholders and gain a more nuanced view of their needs. For example, when US EPA was designing activities to support the government of Vietnam's national GHG inventory, the USAID LEAD country coordinator was able to meet in person with key government staff to discuss and refine the approach.

Leveraging. USAID LEAD maintained an awareness of how other U.S. Government programs can help support LEDS in Asia – e.g., the Overseas Private Investment Corporation (OPIC), Export-Import Bank of the U.S. (ExIm Bank) and U.S. Trade and Development Agency (TDA) have specialized offerings

that can catalyze LEDS finance – and sought opportunities for representatives of these organizations to participate in events. For example, OPIC participated in two Asia LEDS Partnership events that USAID LEAD organized in Vietnam on catalyzing finance for green growth in Asia. This helped to extend the reach of the other U.S. Government programs and provided additional benefits as a result of the USAID LEAD work.



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**LOW EMISSIONS ASIAN
DEVELOPMENT PROGRAM**

PULL OUT SECTION C

**USAID LEAD SUPPORT FOR
THAILAND'S CARBON FOOTPRINT
FOR ORGANIZATIONS**



USAID LEAD SUPPORT FOR THAILAND'S CARBON FOOTPRINT FOR ORGANIZATIONS

Market mechanisms and market-based instruments can be important parts of an approach to mitigating greenhouse gas (GHG) emissions. They include critically important tools such as GHG emissions trading, cap-and-trade schemes, and carbon offset crediting. These mechanisms encourage investment in clean technology, natural resource management, and other elements of green growth strategies and low-emission development.

A valuable input to these mechanisms is GHG reporting schemes. Typically, a GHG reporting scheme is a program that provides entities like businesses,

municipalities, or organizations with a framework by which to measure, report, and verify their GHG emissions. The resulting report that emerges from the GHG reporting scheme is often called a carbon footprint or inventory. Essentially, it is an estimate of an entity's impact on the environment in terms of the GHGs it has released. A carbon footprint may be measured directly using a monitor, meter or other device, or calculated from data, and normally includes the emissions of CO₂ and other GHGs resulting from the reporting organization's activities, summed and expressed as a single number (per source or per entity) in terms of CO₂ equivalent, or CO₂e.¹

¹ The sum of emitted CO₂ and other GHGs, like CH₄, expressed in terms of CO₂ by multiplying the mass of the original gas by a factor called a Global Warming Potential.

The GHG reporting scheme itself could be voluntary or mandatory, and may include a registry, such as an interactive website through which entities report their emissions. Ultimately, the goal is for reporting organizations to populate the scheme with reliable data on their GHG emissions, calculated according to the reporting scheme's guidelines for how emissions are to be measured and monitored to ensure relevance, accuracy, completeness, consistency, and comparability. Reliable GHG emissions data are essential for a number of processes associated with establishing a market program, for example:

- Setting a cap. The cap is the upper limit of GHGs that may be emitted during a defined period.
- Determining who should participate, establishing baselines, and tracking progress against the cap.
- Allocating allowances to covered entities. Allocation is the process by which the regulating entity distributes the GHG allowances to covered entities, consistent with the cap. If a covered entity doesn't reduce its emissions to within its allocation, it must purchase enough allowances or offsets to meet its compliance obligation. This illustrates the need for accurate and credible GHG data given there are financial ramifications to being out of compliance.

Currently, many countries around the world have active or proposed mandatory GHG reporting programs. Driving this expansion seems to be a realization among policymakers that they require data on emissions sources and trends in order to generate informed policy, and that they also wish to be able to assess their progress towards meeting national or sectoral goals.

In addition to mandatory reporting programs, there are voluntary reporting ini-

tiatives that the public and private sectors are using to build capacity ahead of regulation, benchmark performance, or assess climate risks and opportunities.

Whether they are voluntary or mandatory, GHG reporting schemes offer numerous benefits to national governments, companies, and the public.



National governments that are attempting to reduce their countries' GHG emissions stand particularly to gain from GHG reporting schemes. Inventories of organizations' emissions can be inputs into government planning, and an accountable way to measure, track, and publicize the government's success. This data can inform policymaking and help design future programs, e.g., cap-setting and allowance allocation in an emissions trading system (ETS). They permit the government to track its progress against reduction targets, build public confidence in GHG data being disclosed, and lend the government credibility as it seeks climate finance.

The entities that participate in a GHG reporting scheme gain by building their capacity to participate in carbon markets or preparing for regulation, or from their enhanced ability to engage in climate-change-related planning that participating in a GHG reporting scheme

affords them. Also, they stand to cut their costs and improve efficiency by reducing their emissions, and to fulfill corporate social responsibility commitments they may have.

Finally, when a GHG reporting scheme is transparent and makes entities' reports available to the public, or gives entities the option of reporting publicly as opposed to only privately, the public gains by having access to information it needs to make informed purchasing or investment decisions, or to hold emitters accountable.

WHAT USAID LEAD DID

From 2014 to 2016, the USAID LEAD program was privileged to have the opportunity to work with the Thailand Greenhouse Gas Management Organization (TGO), an autonomous governmental organization under the Thai Ministry of Natural Resources and Environment. Together, USAID LEAD and TGO collaborated on an update to TGO's Carbon Footprint for Organizations (CFO) program, specifically to develop an online reporting platform for it.

In 2013, TGO launched the CFO program. That same year, the Royal Thai Government and U.S. Government agreed to a bilateral cooperative partnership under the Enhancing Capacity for Low Emission Development Strategies (EC-LEDS) program. This partnership identified GHG inventories, accounting, measurement, reporting, and verification (MRV), and registry systems as desired areas of cooperation. One specific element was Thailand's request for capacity building to support its GHG reporting system, which recognized the establishment of a GHG registry and MRV system as its highest priority. Responding to this, USAID LEAD and TGO agreed to bring the CFO program to the next stage in its evolution.



CFO logo

In 2016, having worked with USAID LEAD to incorporate many best practices by aligning with international GHG emissions accounting and reporting standards, TGO launched the updated GHG reporting scheme and new online reporting platform. As a result, organizations with facilities in Thailand now are participating in the updated CFO program to report their GHG emissions through the TGO-operated online reporting platform according to precise and transparent guidance authored by USAID LEAD and following TGO specifications. USAID LEAD partner The Climate Registry developed the online platform, in close consultation with TGO, particularly regarding the program administrator's and users' needs. Accredited verification bodies will verify the resultant reports according to equally precise and transparent guidance.





USAID LEAD experts and officials from Thailand's TGO under the Ministry of Natural Resources and Environment, February 2014.

Some noteworthy details about this latest version of TGO's CFO program are summarized below.

- At the outset, the CFO program remains voluntary. USAID LEAD and TGO designed it to be both flexible and rigorous enough to transition to a mandatory program, with data of a high enough quality to inform a potential emissions trading scheme and allow for GHG baseline establishment. To facilitate a future transition to a mandatory program, USAID LEAD provided TGO with a guidance document on principles for transitioning from a voluntary to a mandatory or pre-ETS reporting program.
- The online platform of the CFO program is a sophisticated yet replicable and customizable platform involving complex algorithms and thoroughly conceived processes. It is user-friendly and is conducive to the end goal of facilitating improved GHG emissions management.
- It supports annual facility-level emission reporting with integrated third-party verification.
- It incorporates international best practice in GHG accounting and is aligned with international GHG emissions accounting and reporting standards, including:
 - The GHG Protocol Corporate Standard (2004);
 - ISO 14064-1: Greenhouse gases -- Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals (2006);
 - Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories (2006);
 - The National Guideline on Carbon Footprint for Organization (2013);
 - The GHG Protocol Corporate Value Chain (Scope 3) Standard (2011);

- o Draft Monitoring and Reporting Guideline for Thailand Voluntary Emission Trading System (2013); and
 - o The Climate Registry’s General Reporting Protocol (2013).
- The CFO program will generate accurate, consistent, and comparable data.
 - It will help TGO make informed decisions about carbon policy in Thailand, and ensure that reliable data are available in advance of Thailand’s future Emission Trading Scheme.
 - It will help businesses make better decisions on how to make their operations more efficient and competitive.
 - It will support GHG reporting for all users, whether the reporter is in the industrial sector, a city or government agency, or another type of organization.



Image: Screenshot of the TGO carbon label and carbon footprint for organizations website.²

² <http://thaicarbonlabel.tgo.or.th/>

The CFO program offers participants a clear and streamlined way to credibly manage their emissions; identify options for reducing emission intensity as they develop; and build public confidence while enhancing their national, regional, or global reputation. Further, it lays the groundwork for domestic or regional carbon trading.

This collaboration between USAID LEAD and TGO also aimed to enhance the impact of the Royal Thai Government with respect to carbon MRV and management, advancing the country's regional climate leadership.

With respect to the national GHG inventory, generating quality, facility-level data can help improve reporting efforts at the national level. For example, there is potential to refine country-specific or even facility-level emission factors while enhancing the accuracy and completeness of activity data.

Finally, there are the future market mechanisms with which this report

began. The CFO program's output will ultimately be a great number of verified carbon footprints. These will give Thailand exactly the data it needs to take the next steps towards establishing a market-based program by informing its decisions regarding the most appropriate emissions cap, who should participate, and where to set the baseline(s). The experience and skills TGO gains by administering CFO will support tracking progress against the cap and allocating carbon allowances to covered entities.

Efforts to mitigate climate change by reducing GHG emissions increasingly seem to depend on strong market signals, such as those that come from carbon pricing mechanisms like emission trading schemes. Launching this updated CFO program brings Thailand one step closer to being integrated in such a scheme that has the potential to open the door to a market for carbon we expect to yield benefits to Thailand for years to come.



REGIONAL KNOWLEDGE SHARING

In July 2015, USAID LEAD and TGO presented the updated CFO program at the Regional Forum on Climate Change hosted by the Asian Institute of Technology in Thailand. The goal of participation was to contribute to regional knowledge of and interest in GHG reporting programs.

USAID LEAD placed great importance on raising awareness of the TGO program within the Asia region. As briefly noted above, GHG MRV is not just a component of markets, it is the foundation for good policymaking across the range of mechanisms and actions. For example, policymakers and industry decision makers need GHG data to make informed decisions about effective GHG management, energy consumption, energy supply risks, responses to investor calls for data and transparency, brand/reputation and competitive positioning issues, and the financial risk from the physical impacts of climate change. Furthermore, USAID LEAD believes that carbon markets will be an increasing part of the international discussion of climate change solutions. Within the Asia region, Korea's ETS and China's ETS pilots, and the Chinese government's plan to draw on the lessons learned from them in designing a Chinese national GHG ETS may drive other economies in Asia to follow suit.

Through dedicated technical assistance, USAID LEAD invested resources in identifying up to two additional countries for GHG registry support. The approach was guided by the TCR report and based on information solicited from USAID LEAD country coordinators in July 2014, and focused attention on India, Vietnam, and Philippines. In the Philippines, USAID LEAD consulted on several occasions

on this topic, establishing the Philippines firmly as a possible second country. Once that report was completed, it was determined that USAID LEAD would establish a GHG reporting program in Thailand. USAID LEAD continued to respond to regional interest in establishing this type of GHG MRV program by demonstrating the purpose and functions of the CFO program in several countries through June 2016.

POTENTIAL FOR REPLICATION

As of June 2016, USAID LEAD had determined there was interest within several program countries in a GHG registry. USAID LEAD delivered targeted presentations featuring the TGO registry in Vietnam, Malaysia, and Philippines, and provided introductions to other donors that might support similar efforts, such as the Partnership for Market Readiness managed by the World Bank, and the Climate Technology Center and Network, which is the technical assistance facility of the UNFCCC. Early indications suggest that as a result of this sharing and set of introductions, the Government of Vietnam is now poised to develop a GHG registry.



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**LOW EMISSIONS ASIAN
DEVELOPMENT PROGRAM**



PULL OUT SECTION D

**REGIONAL SUPPORT FOR LEDS
DEVELOPMENT AND IMPLEMENTATION**



Participants from around the Asia and Pacific region learn about Malaysian low-emission transport initiatives at the Asia LEDS Forum 2012 in Bangkok, Thailand.

REGIONAL SUPPORT FOR LEDS DEVELOPMENT AND IMPLEMENTATION

USAID LEAD's work to support regional development and implementation of low emission development strategies (LEDS) took a two-fold approach:

- **support regional knowledge sharing; and**
- **deliver targeted, fit-for-purpose training and technical assistance on LEDS.**

To support regional knowledge sharing, USAID LEAD focused on assisting program countries to learn from one another and from other developing countries that have with similar circumstances. USAID LEAD created, as

its primary platform for collaborative learning, a new regional platform – the Asia LEDS Partnership. This initiative was part of larger global effort under the LEDS Global Partnership (LEDS GP). This approach was consistent with USAID LEAD's designated contractual role as Program Integrator for USAID RDMA and related U.S. Government programs, since the larger effort – the LEDS GP – is operated by two entities listed in the USAID LEAD contract: the U.S. National Renewable Energy Laboratory (NREL) and the U.S. Department of State. Most of USAID LEAD's work on Task 6 – and its major achievement – was focused on the launch of Asia LEDS Partnership, its operation, and ensuring its continued success.

Evidence of USAID LEAD's success with the Asia LEDS Partnership is illustrated by the external evaluation of the LEDS GP that an independent organization – the Energy and Resources Institute (TERI) based in India – released.

This evaluation stated that the, *“Asia LEDS Partnership was the most successful in contributing to the progress of LEDS GP towards its objectives based on the data collected. According to the data, the Asia LEDS Partnership had the highest level of participation, the highest application of learning by government agencies, and the highest amount of leveraged funding”* among all the LEDS GP regional platforms and working groups.

To ensure the continued success of the Asia LEDS Partnership, in February 2016 USAID LEAD engaged a regional organization – ICLEI - Local Governments for Sustainability – to operate the Asia LEDS Partnership Secretariat, and to do so at a reduced cost in order to make continued funding more attractive to donors. There are initial indications of success of this strategy, with the LEDS GP Secretariat expressing its satisfaction with the approach and selection of ICLEI, and indicating that it can contribute to the partnership's funding in calendar year 2017.

Other donors have also stepped forward with indications of interest and funding. This includes the Climate Economic Analysis for Development, Investment and Resilience (CEADIR) program of USAID, which is jointly funded by USAID RDMA and USAID's E3 Bureau. CEADIR anticipates providing about USD 50,000 in 2017 for the Asia LEDS Partnership to support organizing and convening two regional meetings on LEDS approaches for NDCs. In addition, another major international organization that advances green growth has indicated its intent to provide approx-

imately USD 150,000 in co-funding for similar regional workshops and events on NDCs and the Sustainable Development Goals.

USAID LEAD's delivery of targeted, fit-for-purpose training and technical assistance on LEDS drew on the leveraging of expertise from partners. Initially, USAID LEAD devoted significant efforts to launching a new training center – the Asian Greenhouse Gas Management Center (AGMC) within the Asian Institute of Technology (AIT), a USAID LEAD subcontractor. Following guidance of USAID RDMA after its mid-term evaluation, however, USAID LEAD adjusted its training approach to link efforts more closely to the Asia LEDS Partnership, and to serve as curator and distributor of existing high-quality training content on LEDS.

Other targeted trainings that USAID LEAD conducted included:

- *Overview of LEDS for policymakers.* USAID LEAD worked with NREL to develop and deliver a general introduction to principles and practices of green growth that it termed the “LEDS-101” curriculum.
- *GeoSpatial toolkit.* USAID LEAD facilitated training sessions by NREL in the region on how to use this tool to conduct renewable energy resource assessments.
- *Long-range Energy Alternatives Planning (LEAP) modeling.* USAID LEAD engaged the developer of the popular LEAP model (Dr. Charles Heaps of the Stockholm Environment Institute) to provide regional training on its application – particularly for creation of scenarios that integrate provincial and state models with central government models. In addition, USAID LEAD helped assemble a more vibrant community of practice in Southeast Asia and South Asia focusing on the use of LEAP.

KEY FEATURES OF THE ASIA LEADS PARTNERSHIP



Participants from around the Asia and Pacific region discussed how to access finance for green growth and LEADS at a Asia LEADS Partnership regional workshop in Hanoi, Vietnam, March 2014.

Among the more unique features of the Asia LEADS Partnership are its diverse and growing participants, country ownership, active programming, curated trainings, and high amounts of financial leverage.

Diverse and Growing Participants. Members of the Asia LEADS Partnership comprise individuals and organizations working within the public, private, and non-governmental sectors to advance low-emission development in Asia. This includes members from both developing and developed countries, as well as international partners supporting LEADS in Asia from any region around the world—such as Asian government ministries and departments, development organizations, non-governmental orga-

nizations, technical or research institutes, and businesses.

Membership is voluntary and has increased significantly, well beyond expectations (see Table I below).

Country Ownership. The Asia LEADS Partnership was designed to ensure that the developing country members feel ownership of the platform, and have an effective means to guide it. To this end, at least one-half of the Asia LEADS Partnership’s leadership is composed of developing country government representatives; one of the two Co-Chairs must be from a developing country government, and one-half of the Steering Committee members as well.

Table I: Asia LEADS Partnership Indicator Target and Actual Results (FY 2012 – FY 2016)

Program Indicator	Program Target	End of Program Result	Percent of Target Met
Number of organizations participating in the Asia LEADS Partnership	92	145	158%

ORGANIZATIONAL MEMBERS OF THE ASIA LEDS PARTNERSHIP STEERING COMMITTEE FOR 2015-16



Cambodia Ministry of Environment, Climate Change Department



Center for Study of Science, Technology and Policy (India)



Clean Air Asia



Climate Change Division, Pakistan



Climate & Development Knowledge Network (CDKN)



Energy research Center of the Netherlands (ECN)



Japanese International Cooperation Agency (JICA)



Lotus Impact



Prasarana Malaysia Berhad



Nepal National Planning Commission



United Nations Development Programme (UNDP)



US Agency for International Development



Vietnam Ministry of Planning and Investment, Department



World Bank Institute



World Resources Institute EMBARQ



Participants from the session on Subnational/National Integration of LEDS, at the Asia LEDS Forum 2013 in Manila, Philippines.

Active Programming — The Asia LEDS Partnership organized 10 high-turnout events from 2012 through 2016, as detailed in Table 2 below.

Curated Trainings — The Asia LEDS Partnership Online Training Curricula were developed by the Asia LEDS Partnership in response to members' requests to have access to current and concise guidance on LEDS in one location for practitioners working in Asia. These curricula comprise a synthesis of freely available online materials from a wide range of source organizations, with attention given to selecting training resources that help to answer key questions on “how to” advance LEDS action in Asia.

The curricula includes over 200 training resources across three tracks: (1) Overview of LEDS and the LEDS Process, (2) Low Emission Energy Planning, and (3) Low Emission Strategies in the AFOLU Sector. The types of training resources included are: webinars, e-learning modules, Microsoft PowerPoint presentations, guidebooks, and supplementary materials. These training resources are geared for planners, policymakers, and implementers at the national and subnational levels, as well as technical analysts, modelers, researchers, businesses, project developers, and financial institutions.



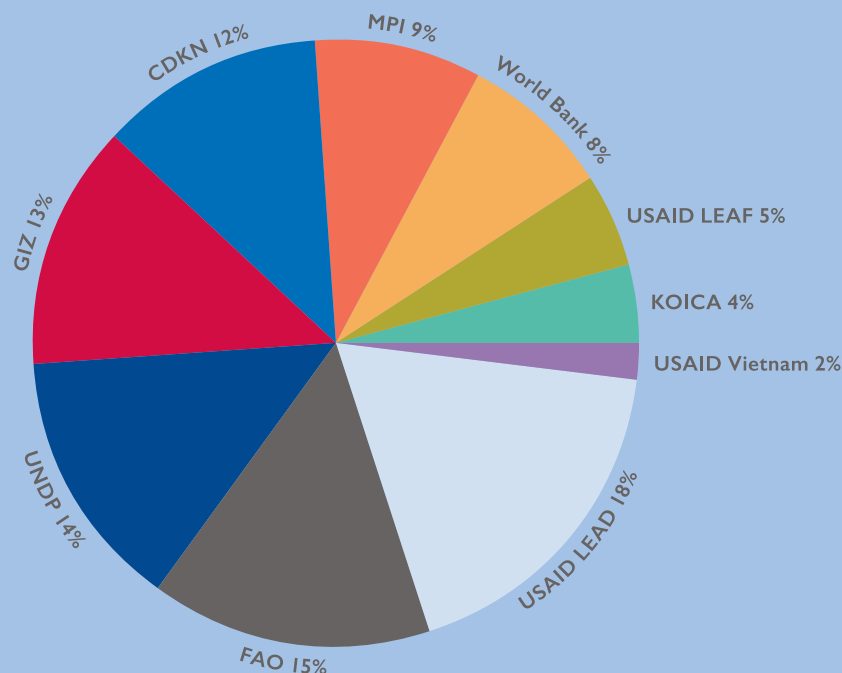
Example of resources available as part of the Asia LEDS Partnership Online Training Curricula.

¹ Available at: <http://www.asialeads.org/training-landing/>

Table 2: Major Asia LEDS Partnership Events, 2012-2016

Event Title	Year	Location	Number of Participants	Number of Countries Represented
2012 Asia LEDS Forum	2012	Bangkok, Thailand	>150	17
Delhi Sustainable Development Summit	2013	New Delhi, India	>100	>20
Preparing for Scaled-up Climate Financing	2013	Manila, Philippines	>100	12
2013 Asia LEDS Forum	2013	Manila, Philippines	250	22
Accessing Finance for Green Growth and LEDS	2014	Hanoi, Vietnam	~150	7
Quantifying Benefits of Bus Rapid Transit (BRT)	2014	Kuala Lumpur, Malaysia	70	7
2014 Asia LEDS Forum	2014	Yogyakarta, Indonesia	250	19
Mobilizing Investment for Low-Emission Development in Asia's Agriculture Sector	2015	Ho Chi Minh City, Vietnam	>150	15
2016 Asia LEDS Forum	2016	Hanoi, Vietnam	>220	23*
Catalyzing Finance for Clean Energy	2016	Hanoi, Vietnam	>200	18*

Figure: Example of Financial Leveraging: Financing for the Asia LEDS Partnership Workshop on Mobilizing Investment for Low Emission Agriculture



Financial Leverage —The Asia LEDS Partnership has enjoyed effective donor coordination and partnering, as evidenced by the high amounts of financial leverage. For example, the Asia LEDS Partnership workshop on Mobilizing Investment for Low-Emission Development in Asia’s Agriculture Sector, held in Ho Chi Minh City, Vietnam in October 2015, achieved over 80% financial leverage, as shown in the figure below.

The results of these unique features have been noteworthy. The Energy and Resources Institute (TERI), the well-known Indian-based global environmental think tank, conducted an external evaluation in 2014 of the LEDS Global Partnership (LEDS GP) and concluded that, among all the LEDS GP regional platforms and working groups, the “Asia LEDS Partnership was the most successful in contributing to the progress of LEDS GP towards its objectives based on the data collected. Accord-

ing to the data, the Asia LEDS Partnership had the highest level of participation, the highest application of learning by government agencies, and the highest amount of leveraged funding.”

The meaningful contributions and success of the Asia LEDS Partnership have been noted by many others as well. According to Andrew Spezowka, for example, Senior Technical Advisor with UNDP Vietnam, “The USAID LEAD program has a good reputation and the Secretariat was timely, organized, helpful, and useful to advance LEDS in the region.” And Ms. Nguyen Thi Dieu Trinh of the Vietnam Ministry of Planning and Investment said that, “The Asia LEDS Partnership is working very well and is efficient and facilitates dialogue between country members; good cooperation has been established”.

²These estimates do not include quantified in-kind contributions such as: value of Secretariat time spent on planning and coordination, costs of self-funded attendees, and costs associated with general presentation and materials (non-training) development by workshop speakers.



Participants in the USAID LEAD training on the “triple bottom line” (TBL) valuation method for protected areas, Thailand, October 2013.

- *Triple bottom line (TBL) and multi-criteria analysis (MCA).* USAID LEAD developed easy-to-use spreadsheet-based tools, and trained developing country officials on how they could use them to consider and balance social, economic, and environmental considerations when formulating policies, particularly for land use.

To deliver these fit-for-purpose trainings and technical assistance on LEDS, USAID LEAD initially devoted significant efforts to launching a new training center – the Asian Greenhouse Gas Management Center (AGMC) within the Asian Institute of Technology (AIT), a USAID LEAD subcontractor. Following guidance of USAID RDMA after its mid-term evaluation, however, USAID LEAD adjusted its training approach to link efforts more closely to Asia LEDS Partnership, and to serve as curator and distributor of existing high-quality training content on LEDS.

Also under Task 6, USAID LEAD conducted several other LEDS-related activities:

- *AFOLU Working Group.* USAID LEAD supported the creation and initial operation of a new Agriculture, Forestry, and Other Land Use (AFOLU) Working Group of LEDS GP to ensure that USAID LEAD countries and other developing countries have an effective vehicle for knowledge sharing on sustainable landscapes and LEDS/green growth. USAID LEAD formed this new AFOLU Working Group together with the US FS and the USAID RDMA Lowering Emissions in Asia’s Forests (LEAF) program. The USAID LEAD Forest Carbon Advisor served as one of the two co-chairs of the AFOLU Working Group.

- *LEDS and Gender.* USAID LEAD supported efforts to embed gender considerations in LEDS by helping a premier Asian association – the Business and Professional



The AFOLU Working Group enhances knowledge sharing on climate resilient LEDS by engaging regional, national, and subnational decision makers, practitioners, and researchers in the public and private sectors; building a community of practice; and linking networks of agriculture and forestry experts.

Women (BPW) Thailand – incorporate sustainability and green growth considerations into an existing high profile awards program (i.e., that includes royal recognition), which is likely to become adopted regionally and then globally. In addition, USAID LEAD helped organize accompanying programs to expose BPW members and stakeholders to principles and practices for green growth.

- *Demand-Driven Webinars.* The Asia LEDS Partnership hosted or supported 10 webinars in collaboration with the LEDS GP and affiliated organizations in 2014 through 2016, as summarized in the table below.

- *Provincial Green Growth Planning.* In response to request of a bilateral mission (USAID Vietnam) USAID LEAD provided expanded support for green growth activities in a Thanh Hoa Province.

Table 3: Webinars hosted or supported by the Asia LEDS Partnership

Webinar Title	Date	Partner
Pioneering and Scaling Up Solar Energy in India	21 June 2016	LEDS GP Sub-National Integration Working Group
Gender Mainstreaming in the Energy Sector: Framework and Applications	2 June 2016	LEDS GP's Energy Working Group
Assessing Renewable Energy Potential Using the Geospatial Toolkit (GsT): Applications in Vietnam's Thanh Hoa Province	21 April 2016	LEDS GP's Energy Working Group
Long-range Energy Alternatives Planning (LEAP) System: Applications in Vietnam and Indonesia	29 March 2016	LEDS GP's Energy Working Group
Addressing Air Pollutants and Climate Relevant Emissions in the Transport Sector	28 January 2016	LEDS GP's Transport Working Group
Fuels and Technologies to Mitigate Emissions	10 November 2015	LEDS GP's Transport Working Group
Leveraging the Capital Market for Climate Change: Exploring the Opportunity of Green Bonds in Asia	16 December 2014	The World Bank
Energy LEDS in Asia: A Regional Overview and Experiences from Thailand	29 October 2014	LEDS GP's Energy Working Group
Bus Rapid Transit (BRT) and Urban Development in Latin America and India	18 June 2014	LEDS GP's Transport Working Group
Mainstreaming Low Carbon Path in the Transport Sector in the National and Local Levels: Case of the Philippines	6 May 2014	LEDS GP's Transport Working Group



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PULL OUT SECTION E

**LESSONS FOR BUILDING EFFECTIVE AND
SUSTAINABLE REGIONAL PLATFORMS**



Plenary discussion featuring Asian perspectives on low-carbon green growth as a foundation for sustainable development at the Asia LEADS Forum 2014 in Yogyakarta, Indonesia.

LESSONS FOR BUILDING EFFECTIVE AND SUSTAINABLE REGIONAL PLATFORMS

ASIA LEADS PARTNERSHIP

As a regional knowledge-sharing platform, the Asia LEADS Partnership aims to help Asian policy makers, city planners, industry leaders, researchers, project managers, and other stakeholders acquire the tools, knowledge, and know-how to plan and implement effective policies and initiatives. A core objective of USAID/RDMA, as reflected in its recently released Regional Development Cooperation Strategy (RDCS), is to help launch and sustain such platforms.

This pull-out section highlights how the USAID LEAD program created and managed the Asia LEADS Partnership, which has been widely acknowledged as a success in helping Asian countries share experience in low-carbon growth and identify common areas of interest on which to collaborate at regional and global levels. Through fostering greater regional cooperation and collaboration, the Asia LEADS Partnership has helped countries take greater advantage of global flows of information, investment, technology, and trade opportunities related to low-carbon growth.

CORE VALUES OF THE ASIA LEADS PARTNERSHIP

DEMAND DRIVEN

Activities are based on the needs, interests, and preferences of members, identified yearly through surveys and discussions.

PRACTICAL

Activities focus on practical knowledge and the application in Asian countries of tools, models, approaches and best practices.

COLLABORATIVE

Activities are planned and delivered by multiple partners, including donors, national and local government staff, and regional and international experts to minimize duplication and maximize leverage.

FLEXIBLE

To date, funding from USAID for the Asia LEADS Partnership Secretariat has allowed significant flexibility to design and deliver activities in response to member interests and requests for assistance as they arose.



USAID supported the launch of Asia LEADS Partnership in recognition that current patterns of economic growth and development are causing serious impacts on the natural resources, ecosystems, and global climate on which human well-being depends. Fortunately, both economic theory and experience show that it is possible to grow cleaner without growing slower. Around the world an increasing number of countries are developing and implementing low emission development strategies, or LEADS, as the foundation for sustainable, climate-smart development. LEADS are country-led and country-specific strategic plans to promote economic growth while simultaneously reducing GHG emissions over the long term, providing a framework for broader green growth strategies.

In 2012, USAID led multi-party efforts to launch the Asia LEADS Partnership

as a new regional network to support countries in the Asia and Pacific regions on the path to sustainable, low-emission growth. The Asia LEADS Partnership continues to serve as a regional knowledge-sharing platform under the LEADS Global Partnership (LEADS GP), assisting developing countries in Asia to design, promote, and implement LEADS through peer-to-peer learning, knowledge sharing, and improved coordination and cooperation. The Asia LEADS Partnership has grown to include 145 members (both organizations and individuals), ranging from national ministries and Asian technical experts to global development institutions and multinational companies.

The Asia LEADS Partnership promotes and supports peer-to-peer learning, knowledge sharing, and improved cooperation on LEADS.

A Brief History of the Asia LEDS Partnership



The key activities undertaken by the Asia LEDS Partnership – with the USAID LEAD program serving as Secretariat – include organizing knowledge sharing events, maintaining a knowledge sharing website that includes a curated guide to technical training resources on LEDS-related topics, and facilitation of direct technical assistance to members.

KNOWLEDGE SHARING EVENTS

The signature activity for the Partnership during 2012-2016 was the

annual Asia LEDS Forum, a three-day regional event where members, experts, collaborating organizations, and representatives of different sectors come together to share experiences, knowledge, and best practices on advancing LEDS action, and to receive training on LEDS tools and frameworks. The Asia LEDS Partnership convened Asia LEDS Forums in Bangkok, Thailand (September 2012); Manila, Philippines (October 2013); Yogyakarta, Indonesia (November 2014); and Hanoi, Vietnam (June 2016).

The Asia LEDS Forums have been successful in showcasing progress made by members towards low- emission, climate-resilient growth; identifying and prioritizing country-based needs, via consultation with members, to further advance that progress; distilling regional priorities for action; and outlining work areas and collaborations among members towards shared goals.

In all, the Asia LEDS Forums have attracted 815 participants working to advance LEDS from more than 25 countries in Asia and the Pacific. The forums have spawned new member-driven collaborations, including a community of practice in agriculture, forestry and other land use (AFOLU) LEDS, and new leaders to raise awareness and spur action on LEDS in Asia.

Support to Members on LEDS and Green Growth



Participants at the Asia LEDS Forum 2016 in Hanoi, Vietnam.

TRAINING ON ASSESSING IMPACTS OF SUSTAINABLE TRANSPORT OPTIONS

One of the priority identified by Asia LEADS Partnership members was for capacity building on estimating development impacts from low emission measures.

In one example of how the Partnership responded to this request, in collaboration with the LEADS Global Partnership's Transport Working Group the Partnership developed in-depth training on benefits assessment for sustainable transport system, in particular bus rapid transit (BRT).

In June 2014 over 70 representatives from China, India, Indonesia, Japan, Laos, Malaysia, Philippines and Vietnam – participated in the regional workshop. The training focused on sharing frameworks and tools to inform decision making on BRT systems in Asia, with an

emphasis on quantifying the benefits using cost-benefit analysis and other tools such as the Transport Emissions Evaluation Models for Projects, Health Impact Assessment in Transport Planning, Road Safety Audits, and Co-benefits Evaluation Tool for the Urban Transport Sector. Following the training participants reported 12 new applications of the tools in BRT systems under development in the region.

The workshop was completed by regional webinars organized by the LEADS Global Partnership's Transport Working Group on high priority topics identified at the training. The topics included integrated public transport planning and management, and sharing of case studies on policy measures, technology options, and on-the-ground troubleshooting.



Participants in the Asia LEADS Partnership workshop on BRT systems learned about tools and methods to quantify impacts, gained skills to apply these tools, and developed a stronger peer network to draw on in order to help address common BRT system design and implementation challenges.

From 2012-2016, the Asia LEADS Partnership also convened regional workshops to share knowledge on more focused and specialized LEADS-related topics. These included four regional workshops on catalyzing finance for LEADS, with emphasis on two sectors: energy and agriculture. The Asia LEADS Partnership convened these

sessions in Manila, Philippines (2013); Hanoi, Vietnam (2014); Ho Chi Minh City, Vietnam (2015); and Hanoi, Vietnam (2016). In addition, the Asia LEADS Partnership collaborated with the government of Malaysia in 2014 to organize a session on quantifying the benefits of bus rapid transit (BRT) systems.

These Asia LEADS Partnership events are summarized in the table below.

Table 1: Major Asia LEADS Partnership events

Event Title	Year	Location	Number of participants	Number of countries represented
2012 Asia LEADS Forum	2012	Bangkok, Thailand	>150	17
Delhi Sustainable Development Summit	2013	New Delhi, India	>100	>20
Preparing for Scaledup Climate Financing	2013	Manila, Philippines	>100	12
2013 Asia LEADS Forum	2013	Manila, Philippines	250	22
Accessing Finance for Green Growth and LEADS	2014	Hanoi, Vietnam	~150	7
Quantifying Benefits of Bus Rapid Transit (BRT)	2014	Kuala Lumpur, Malaysia	70	7
2014 Asia LEADS Forum	2014	Yogyakarta, Indonesia	250	19
Mobilizing Investment for Low-Emission Development in Asia's Agriculture Sector	2015	Ho Chi Minh City, Vietnam	>150	15
2016 Asia LEADS Forum	2016	Hanoi, Vietnam	>220	23*
Catalyzing Finance for Clean Energy	2016	Hanoi, Vietnam	>200	18*

*Data based on registration.

KNOWLEDGE SHARING WEBSITE

The Asia LEADS Partnership, in cooperation with members, developed and launched an online Asia LEADS Knowledge Portal (at www.asialeads.org) in 2013 to make both regional and global LEADS information readily available to stakeholders in the region.

The Asia LEADS Knowledge Portal includes a resource center with hundreds of publications, presentations, webinars, and videos on a wide array of LEADS topics. The site provides news of regional interest, blog posts from members and other experts, and showcases LEADS leaders in Asia. In response to requests from members, the Secretariat added a unique threetrack integrated training curricula on LEADS, with an extensive

set of courses from energy modeling tools to monitoring and evaluation of climate finance. The Secretariat will continue to work with members to develop and disseminate Asia-focused knowledge products in response to regional priorities, including fact sheets, case studies, “how-to” tip sheets, and interviews with high-interest persons—all housed on the portal.

The Asia LEADS Partnership developed a plethora of other knowledge products, including articles, blogs, case studies, and issue briefs—focused on topics such as green investment, gender mainstreaming, low-carbon cities, district climate and energy plans, efficient bagasse processing, and more.

Figure 1: Asia LEADS Knowledge Portal - www.AsiaLEADS.org



DIRECT TECHNICAL ASSISTANCE

The Asia LEDS Partnership facilitates the no-cost Remote Expert Assistance on LEDS (REAL) service for government representatives and technical institutes in Asia, assisting them to advance climate-resilient, low-emission development and achieving mitigation commitments. Spanning more than 30 institutions, the LEDS GP pool of experts has a wide range of areas of expertise. In addition, the Asia LEDS Partnership and LEDS GP leverages resources and over 60 experts available through their partner institutions.

For example, in 2015, a REAL request was received from the government of Bhutan requesting review of the country's draft industrial sector LEDS strategy. In response, the Asia LEDS Partnership identified two expert reviewers—one from the Energy research Centre of the Netherlands (ECN) with expertise in Nationally Appropriate Mitigation Actions (NAMAs), and the other from the Clean Energy Solutions Center (CESC) with expertise in policies and programs to support deployment of clean energy technologies and coordinated a response. Within days, meaningful input was provided on Bhutan's draft LEDS document.

Recognition of Success

The Energy and Resources Institute (TERI), the wellknown Indian-based global envi-

ronmental think tank, conducted an external evaluation in 2014 of the LEDS Global Partnership (LEDS GP) and concluded that of all its elements the Asia LEDS Partnership was the most successful.

APPLICATION OF LEARNING

One key to the success of the Asia LEDS Partnership has been its ability to design, promote, and implement LEDS through peer-to-peer learning and knowledge sharing. The Asia LEDS Partnership provided hands-on, practical learning through a variety of means, including events, workshops, webinars, and case studies.

For example, the event on “Quantifying Benefits of Bus Rapid Transit (BRT)” held in Kuala Lumpur, Malaysia in 2014 included (among other things) an overview of the BRT planning process as applied in Asian cities; a peer exchange to allow participants to share perspectives on key questions and experiences; a panel discussion on cases on BRT systems in Asian cities; hands-on demonstrations of tools for use in modeling BRT benefits; and a guided tour to see first-hand Kuala Lumpur's improved pedestrian facilities.

This strong focus on learning and exchanges has been appreciated by members, as evidenced through key informant interviews conducted at the Asia LEDS Forum in June 2016.

EXTERNAL EVALUATION ACKNOWLEDGES SUCCESS OF THE ASIA LEDS PARTNERSHIP

“ Among all the LEDS GP regional platforms and working groups, “the Asia LEDS Partnership was the most successful in contributing to the progress of LEDS GP towards its objectives based on the data collected. According to the data, the Asia LEDS Partnership had the

highest level of participation, the highest application of learning by government agencies, and the highest amount of leveraged funding”.

The Energy and Resources Institute (TERI), 2014

“

LEVERAGING OF RESOURCES

The Asia LEDS Partnership has enjoyed effective donor coordination and partnering, as evidenced by the high amounts of financial leverage it has been able to achieve. For example, in 2014,

across all major activities, the Asia LEDS Partnership managed to leverage 55% of costs from partner organizations, as shown in the table below.

Table 2: Financial Leveraging Across All Major Activities, 2014

Organization	Total	Share
USAID Low Emissions Asian Development (LEAD) Program	\$295,755	45%
World Bank	\$102,000	15%
Climate and Development Knowledge Network (CDKN)	\$47,757	7%
USAID Lowering Emissions in Asia's Forests (LEAF)	\$41,450	6%
SWITCH-Asia Network Facility	\$29,800	5%
Government of Indonesia*	\$28,800	4%
Energy research Centre of the Netherlands (ECN)	\$20,500	3%
Vietnam Ministry of Planning and Investment (MPI)	\$18,700	3%
LEDS Global Partnership Transport Working Group	\$14,906	2%
USAID Philippines	\$13,064	2%
Malaysia Land Public Transport Commission (SPAD)**	\$11,765	2%
United Nations Development Programme (UNDP)	\$10,966	2%
USAID Lowering Emissions in Asia's Forests (LEAF)	\$41,450	1%
US Forest Service – International Programs (USFS)	\$8,000	1%
LEDS Global Partnership AFOLU Secretariat	\$4,650	1%
Organisation for Economic Cooperation and Development(OECD)*	\$4,000	1%
Clean Air Asia	\$2,275	0%
Global Green Growth Institute (GGGI)	\$2,171	0%
UN University – Institute for the Advanced Study of Sustainability (UNU)	\$2,150	0%
PT Indokor Bangun Desa	\$2,090	0%
Total Contributions Leveraged	\$365,044	55%

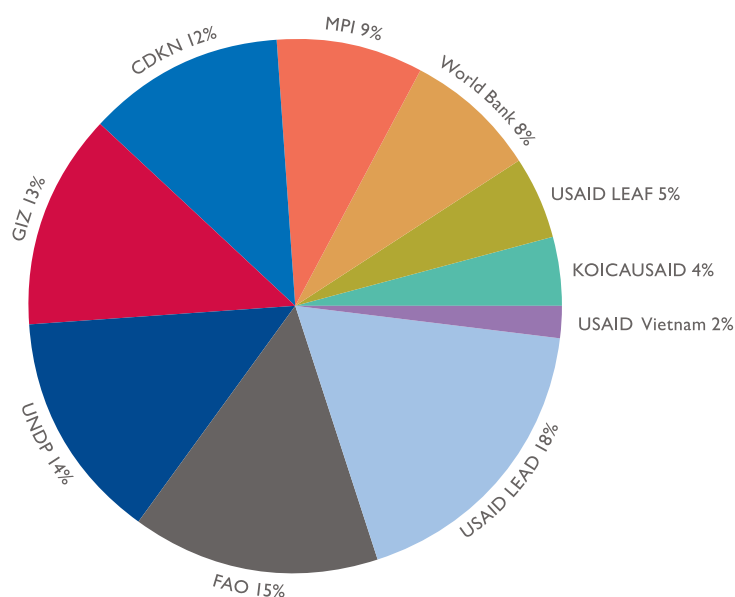
* Unofficial estimates

** Value here reflects estimated cost for holding this Asia LEDS Partnership workshop at a commercial venue (e.g, hotel), or what the Asia LEDS Partnership would have had to incur without SPAD's generous provision of its venue and related services.

The Asia LEDS Partnership consistently leveraged its events by leaning on support from partner organizations. One particularly successful example of this was the Asia LEDS Partnership workshop on Mobilizing Investment for

Low-Emission Development in Asia's Agriculture Sector, held in Ho Chi Minh City, Vietnam in October 2015, which achieved over 80% financial leverage (see figure below).¹

Figure 2 Example of Successful Financial Leverage: Funding for Asia LEDS Partnership Workshop on Financing Low Emission Development in Asia's Agriculture Sector



LESSONS FROM THE LAUNCH AND OPERATION OF THE ASIA LEDS PARTNERSHIP

Several lessons can be gleaned from the launch and operation of the Asia LEDS Partnership. This includes the importance of connecting with a broader community, having a running start with staff and money, incorporating a balanced governance structure, and minimizing initial participation requirements. Additional details on each of these points are provided below.

- *Connect within a broader community.*
Grounding the Asia LEDS Partnership

within a broader, global effort that had already attracted considerable participation and financial sponsorship was critical to the partnership's early success. The idea of launching a regional platform emerged from the first meeting of the LEDS GP – in London, United Kingdom in 2012 – which was convened with financial commitments of the US Department of State and the UK Department for International Development through its global program the Climate Development and

¹ These estimates do not include quantified in-kind contributions such as: value of Secretariat time spent on planning and coordination, costs of self-funded attendees, and costs associated with general presentation and materials (non-training) development by workshop speakers.

Knowledge Network (CDKN). Beginning a new platform with immediate support was essential to early credibility and convening power. Additionally, the global reach of the LEADS GP helps its regional platforms to secure participation and resources from key global institutions that advance green growth, including the World Bank Group, United Nations agencies, and the Green Climate Fund.

- *Begin with staff and money.* The Asia LEADS Partnership was fortunate that the ongoing and recently launched USAID LEAD program had a mission consistent with the Asia LEADS Partnership, as well as considerable financial resources (a five-year budget of USD 21.5 million) that could be devoted to its start-up and operation. The successes of the Asia LEADS Partnership – in attracting members, sponsoring events and other resources to serve them, and leveraging the work of other donors and international organizations – was enhanced considerably by the fact that the partnership began with core funding in place.
- *Incorporate a balanced governance structure.* With the Asia LEADS Partnership emphasizing peer- to-peer exchange (i.e., South-South knowledge sharing), an approach that members have cited as a key part of its attractiveness and effectiveness, it has been critical to ensure that the developing country members

feel a sense of ownership of the platform, and have an effective means to guide it. USAID LEAD, in drafting the initial governance structure, made an explicit decision that Asia LEADS Partnership would have a balanced leadership, with at least one-half of the leadership team coming from developing country governments. This includes the requirement that one of the two Co-Chairs is from a developing country government, and that one-half of the Steering Committee members are as well.

- *Minimize initial participation requirements.* As USAID LEAD launched the Asia LEADS Partnership, it began with loose requirements for registration and participation to allow the platform to grow and gain in credibility and reach.
- *Address core needs.* USAID LEAD found, through various means of engagement with Asia LEADS Partnership members (including facilitated discussions at events and formal surveys), that members desired two key attributes – peer-to-peer learning focused on lessons from neighboring countries with similar circumstances, and an emphasis on how to achieve economic and social benefits while also meeting climate change mitigation goals. While other programs and platforms focused on similar elements, the Asia LEADS Partnership was able to secure a unique niche focusing on both needs, and then roll out a robust program of support.



TIPS FOR LEVERAGING RESOURCES

As the Asia LEDS Partnership Secretariat, USAID LEAD was able to leverage contributions for joint events that ranged up to 80% of costs. Some of the keys to success are summarized below.



- *Look for alignment/opportunity and proactively conduct outreach to propose synergies.* One example of how the Asia LEDS Partnership did this successfully was in the development of the workshop on quantifying the benefits of bus rapid transit (BRT) in Malaysia. This workshop came at the suggestion of the Steering Committee member from Malaysia's Land Public Transport Commission, the workshop theme aligned well with interest of Asia LEDS Partnership members, and it fit within the capabilities of both the LEDS GP Transport Working Group and the LEDS GP Benefits Working Group.
- *Secure key commitments from country governments to demonstrate country demand and leverage funding.* Just as the provision of core funding from the USAID LEAD program was critical to the success of the Asia LEDS Partnership in attracting members, sponsoring events/resources, and leveraging the work of other donors/international organizations (as described above), the Asia LEDS Partnership successfully leveraged commitments from country governments to demonstrate buy-in and further attract support from other organizations. For example, once the Philippines government offered to host the Asia LEDS Forum 2013 in Manila, the Asia LEDS Partnership successfully secured support from the Philippines Climate Change Commission and the USAID Philippines Mission.
- *Offer a ready target audience.* The Asia LEDS Partnership successfully solicited contributions for events that attracted large audiences by making it easy for organizations to lend support even if they had limited financial resources to offer. By covering participant costs and managing event logis-

tics/planning, the partnership made is easier for other organizations to offer instructors and content for in-depth training sessions that were featured as part of Asia LEDS Partnership events, such as the Asia LEDS Forums.

- *Offer clear opportunities for branding and visibility.* To recognize contributions from donors and international organizations, the Asia LEDS Partnership ensured that the logos of contributors were featured prominently on event materials and resources, including event programs, press releases, case studies, webinars, etc. This was critical for fostering collaboration.
- *Make room for partner priorities in activity design by building in flexibility.* The core objectives of any event must be afforded some flexibility to address partner priorities as planning evolves. For example, the 2016 regional event “Catalyzing Finance for Clean Energy” in Hanoi, Vietnam was focused on grid-connected energy, but a session on energy efficiency was incorporated into the agenda based on the request of a representative from the host country government. This slight diversion from the core theme was important for ensuring proper government endorsement and support.
- *Report back on value and impact post-engagement.* The USAID LEAD program’s Monitoring and Evaluation (M&E) Advisor systematically conducted post-event assessment six months after each Asia LEDS Partnership training event, asking event participants whether and how they have applied the learning in their work, and other feedback on the events overall usefulness. This systematic assessment allowed the Asia LEDS Partnership to demonstrate that its event made a difference, which in turn helped garner continued funding.
- *Follow-up repeatedly.* With extensive coordination and outreach required to hundreds of donors, event participants, and instructors, the Asia LEDS Partnership Secretariat developed a system for routine follow-up by email and phone. Trying to reach people with busy schedules across different time zones and who speak different languages is challenging, and requires persistence. Similarly, the Asia LEDS Partnership Secretariat was diligent about staying in touch with its key Address core needs. USAID LEAD found, through various means of engagement with Asia LEDS members and contributors to maintain and promote collaboration, even when they were non-responsive.



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