



ESMAP-ASTAE Portfolio Review FY2009-2014

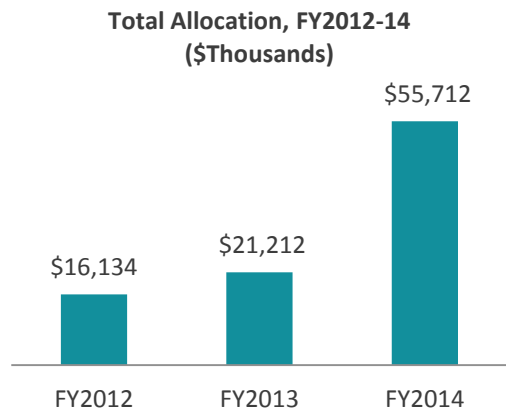
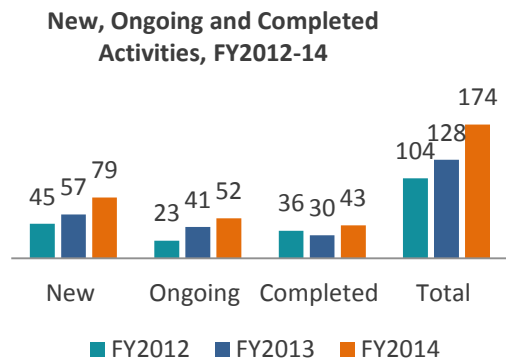
MARCH 2015

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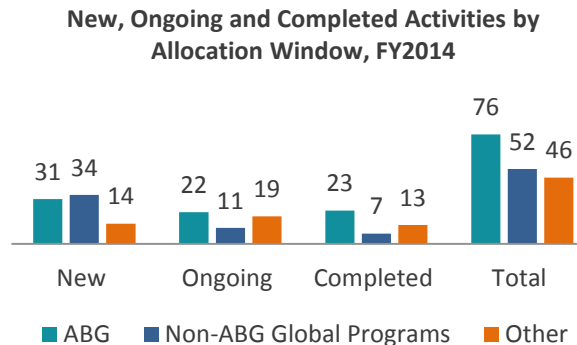
1. ESMAP
 - a. Portfolio Overview
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3. ASTAE

ESMAP's Portfolio Overview

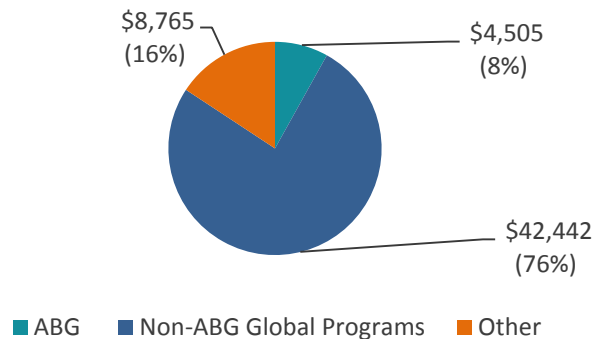
(i) Overview of ESMAP's Portfolio for FY2014



(ii) ESMAP's Portfolio by Window Allocation

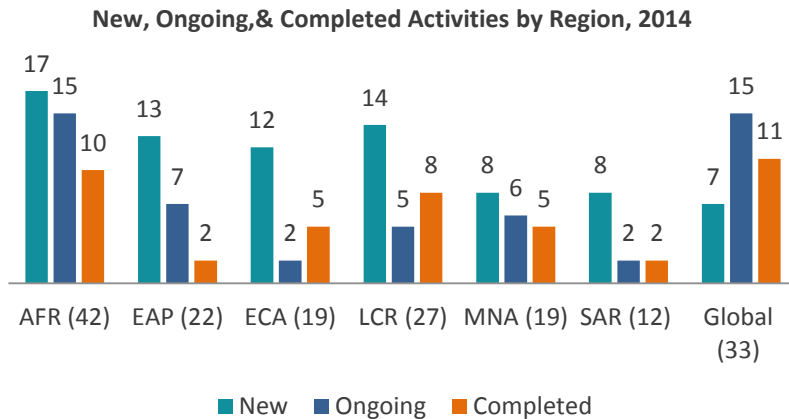


Breakdown of Total Allocation by Allocation Window, FY2014 (\$ Thousands)

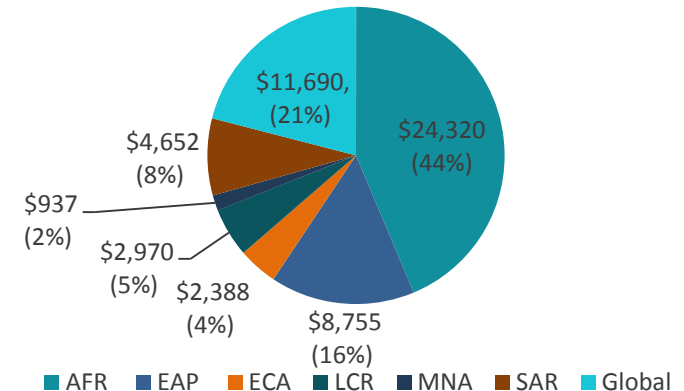


ESMAP's Portfolio, by Region & Focus Area

(iii) ESMAP's Portfolio by Region



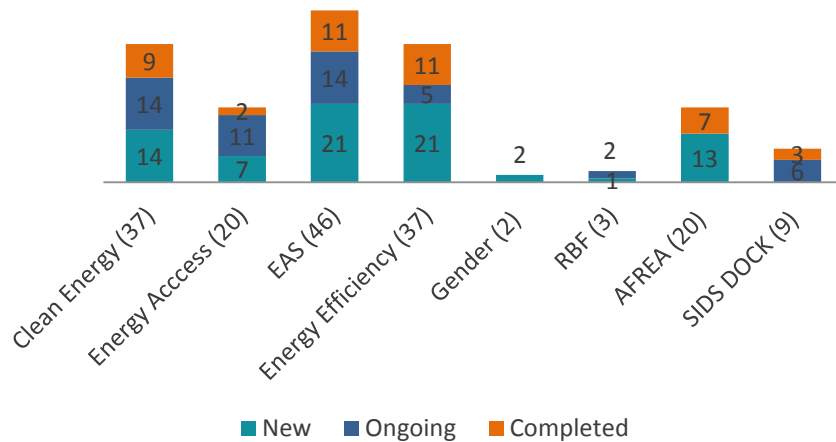
Breakdown of Total Allocation by Region, FY2014 (\$ Thousands)



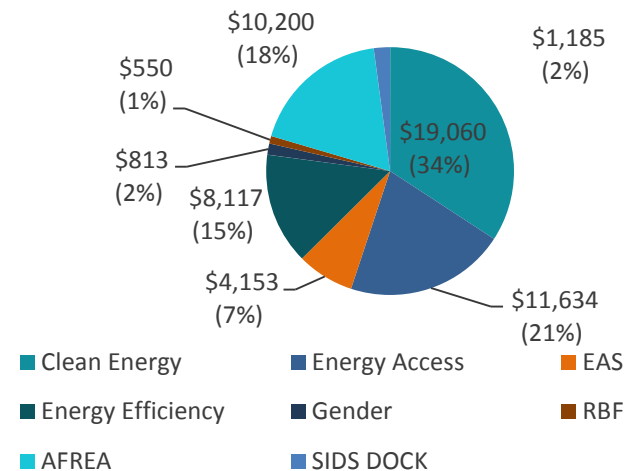
ESMAP's Portfolio, by Region & Focus Area

(iv) ESMAP's Portfolio by ESMAP Focus Area

New, Ongoing, & Completed Activities by ESMAP Focus Area, FY2014

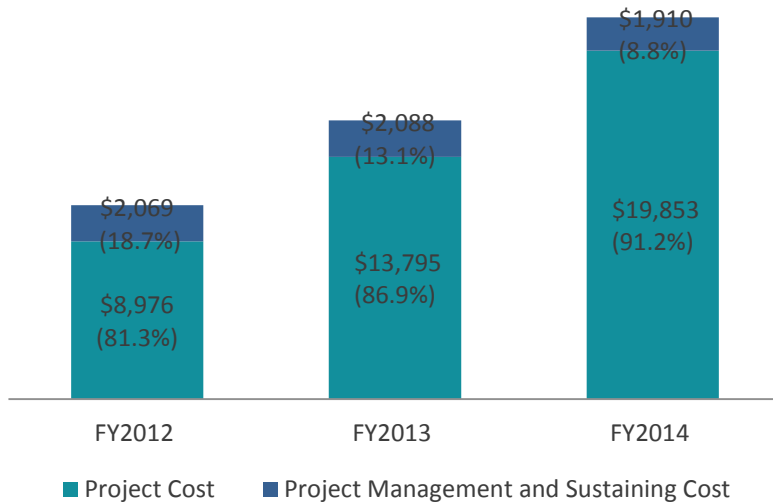


Breakdown of Total Allocation by Focus Area, FY2014 (\$ Thousands)

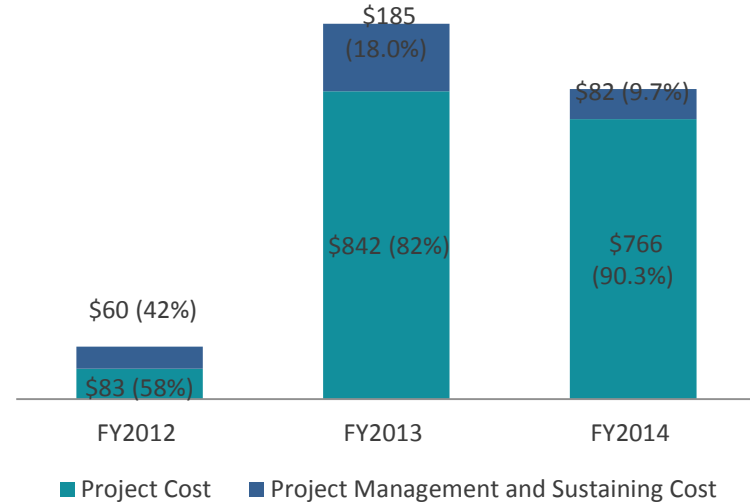


ESMAP | Total Disbursements, FY2014

Total Disbursements for ESMAP (inc. AFREA), FY2012-14 (\$Thousands)



Total Disbursements for SIDS DOCK, FY2012-14 (\$Thousands)



ESMAP | Disbursements, FY2014

Table: ESMAP's Project Disbursements, by Focus Area, FY2014 (US\$ Thousands)

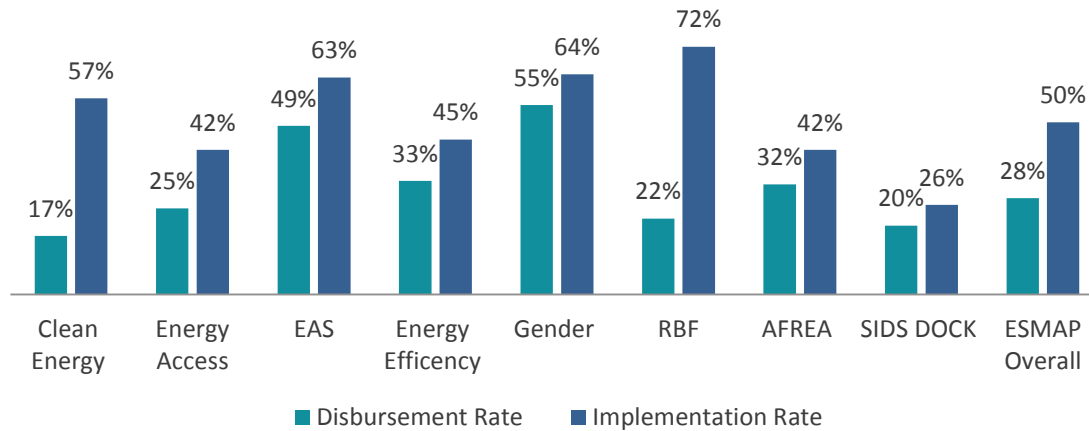
	Clean Energy	Energy Access	EAS	Energy Efficiency	Gender	RBF	AFREA	SIDS DOCK	Total
AFR	196	825	794	213			5,653	180	7,861
EAP	464	1,050	229	315		75		75	2,208
ECA	3		687	730					1,420
LCR	902	543	395	313				380	2,533
MNA	43		256	149					448
SAR	329	32	382	136					879
Global Programs	1,847	899	701	1,258	348	86		131	5,270
Total	3,784	3,349	3,444	3,114	348	161	5,653	766	20,619

Table: ESMAP's Project Disbursements, by Program and Region, FY2014 (US\$ Thousands)

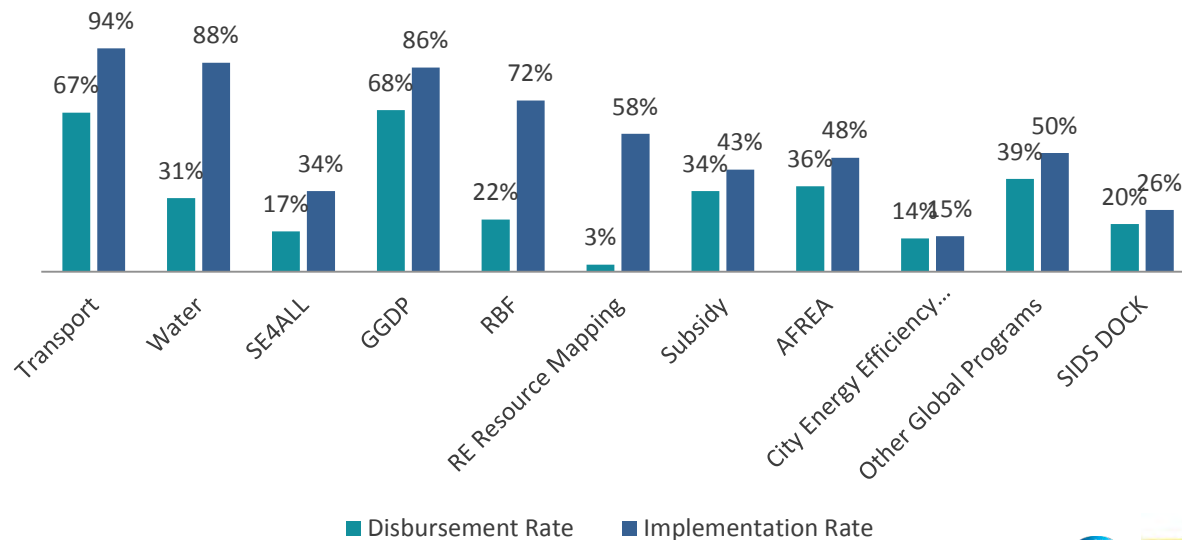
	ABG	Transport	Water	SE4ALL	GGDP	RBF	RE Resource Mapping	Subsidy	AFREA	City Energy Efficiency Transformation Initiative	Other Global Programs	SIDS	Total
AFR	1,368			464			196		5,653			180	7,861
EAP	959	52		916	17	75	113			1		75	2,208
ECA	1,219		37					164					1,420
LCR	1,239	203	15	302	352			42				380	2,533
MNA	311		73					64					448
SAR	603	122		17			137						879
Global Units		93	79	85	230	86		288		721	3,557	131	5,270
Total	5,699	470	204	1,784	599	161	446	558	5,653	722	3,557	766	20,619

ESMAP | Disbursement & Implementation Rates

Disbursement and Implementation Rates, by Focus Area, FY2014

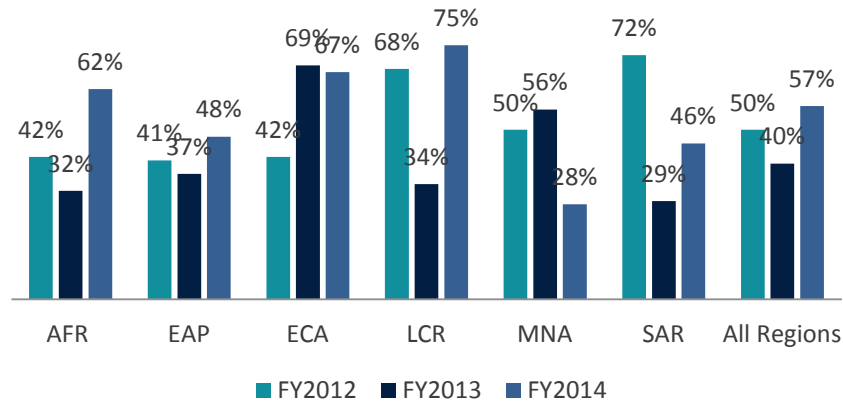


Disbursement and Implementation Rates, by Program, FY2014

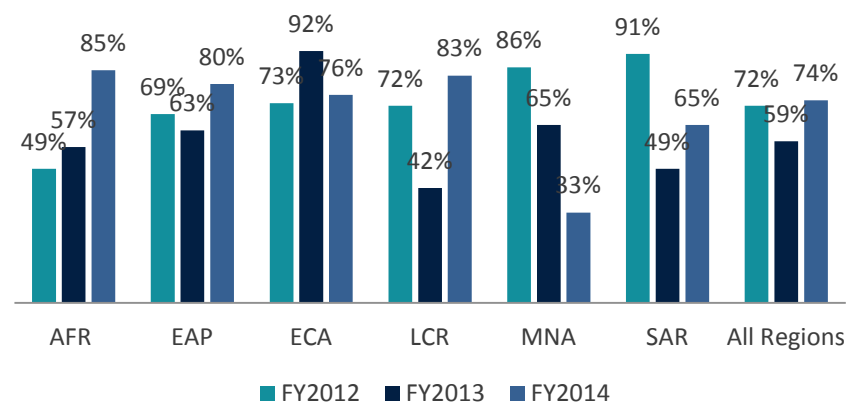


ESMAP | Disbursement & Implementation Rates

Disbursement Rates for ABG by Region, FY2012-2014

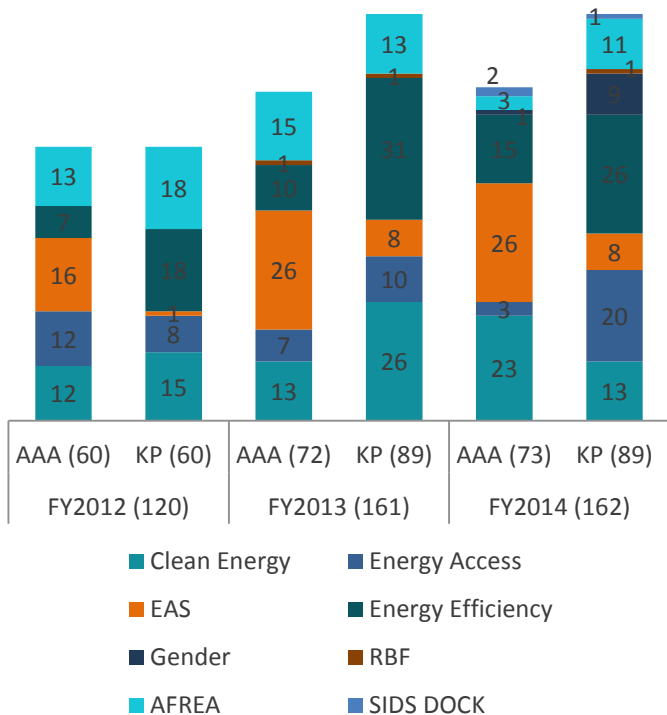


Implementation Rates for ABG by Region, FY2012-2014

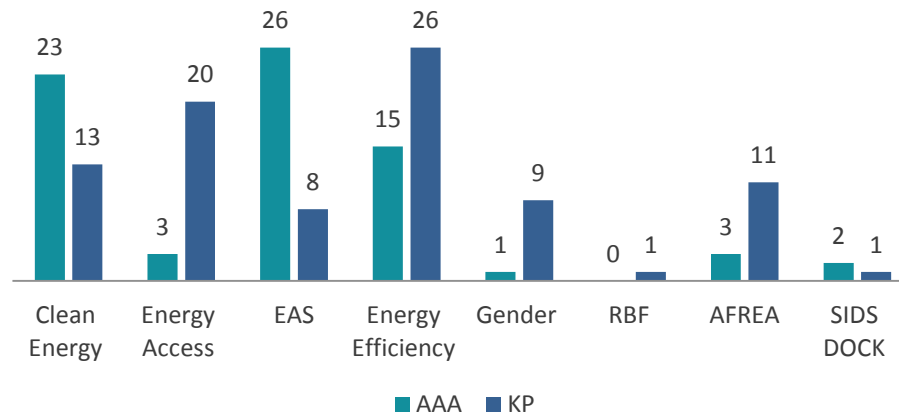


ESMAP | Outputs

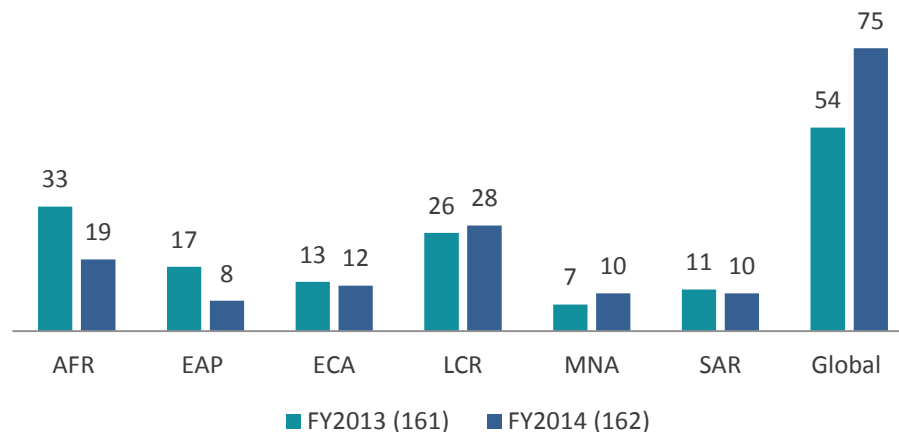
Number of Outputs, by Type, FY2012-14



Number of Outputs, by ESMAP Focus Area, FY2014



Number of Outputs (AAA and KP), by Region, FY2013-14

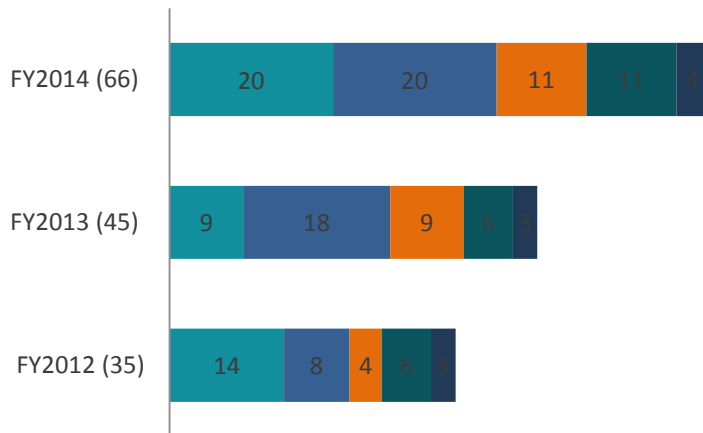


ESMAP | Outputs

Peer-Reviewed Research Pieces Published	Impact Stories Produced	Academic Mentions of ESMAP Products
<p style="text-align: center;">3</p> <ul style="list-style-type: none"> • Marginal Abatement Cost Curves and the Optimal Timing of Mitigation Measures (March 2014, Energy Policy) • Long-Term Mitigation Strategies and Marginal Abatement Cost Curves: A Case Study on Brazil (March 2014, Policy Research Working Paper – The World Bank) • Household Cooking Fuel Choice and Adoption of Improved Cookstoves in Developing Countries: A Review (June 2014, Policy Research Working Paper – The World Bank) 	<p style="text-align: center;">4</p> <p style="text-align: center;">(IMPACT Issues 5-8)</p>	<p style="text-align: center;">196</p> <p style="text-align: center;">(a 47% increase in the total number compared to 133 reported in FY2013)</p>

ESMAP | Outcomes, FY2014

Outcomes, by Type, FY2012-14



- Development Financing Informed
- Policy / Strategy Informed
- Client Capacity Increased
- Knowledge Increased
- Innovative Approaches and Solutions Generated

Box 1 – WB / ESMAP Outcomes and Indicators

ESMAP has adopted the following outcomes and corresponding indicators developed and implemented by the World Bank under its AAA and KP.

Development Financing Informed

- Preparation of new operation informed
- Existing operations informed
- Mobilization of non-Bank resources informed
- Government expenditure informed

Policy/Strategy Informed

- Government policy / strategy informed
- Public debate stimulated / initiated
- Contributed to stakeholder involvement
- Development community / partner policy / strategy informed
- Bank country strategy (CAS / CPS) informed/influenced
- Bank sector strategy informed / influenced

Client Capacity Increased

- Design capacity strengthened
- Implementation capacity strengthened
- Monitoring & Evaluation capacity increased

Knowledge Increased / Deepened

- Facilitated exchange of best practice with clients
- Facilitated exchange of best practice with partners
- Disseminated best practices

Innovative Approaches and Solutions Generated

- New innovative approach fostered
- New innovative approach developed
- Client is able to adopt / harness new technologies, innovative ideas, know-how

ESMAP | Outcomes, FY2014

Table: Number of Outcomes, by Type and Region, FY2014

	1. Development Financing Informed	2. Policy / Strategy Informed	3. Client Capacity Increased	4. Knowledge Increased	5. Innovative Approaches and Solutions Generated	Total of Outcomes (%)
AFR	7	4	2	1	2	16 (24.2%)
EAP	-	2	1	1	-	4 (6.1%)
ECA	2	6	2	-	-	10 (15.2%)
LCR	1	3	1	2	1	8 (12.1%)
MNA	1	2	1	-	-	4 (6.1%)
SAR	3	-	1	-	1	5 (7.6%)
Global	6	3	3	7	-	19 (28.8%)
Total	20	20	11	11	4	66

Table: Number of Outcomes, by Type and ESMAP Focus Area, FY2014

	1. Development Financing Informed	2. Policy / Strategy Informed	3. Client Capacity Increased	4. Knowledge Increased	5. Innovative Approaches and Solutions Generated	Total of Outcomes (%)
Clean Energy	4	8	2	3	1	18 (27.3%)
Energy Access	3	-	1	2	-	6 (9.1%)
EAS	6	7	2	3	-	17 (25.8%)
Energy Efficiency	1	2	5	2	1	11 (16.7%)
AFREA	6	4	1	1	2	14 (21.2%)
Total	20	20	11	11	4	66

1. Development Financing Informed (10)

Note: AFREA outcomes are separately reported in the following slides.

Operation	Country / Region	Financing Source	Amount (US\$ Million)	Approval Date	Associated ESMAP Activity
<i>Existing operations informed</i>					
MA-Support to ONE (Office National de l'Electricité)	Morocco / MNA	IBRD	150	Jun 10, 2008	Global - META Dissemination and Knowledge Sharing
Second Rural Electrification	Peru / LCR	IBRD	50	Apr 11, 2011	LCR - Peru Second Rural Electrification (P117864)
GPOBA (Global Partnership for Output Based Aid) W3: Kenya Electricity (Recipient)	Kenya / AFR	GPOBA	5.15	Jun 29, 2011	Global - Energy Access for the Peri-urban/Urban Poor (P152897)
<i>New operations informed</i>					
Additional Financing for ONEE Support Project (formerly, ONE Support Project)	Morocco / MNA	IBRD	40.5	Nov 26, 2013	Global - META Dissemination and Knowledge Sharing
Belarus Biomass District Heating Project	Belarus / ECA	IBRD	90	Mar 31, 2014	ECA - Biomass-based District Heating (P130977)
Development Policy Loan 2 to Promote Inclusive Green Growth and Sustainable Development in Himachal Pradesh	India / SAR	CTF	100	Apr 21, 2014	SAR - Luhri Hydro Electric Project (P102843)
District Heating Energy Efficiency Project	Ukraine / ECA	IBRD (332) / CTF (50)	382	May 22, 2014	ECA - District Heating AAA - Belarus & Ukraine (P112754)
Improved Forested Landscape Management Project (Recipient)	Democratic Republic of Congo / AFR	CSCF-Strategic Climate Fund Grant	36.9	Jun 24, 2014	Global - Household Energy Guidance Note (P129095)
Accelerating Sustainable Private Investment in Renewable Energy Project	Maldives / SAR	IDA-Guarantee (16) / CSCF-Strategic Climate Fund Grant (11.684)	27.684	Jun 26, 2014	SAR - Developing a Regulatory Framework for Maldives Energy Sector (P123047)
Vietnam Climate Change Development Policy Loan 3	Vietnam / EAP	IDA	70	Jun 30, 2014	Global - Energy Sector Low Carbon Development Operational Support
		Total	952.234		

Note: World Bank approved lending in the energy and mining sector totaled about \$6.69 billion during FY2014

Source: [World Bank Annual Report 2014](#)

Four instances of mobilization of non Bank resources:

- (i) **\$235 million from the Clean Technology Fund** to build up on the efforts conducted through the GGDP to validate surface exploration and support the identification and design of individual projects;
- (ii) **\$10 million from the CTF** to build on and replace the ESMAP-funded technical assistance program to develop a new CTF Technical Assistance Program;
- (iii) **a loan of \$54.3 million from the Inter-American Bank** to develop a Risk Mitigation Program for private geothermal energy projects for Mexico; and
- (iv) **a financing of \$26 million from the African Development Bank** to rehabilitate and expand the distribution networks in Juba, South Sudan.

2. Policy / Strategy Informed (16)

Associated ESMAP Activity	Country / Region	Policy / Strategy-Related Outcome
GOVERNMENT POLICY / STRATEGY INFORMED		
LCR – Green Transport and Energy Efficiency Initiatives (P144262)	Brazil / LCR	The travel demand pilot in São Paulo highlighted the integral role of parking regulations in determining incentives of employers, employees and property managers with respect to auto travel. It was one of the factors which led to the abolishment of parking minimums citywide in its new Master Plan approved by the São Paulo City Council on June 20, 2014.
MNA - Cairo Congestion Study	Egypt / MNA	The study recommended four specific categories of actions that can yield significant results in tackling congestion are recommended. Based on the findings and recommendations, the Government is undertaking the preparation of an urban transport project for Cairo with the World Bank, which will look into financing greener modes of transport such as clean buses and Tramways.
Global - Direct Delivery of Power Subsidy to Rural Consumers (122107)	India / SAR	The study assessed the potential and opportunities for introduction of the innovative scheme for delivering power subsidies through rigorous analysis, consultations with farmers and other stakeholders, and series of workshops with governments and related agencies. The study influenced the preparation and content of the 12th Five Year Plan for India which highlighted the essentials of this theme.
ECA – Power Supply Options Study (P128881)	Tajikistan / ECA	The study which sets out a three-pronged approach to reducing and eliminating winter power deficits by 2016 is being used by both the Government and Development Community as the main vehicle for discussing policy directions.
ECA – Tunisia Low Carbon Energy Strategy (P129821)	Tunisia / MNA	The report covered four specific strategic areas, and broad consensus was reached on a long-term strategy for the country's energy sector in the process of energy stakeholder workshops that took place all over Tunisia. The report has served the basis for developing the Government's new energy strategy.
ECA - National Watershed Management (P129244)	Turkey / ECA	The activity assisted the Ministry of Environment and Urbanization (MoEU) to prepare cumulative environmental impact assessment guidelines for hydropower projects. The MoEU who addresses cumulative impact issues is using the guidelines in their environmental impact assessment procedures.
LCR – Greening Electricity Generation (P132533)	Mexico / LCR	The study analyzed the potential of the Ministry of Energy's methodology (SENER) to incorporate external costs of electricity generation, and indicated that the methodology could be implemented in Mexico to include local, regional and global pollution. Mexico has already used externalities in the evaluation of investment projects, and this method has proved useful incentivizing investment in cleaner technologies.
Global – Low Carbon Development in Power Sector (P121622)	Morocco / MNA	The recommendations on low carbon development from the study were accepted by Morocco to inform its planning in power sector. The utility acquired advanced tools for low carbon planning and the Planning Department in the Ministry of Energy is in the process of establishing a dedicated low carbon development cell.
PUBLIC DEBATE STIMULATED / INITIATED		
Global – Outcomes for Integration of Renewable Energy Technologies in Sustainable Infrastructure (P128961)	Mexico	The case study of Mexico prepared under this study was discussed with CENACE (a grid's operator) at the International Renewable Energy Forum held in Riviera Maya, Mexico in May 2014, stimulating the discussion about the need of additional planning in order to minimize integration costs in the long run.
BANK SECTOR STRATEGY INFORMED / INFLUENCED		
ECA - Strategic Analysis of Water Resources Development Options in the Upper Amu Darya Basin (P133217)	N/A	The outputs of this activity included conceptualization and development of alternative operations scenarios for Rogun, which can generate more basin-wide benefits from the proposed Rogun Hydropower Project. This concept of "cooperative operations" is now proving fundamental in defining the Bank's position on Rogun.
LCR - Climate Change Auctions Best Practices (P129195)	N/A	The study allowed a better understanding of the use of auction as a tool for design of efficient market instruments for climate change mitigation programs. Auctions are now planned for a wider set of World Bank programs, for example, the Pilot Auction Facility for Methane and Climate Mitigation and for designing result based finance instruments which will rely on the use of reverse auction.

3. Capacity Increased (10)

Associated ESMAP Activity	Capacity-Related Outcome
DESIGN CAPACITY STRENGTHEN	
AFR - Electricity Sector Strategy Note for South Sudan (P144307)	About 20 senior government officials and utility officials were trained on specific needs and strategies of the sector to help design the capacity building program. In addition, key government officials participated directly in the preparation of the analysis and strengthened their capacity to carry out technical planning and design of the distribution network in Juba.
ECA - Energy Efficiency Scale-Up Plan in Buildings (P133200)	Over 40 government officials from the Western Balkan countries increased understanding of the financing and implementation options and lessons through the workshops, review of the reports, and discussions. Through the guidance notes prepared under the activity, counterparts also strengthened their plans for how to realize their committed EE targets and have an improved understanding of policies and actions required to get started.
Global - Low Carbon Development in Power Sector (P121622)	A number of capacity building programs and real-life planning exercises were conducted as part of the program, which contributed to building capacity among over 50 power sector stakeholders (the Power Ministry in Nigeria and the Power Utility in Morocco) to undertake low carbon development planning.
IMPLEMENTATION CAPACITY STRENGTHEN	
EAP - Indonesia Geospatial Mapping and Least Cost Electrification Planning (P128568)	Approximately 120 Perusahaan Listrik Negara (PLN) staff were trained, and the activity contributed substantially to building PLN's skills in system planning and optimization. The training in least cost electrification planning and network modeling has been integrated into PLN's system planning process and shall continue to be deployed in enabling PLN to improve electricity access in Indonesia's islands.
ECA - Biomass-based District Heating (P130977)	Two workshops where a number of biomass users were invited to learn about biomass heating options, and technical and economic considerations, contributed to improving the capacity of the project implementation unit to conduct practical feasibility studies and the capacity of the Energy Efficiency Department to consider different policy options.
MNA - Development of a Manual to Procure New Energy Efficient Water/Sewage Pumping, Street-Lightings and Public Building Services (P127163)	70 municipality representatives (increased from four before the activity started) and the Municipal Development and Lending Fund, which is the implementing agency of the World Bank's Second Municipal Development Project, were trained on energy efficiency in municipal infrastructure based on the Manual.
Global - Capacity Building for EE Urban Transport (P127138)	A total of close to 600 participants from 38 countries were trained to undertake a comprehensive and holistic urban transport planning aimed at reducing the energy consumed in meeting the growing travel demand through 15 offerings provided between June 2011 and October 2013.

4. Knowledge Increased (10) & Innovative Approaches Generated (2)

Associated ESMAP Activity	Knowledge-Related Outcome
EAP - China-ASEAN Energy Efficiency South-South Knowledge Exchange (P098916)	Regional South-South knowledge exchange on energy efficiency between China and other Asian countries, held in Beijing and Xi'an in June 2014 with support from ESMAP and ASTAE.
LCR – Regional Workshop on EE/NRW (P118064)	Knowledge exchange facilitated on non-revenue water reduction practices and energy efficiency programs among over eighty participants from fifteen water utilities and government institutions and experts from eight Latin American countries through international workshop held in Argentina in June 2013.
Global - Clean energy staff training and knowledge platform (P127169)	Knowledge increased on renewable energy, among the World Bank's EAP and SAR staff and IFC staff through the Renewable Energy Training sessions in Thailand and Washington, DC during 2014, respectively. Over 70 percent of those who participated in the sessions in Thailand reported that their knowledge and skills had improved as a result of the training.
Global - Low Carbon Development in Power Sector (P121622)	Relevant experience brought into the program from the various countries where ESMAP completed low carbon development studies. This contributed to share knowledge and best practices of low carbon planning in the power sector with key stakeholders in Nigeria and Morocco, as well as World Bank TTLs in the Africa and MNA regions, who attended a number of workshops organized as part of the program.
Global - International Experience with Private Sector Participation and Open Access in Power Grids (P128995)	Knowledge increased on the issue of open access and its opportunities and challenges ahead among participants from Azerbaijan, Brazil, China, India, Indonesia, Tunisia, Turkey and Vietnam as well as from the World Bank in the knowledge exchange event in Istanbul in April 2014.
Global - Energy Access for the Peri-urban / Urban Poor (P133185)	Knowledge acquired by Kenya Power on how to effectively serve slum communities through the knowledge exchange session with electricity distribution companies from South Africa, Colombia and Brazil.
Global - Household Energy Guidance Note (P129095)	Knowledge of World Bank staff increased to facilitate the preparation of household energy access interventions through discussions and consultations as part of the preparation of the guidance note, as well as through workshops and the preparation of a household energy component or project. This is demonstrated household two energy projects approved in FY2013-2014 and three in pipeline.
Global - META Dissemination and Knowledge Sharing (IO2078008)	Knowledge increased on the Model for Electricity Technology Assessment (META) tool and its use among World Bank and IFC staff through ESMAP's Renewable Energy Training in Thailand in April 2014.

ESMAP Notable Outcomes | Clean Energy

\$245 million from the CTF was mobilized the GGDP.

In collaboration with other multilateral and bilateral development partners, the GGDP was launched in March 2013 with the aim of identifying test drilling investments and facilitating capture and dissemination of lessons learnt on best practices. In FY2014, \$235 million has been approved by the CTF to support the GGDP as part of its Utility Scale Renewable Energy Program. The GGDP is a three year initiative aimed to mobilize \$500 million in concessional funding from diverse sources to be matched with investment-ready geothermal validation projects; about half of the target was achieved in its first year alone. Several projects are under preparation to be presented to the Climate Investment Funds (CIF), and two projects were approved in FY2014 – CTF funding of \$20 million each for Mexico and for Chile to be implemented by the IDB. The CTF project for Mexico will be also supported with the IDB financing of \$54.3 million. Moreover, besides IDB, the World Bank Group and KfW are benefiting from knowledge dissemination and advice directly provided through the GGDP for the design of several new operations.

India is applying the knowledge and capacity built through a programmatic technical assistance to prepare the country's large solar scale-up program.

Over four years, the ESMAP-funded CSP Initiative in India supported various activities, ranging from international experience sharing, to policy formulation, to building better data capabilities, to setting up a center of excellence, which were all intended to help scale up India's solar capacity. The knowledge and awareness, as well as the capacity of government officials and stakeholders, has been built and strengthened, among others, by offering practical guidance on the issue of domestic manufacturing in the solar sector, developing innovative financing mechanisms for leveraging commercial finance on a long term, and evaluating technology, regulatory, institutional, and policy mechanisms in Phase II of the Jawaharlal Nehru National Solar Mission (JNNSM), which provides the policy framework and roadmap for solar power development in the country, and beyond. The combined support provided under this engagement has all laid the foundation for the Government to prepare a larger scale solar program to be supported by the World Bank Group. The Program for Large Scale Solar in India currently under preparation would support the country's large-scale solar power development efforts. The program would also use IBRD's long tenor loan to bridge the gap between cost and tariffs currently being funded by scarce budgetary resources through the Government's Viability Gap Funding. In fact, the long tenor financing has been presented under this CSP Initiative to the Government as innovative instrument to deploy limited public finance and leverage substantial commercial finance for solar scale-up in India.

\$10 million from the CTF was mobilized by the MNA Regional CSP Initiative.

In December 2009, \$750 million of funding was endorsed by the CTF to support the Regional CSP Initiative for five countries in the MNA region: Algeria, Egypt, Jordan, Morocco, and Tunisia. The MNA CSP Initiative originally planned to mobilize additional \$4.85 billion from other sources. ESMAP support was instrumental in building consensus among regional stakeholders and conducting analytical work to deliver the MNA CSP Investment Plan at that time. In parallel, ESMAP has since supported this regional initiative through technical assistance activities, such as support for projects, establishment of regulatory frameworks, capacity building and knowledge sharing activities, to fulfill the needs of the participating five countries for scale-up of CSP development. Two investment projects in Morocco have been approved both by the CTF and the World Bank: (i) Noor I (formerly named Ouarzazate I) CSP Project and (ii) Noor II & III CSP Project. Moreover, under the 2013 update for the MNA CSP Investment Plan, it was agreed that a technical assistance component of \$10 million in CTF funding would be put in place, which will build on and replace the ESMAP-funded technical assistance program. The key findings of the ESMAP-supported activities will provide the basis for developing this new technical assistance under preparation jointly with the AfDB.

ESMAP-supported technical assistance successfully led to the issue of a smart grid regulation in China and a new regulation on geothermal tariffs in Indonesia.

The State Electricity Regulatory Commission (SERC) was assisted in preparing a report on a smart grid development strategy in China and a cost-benefit analysis for smart grids, and also provided with recommendations on regulatory requirements. Based on the findings and recommendations, SERC issued a regulation "Implementation Rules for the Operation and Management of the Grid-Connected Wind Farms in North China (Trial)" to apply smart grid technologies to improve the integration of wind power in the North China Power Grid, as well as a regulatory report regarding wind power integration in the major areas on its website.

With support from ESMAP, the current pricing regulation was analyzed for geothermal investment and development under a new pricing methodology, regime and regulation for geothermal power projects in Indonesia. The study was also co-funded by the Asian Development Bank. Based on the recommendation of the study, Regulation No. 17 on Geothermal Tariffs was issued by the Ministry of Energy and Mineral Resources on June 3, 2014. Under the new regulation, tariff rates are determined based on the utility's avoided costs depending on the location and the year when the commercial operation date occurs.

ESMAP Notable Outcomes | Energy Access

The Household Energy Guidance Note contributed to inform the preparation of household energy projects.

A guidance note, Household Energy for Cooking: Project Design Principles, prepared with support from ESMAP, provides broad project design principles related to household energy for cooking. As part of the preparation of the guidance note, discussions and consultations were conducted with World Bank staff with operational experience in this topic. This contributed to the overall internal discussion on the business model of the World Bank on clean cooking and the increased awareness on its project design principals. The results from the guidance note were also disseminated through internal workshops and the preparation of a household energy component of World Bank operations, which contributed to strengthening knowledge of World Bank staff to facilitate the preparation of household energy access interventions. This is demonstrated by the World Bank household energy projects or components recently approved, including the Democratic Republic of Congo Improved Forested Landscape Management Project with a grant of \$36.9 million from the Strategic Climate Fund, and three operations in pipeline for Honduras, China and Uganda.

An existing operation in Peru was informed by an ESMAP-supported activity.

The Peru Second Rural Electrification Project approved in FY2011 is currently under implementation with the objective of increasing access to electricity in the rural areas of Peru on an efficient and sustainable basis. The project was informed by ESMAP's technical assistance on the viability of four photovoltaic (PV) sub-projects representing about 3,300 connections in Peru's rural areas. The distribution companies responsible for PV sub-projects under the project prepared the technical study, through which they acquired necessary knowledge and strengthened their capacity on processes to implement such projects. These sub-projects amounting to a total of \$3 million in investment were approved by the National System of Public Investments, and also bidden out and awarded.

ESMAP support to the implementation of the Slum Electrification Project in Kenya informed the operations of Kenya Power, the power utility in Kenya, and contributed to electricity connection uptake under the IDA/GPOBA-financed Slum Electrification Project in Kenya.

A Knowledge Exchange Working Session was facilitated by ESMAP in May 2014, where practitioners from electricity distribution companies such as ESKOM (South Africa), Empresas Publicas de Medellin (EPM, Colombia) and LIGHT (Brazil) presented their approaches to problems with serving slums. Representatives from organizations working on improving services and infrastructure in Nairobi's slums, including the Kenya Informal Settlements Improvement Project (KISIP) team, also brought a local perspective. EPM and LIGHT's comprehensive community engagement approaches coupled with solutions to payment and affordability concerns for new customers were of great interest to Kenya Power. ESKOM's approach – improving safety and security in slums as part of its overall conversion to prepayment as a means to ensure that electricity purchases remain affordable – was also appreciated, as the same issues are concerns in Kenyan slums.

Similarly, KISIP's work with community organizations including leaders and elders retained attention. Kenya Power adopted and incorporated into its slum electrification operations, the practices that EPM and LIGHT presented during the working session. Kenya Power also implemented a connection strategy based on slum typology (i.e. cartel influence, level of informality), following a Bank/GPOBA/ESMAP mission and an initial ESMAP-supported assessment that emphasized the need for a differentiated approach. The implementation of the differentiated connection strategy significantly contributed to increase electricity connections (16,000 connections as of July 2014 increased from 2,000 connections in January 2014). Under the Energy Access for the Urban Poor Program, ESMAP continues to assist Kenya Power and the World Bank team in addressing difficulties in ramping up connection in slums under strong influence from illegal service providers, such as in Kibera, one of the hardest slums in Kenya.

ESMAP Notable Outcomes | Energy Efficiency

A district heating investment operation was informed by the ESMAP-supported analysis.

With support from ESMAP, district heating systems in four small and medium sized towns in Belarus were analyzed, and training workshops were conducted to help the Energy Efficiency Department understand different policy options and strengthen the capacity of the existing Project Implementation Unit (PIU) to prepare practical feasibility studies. Belorussian counterparts, together with the Energy Efficiency Department and the PIU prepared detailed feasibility studies on 13 project sites, including three of the sites analyzed under the ESMAP-supported study. Based on the feasibility studies, an IBRD loan of \$90 million was prepared for scaling up the efficient use of renewable biomass in heat and electricity generation in selected towns in Belarus and approved by the World Bank's Board in March 2014.

A strong commitment by the governments of the Western Balkans was demonstrated to scale up energy efficiency programs.

ESMAP supported a technical assistance activity on Scaling-Up Energy Efficiency in Buildings in the Western Balkans for two years. Since the ESMAP activity began, interest in EE programs has increased in the region. This allows the World Bank to continue to follow-up and engage on energy efficiency policies and programs discussed under the activity. The report prepared with support from ESMAP provides a roadmap for how the Western Balkan countries can achieve significant and sustained efficiency gains in public buildings. Bosnia and Herzegovina and Kosovo energy efficiency projects approved by the World Bank's Board in FY2014 include specific elements that emanated from the report's recommendations – the use of co-financing and repayments, piloting performance-based construction contracts, and building certificates. Macedonia has approved the creation of an Energy Efficiency Fund, which is a direct result of the World Bank's ongoing dialogue and momentum built from the ESMAP activity. The Bosnia and Herzegovina and Serbia are also currently working with the European Bank for Reconstruction and Development on their procurement as well as energy service company contracting rules, which is a specific recommendation in the study.

Capacity has also been significantly enhanced. Over 40 government officials from the Western Balkan countries participated in the workshops, reviewed the reports and presentations, and joined the discussions. The workshops included practitioners from neighboring countries that had implemented successful programs and participants were very engaged, thus increasing their understanding of the financing and implementation options and lessons. Through the guidance notes prepared under the activity, counterparts have strengthened their plans for how to realize their committed energy efficiency targets and have an improved understanding of policies and actions required to get started. The assessment framework also provided a clear roadmap of key gaps and remaining actions to be taken to improve the enabling environment for increased investment in the building sector.

TRACE continued to be conducted in cities, facilitating the development of energy efficiency measures.

In FY2014, TRACE was used to conduct energy diagnostics in three cities: Leon and Puebla in Mexico and Bogota in Columbia to help the municipalities better understand and manage their energy situation across six municipal sectors. Through a number of consultations and workshops, the TRACE-supported diagnosis provided a concrete set of rapid and innovative recommendations for efficiency use of energy in each city. Especially for the two Mexican cities, the assessments prioritized street lighting, solid waste management and municipal buildings. The recommendations were well received and discussed among SENER and relevant city officials. This laid the path to the country launching a broader program including city energy diagnostics in 30 other municipalities (one per state), and the request for World Bank support to prepare a \$100 million lending operation for a Municipal Energy Efficiency Project covering a technical assistance component and making investments in priority sectors (likely street lighting, municipal buildings and water utilities). In addition, for three African cities: Nairobi, Addis Ababa and Accra, the assessments which were initiated in 2012 through TRACE were concluded in 2014 and the final TRACE reports were handed over to the respective municipalities. The assessment found potentials for energy efficiency measures in the building sector (Accra, Nairobi), potable water supply (Addis Ababa), solid waste (Accra, Nairobi), the local tannery industry (Addis Ababa), transport (Addis Ababa) and street lighting (Nairobi). Based on the assessment results, ESMAP is currently working with the World Bank's Urban Practice to develop and implement measures in Nairobi.

Moreover, training on TRACE was conducted for about 30 officials from Bangkok and Lampang Thailand, the Organization of American States, the Indian state of Odisha, and Puebla and Leon, Mexico. This contributed to build their capacity to use and implement TRACE on their own.

ESMAP Notable Outcomes | EAS

ESMAP-supported activities led to increased power sector tariffs to cost-recovery levels in Armenia and the approval of the Medium Term Tariff Policy which envisages power tariff increases from 2014-17 in the Kyrgyz Republic.

In Armenia, the study analyzed specifically the supply chains of the power sector to assess how much tariffs would need to increase to reach cost-recovery levels depending on the investment scenario pursued and provided recommendations to regarding power tariff structure. Based on the recommendations, the Public Services Regulatory Commission (PSRC) revised the tariffs for power sector companies to align with cost recovery. The PSRC and the Ministry of Energy and Natural Resources are also currently considering the follow-up support from the World Bank to operationalize the recommended changes in the power tariff structure.

In the Kyrgyz Republic, the ESMAP activity helped prepare the Policy Note which outlines a set of policy measures as well as priority investments for reforms in the power sector. The Government approved the new Medium Term Tariff Policy which envisages tariff increases from 2014-17, which was highlighted as a priority measure in the Note. Moreover, the Note informed the preparation of the recently approved IDA loan of US\$25 million. It aims to strengthen the governance in the largest distribution company and improve its operational performance by reducing losses which was identified as one of the top priority areas in the Note. The Government has also requested to scope a project in district heating based on the analysis made in the Note.

The Electricity Supply Accountability and Reliability Improvement Project was approved by the World Bank's Board in July 15, 2014 or FY2015. It will be therefore reported in the development financing section of the Annual Portfolio Review for FY2015.

World Bank lending operations were informed in Morocco, Ukraine and Maldives.

For the Support to ONE (*Office National de l'Electricité*) Project and the ONEE Support Project (or the Additional Financing for the ONE Support Project) for Morocco, which aim to contribute to increase the efficiency and reliability of electricity supply to electricity consumers, the Model for Electricity Technology Assessment (META) developed by ESMAP helped provide cost and performance estimates of power plants that were to be evacuated using the transmission lines built under the project, as well as estimates of grid emission factors, and transmission line costs as a reference.

The ESMAP activity in Ukraine conducted an in-depth analysis of the binding constraints to municipal creditworthiness for energy efficiency investments and to identify viable financial options in Ukraine, such as the promotion of Energy Service Company models. It helped appraise the *District Heating Energy Efficiency Project in Ukraine* which would support 10 municipal heating utility companies across the country by helping them enhance quality of their services and carry out efficiency improvements to cut production costs as well as harmful emissions.

In June 2014, the *Accelerating Sustainable Private Investment in Renewable Energy Project* was approved for Maldives. The regulatory framework developed through the ESMAP activity contributed to an important facet of the government's policies and objectives of scaling up renewable energy in the country through projects and programs being developed. Particularly given the importance of developing a regulatory framework for future investment, it provided a robust foundation for this operation to (i) enable private sector investment in PV infrastructure development; and (ii) diversify the investment base in the country through developing a local market and expertise in renewable energy.

Technical assistance for the energy sector development in South Sudan helped strengthen the capacity to design the capacity building program, as well as the capital's distribution network, which will be part of a new World Bank lending operation.

The ESMAP supported activity helped analyze two key areas of the electricity sector – capacity building needs for sector institutions and the distribution network in Juba for efficiency improvement – to support the overall development of the energy sector and its institutions in the post independent Republic of South Sudan. Through the surveys and discussions with key sector organizations such as the Ministry of Electricity, Dams, Irrigation, and Water Resources, the South Sudan Development Plan, and off-grid utilities, both analyses identified the technical equipment and the size and scale of the infrastructure needed to boost the Juba distribution network, as well as high priority areas for capacity building, including improved sector planning on generation and transmission, regulatory issues, and human resource development, respectively. About 20 senior government officials and utility officials were trained on specific needs and strategies of the sector to help design the capacity building program. In addition, key government officials participated directly in the preparation of the analysis and strengthened their capacity to carry out technical planning and design of the distribution network in Juba. Both the capacity building program and distribution network designed through this activity have fed into separate components of the World Bank's South Sudan Energy Sector Technical Assistance Project currently under preparation. Moreover, the latter led to the financing support of \$26 million for technical investment in the Juba grid reinforcement from AfDB.

Social Inclusion and Gender Program

FY2014 marks the start of ESMAP's new \$1.5 million global program on **Gender and Social Inclusion in the Energy Sector**. The primary objective of the program is to **establish a core body of evidence to demonstrate that promoting improved gender equality in energy projects improves development outcomes**. The program also seeks to develop state-of-the-art approaches for how to improve gender equality in energy projects.

Leveraging Partnerships for research and training on Gender and Energy

In FY2014, ESMAP partnered with the World Bank's Social Development department to launch a report on **Gender and Electricity Infrastructure** to explore the gender-specific land and labor impacts of generation, transmission, and distribution projects. Research has begun with focus group discussions in Nepal regarding the Kali Ghandaki Hydropower project, and data has been analyzed for India's power project for pre- and post-construction gender impacts.

ESMAP has also collaborated with the World Bank Institute to develop an **e-learning module** to address gender issues within specific topics such as energy access, energy infrastructure, and energy policy. The course will be offered to World Bank staff, clients, partners, and development practitioners starting in 2015. An [online gender and energy forum](#) has also been established to connect experts in this field and facilitate knowledge and exchange.

PROGRAM HIGHLIGHTS | FY14

ESMAP has continued to screen its portfolio for gender-informed activities and help support task teams in integrating gender within their activities. A notable achievement in FY2014 was that SAR came forward with a request for a regional gender assessment of energy programs in India, Nepal, and Pakistan; and the Bolivia energy team requested operational support to integrate gender into their rural electrification program. Increasingly, such work focusing on gender and energy is being initiated in response to client demand. ESMAP continues its operational support to the AFREA Gender and Energy program and has contributed to the development of the new EAP Gender and Energy Technical Assistance program that will launch in FY2015. ECA has developed a gender and energy component to their research on energy subsidy reform, the findings of which will inform ESMAP-supported technical assistance to countries in the region. Towards the end of FY2014, ESMAP joined the SE4ALL campaign on Women, Youth and Health. ESMAP is working together with UN Women and ENERGIA to provide input on gender and energy indicators for the Global Tracking Framework update.

AFREA Gender and Energy Program closes first phase with engagement in 6 countries and launches second phase of the program.

Over the course of FY2014, the AFREA Gender and Energy program worked with World Bank energy teams and government clients in Benin, Kenya, Mali, Senegal, Tanzania, and Zambia to pilot initiatives bringing gender considerations to the forefront of the project planning and implementation process. In Benin, AFREA supported a gender action plan that is increasing women's participation in agriculture, strengthening institutional capacities, and informing the revision of the country's energy policy. In Mali, the recently approved Rural Electrification Hybrid System Project includes a range of productive use activities informed by AFREA input. In Tanzania, AFREA organized a series of capacity training workshops attended by project developers and officials from the Rural Energy Agency and produced a video to disseminate these lessons. In Zambia, AFREA integrated a number of gender-mainstreaming activities under the Electricity Access for Low-Income Households Project that will enable women to enjoy the benefits of electricity access through participation in a connection-fee subsidy program. To close the first phase of the program and exchange country level experiences a Gender and Energy Capacity Building and Knowledge Exchange workshop was held in Dakar, Senegal, April 2014.

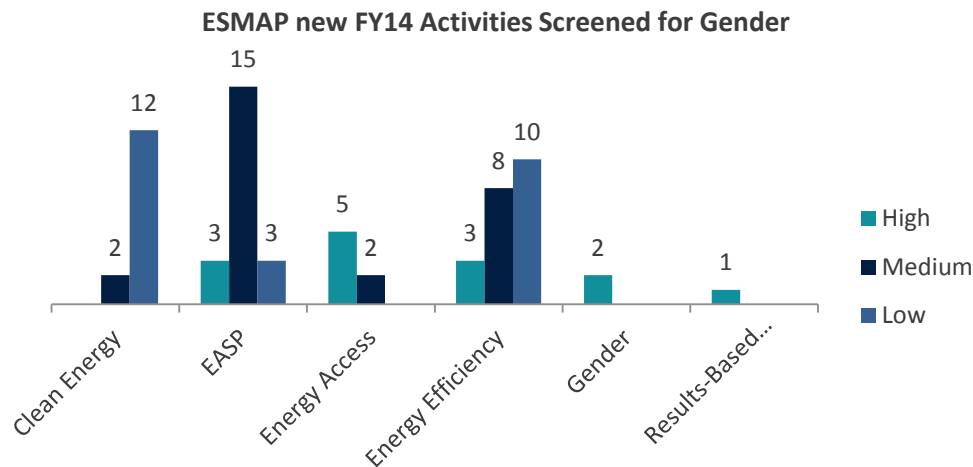
The AFREA 2 Gender and Energy Program aims to support teams in less researched topics such as gender and renewable energy, policy reforms and infrastructure. Program components include: i) Advisory & Operational Support; ii) Training & Capacity Building; iii) Knowledge Development and Dissemination; and iv) Results, Monitoring & Evaluation. A gender screening task team has been established and to date 95 active and pipeline energy projects under AFTEG and AFREA operations have been screened and 10 new projects identified for potential support on gender.

Social Inclusion and Gender Program

SCREENING ESMAP SUPPORTED ACTIVITIES FOR GENDER CONSIDERATIONS

As noted in previous portfolio reviews, in FY2013 ESMAP began to systematically screen ABGs and ESMAP-owned work for gender considerations. Activities were being ranked “high, medium, and low” for potential gender-related impacts during ESMAP’s review of Proposal Summary Forms–In FY2014, 66 proposals were considered as part of the review, of which 14 were noted High; 27 Medium and 25 Low. One of the substantial changes in FY2014 was that the screening process was strengthened by having all ESMAP evaluators also provide feedback on the gender aspects using the World Bank screening criteria for projects: (i) gender analysis and/or consultations on gender related issues; (ii) specific actions to address the distinct needs of women and girls, or men and boys, or positive impacts on gender gaps; or (iii) Mechanisms to facilitate monitoring and/or evaluation of gender impacts. This helped align ESMAP’s screening process with the World Bank’s gender monitoring for all lending and knowledge work. ESMAP reviewers consulted with the gender experts and were able to provide suggestions as relevant on ABG proposals for the teams to take into account during the development of their activities and PCNs. This went from a “checking the box” exercise to helping teams discuss and brainstorm on how to make the links on gender and social issues and consult within their teams and regions. For example, since the South Asia region was carrying out gender assessments for India, Nepal and Pakistan, ABGs that came forward for those countries were asked to take any of the findings from those assessments into account for their proposal. What may seem like a simple connection was actually a critical missing link in previous review processes.

The chart below breaks down the gender considerations within program themes and demonstrates that the majority of projects are showing high or medium potential for gender considerations. As ESMAP continues to mainstream gender across its portfolio, teams can look towards the high/medium potential projects to learn lessons and understand what concrete measures were taken to transition the gender potential into gender action within their projects. ESMAP reviewers, together with gender/social experts as needed, reviewed Proposal Summary Forms and use the following criteria to rate the projects: **HIGH** – social/gender aspects are highly relevant and should be incorporated in the activity scope at the PCN stage; **MEDIUM** – there is some scope to consider social/gender aspects and the PCN should address the relevance of gender/social aspects; **LOW** – minimal opportunity to incorporate specific social/gender aspects. The 14 activities under AFREA are not included in the gender screening review. Starting under AFREA 2, the AFREA Gender and Energy Program has developed a gender screening process for all Africa Energy operations.



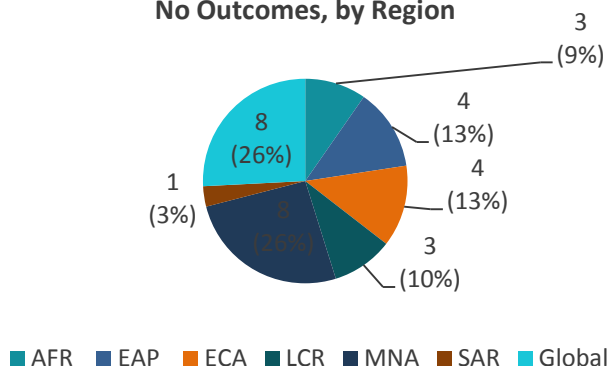
1 e Private Sector Financing Informed by ESMAP, FY2009-14

World Bank Operation (Approval FY)	Region	Private Sector Financing (\$ million)	Associated ESMAP Activity (ESMAP Focus Area) *
P101645: Tanzania Energy Development and Access Project (2008)	AFR	27.1	P117260: Lighting Rural Tanzania(Energy Access / AFREA)
P097818: Rwanda Sustainable Energy Development Project	AFR	1.75	Co-financing from AFREA (Energy Access / AFREA)
P105654: Southern African Power Market Project, APL 1 (2009)	AFR	18	P099315: Southern Africa Power Market: Indicative Generation & Transmission Expansion Study (EAS)
Scale up Renewable Energy Program (SREP), Mali (2011)	AFR	38	P124390: Gender and Energy Development Strategies Program (Energy Access / AFREA)
P124014: Lighting Lives in Liberia (2012)	AFR	2	P118460: Catalyzing New and Renewable Energy In Rural Liberia (Energy Access / AFREA)
P064844: Cambodia Rural Electrification and Transmission Project (2004)	EAP	21.59	P095219: Cambodia - Decentralized Energy Services (Energy Access)
P122178: Turkey SME Energy Efficiency Project (2013)	ECA	40	P130578: Facilitating Small and Medium Enterprise Financing for Energy Efficiency in Turkey (Energy Efficiency)
P117864: Peru Second Rural Electrification Project (2011)	LCR	10.4	P117864: Peru Second Rural Electrification Project (Energy Access)
SREP - Honduras Investment Plan (2011)	LCR	8	P124390: Central America Improved Cookstoves Framework (Energy Access)
P113416: Egypt Wind Power Development Project (2010)	MNA	450	P110330: Commercial Wind Development Framework (Clean Energy)
P122028: Morocco Noor I CSP Project (2012)	MNA	253	P113684: North Africa Regional CSP Scale-Up Initiative (Clean Energy)
TOTAL (11 operations)		869.84	
Lighting Kenya (2008-2013)	AFR	1.434	Lighting Africa (Energy Access / AFREA)
GRAND TOTAL (12 operations/programs)		871.274	

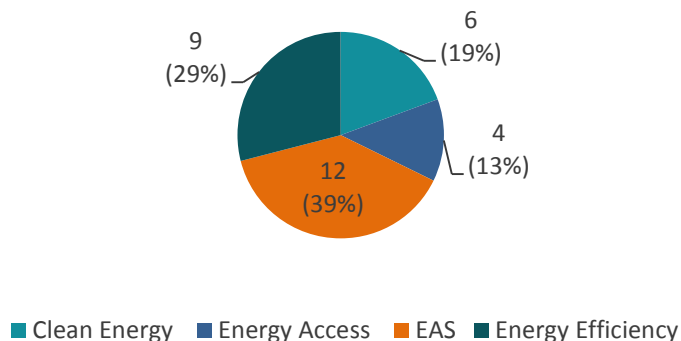
ESMAP's Closed Activities with No Outcomes (Previous Business Plan 2009-13)

During the previous business plan of 2009-2013, a total of 220 activities were completed, of which 31 activities had no outcomes and 189 activities had at least one outcome. The 189 activities had a total of 247 outcomes ([ESMAP Annual Portfolio Review for FY2013](#)).

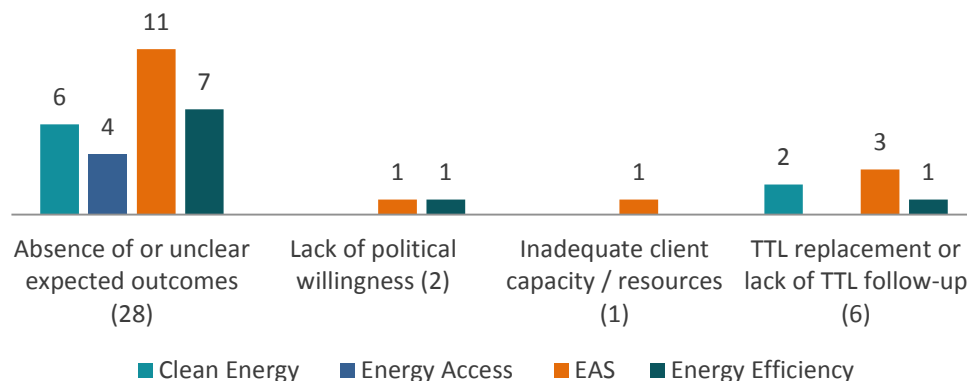
Breakdown of 31 Closed Activities with No Outcomes, by Region



Breakdown of 31 Closed Activities with No Outcomes, by Focus Area



Factors for No Outcomes, by ESMAP Focus Area



Conclusions from the Analysis:

(i) Pre-identification of expected outcomes and corresponding indicators is indispensable for measuring and reporting solid or quantifiable results.

This is clearly the vital element of maintaining the ESMAP M&E system. It helps ensure TTL's commitment to the outcomes defined in GFRs, thus being expected to address the issue of the lack of TTL's follow-up even after the output is delivered. Many ESMAP activities help influence government policies / strategies, and such outcomes in particular tend not to be observed immediately after the activities are closed. Once TTLs complete the GRM report at the closing of the grant, they might not keep track of the agreed outcomes as they do when the activity is still under implementation. With GFRs, TTLs can be encouraged to take necessary actions to report to ESMAP until the expected outcomes are confirmed. This is also applicable when TTLs change during the activity implementation period – the commitment to the outcomes could be maintained under a new TTL.

(ii) Grant requests should be demand-driven.

Tracking and measuring expected outcomes requires successful delivery of outputs. The client's support for the activity's objective and scope is therefore necessary in advance of its implementation; otherwise, there is a risk of not completing the activity and thus leading to no outputs.

ESMAP Logframe Updates, FY2014

The table below indicates progress toward the lower level outcomes defined in the ESMAP program logframe as of the end of FY2014 or the first year of ESMAP's business plan period (see Annex 2 of the [ESMAP Business Plan, FY2014-16](#) for the logframe). The updates in the table are based on the outcomes observed during FY2014.

LOWER LEVEL OUTCOMES		
OBJECTIVE	TOTAL (TARGET)	FY2014 UPDATES
Development Financing Informed: Client countries provided with "just-in-time" technical assistance for pre-investment activities necessary to resolve program design issues and offer additional options.	90 of which: Please see Annex 2 of the ESMAP Business Plan, FY2014-16 for the logframe.	19 of which: <ul style="list-style-type: none"> • 10 existing and new World Bank operations informed by ESMAP (excluding AFREA): <ul style="list-style-type: none"> - GPOBA W3: Kenya Electricity (Kenya / \$5.15 million) - Improved Forested Landscape Management Project (Democratic Republic of Congo / \$36.9 million) - Vietnam Climate Change Development Policy Loan 3 (Vietnam / \$70 million) - Belarus Biomass District Heating Project (Belarus / \$90 million) - District Heating Energy Efficiency Project (Ukraine / \$382 million) - Second Rural Electrification Project (Peru / \$50 million) - MA-Support to ONE (Office National de l'Electricité) (Morocco / \$150 million) - ONEE Support Project (formerly, ONE Support Project) (Morocco / \$40.5 million) - Development Policy Loan 2 to Promote Inclusive Green Growth and Sustainable Development in Himachal Pradesh (India / \$100 million) - Accelerating Sustainable Private Investment in Renewable Energy Project (Maldives / \$27.684 million) • 3 new geothermal test drilling investment prepared and financed: <ul style="list-style-type: none"> - Djibouti Geothermal Power Generation Project (approved in June 5, 2013 and became effective in Jul 2, 2014) - Mexico CTF project by Inter-American Development Bank - Chile CTF Project by Inter-American Development Bank • 6 existing and new World Bank operations informed by AFREA: <ul style="list-style-type: none"> - Regional and Domestic Power Market Development Project (Democratic Republic of Congo / \$296.7 million) - Additional Financing for the Regional and Domestic Power Market Project (Democratic Republic of Congo / \$283 million) - Mali Rural Electrification Hybrid System Project (Mali / \$45.4 million) - Burkina Faso Electricity Sector Support Project (Burkina Faso / \$50 million) - Electricity Network Reinforcement and Expansion Project (ENREP) (Ethiopia / \$200 million) - Increased Access to Electricity (Zambia / \$37.5 million)

ESMAP Logframe Updates, FY2014 (cont.)

LOWER LEVEL OUTCOMES		
OBJECTIVE	TOTAL (TARGET)	FY2014 UPDATES
Policy & Strategy Informed and Client Capacity Increased: Increased institutional capacity of ESMAP client countries to plan, manage, and regulate the implementation of policies, strategies, and programs that deliver clean, reliable, and affordable energy services required by their citizens for poverty reduction and environmentally sustainable economic growth.	150 of which: Please see Annex 2 of the FY2014-2016 ESMAP Business Plan for the logframe.	39 of which: <ul style="list-style-type: none"> • Government policy/strategy informed outcomes were observed in 16 countries (ESMAP excluding AFREA): Armenia, Bosnia & Herzegovina, Brazil, China, Egypt, India, Indonesia, Kosovo, Kyrgyz Republic, Macedonia, Mexico, Morocco, Serbia, Tajikistan, Tunisia , and Turkey. • 8 countries use, adopt, and/or deploy ESMAP models and toolkits: TRACE (Mexico, Thailand, Columbia, Kenya, Ethiopia, Ghana), META (Morocco), and EFFECT/MACTool (Vietnam). • Government policy/strategy informed outcomes were observed in 8 countries (AFREA): Rwanda, Liberia, Burkina Faso, Mali, Democratic Republic of Congo, Ethiopia, Senegal, and South Sudan. • 7 governments initiate action through SE4All TA to establish enabling environment for private sector investments and a creditworthy power sector: Myanmar, Guatemala, Honduras, Nicaragua, Senegal, Liberia, and Guinea.
	75 of which: Please see Annex 2 of the FY2014-2016 ESMAP Business Plan for the logframe.	205 of which: <ul style="list-style-type: none"> • 3 peer-reviewed research articles published. • 196 academic references of ESMAP products/knowledge • 3 development partners utilize knowledge on geothermal financing modalities, project structuring, and management: Inter-American Development Bank, kfW, IFC • 3 organizations are collaborating with ESMAP in the RE Resource Center: GIZ, Reep, OPEN EI

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2. AFREA

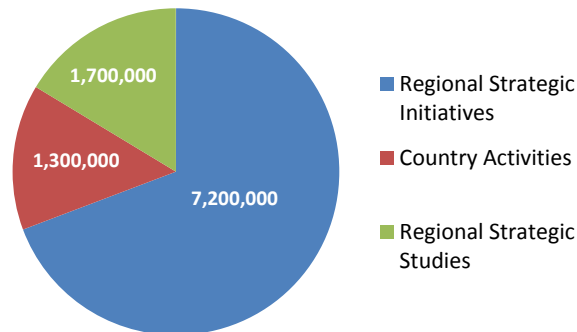
- a. Portfolio Overview
- b. Disbursements & Outputs
- c. Outcomes

1. ASTAE

AFREA | Portfolio Size & Composition

- The AFREA portfolio consisted of 20 activities in FY2014. Of this, seven activities were ongoing from the previous fiscal year(s) and completed in FY2014. There are no ongoing activities since AFREA Phase I closed on June 30, 2014.
- AFREA Phase II was launched in early FY2014. In the first year of operation, 13 new activities have been launched for a total amount of \$10.2 million.

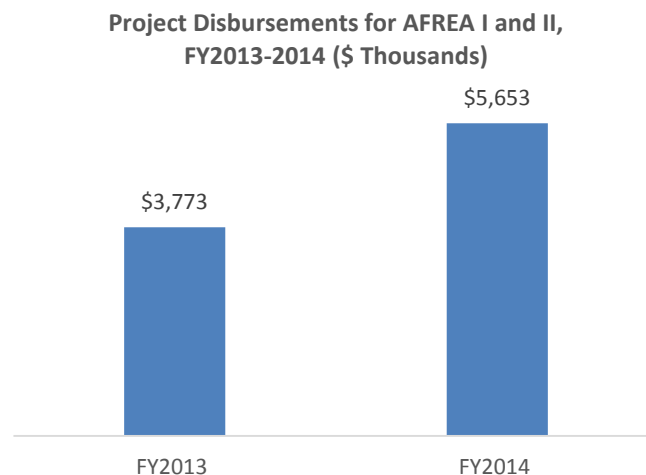
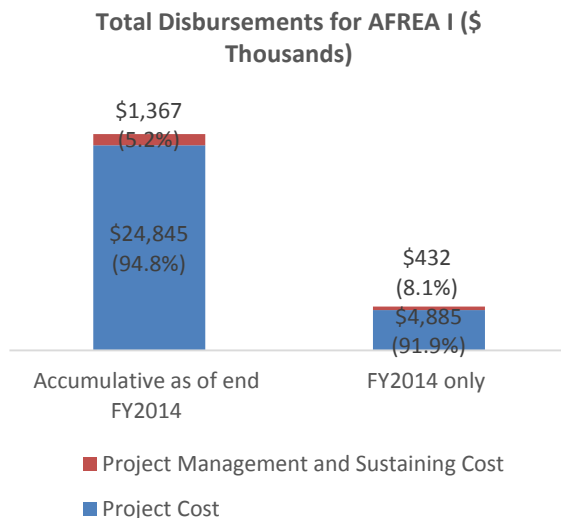
Total AFREA II Allocation - \$10.2 million



AFREA – Disbursements and Outputs

Disbursements:

- As of the end of FY2014, the total amount disbursed for the AFREA Phase II activities accounted for \$335,000 out of the total allocation of \$10.2 million. The disbursement rate was 3% while the implementation rate was 17%.



Outputs:

- AFREA was responsible for delivering 14 outputs during FY2014, of which three are classified as AAA and 11 as KP.

1. Development Financing Outcomes (6)

- Development financing informed (6): AFREA informed components in at least six projects through its upstream engagement. Lighting Africa informed four projects during FY2014, and the Africa Electrification Initiative informed one.

COUNTRY	WBG LEVERAGED LENDING OPERATION	AFREA UPSTREAM ACTIVITY
Burkina Faso	Electricity Sector Support Project (US\$ 50 million)	Lighting Africa
Democratic Republic of Congo	<ul style="list-style-type: none"> • Regional and Domestic Power Market Development Project (US\$ 296.7 million) • Additional Financing for the Regional and Domestic Power Market Project (US\$ 283 million) 	Lighting Africa
Ethiopia	Electricity Network Reinforcement and Expansion Project (ENREP) (US\$ 200 million)	Lighting Africa
Mali	Rural Electrification Hybrid System Project (US\$ 45.4 million)	Lighting Africa
Zambia	Increased Access to Electricity Project (US\$37.5 million)	Africa Electrification Experience

2. Policy / Strategy Outcomes (4)

The components under the **Rwanda Sustainable Energy Development Project** funded by AFREA were (i) the strengthening of renewable energy policy, strategy and management and (ii) enabling and expanding the efficient use of biomass resources. The objective was to assist the Ministry of Infrastructure in developing a set of renewable energy strategies in order to ensure a long-term and sustainable contribution by renewable energy technologies to Rwanda's energy balance.

The project among others supported Renewable Energy strategy studies which focused on solar, hydro, geothermal and wind technologies and a final report "The Renewable Energy and Energy Efficiency Strategy" was submitted July 2012. The strategy included 18 framework strategy programs and investment plan recommendations and project investment needs in the next five years. As part of this project, installation and user guidelines for solar PVs in public institutions were also prepared, and these were approved in July 2013.

Country-specific AFREA funded **Lighting Africa activities** centered on supporting the implementation of off-grid lighting components within existing IDA operations, such as executing feasibility and design studies for piloting multi-format consumer awareness campaign centered on off-grid lighting and preparing draft TORs and launching RFPs for execution of analytic work on off-grid lighting. Through this support, governments in at least six -- namely Burkina Faso, Mali, Democratic Republic of Congo, Ethiopia, Senegal and Liberia-- have developed a working knowledge of pico-PV technology and have included them into their rural electrification agendas.

As part of the broader energy sector program supporting the **South Sudan Energy Sector TA Project (ESTAP)**, the objectives for ESTAP-AFREA are to promote access enhancement and broaden the use of renewable energy resources. Lack of a program developed by Government of the Republic of South Sudan in support of rural electrification and distribution efficiency, this activity allowed the Government to substantially improve the ability to develop an off-grid rural electrification and distribution efficiency improvement program.

The project **Catalyzing New Renewable Energy in Rural Liberia** aimed to help establish Liberia's Rural and Renewable Energy Agency (RREA) as a functioning agency that is able to mobilize new renewable energy services and investment for rural areas to meet demand in a technically reliable and affordable manner. Phase I of the project is Bank-executed and aims at creating an enabling environment for the full functionality of the RREA, including recruiting and training advisors who could eventually become RREA staff; development of initial and later full legislation; preparation of targeted energy access pilot projects; and outfitting of the RREA for full operation including strategic and foundational documents, and its office and logistical capabilities. The Rural and Renewable Energy Agency Bill of 2011 was finally approved by the Senate in March 2014, and is currently with the House of Representatives for ratification.

3. Capacity Outcomes (1)

4. Knowledge (1) & Innovation (2) Outcomes

Knowledge Increased

As part of the *Rwanda Sustainable Energy Development Project*, the Guidelines for Installation and Usage of Solar PVs in Public Institutions were prepared and approved by the Energy Sector Working Group.

Client Capacity Increased

The Liberia project *Catalyzing New Renewable Energy* selected the Yandohun micro-hydro pilot based on its potential to become a demonstration project for the RREA as well as a training project based on which future sites can be developed. Therefore, the pilot's project's potential for becoming a highly successful pilot was prioritized. The Yandohun site fit these criteria, as it was a site that was operational before the civil war, with a proven track record of operations. Moreover, the project community demonstrated the ability to contribute to and manage the project, and the pre-war history of the plant provided additional justification for a community-management approach. With support from the Africa Electrification Initiative, RREA through this project was able to carry out rehabilitation and the commissioning of the Yandohun micro hydropower system in a successful manner. On a side note: as part of this project, RREA was able to donate 500 Lighting Africa products to the Ministry of Health for distribution to Ebola affected areas in the country.

Innovative Approaches / Solutions Generated

The Phase II AFREA activity *Increased Electricity Access Support* established the Africa on-Grid Access Team or AGAT. This team of experts is being deployed to just-in-time activities to facilitate on-grid access under on-going and planned projects in the Africa Energy portfolio.

The *Gender and Energy* activity under AFREA Phase II has also set up a group of consulting experts "on-call" to provide timely guidance and input through enhanced partnerships and outreach.

Contents

1. ESMAP
2. AFREA

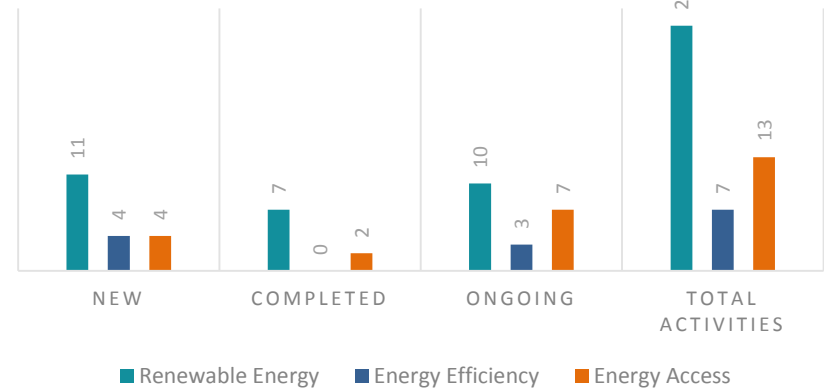
3. ASTAE
 - Portfolio Overview
 - Disbursements & Implementation
 - Outputs
 - Outcomes
 - Looking Forward

ASTAE | Portfolio Size & Composition

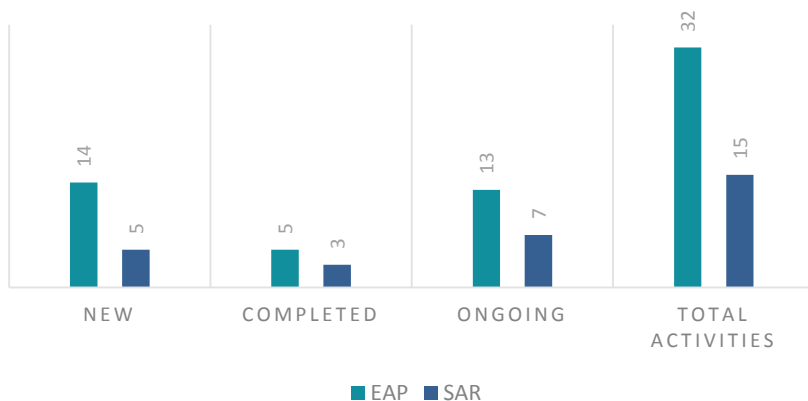
New, Completed, & Ongoing Projects, FY2012-14*

	FY2012	FY2013	FY2014
New	12	14	19
Completed**	1	0	8
Ongoing	0	12	20
Total Activities	13	26	47
Activities included IDA countries***	10	19	34
Activities included IDA Countries within Total Activities (%)	77%	73%	72%

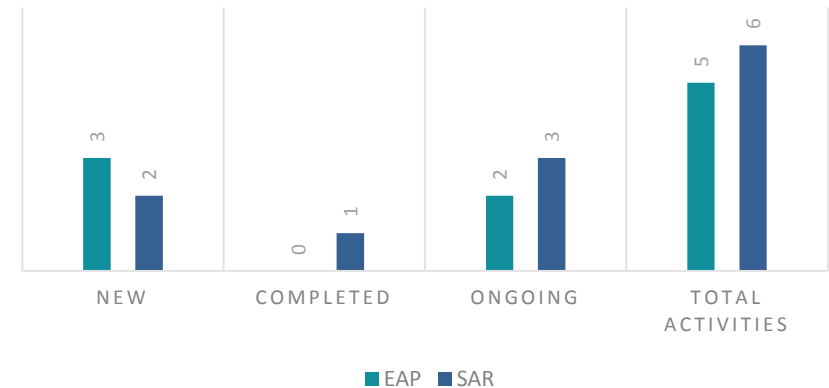
Number of New, Completed, & Ongoing Projects, by ASTAE Pillars, FY2012-14*



Number of New, Completed, & Ongoing Projects, by Region, FY2014



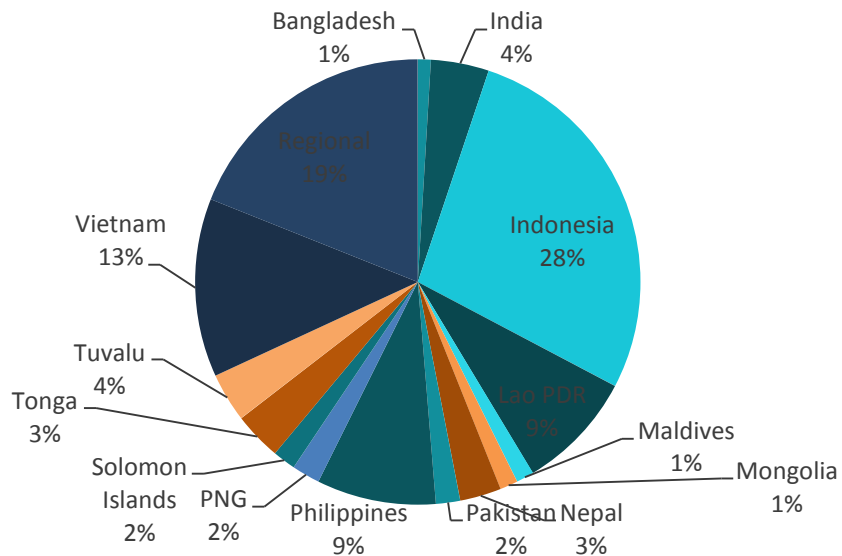
Number of New, Completed, & Ongoing Regional Activities, FY2014



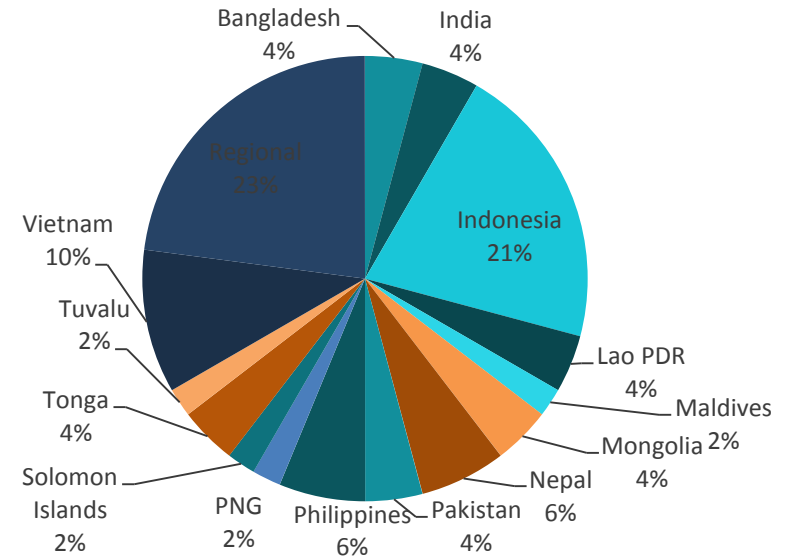
ASTAE | Portfolio Size & Composition

During FY2012-14, a total of \$15,511,767 was allocated to all 48 ASTAE-funded activities, including completed activities. Annual allocation has increased gradually with \$5,891,298 for FY2014, \$5,530,048 for FY2013, and \$4,090,421 for FY2012.

Share of ASTAE Total Fund Allocation, by Country & Regional Activities, FY2012-14

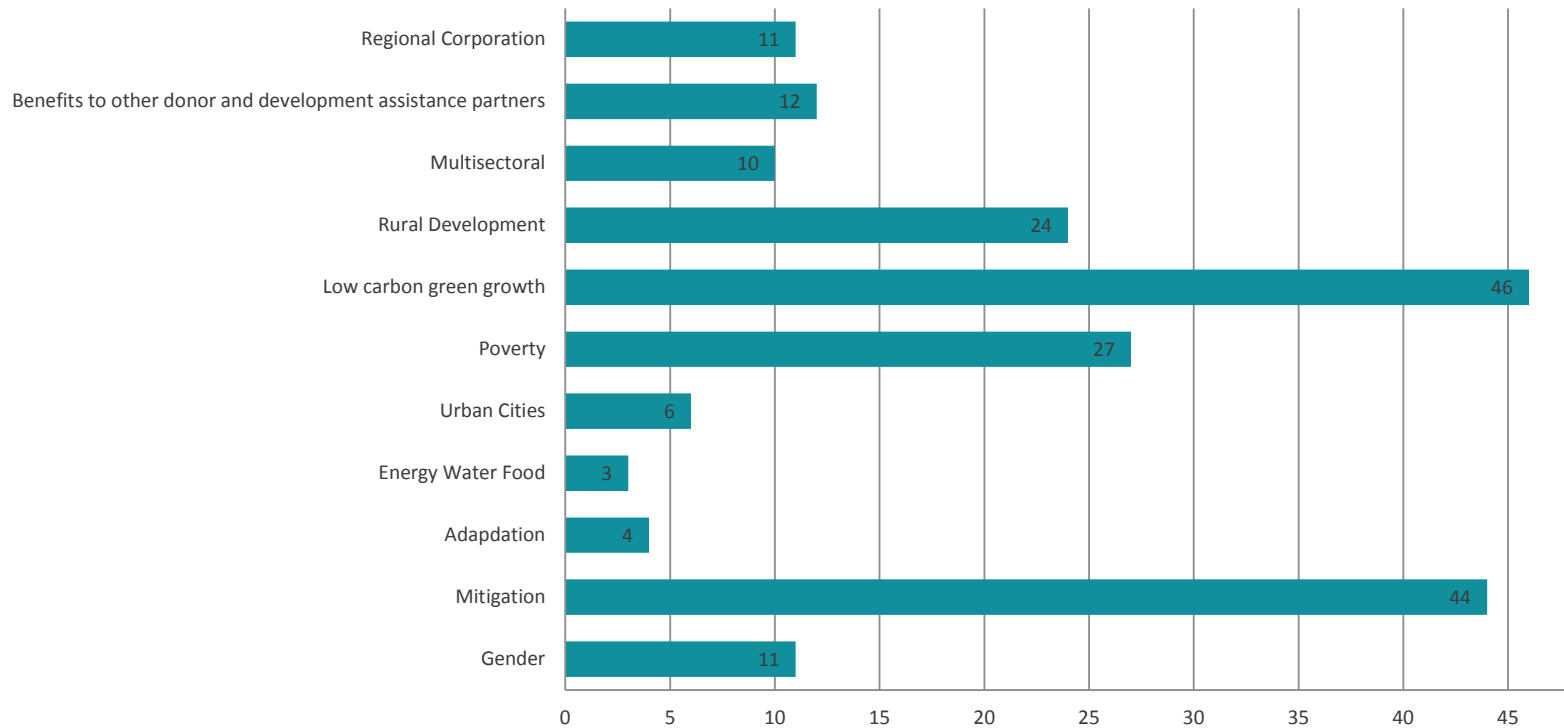


Share of ASTAE Total Activities, by Country & Regional Activities, FY2012-14



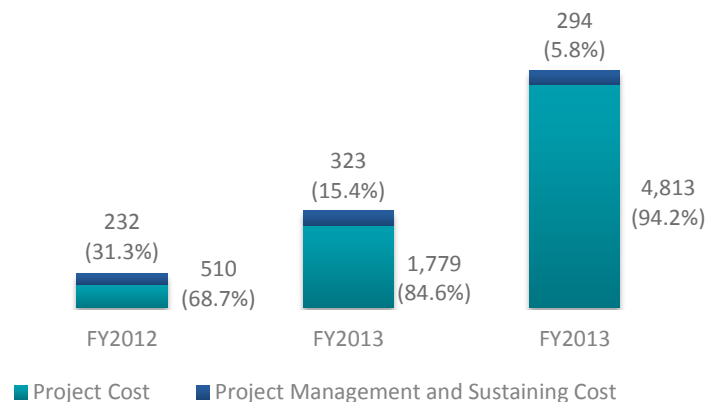
ASTAE | Portfolio Size & Composition

Allocated Activities, by Specific Themes of ASTAE Donors' Interests, FY2012-14



ASTAE | Disbursements & Implementation

Total Disbursements for ASTAE, FY2012-14
(\$ Thousands)



ASTAE Disbursements by Region in FY2014 (\$Thousands)

EAP	3,848 (80%)
SAR	966 (20%)
Total	4,813 (100%)

ASTAE Disbursements, by Pillar & Region, FY2014 (\$ Thousands)

	EAP	SAR	Total
Renewable Energy	1,943	267	2,210 (46%)
Energy Efficiency	698	286	984 (20%)
Energy Access	1,207	413	1,620 (34%)
Total	3,848	966	4,813 (100%)

Most of the ASTAE activities include three or two pillars and thus the table above was based on the highest weight that each activity placed among the three pillars.

Breakdown of Energy Access Pillar & Regions (\$ Thousands)

Energy Access	EAP	SAR	Total
Off Grid	515	227	742
On Grid	94	-	94
Both Grids	598	186	784
Total	1,207	413	1,620

The overall disbursement rate as of the end of FY2014 was 47% of funds allocated to the approved ASTAE financed activities under the current ASTAE Business Plan, compared to 22% in FY2013. The overall implementation rate, which includes total commitments for active projects under implementation, was about 68% in FY2014. Disbursement and implementation rates were higher in EAP with 48% and 72%, respectively, than SAR with the disbursement rate of 42% and implementation rate of 54%.

3 C ASTAE | Outputs

ASTAE Publications, FY2014

- [Lighting Rural India: Load Segregation Experience in Selected States](#)
- [Mongolia: Development Impacts of Solar-Powered Electricity Services](#)
- [Geothermal Resource Risk in Indonesia: A Statistical Inquiry](#)
- [Cumulative Impacts and Joint Operation of Small-Scale Hydropower Cascades: Case Studies for Selected River Basins in Northwest Vietnam](#)
- [China: Accelerating Household Access to Clean Cooking and Heating](#)

3 d ASTAE | Outcomes

Indicator 1 | Total World Bank Lending Catalyzed by ASTAE Activities

By providing advisory services and technical assistance, ASTAE informs the preparation, execution and evaluation of major World Bank energy projects. Four ASTAE-supported projects were approved in FY2014 by the World Bank's Board for a total of \$332.7 million.

Table: ASTAE-Supported IDA/IBRD/GEF Projects Approved by the World Bank's Board in FY2014

Country	Project Title	US\$ Million
Lao People's Democratic Republic (PDR)	Technical Assistance for Capacity Building in the Hydropower and Mining Sectors, Add'l Financing	28.34
Maldives	Accelerating Sustainable Private Investment in Renewable Energy Project	27.68
Vietnam	Vietnam Renewable Energy Development Project (Carbon Finance Component)	249.40
China	China Renewable Energy Scale-Up Program Phase II	27.28
Total		332.7

ASTAE | Outcomes

Table: ASTAE-Supported World Bank Lending and Grants Approved by the World Bank's Board, FY2012-2014

Country/ Region	Associated ASTAE Activity (same project code and web link as in the World Bank Project unless otherwise noted)	World Bank Project	Total Project Cost (\$ million)
China	Energy Efficiency Financing Promotion (FY09, FY11)	China Energy Efficiency Financing III (P123129)	428
Mongolia	Heating in Poor, Peri-Urban Areas of Ulaanbaatar (ASTAE support FY08–09)	Ulaanbaatar Clean Air Project (P122320)	21.94
China	China Renewable Energy Scale-up Program (CRESP) Phase II and Shanghai Low-Carbon City Preparation (FY10-FY11); and Shanghai- Jade Green Electricity Scheme (FY03-FY05)	Green Energy Schemes for Low-carbon City in Shanghai (P127034)	256
Vietnam	Support for the Energy Efficiency Demand-Side Management Program (FY10–11)	Clean Production and Energy Efficiency (P116846)	4.15
Vietnam	Support for the Preparation of the Vietnam Renewable Energy Project (REDP; FY08-11).	Vietnam Renewable Energy Development Project (Carbon Finance Component) (P110477)	249.40
Indonesia	Building Innovation Capacity in Clean Energy in Indonesia	Research and Innovation in Science and Technology Project (P121842)	95.00
Indonesia	Geothermal Power Development Program II	Geothermal Clean Energy Investment Project (P113078)	581.65
Bangladesh	Household Energy in South Asia Region	Rural Electrification and Renewable Energy Development II Project (RERED II) (P131263)	386
Maldives	Clean Energy Development and Regulatory Support	Maldives: Clean Energy for Climate Mitigation Project (P128268)	2.6
Bangladesh	Showcasing Results in World Bank Supported Intervention in Bangladesh Rural Electrification	Rural Electrification and Renewable Energy Development Project (P071794)	592.1
Mongolia	Enhance Awareness of Effort at Electrification of Rural Herders through Solar Home Systems in Mongolia	Renewable Energy and Rural Electricity Access (P099321)	18
Pakistan	Natural Gas Loss Reduction	Natural Gas Efficiency Project (P120589)	272
Tonga	Tonga Energy Roadmap Implementation Project	Institutional and Regulatory Framework Strengthening Project (P131250)	4
Vietnam	Cumulative Impact Assessment on Small Hydropower Projects on River Cascades	Vietnam Renewable Energy Development Project (P103238)	318.04
PNG	Assessing the Key Elements for the Development of a Third Party Access Code for the Transmission and Distribution Networks in Papua New Guinea	PNG Energy Sector Development Project (P101578)	9.25
Nepal	Support to Sustainable Hydropower Development in Nepal	Kali Gandaki A Hydropower Plant Rehabilitation Project (KGAHPRP) (P132289)	30.37
Regional	Development of Private Sector Models for Off-Grid Electrification in South Asia (P145999) (this project code does not have external weblink)	Accelerating Sustainable Private Investment in Renewable Energy (ASPIRE) Project: Maldives (P145482)	27.68
Vietnam	Capacity Building Support to Vietnam Pumped Storage Power Program	Trung Son Hydropower Project (P084773)	411.72
Lao PDR	Strategic Advisory for the Lao Power Sector Reform	TA for Capacity Building in the Hydropower and Mining Sectors (P109736)	28.34
Indonesia	Support to Integrated Catchment Program for Upper Cisokan Pumped Storage Project	Upper Cisokan Pumped Storage Hydro-Electrical Power (1040 MW) Project (P112158)	800

ASTAE | Outcomes

Indicator 2 | New Capacity and Increased Generation of Renewable Electricity. By supporting projects that directly facilitate investments, ASTAE activities lead to increased capacity and generation from renewable sources.

Table: Renewable Electricity Capacity Added, by Country, FY2012-2014

Country	Capacity (MW)	World Bank Project	Generation (GWh)	World Bank Project
Bangladesh	61	Rural Electrification and Renewable Energy Development II Project (RERED II) and Additional Financing (P131263, P150001)	-	
China	-		370	China Renewable Energy Scale-Up Program Phase II (P127033)
Indonesia	1,040	Geothermal Clean Energy Investment Project (P113078) Upper Cisokan Pumped Storage Hydro-Electrical Power (1040 MW) Project (P112158)	1,208	Geothermal Clean Energy Investment Project (P113078)
Maldives	20	Accelerating Sustainable Private Investment in Renewable Energy (ASPIRE) Project: Maldives (P145482)	32.6	Accelerating Sustainable Private Investment in Renewable Energy (ASPIRE) Project: Maldives (P145482)
Nepal	144	Kali Gandaki A Hydropower Plant Rehabilitation Project (KGAHPRP) (P132289)	-	
Vietnam	43.5	Trung Son Hydropower Project (P084773)	1,019	Trung Son Hydropower Project (P084773)
TOTAL	1,309 MW		2,630 GWh	

ASTAE | Outcomes

Indicator 3 | Electricity Savings Resulting from Efficiency Improvements. ASTAE helps embed energy efficiency measures into World Bank programs and assists governments in taking energy efficiency into account as part of the policy planning process.

Table: Cumulative Electricity Savings, by Country, FY2012-15 Business Plan Period

	Capacity (MWe saved)	World Bank Project	Generation (GWh saved)	World Bank Project
Bangladesh	-		160	Rural Electrification and Renewable Energy Development II (RERED II) Project and Additional Financing (P131263, P150001)
China	-		0.00619	Energy Efficiency Financing III Project (P123239) Green Energy Schemes for Low-carbon City in Shanghai (P127034)
Pakistan	350	Natural Gas Efficiency Project (P120589)	2,820	Natural Gas Efficiency Project (P120589)
Total	350		2,980	

In FY2014, no World Bank loans and grants for energy efficiency, which were supported by ASTAE were approved. There are new World Bank projects supported by ASTAE, which are expected to be approved in the coming fiscal years.

ASTAE | Outcomes

Indicator 4 | Households with Access to Modern Energy Services. This indicator reflects ASTAE’s success in extending access to modern energy services by measuring the number of households reached. The indicator comprises three sub-indicators: (i) the number of households receiving new access to electricity, (ii) the number of households receiving improved electricity, and (iii) the number of households receiving improved access to efficient stoves for heating and cooking.

Table: Households with Access to Modern Energy Services, by Country, FY2012–15

	<u>New</u> Electricity Access	World Bank Project	<u>Improved</u> Electricity Access	World Bank Project	<u>Improved</u> Cooking & Heating Access	World Bank Project
Bangladesh	558,000	Rural Electrification and Renewable Energy Development II Project (RERED II) & Additional Financing (P131263, P150001)	-		1,020,000	Rural Electrification and Renewable Energy Development II Project (RERED II) & Additional Financing (P131263, P150001)
Maldives	-	Accelerating Sustainable Private Investment in Renewable Energy (ASPIRE) Project: Maldives (P145482)	150,000		-	
Mongolia	-		-		175,000	Ulaanbaatar Clean Air Project (P122320)
Total	558,000		150,000		1,195,000	

ASTAE | Outcomes

Indicator 5 | Avoided Greenhouse Gas Emissions. This indicator estimates the quantity of CO₂ emissions that would be avoided over 20 years (the conventional lifespan of projects or equipment) through ASTAE-supported World Bank projects. It determines the CO₂ equivalent saved directly and indirectly through the replacement of conventional thermal power plants with renewable energy and realizing the potential energy savings.

Table: CO₂ Mitigated, by Country, FY2012–2015

Countries with ASTAE Activity that may Reduce GHG	CO ₂ Mitigated (million tons over 20 years)	World Bank Project
China	110.1	China Renewable Energy Scale-Up Program Phase II (P127033)
		Energy Efficiency Financing III Project (P123239)
		Green Energy Schemes for Low-carbon City in Shanghai (P127034)
Maldives	0.518	Accelerating Sustainable Private Investment in Renewable Energy (ASPIRE) Project: Maldives (P145482)
Pakistan	240.0	Natural Gas Efficiency Project (P120589)
Vietnam	24.65	Clean Production & Energy Efficiency Project (P116846)
		Trung Son Hydropower Project (P084773)
Total	375.27	

Indicator 6 | Countries Benefiting from ASTAE Support. This indicator ensures that ASTAE resources are used in a balanced manner across all ASTAE countries, providing equal funding opportunities to large countries (for example, Pakistan, Indonesia, and Vietnam) and to smaller countries (such as Pacific Islands and Maldives). ASTAE financed activities in 16 countries, which exceeded the target of 15 countries for the current ASTAE Business Plan, with five countries in SAR and 11 in EAP. This difference between EAP and SAR reflects the fact that EAP has more countries than SAR.

ASTAE | Looking Forward

Table: ASTAE Summary of Progress towards the FY2012-15 Business Plan Targets

Direct Indicators	Unit	Value Pledged	Value Achieved FY2012-13	Value Achieved FY2014	Value Achieved FY2012-14	Progress (%)
1. TOTAL WORLD BANK LENDING CATALYZED BY ASTAE ACTIVITIES						
Project and Program Lending	million US\$	3,200	2,676[1]	1,544[2]	4,221	132%
2. NEW CAPACITY AND INCREASED GENERATION OF RENEWABLE ELECTRICITY						
Renewable Energy, Capacity	MW	1,500	205	1,104	1,309	87%
Renewable Energy, Generation	GWh/year	3,000	1,208	1,052	2,630	88%
3. ELECTRICITY SAVINGS RESULTING FROM EFFICIENCY IMPROVEMENTS						
Energy Savings, Capacity	MWe	1,000	350		350	35%
Energy Savings, Generation	GWh/year	2,000	2,980		2,980	149%
4. HOUSEHOLDS WITH ACCESS TO MODERN ENERGY SERVICES						
Access to Electricity (new)	households	2,000,000	558,000		558,000	28%
Access to Electricity (improved)	households	1,000,000	0	150,000	150,000	15%
Improved Stoves for Heating (cooking & space)	households	5,000,000	1,195,000		1,195,000	24%
5. AVOIDED GREENHOUSE GAS EMISSIONS						
Direct CO ₂ avoided over 20 years	million tons	200	280	95	375	187%
6. COUNTRIES BENEFITING FROM ASTAE SUPPORT						
Number of Countries	Countries	15	12	16	16	107%

ASTAE | Pipeline, FY2015

Table: Potential ASTAE-Supported Activities, FY2015

Country/Region	Activity Title	Grant Amount (US\$)
Regional	EAP Gender and Energy Facility	474,500
Maldives	Maldives: Renewable Energy Resource Mapping and Geospatial Planning	1,915,000
Regional	Implementation Support for the Pacific Energy Program	250,000
Philippines	Capacity Strengthening of the National Electrification Administration, Department of Energy and the Energy Regulatory Commission in the Philippines	760,000
Myanmar	Strengthening institutions for on- and off-grid electrification in Myanmar	500,000
Vietnam	Pumped Storage Hydropower Development Strategy	600,000
Mongolia	Support to the pre-identification of the Second Energy Sector Project (ESP2) in Mongolia	275,000
India	Program for Grid Based Solar Sector	400,000
India	Clean Cooking in India: Options and Strategies	900,000
Papua New Guinea	Renewable Energy Resource Mapping and Geospatial Planning	400,000