



# 2014 Energy Sector Update

- Private Participation in Infrastructure (PPI)<sup>1</sup> in energy decreased 19% from US\$59.4 billion in 2013 to US\$48.2 billion in 2014
- Four out of six regions experience declining investment levels
- Mexico and Thailand have their highest energy PPI on record
- Investment in IDA countries was second highest ever at US\$5.6 billion, increasing 184% year-over-year

*This note is a product of the Public-Private Partnership Group of the World Bank, and the Private Participation in Infrastructure Database (PPI Database), written by Henry Kasper and edited by Jenny J. Chao.*

## 1

### ENERGY SECTOR OVERVIEW

Total investment<sup>2</sup> in energy projects in 2014 were US\$48.2 billion, down 19% from 2013 (US\$59.4 billion). The decrease is mainly due to fewer projects in five out of six regions which resulted in lower investment levels overall. Latin America and the Caribbean (LAC) led the decline, falling from US\$24.2 billion in 2013 to US\$19.8 billion in 2014. Also falling were Europe and Central Asia (ECA) from US\$14.8 billion to US\$9.5 billion, Sub-Saharan Africa (AFR) from US\$4.6 billion to US\$2.6 billion and South Asia (SAR) from US\$3.41 billion to US\$3.39 billion. The two regions with investment increases—East Asia and Pacific (EAP) and Middle East and North Africa (MNA)—recorded cumulative gains of only US\$372 million, not enough to offset the year-over-year decline of US\$11.3 billion (Figure 1).

Despite these declines, IDA countries auspiciously received their second highest investment volume ever recorded—US\$5.6 billion in 16 new projects. Leading the way were two hydropower plants in Lao PDR (US\$2 billion), along with a pair of energy projects in AFR—a wind farm in Kenya (Lake Turkana—US\$635 million) and an independent power plant in Ghana (Kpone—US\$900 million).

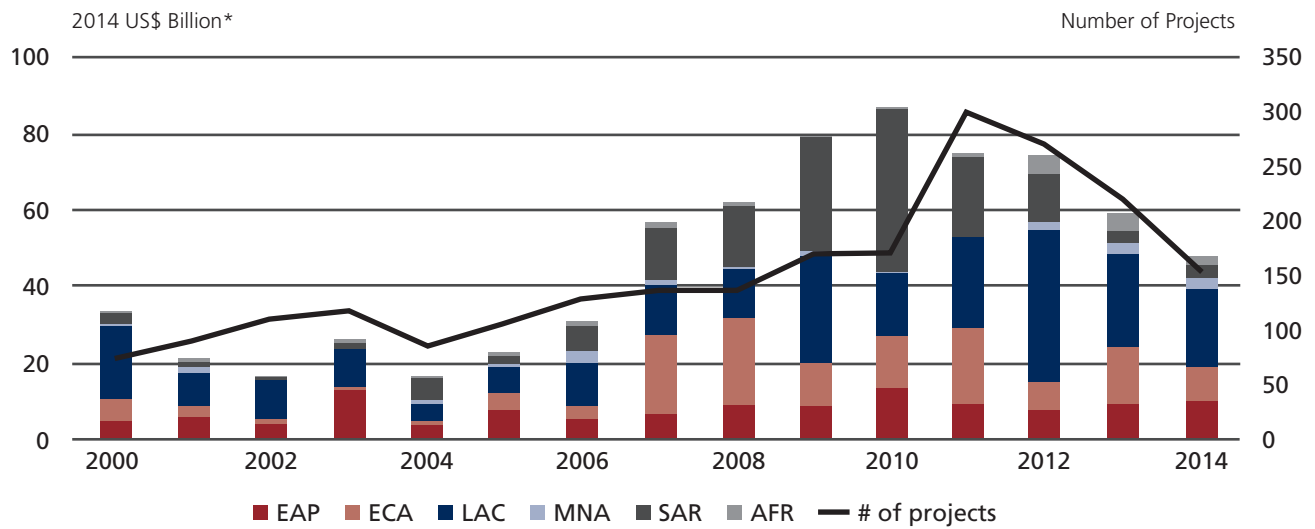
Among all regions, the total number of new energy projects was 157—the fewest since 2008 when 137 closed. Of the 157, nearly half was in LAC (72); SAR had 25; EAP had 23; ECA had 19; MNA had 11 and AFR 7. Notably, EAP dropped precipitously from 72 projects in 2013 to just 19 in 2014. Much of this was a result of China, which dropped from 50 projects to just 12 year-over-year. Meanwhile, MNA nearly quadrupled from 3 to 11. The remaining four regions were mostly in-line with 2013 project totals.

Brownfields attained the lowest level of investment in nearly a decade with just US\$3.7 billion in 2014. This compares to US\$10.7 billion in 2013 and US\$8.1 billion for the five-year average (2009-2013). Greenfields also slipped year-over-year, falling from US\$40.2 billion in 2013 to US\$36.4 billion in 2014.

<sup>1</sup> Private Participation in Infrastructure (PPI) as defined by the Private Participation in Infrastructure Database [http://ppi.worldbank.org/resources/ppi\\_methodology.aspx](http://ppi.worldbank.org/resources/ppi_methodology.aspx)

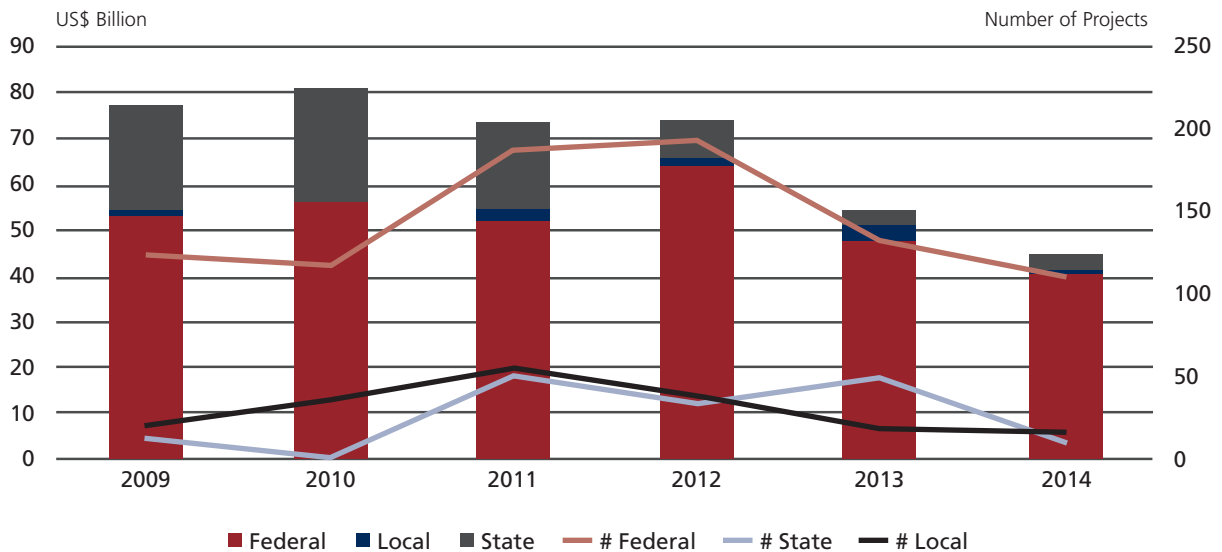
<sup>2</sup> “Investment” refers to investment commitments at the time of financial closure or in the case of brownfield concessions, contract signing.

FIGURE 1: TOTAL INVESTMENT IN ENERGY BY REGION



2014 experienced the fewest contracts granted by national governments since 2008. Only US\$40.6 billion was granted by national governments in 2014 compared to US\$47.6 billion in 2013 and US\$54.5 billion for the five-year average (2009-2013). Local government contracts also fell significantly year-over-year, dropping from US\$3.5 billion in 2013 to just US\$780 million in 2014. The US\$780 million is also 58% below the five-year average of US\$1.9 billion. In addition, contracts awarded at the state/provincial level fell 12% from US\$3.6 billion to US\$3.2 billion, which is a continuation of a four-year trend of fewer state contracts awarded each year. Since peaking in 2010 with US\$24.7 billion, investment awards at the state level have been declining and is now 87% below the five-year average (2009-2013) of US\$15.7 billion (Figure 2).

FIGURE 2: INVESTMENT TOTALS BY TYPE OF GOVERNMENT GRANTING CONTRACT



## 2 SUBSECTOR OVERVIEW

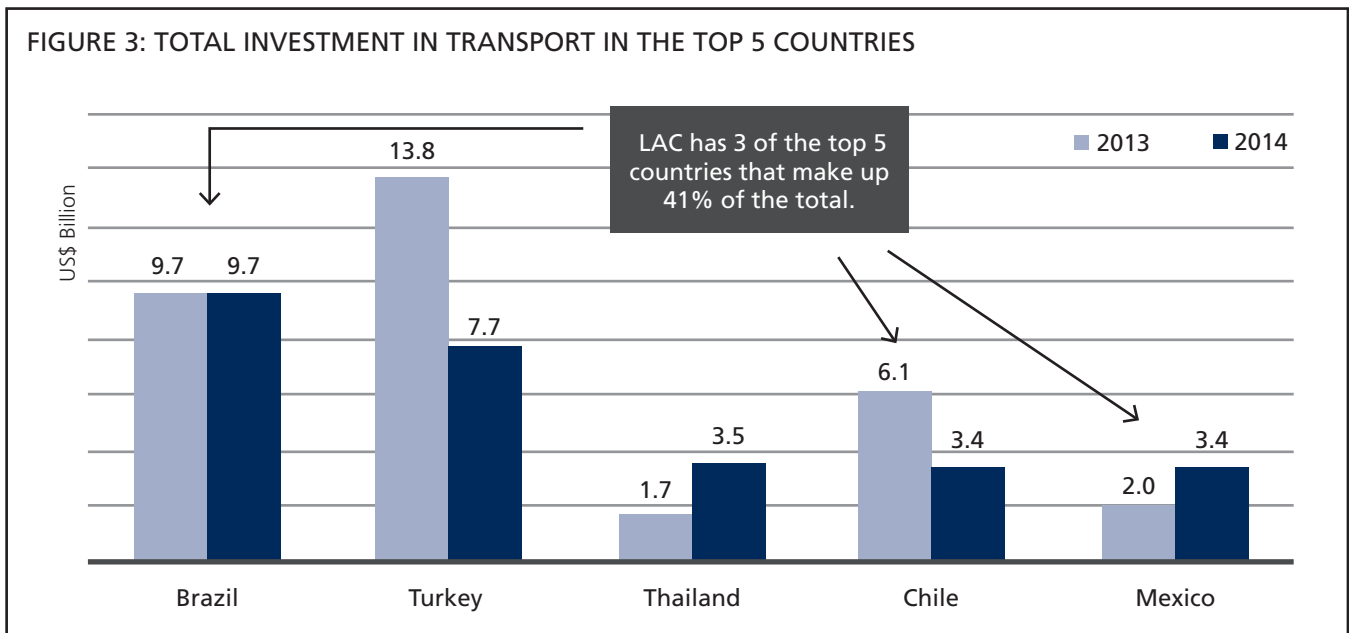
Investment in energy amounted to US\$48.2 billion in 2014. Of this amount, US\$41.3 billion was new investment and US\$6.9 billion was capacity expansion.

**Natural gas.** Although a small amount of the total, US\$2.7 billion was committed to natural gas. Markedly, this is nearly four times the amount committed in 2013. Mexico accounted for most of the increase with three new gas pipelines reaching closure (Los Ramones 1, Sonora and Tamazunchale El Sauz). The increase in natural gas investment in Mexico is part of a larger reform in the sector.

**Electricity.** At US\$45.4 billion and 151 new projects, the electricity subsector continued its decline with 22% lower investment and 30% fewer projects than in 2013. Electricity investment continued to wane and in 2014 was 37% lower than the five-year average of US\$71.6 billion. Generation projects accounted for US\$39.9 billion of the total while distribution and transmission projects accounted for US\$3.8 billion and US\$1.6 billion, respectively. Within electricity generation, approximately US\$22 billion were in renewables. Onshore wind and Solar PV were the most common technologies for renewable energy projects.

## 3 TOP COUNTRIES

The top five countries with the highest investment in 2014 were the following: (1) Brazil, (2) Turkey, (3) Thailand, (4) Chile, and (5) Mexico. These five countries together attracted US\$27.8 billion, representing 58% of investment commitments in the developing world in 2014 (Figure 3).



In 2014, private participation in the largest PPI market—**Brazil**—continued to show strength by attracting US\$9.6 billion, or 20% of global energy investment. Despite being the top country, this total is slightly below 2013’s investment volume of US\$9.7 billion and approximately 50% below the five-year average of US\$19.5 billion per year (2009-2013). Driving investment volume was the largest deal—the US\$630 million BW Guirapa I Wind Park. The 35-year BOO renewable energy contract was signed in December, 2014. The project consists of building seven wind power plants (162 MW in total capacity) located in the state of Bahia in the Pindai and Caetite municipalities. Another notable deal which also happens to be a renewable was the US\$468 million Cachoeira Caldeirao Hydro Power Plant.

With 13 new projects, **Turkey** was able to secure the second highest investment volume. Significant government reform in 2008 continued to influence energy investment in Turkey in 2014 as the government claimed that the privatization of Turkey’s electricity generation and distribution assets is necessary for greater competition. This shift in policy toward a more business-friendly Turkey resulted in significant investment

in energy in the coming years, including in 2014. The sectors that were affected were the energy generation and distribution industries. Specifically, 2014 witnessed three large-scale privatizations as a result of this legislation: the US\$4.3 billion Kemerkooy and Yenikooy Thermal Power Plants; the US\$1.1 billion Yatagan Thermal Power Plant; and the US\$350 million Catalagzi Thermal Power Plant, totaling US\$5.7 billion.

Five deals in **Thailand** closed for US\$3.5 billion, its highest energy PPI ever. Driving investment in the country was the largest project by far, the US\$2.2 billion Gulf TS1 Project. The greenfield BOO consists of building and operating 12 gas-fired power plants with a capacity of 1,470 megawatts. Financing for the mega project comprises a US\$500 million term loan arranged by BTMU, Mizuho and CIMB Thai with a tenor of up to 24-years, along with three tranches totaling US\$1.7 billion. Thailand had a second sizable natural gas project—the US\$822 million Khanom 4 CCGT. The 970 megawatt project received US\$187 million of multilateral support from the Japan Bank for International Cooperation, and a pair of Japanese companies sponsored the deal—Tokyo Electric Power (50%) and Mitsubishi Corp (50%)—each with an equity stake of US\$54.8 million, totaling approximately US\$110 million.

|                     | Average Investment | Total Investment | % Total Investment |
|---------------------|--------------------|------------------|--------------------|
| Brazil              | \$138              | \$9,652          | 20%                |
| Turkey              | \$596              | \$7,745          | 16%                |
| Thailand            | \$590              | \$3,538          | 7%                 |
| Chile               | \$287              | \$3,441          | 7%                 |
| Mexico              | \$424              | \$3,393          | 7%                 |
| All Other Countries | \$200              | \$20,393         | 43%                |
| <b>Total</b>        | <b>\$228</b>       | <b>\$48,162</b>  | <b>100%</b>        |

**Chile** made the top five with 12 projects totaling US\$3.4 billion. All 12 projects were renewables: solar (7), wind (3) and hydropower (2). Driving Chile’s investment in renewables is their 2012-2013 National Energy Strategy, “Energy for the Future,” launched in February 2012 to “better” the country’s energy matrix and address supply concerns by boosting renewables participation. This is in addition to other initiatives to boost renewable energy production, including new geothermal concession rules introduced in early 2013. As the country often suffers from drought and earthquakes and hardly any fossil fuel production of its own, there are few other avenues to explore. As a result, the energy landscape is evolving and cleaner projects are being tendered at the national level. In fact, all 12 renewable energy projects were BOO greenfield contracts granted by the national government. The top deal was the US\$1 billion Atacama 1 Solar Power Project—the largest solar complex in Latin America. The complex, located in the Atacama Desert, will have an overall capacity of 210 megawatts and will include two technologies that complement each other—a solar thermal plant and a photovoltaic plant. Hydro also drove investment. The largest deal was the 150 megawatt US\$662 million Los Condores Hydro Power Plant. Located on the Laguna del Maule reservoir in Chile’s Talca Province, power generated at the plant will come from two turbines installed in an underground powerhouse at the end of a 12-kilometer-long tunnel. The EPC contract was signed in March, 2014 and operations are expected to begin in 2018.

**Mexico** attained its highest energy PPI ever with eight new projects totaling US\$3.4 billion. With Mexico’s Congress recently passing energy reform which ends the monopoly of state-run Petroleus Mexicanos—PE-MEX—private companies are now allowed to explore and drill oil and natural gas. This regulatory change is already having an impact on private participation. For example, two natural gas pipelines connecting to the United States are driving investment activity as the country looked to capitalize on abundant and relatively inexpensive U.S. gas production to meet Mexico’s energy demand. A third domestic pipeline also received investment and will eventually connect with Mexico’s national pipeline system. Most investments were sizeable, averaging US\$424 million per deal.

## 4

## REGIONAL OVERVIEW

The top region by volume and investment totals was LAC (Table 2). The driving factor behind Latin America and the Caribbean in 2014 is Brazil and, to a lesser extent Chile and Mexico. Among the six regions, only two experienced investment gains from its five-year average—MNA and AFR. But given their relatively small share of total investment—US\$5.6 billion of the US\$48.2 billion—overall investment is currently 36% below its five-year average of US\$75.2 billion (Table 2).

TABLE 2: TOTAL INVESTMENT IN ENERGY BY REGION, 2014 (US\$ BILLION)

|              | # of Projects | Total Investment | % of Total  | % Change from 5-year Average |
|--------------|---------------|------------------|-------------|------------------------------|
| LAC          | 72            | \$19.8           | 41%         | -25%                         |
| EAP          | 23            | \$9.8            | 20%         | 0%                           |
| ECA          | 19            | \$9.5            | 20%         | -29%                         |
| SAR          | 25            | \$3.4            | 7%          | -84%                         |
| MNA          | 11            | \$3.0            | 6%          | +108%                        |
| AFR          | 7             | \$2.6            | 5%          | +4%                          |
| <b>Total</b> | <b>157</b>    | <b>\$48.2</b>    | <b>100%</b> | <b>-36%</b>                  |

**Latin America and the Caribbean.** Latin America and the Caribbean attracted US\$19.8 billion in energy commitments. Despite leading all regions in investment and capturing 41% of the global total, this amount is 25% below LAC's five-year average of US\$26.4 billion. Still, it is very much in line with the 10-year average of US\$18 billion. Within the region, Brazil had the largest investment totals, receiving approximately half of all commitments (US\$9.7 billion). Following Brazil was Chile with US\$3.4 billion, Mexico with US\$3.3 billion and Peru with US\$1.1 billion. Overall, there were 72 projects in the region, which is the fourth highest ever recorded in LAC. The 72 projects is above the five-year average of 60 projects and well above the 10-year average of 44. Nine countries in LAC had investment in energy, led by Brazil with 31. Behind Brazil were Chile (12), Mexico (8), Peru (8), Uruguay (4), Colombia (3), Guatemala (3), Honduras (2) and Costa Rica (1).

LATIN AMERICA AND THE CARIBBEAN (LAC), TOP DEALS

| Country | Project  | US\$ Million | Sponsors  |
|---------|--|--------------|---|
| Chile   | Atacama 1 Solar Power Project                    | \$1,000      | Abengoa (100% / Spain)                            |
| Mexico  | Los Ramones I Natural Gas Pipeline               | \$800        | Sempra Energy International (50% / United States) |
| Chile   | E-CL Solar Power Plants                          | \$720        | SUEZ (100% / France)                              |
| Brazil  | Renova Energia Alto Sertao III Phase A Wind Park | \$696        | Renova Energia S.A. (100% / Brazil)               |
| Chile   | Los Condores Hydro Power Plant                   | \$662        | Endesa (Chile) (100% / Chile)                     |

**East Asia and Pacific.** East Asia and Pacific was the second largest destination for energy PPI, attracting US\$9.8 billion in 23 new projects. EAP's share of global investment was 20%, which is higher than the 16% achieved in 2013 and 10% in 2012. Although China received over half of all projects—12 of 23—total investment was led by Thailand, which had US\$3.5 billion in five projects, averaging US\$704 million

per deal. In contrast, Chinese investment amounted to only US\$780 million, averaging a modest US\$65 million per deal. Notably, 2014 marks the first time since 2010 that private investment commitments in China fell below US\$1 billion. In addition, the US\$780 million in energy deals in 2014 is 61% below China's 10-year average of US\$2 billion. Behind Thailand and China was Lao PDR with US\$2 billion, Vietnam with US\$1.8 billion, and Indonesia with US\$1.7 billion—each with two projects.

| EAST ASIA AND PACIFIC (EAP), TOP DEALS |                                |              |   |
|--|--------------------------------|--------------|---|
| Country                                | Project                        | US\$ Million | Sponsors  |
| Thailand                               | Gulf TS1 Co Ltd                | \$2,200      | Mitsui (30% / Japan), Gulf Group (70% / Thailand)   |
| Vietnam                                | Vinh Tan 1 Coal Plant          | \$1,740      | China Southern Power Grid Corporation (55% / China), Vietnam National Coal - Mineral Industries Group (Vinacom) (5% / Vietnam), China Power Investment Corporation (40% / Hong Kong, China) |
| Indonesia                              | Sarulla Geothermal Project     | \$1,541      | Itochu Corporation (25% / Japan), Kyushu Electric Power Corp. (25% / Japan), PT Medco Energi International Tbk (38% / Indonesia), Ormat Turbines Ltd (13% / Israel)                         |
| Lao PDR                                | Xe-Pian Xe-Namnoy HPP          | \$1,043      | SK Corp. (26% / ..), Ratchaburi Electricity Generating Holding Plc (25% / Thailand), Korea Western Power (25% / Korea, Rep.)  |
| Lao PDR                                | Nam Ngiep 1 Hydropower Project | \$980        | Kansai Electric Power (45% / Japan), EGAT (30% / Thailand)  |

**Europe and Central Asia.** Europe and Central Asia had 19 projects totaling US\$9.5 billion, 29% below its five-year average (2009-2013) of US\$12 billion. ECA's share of the global total was 20% in 2014—falling from 25% in 2013. Turkey had the most new projects with 13 out of the 19, and they also managed to capture 81% of regional investment totals. Romania had four investments, with a US\$604 million divestiture being the largest. Another divestiture in Albania—the country's only project—was a hydro power plant (Bistrica and Ulez-Shkopet) for US\$177 million. Kyrgyz Republic also had one project totaling US\$40 million (Kyrgyzgaz Gazprom).

| EUROPE AND CENTRAL ASIA (ECA), TOP DEALS |   |              |   |
|--|---|--------------|---|
| Country                                  | Project   | US\$ Million | Sponsors  |
| Turkey                                   | Kemerkooy and Yenikoy Thermal Power Plants                        | \$4,271      | IC Holding (100% / Turkey)  |
| Turkey                                   | Yatagan Thermal Power Plant                                       | \$1,090      | Elsan (100% / Turkey)   |
| Turkey                                   | ACWA Kirikkale Independent Power Project                          | \$1,000      | ACWA Power (90% / Saudi Arabia), Samsung Corporation (10% / Korea)                |
| Romania                                  | S.C. Electrica S.A.   | \$604        | Others (51%)  |
| Turkey                                   | Borusan EnBW Wind Farm Bundle " Mut, Hermanlik, Koru and Fuat WPP | \$525        | EnBW Energie Baden-Württemberg AG (50% / Germany), Borusan Holding (50% / Turkey) |

**South Asia.** In South Asia, 25 new projects reached financial closure. However, the 25 projects represent only 7% of energy PPI—far below previous years. As shown below, this is due to a high number of relatively small projects in the region. The 25 deals was the fewest since 24 closed in 2006. The number of projects peaked in 2011 with 77 deals closing, but has been gradually falling ever since, including a precipitous decline of 66% from 2012 to 2013 (76 to 26). Much of this decline was a result of fewer and smaller projects in India. Indeed, the average project size in India has been steadily declining since peaking at US\$874 million in 2010. Consistent with historical trends, India in 2014 had the vast majority of new projects with 21, and Bangladesh had four. Among these four is the Summit Meghnaghat Power Project—a US\$320 million investment that will add 335MW of power near Dhaka to help meet Bangladesh’s chronic power shortages.<sup>3</sup> Interestingly, Pakistan experienced no new energy projects for the first time since 2004, and Sri Lanka experienced their second straight year of no energy investment after 12 straight years of commitments (2001-2012).

| SOUTH ASIA (SAR), TOP DEALS |  |              |   |
|-----------------------------|--|--------------|---|
| Country                     | Project  | US\$ Million | Sponsors  |
| India                       | South East UP Power Transmission Company Limited | \$812        | Isolux Corsan (100% / Spain)  |
| Bangladesh                  | Summit Meghnaghat Power Company Limited          | \$320        | Summit Industrial and Mercantile Corp. (Bangladesh), General Electric (United States) |
| India                       | Kamalanga Thermal Power Plant                    | \$316        | GMR Group (100% / India)  |
| India                       | Nigrie Thermal Project                           | \$270        | Jaiprakash Associates Ltd (100% / India)  |
| India                       | Hinduja National Power Corp Ltd (HNPCL)          | \$204        | Hinduja Group (100% / India)  |

**Middle East and North Africa.** With US\$3 billion in energy commitments, MNA experienced its highest investment total since recording US\$6.8 billion in 1997. Still, the US\$3 billion represents less than 6% of global investment commitments in energy and a single project was responsible for the vast majority. Nonetheless, the region closed 11 deals—10 of which were in Jordan and one in Morocco. The largest deal was Morocco’s only project—the US\$2.6 billion Safi Independent Power Project. The project was the largest privately developed power plant in Africa to sign financing agreements in 2014. Sponsors GDF Suez, Nareva and Mitsui have assembled an 18-year multi-currency, multi-tranche financing of over US\$2 billion which features commercial banks, a development bank and two Japanese export credit agencies. Once complete, the Safi plant will represent roughly 25% of Morocco’s total generating capacity.

<sup>3</sup> Ministry of Finance, Government of the People’s Republic of Bangladesh, Power and Energy Report. Available at [http://www.mof.gov.bd/en/budget/11\\_12/power/power\\_energy\\_en.pdf](http://www.mof.gov.bd/en/budget/11_12/power/power_energy_en.pdf)



### MIDDLE EAST AND NORTH AFRICA (MNA), TOP DEALS

| Country | Project                         | US\$ Million | Sponsors  |
|---------|---------------------------------|--------------|---|
| Morocco | Safi Independent Power Project  | \$2,600      | Mitsui (30% / Japan), SUEZ (35% / France), Nareva Holdings (35% / Morocco)  |
| Jordan  | Jordan Solar One PV Power Plant | \$70         | AMP Solar Group (67% / Canada), Evolution Solar Group (17% / United States), RAI Energy International (13% / United States)   |
| Jordan  | SunEdison Solar Power Project   | \$66         | SunEdison LLC (100% / United States)  |
| Jordan  | EJRE Solar PV Plant             | \$65         | Scatec (40% / Norway)   |
| Jordan  | Falcon Maan Solar PV Plant      | \$50         | Catalyst Private Equity Fund (50% / Jordan), Desert Technologies (25% / Saudi Arabia), Gruppo Maccaferri (25% / Italy) Catalyst Private Equity Fund (50% / Jordan), Desert Technologies (25% / Saudi Arabia), Gruppo Maccaferri (25% / Italy) |

**Sub-Saharan Africa.** Sub-Saharan Africa had seven deals in six countries totaling US\$2.6 billion. The most notable deal was a greenfield BOO in Ghana for US\$900 million—the Kpone Independent Power Project. A lack of water and transport projects and a slowdown in South Africa’s renewable energy program (REIPP) likely contributed to the region’s low level of investment. However, as South Africa realized fewer energy commitments in 2014, other non-traditional, emerging countries in the region such as Ghana, Kenya and Senegal offset the weakness.

### SUB-SAHARAN AFRICA (AFR), TOP DEALS

| Country       | Project   | US\$ Million | Sponsors  |
|---------------|---|--------------|---|
| Ghana         | Kpone Independent Power Project                           | \$900        | Africa Finance Corporation (42% / Nigeria), Sumitomo Corporation (28% / Japan), Macquarie Infrastructure Group (MIG) (8% / Australia), Old Mutual (8% / South Africa) |
| Kenya         | Aldwych Lake Turkana Wind Farm                            | \$635        | Aldwych International Ltd (51% / United Kingdom), Industrial Development Corporation (25% / South Africa), Others (24% )  |
| Côte d’Ivoire | Compagnie Ivoirienne de Production d’Electricite (CIPREL) | \$269        | Finagestion (83% / France), West African Development Bank (2% / Togo)   |
| Mozambique    | Ressano Garcia Gas-Fired Plant                            | \$250        | Old Mutual (32% / South Africa)   |
| Senegal       | Senegal Thermal Facility                                  | \$172        | ContourGlobal (100% / United States)  |



**About the Private Participation in Infrastructure Projects Database:**

The Private Participation in Infrastructure Database is a product of the World Bank's Public-Private Partnerships Group. Its purpose is to identify and disseminate information on private participation in infrastructure projects in low- and middle-income countries. The database highlights the contractual arrangements used to attract private investment, the sources and destination of investment flows, and information on the main investors. The site currently provides information on more than 6,000 infrastructure projects dating from 1984 to 2014 and is updated with last year's data six months after year-end (July 2015). It contains over 30 fields per project record, including country, financial closure year, infrastructure services provided, type of private participation, technology, capacity, project location, contract duration, private sponsors, and development bank support. This project represents the best efforts of a research team to compile publicly available information on those projects, and should not be seen as a fully comprehensive resource. Some projects—particularly those involving local and small-scale operators—tend to be omitted because they are usually not reported by major news sources, databases, government websites, and other sources used by the PPI Projects database staff. For more information, please visit: <http://ppi.worldbank.org/>.

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