


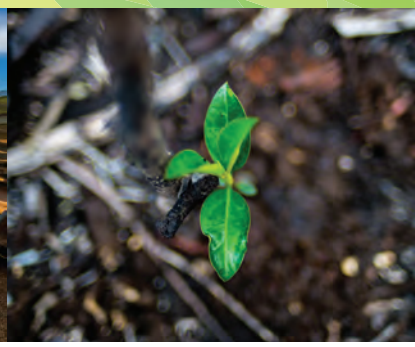

ADB Green BONDS

Helping Asia and the Pacific Meet the Challenges of Climate Change

The Asian Development Bank (ADB) launched a Green Bond program in 2015 with an inaugural 10-year $500 million green bond. In August 2016, ADB launched a dual tranche 3- and 10-year green bond, raising $1.3 billion across both tenors. Similar to the inaugural green bond, the dual tranche issues drew interest from socially responsible investors. ADB's green bonds are issued under a framework that was developed in collaboration between ADB's Treasury Department and Sustainable Development and Climate Change Department. The green bond framework identifies eligible projects within ADB's loan portfolio. Proceeds from ADB's green bonds are tracked against the disbursements of eligible projects. ADB intends to maintain a regular presence in the green bond market consistent with its commitment to scale up climate financing.

ADB Climate Operations Reach a Record $3.7 Billion in 2016

ADB approved $3.7 billion in climate finance investments in 2016, according to recently released figures—marking a 42% boost from the $2.6 billion reached in 2015. Estimates show that in 2016, climate finance from ADB's internal sources reached a record $2.65 billion for climate mitigation and $1.08 billion for climate adaptation.

"ADB is responding to the Paris Agreement by boosting its support to climate action in developing member countries in line with their Nationally Determined Contributions and the Sustainable Development Goals," said ADB President Takehiko Nakao. "ADB remains committed to scaling up its climate financing to $6 billion by 2020, of which $4 billion will target mitigation and $2 billion adaptation." It is expected that ADB's spending on climate change will increase to around 30% of its overall financing by 2020.

Low Carbon Growth in Asia: Things to Know

- If uncontrolled, climate change in Asia could lead to economic losses equivalent to 10% of the region's gross domestic product by 2100, which would reverse many hard-won socioeconomic gains in the region.
- Greenhouse gas emissions from Asia have risen rapidly, from 25% of the global total in the 1990s to 40% in 2012. The region could generate nearly 50% of all emissions worldwide by 2030.
- To meet the global temperature goal of 2 degrees Celsius (2°C) above pre-industrial levels will require Asian countries to invest an additional $300 billion a year between now and 2050.
- Reducing greenhouse gas emissions also reduces air pollution, making cities more livable and protecting the natural environment and its ecosystems. It could prevent nearly 600,000 deaths each year in Asia.
- In Asia and the Pacific, it is critical that energy production is made less carbon intensive, notably by deploying such renewables as wind, solar, and biomass, and through carbon capture and storage, and that there is a shift to sustainable transport systems.

In addition to its own financing, ADB mobilized $701 million from external sources, with $595 million invested in mitigation and $106 million in adaptation. Including financing from external sources, ADB delivered over $4.4 billion in climate finance in 2016.

Among the mitigation projects, a $47 million loan to the Distributed Commercial Solar Power Project in Thailand will help deploy a total of 100 megawatts of solar photovoltaic systems on commercial and industrial infrastructure at no upfront cost to the host companies.

ADB will continue to work with public and private sector partners to mobilize additional financing for climate projects. In December 2016, the Green Climate Fund announced its support to ADB's proposed Pacific Islands Renewable Energy Investment Program. This includes a $12 million grant to help the Cook Islands install energy storage systems and support private sector investment in renewable energy, as well as a $5 million grant to assist seven Pacific island countries to transition to renewable energy sources.

In response to climate action commitments made under the COP 21 Paris agreement by its developing member countries (DMCs), ADB is developing a Climate Change Strategic Framework. The strategic framework will cover ADB's future direction regarding climate change from 2017 to 2030, and will feed into ADB's new corporate strategy toward 2030, which is also being developed. It will also outline how ADB will deliver on its $6 billion climate financing goal by 2020 and the anticipated growth in DMC demand for ADB support for climate action to 2030.

50 YEARS ADB

Eligible Project Selection Criteria

Green bonds have proven to be an effective tool to promote ADB's climate change strategy, which identifies five priority areas:

(i) expanding the use of clean energy;
(ii) encouraging sustainable transport and urban development;
(iii) managing land use and forests for carbon sequestration;
(iv) promoting climate-resilient development; and
(v) strengthening policies, governance, and capacities.

Mitigation projects include those that fall under the following sectors:

- renewable energy,
- energy efficiency, and
- sustainable transport.

Climate change adaptation projects include those that fall under the following sectors:

- energy,
- water and other urban infrastructure and services, and
- transport.

Eligible green bond projects are identified by ADB energy, climate change, and environmental specialists on a continuous basis. This is done by using the joint multilateral development bank approach for tracking and reporting climate change mitigation and adaptation finance,[1] and additional selection criteria for "green" projects as defined by ADB's Green Bond Framework that deliver environmentally sustainable growth.[2]

Use of Proceeds

Green Bond net proceeds are allocated within ADB's treasury to a special subportfolio that is linked to ADB's lending operations to eligible projects. So long as the green bonds are outstanding, the balance of the subportfolio will be reduced at the end of each quarter in respect of eligible projects. Pending such disbursements, the subportfolio will be invested in liquid instruments, consistent with ADB's liquidity policy.

Outstanding Green Bond Issuances as of 31 December 2016

Format	Issue Date	Maturity Date	Proceeds
Global	19 March 2015	19 March 2025	USD 500,000,000
Global	16 August 2016	16 August 2019	USD 800,000,000
Global	16 August 2016	14 August 2026	USD 500,000,000
Total Green Bond Proceeds:			USD1,800,000,000

Source: ADB Treasury Department.

[1] https://www.adb.org/sites/default/files/institutional-document/189560/mdb-joint-report-2015.pdf
[2] http://www.adb.org/sites/default/files/adb-green-bonds-framework.pdf

Case Study: Hubei–Yichang Sustainable Urban Transport Project

ADB Loan Package: $150 million

Yichang, in the People's Republic of China (PRC) is being developed to become a modern logistics hub, at the center of an intricate transport network of inland waterways, an airport, rail and expressways. However, this plan may be derailed by the negative effects of rapid urbanization. Higher demand for transport both for people and goods have already caused congestion.

PRC, through the assistance of the Asian Development Bank (ADB), aimed to address these challenges through the Hubei–Yichang Sustainable Urban Transport Project.

The project was approved in 2013 and introduces a bus rapid transit (BRT) system along the main arterial of the city. The BRT provides a greener mass transit option augmented by pedestrian and bike lanes. The BRT, which will become fully operational in 2017, will not only give commuters a convenient and flexible transport option, it will also complement the scenic city of Yichang which runs parallel to a portion of the Yangtze River.

The project also includes a bypass road (not eligible for Green Bond finance) to carry freight traffic, which currently passes through the city center, from freight operations at the Three Gorges Dam on its way to different parts of the province. The BRT, along with the bypass road, is a strategic response to accommodate current and future transport demand levels in Yichang. It is poised to further strengthen Yichang's urban transport system and its role as a regional logistics hub.

Our Vision—An Asia and Pacific Free of Poverty

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to a large share of the world's poor. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

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List of ADB Green Bond Eligible Projects by Sector
Target Impacts and Committed and Allocated Amounts
A. Renewable Energy and Energy Efficiency
As of 31 December 2016

#	Link to More Information	Project Name (Number/Year Loan Approved and Description)	A/M[a]	RE or EE	Project Life (Years)[b]	Annual Energy Savings (MWh)[b]	Annual Energy Produced (MWh)[b]	Renewable Capacity Added (MW)[b]	Annual Greenhouse Gas Emission Avoided (Tons of CO2eq)[b]	Target Results[b]	Committed Amount (US$ mil)	Allocated Amount (US$ mil)[c]
1	http://www.adb.org/projects/40061-013/main?page-2=1	**Indonesia: Java–Bali Electricity Distribution Performance Improvement (2619/FY2010):** reduce distribution system losses and with an energy efficient lighting program, reduce demand side energy consumption	M	EE	40	400,000	na	na	330,000	• Deferral of new distribution network investment by $100 million • Overall distribution loss reduced to 7% from 8.4% in 2008 • System average interruption frequency index (SAIFI) reduced to 3.0 times per year per customer from 6.80 in 2008	40.00	16.70
2	http://www.adb.org/projects/40682-013/main?page-3=1	**China, People's Republic of: Integrated Renewable Biomass Energy Development Sector (2632/FY2010):** improve performance of biogas subsector through the demonstration of integrated renewable biomass energy system in poor rural areas of Heilongjiang, Henan, Jiangxi, and Shandong provinces in PRC	M	RE	15	27,222	92,000	--	1,000,000	• About 90% of the wastes of the subproject farms is collected and treated via the project biogas plant • About 70 million cubic meters of biogas produced every year for rural energy use. • About 41,000 households, including 8,000 poor households benefit from improved access to clean energy • About 27,000 farmers increased their incomes through expanded contract farming. • About 9,000 poor households benefit from the use of organic fertilizer and sales of organic products. • Greenhouse gas emissions reduced by about 1 million tons of carbon dioxide equivalent.	66.10	23.55
3	http://www.adb.org/projects/41504-023/main?page-2=1&page-3=1	**Papua New Guinea: Town Electrification Investment Program, Tranche 1 (2713/FY2010):** increase generation and use of renewable energy in provincial areas	M	RE	30	na	35,600	6	35,000	• Installation of 6 additional small hydropower plants in target provincial areas by end 2016 • Reduced power outages by 20% in target provincial urban areas by end 2016 • Reduced fuel costs for PPL power generation by 60% in target provincial areas by end 2016	37.90	21.15
4	http://www.adb.org/projects/44431-013/main?page-2=1&page-3=1	**India: Gujarat Solar Power Transmission (2778/FY2011):** develop the transmission infrastructure to evacuate power from the solar power generation plants to be located in the 2,500-hectare Charanka solar park located in Patan district of Gujarat; the solar park will host over 500 MW of both solar photovoltaic and concentrated solar power plants	M	RE	40	na	na	na	na	• Up to 500 MW of power could be evacuated from the Charanka solar park over the transmission link to the Gujarat and national grid commencing in 2014 (2010 baseline: 0 MW)	68.00	44.29

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5	http://www.adb.org/projects/46906-014/main	**China, People's Republic of: Everbright Environmental Energy Limited (Municipal Waste to Energy Project) (7368/2900/FY2012):** increase power generation from municipal solid waste, a form of renewable energy resource	M	RE	40	na	496,000	84	255,200	• 70% of MSW in the People's Republic of China is properly treated, with 30% incinerated in cities, by 2020 (2010 baseline: 63.5% of MSW properly treated, with 14.7% incinerated in cities) • Total installed capacity of municipal WTE plants in the People's Republic of China reaches 3 GW by 2020 (2010 baseline: about 500 MW) • Approximately an additional 7,300 tons per day of waste is treated by 2018	80.00	80.00
6	http://www.adb.org/projects/46914-012/main	**Regional: Southeast Asia Energy Efficiency Project (Cofely Southeast Asia Pte) (7371/2919/FY2012):** support the investment program to expand and upgrade energy efficiency services in Cambodia, Indonesia, the Lao PDR, Malaysia, the Philippines, Thailand, and Viet Nam by removing financial constraints and information barriers that inhibit the development of the energy efficiency market	M	EE	20	150,000	na	na	90,000	• The project achieves annual energy savings of at least 150,000 MWh from energy efficiency projects by 2019 • The project results in average annual avoidance of 90,000 tons of carbon emissions by 2019 • Average annual net savings of $10 million from energy efficiency projects by 2019	20.00	8.18
7	http://www.adb.org/projects/46930-014/main?page-2=1	**China, People's Republic of: Dynagreen Waste-to-Energy Project(7377/2960-02/FY2012):** increase power generation from MSW, a form of renewable energy resource	M	RE	40	na	610,000	120	450,000	• 2.8 million tons of MSW is treated per annum on average by 2018 • About 610 GWh of clean energy is produced annually by WTE plants by 2018 • CO2 emissions are reduced by approximately 450,000 tons per annum by 2018 • Up to 700 local workers employed by nine WTE plants during operation • CNY45 million of local goods and services procured during operations on average per annum starting 2018–2019	100.45	67.81
8	http://www.adb.org/projects/43207-013/main?page-2=1	**Philippines: Market Transformation Through Introduction of Energy-Efficient Electric Vehicle Project (2964/FY2012):** generate global environmental benefits and reduce the carbon footprint of the tricycle industry through the introduction of low-carbon, e-trike technology	M	EE	10	1,538,611	na	na	332,150	• At least 20,000 e-trikes operating by December 2014; 50,000 by 2015; and 100,000 by 2017 • At least two retailers distributing lithium-ion and other high-energy-density batteries locally • Five solar charging stations of 200 kw each established by 2014 • At least 100 locally assembled charging stations are installed in selected project areas by 2017 • At least 30% of operators of public charging stations are women (only for daytime shifts) • Battery-recycling options are studied and recommendations implemented by 2017 • Targeted beneficiaries attended operations and maintenance workshops conducted by accredited institutions (at least one workshop per LGU, total 10 workshops by 2017)	228.43	1.20

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9	http://www.adb.org/projects/46934-014/main	**Thailand: Solarco Company Limited (7384/2992/FY2013):** increase solar power generation and diversify energy mix by through the addition of renewable energy capacity	M	RE	25	na	90,000	57	66,576	• More than 90,000 MWh of solar power delivered to the off-taker per annum, on average, during the first 10 years of operation (2014–2024) • 66,576 tons of carbon dioxide equivalent emissions avoided per annum, on average, during the first 10 years of operation (2014–2024) • At least 50 FTE permanent staff positions filled from commercial operations date • 57 MW solar power capacity commissioned by the fourth quarter of 2013 • At least 150 people FTE employed during construction • Local purchase of goods and services amounting to more than B1,725 million ($54 million equivalent) during construction	52.00	-
10	http://www.adb.org/projects/45224-003/main?page-2=1	**India: Rajasthan Renewable Energy Transmission Investment Program, Tranche 1(3052/FY2013):** support transmission facilities to evacuate renewable energy from renewable energy park to the state and national grid	M	RE	40	na	na	na	na	• Bulk renewable energy-dedicated power transmission system expanded • Institutional capacity for renewable energy parks and transmission system developed	62.00	26.83
11	http://www.adb.org/projects/46058-002/main?page-2=1	**China, People's Republic of: Qinghai Delingha Concentrated Solar Power Thermal Project (3075/FY2013):** increase solar power generation using concentrated solar power technology; increase share of renewable energy in the total primary energy consumption	M	RE	25	na	197,000	50	154,446	• 50 MW Qinghai Delingha plant operates reliably delivering designed output (baseline: 0 MW in 2013) • 197 GWh of clean electricity generated annually, thereby avoiding 154,446 tons of CO2 per year by 2017 (baseline: 0 GWh in 2013)	150.00	14.43
12	http://www.adb.org/projects/42916-014/main?page-2=1	**Indonesia: Sarulla Geothermal Power Development Project (7397/3089/FY2013):** increase use of geothermal resources for power generation	M	RE	30	na	2,529,000	320	1,300,000	• Annual electricity production of 2,529 GWh from 2018 onward • Net reduction of 1.3 million tons of CO2 equivalent emissions per year from 2018 onward • Annual corporate tax paid averages at least $20 million per annum • Employment equivalent to 100 full-time skilled or semiskilled jobs provided during operations by 2020 • Women comprise at least 20% of the technical or laboratory and administrative positions during operations by 2020 • Indigenous peoples comprise 20% of the semiskilled labor from the affected area (Pahae Jae and Pahae Julu) and the North Tapanuli Regency during operations by 2020	250.00	220.50

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13	http://www.adb.org/projects/48209-001/main?page-2=1	**India: ACME-EDF Solar Power (3175/FY2014):** increase solar power generation capacity by 20 MW	M	RE	25	na	38,000	20	35,340	• 38,000 MWh generated annually from 2018 onward • 35,340 tons of CO2 avoided annually from 2018 onward • FTE employment of 14 people for operation and maintenance services from 2018 onward	9.79	9.28
14	http://www.adb.org/projects/48209-001/main?page-2=1	**India: ACME-EDF Solar Power (3176/FY2014):** increase solar power generation capacity by 20 MW	M	RE	25	na	38,000	20	35,340	• 38,000 MWh generated annually from 2018 onward • 35,340 tons of CO2 avoided annually from 2018 onward • FTE employment of 14 people for operation and maintenance services from 2018 onward	9.81	9.39
15	http://www.adb.org/projects/48209-001/main?page-2=1	**India: ACME-EDF Solar Power (3177/FY2014):** increase solar power generation capacity by 20 MW	M	RE	25	na	38,000	20	35,340	• 38,000 MWh generated annually from 2018 onward • 35,340 tons of CO2 avoided annually from 2018 onward • FTE employment of 14 people for operation and maintenance services from 2018 onward	9.79	9.28
16	http://www.adb.org/projects/48209-001/main?page-2=1	**India: ACME-EDF Solar Power (3178/FY2014):** increase solar power generation capacity by 20 MW	M	RE	25	na	38,000	20	35,340	• 38,000 MWh generated annually from 2018 onward • 35,340 tons of CO2 avoided annually from 2018 onward • FTE employment of 14 people for operation and maintenance services from 2018 onward	9.81	9.39
17	http://www.adb.org/projects/48209-001/main?page-2=1	**India: ACME-EDF Solar Power (3179/FY2014):** increase solar power generation capacity by 20 MW	M	RE	25	na	38,000	20	35,340	• 38,000 MWh generated annually from 2018 onward • 35,340 tons of CO2 avoided annually from 2018 onward • FTE employment of 14 people for operation and maintenance services from 2018 onward	10.79	10.37
18	http://www.adb.org/projects/48209-001/main?page-2=1	**India: ACME-EDF Solar Power (3180/FY2014):** increase solar power generation capacity by 100 MW	M	RE	25	na	190,000	100	176,700	• 190,000 MWh generated annually from 2018 onward • 176,700 tons of CO2 avoided annually from 2018 onward • FTE employment of 70 people for operation and maintenance services from 2018 onward	50.00	-

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19	http://www.adb.org/projects/46453-002/main?page-2=1	**Cook Islands: Renewable Energy Sector Project (3193/FY2014):** increase solar power generation capacity by 3 MWp	M	RE	25	na	4,870	3	2,930	• By end of 2016: Solar photovoltaic power system of core subprojects (with 780 kW of installed capacity) connected to the existing power grid on Mangaia, Mauke, and Mitiaro islands (2012 baseline: 0%) • By end of 2017: Solar photovoltaic power system of noncore subprojects (2,400 kW) connected to the existing power grid on Atiu, Aitutaki, and Rarotonga islands (2012 baseline: 0%) • By end of 2017: Energy efficiency policy implementation plan is developed (2012 baseline: 0%) • Capacity of OEC and REDD (10 staff in total) for renewable energy technology assessments and tariff setting in private sector-funded projects developed (2012 baseline: 0%) • The updated CIRECIP, which incorporates load demand update, viable renewable technology choice, and least-cost investment plan, developed (2012 baseline: 0%) • Project management support for REDD and TAU to implement core and noncore subprojects (6 in total) completed (2012 baseline: 0%)	11.19	0.73
20	http://www.adb.org/projects/48233-001/main	**Thailand: Chaiyaphum Wind Farm Company Limited (Subyai Wind Power Project) (7435/3219/ FY2014):** increase wind power generation capacity by 81 MW	M	RE	20	na	128,950	81	65,000	• At least 120,000 MWh of wind power delivered to the off-taker per annum (2016–2026) • At least 65,000 tons of carbon dioxide equivalent emissions avoided per annum (2016–2026) • 81 MW wind power capacity commissioned by the first quarter of 2016 • More than 250 people (45 FTE) employed during construction • Local purchase of goods and services amounting to over B1,000 million ($29.5 million) during construction	53.00	51.82
21	http://www.adb.org/projects/48325-001/main	**Philippines: 150-MW Burgos Wind Farm Project (7442/3246/ FY2015):** increase wind power generation capacity by 150 MW	M	RE	20	na	370,000	150	160,113.70	• Approximately 370 GWh of wind power delivered to the grid per year, on average, from 2015 (2012 baseline: 75 GWh per year) • 150 MW wind power capacity commissioned by the first quarter of 2015	20.00	19.60

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22	http://www.adb.org/projects/48423-001/main	**Philippines: Tiwi and Makban Geothermal Power Green Bonds Project (7551/3266/ FY2015):** involves refinancing of capital expenditure (including acquisition and plant rehabilitation) and ongoing operation and maintenance in Tiwi and Makban, two major geothermal power generation complexes in Luzon	M	RE	na	na	na	na	na	• Full subscription of up to P10.7 billion of peso-denominated Tiwi–MakBan green project bonds in the third quarter of 2015 (2015 baseline: N/A) • Climate bond certificate application issued by fourth quarter 2015 (2015 baseline: N/A) • ADB public knowledge product disseminated by 2016 (2015 baseline: N/A) • Implement risk-sharing agreement with at least one coguarantor by third quarter of 2015 (2015 baseline: N/A)	40.64	38.47
23	http://www.adb.org/projects/49263-001/main	**Thailand: Northeastern Thailand Wind Power Project (7462/3366/ FY2015):** increase wind power generation and diversify electricity generation mix	M	RE	20	na	411,000	260	222,000	• Wind power facilities (including transmission line and substation) with 260 MW of capacity commissioned by the second quarter of 2018 • Employment for more than 250 people generated during construction by 2018 • Local purchase of goods and services amounts to more than B3,000 million ($82 million) during construction	157.50	-
24	http://www.adb.org/projects/42016-013/main?page-2=1&page-3=1	**China, People's Republic of: Qinghai Rural Water Resources Management (2738/FY2011):** increase water use efficiency, convert existing lift irrigation to gravity irrigation, improve agricultural extension services, and empower farmer associations for irrigated agricultural service and management	M	EE	--	49,410	na	na	43,649	• Spring wheat yield increased from 4.6 t/ha in 2009 to 5.7 t/ha by 2016, and winter wheat yield increased from 5.8 t/ha in 2009 to 7.2 t/ha by 2016 • High-value crops diversified on additional 3,000 ha by 2016 • Irrigation water use efficiency increased from 35% in 2009 to 56% by 2016 • Gravity irrigation cover increased from 26% to 89% of the irrigated areas in project countries • Average operation and maintenance cost including electricity reduced from CNY 0.168/m3 for lift irrigation to CNY 0.033/m3 for gravity irrigation	45.32	20.36

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25	https://www.adb.org/projects/50248-001/main	**Cambodia: Sunseap Asset (Cambodia) Co. Ltd. (Cambodia Solar Power) (7498/3495/FY2016):** The project is the first utility-scale solar power plant in Cambodia, and the first competitively tendered renewable energy independent power producer project in the country. It is a build–own–operate, public–private partnership transaction for a 10-MW solar power plant to be located in Bavet city in Svay Rieng Province, about 150 kilometers from the capital Phnom Penh.	M	RE	25	na	14,000	10	9,500	• 10 MW of solar power capacity commissioned by July 2017 • 5.5-kilometer transmission line connecting the plant to the substation completed by June 2017 • More than 14 GWh of power dispatched to Electricité du Cambodge per annum by 2018 • Annual amount of emissions reductions achieved 9,500 metric tons of carbon dioxide equivalent on average during the first 10 years of operation • Number of FTE jobs provided during operation phase amount to at least 10 by 2018 • Direct contribution (corporate tax) to government revenues amounts to at least $25,000 equivalent per annum by 2023	3.60	-
26	https://www.adb.org/projects/50156-001/main	**Indonesia: PT Supreme Energy Muara Laboh (Muara Laboh Geothermal Power) (3487/FY2016):** The project will develop geothermal steam resources through production and injection facilities in the Liki Pinangawan Muaralaboh concession area and construct, operate, and maintain a single power generation unit with a total capacity of approximately 80 MW.	M	RE	30	na	630,000	80	471,240	• Total installed electricity generation capacity of project increased to 80 MW • Electricity generated and delivered to off-taker increased to 630 GWh per year • Annual emission reductions achieved amount to 471,240 metric tons of carbon dioxide equivalent • Number of jobs provided during operation amount to at least 190	70.00	-
27	https://www.adb.org/projects/50195-001/main	**India: ReNew Power Ventures Private Limited (ReNew Clean Energy Project) (FY2016):** ADB will provide funding to seven SPVs established by ReNew for the purposes of developing 709 MW of solar and wind projects in the states of Andhra Pradesh, Gujarat, Jharkhand, Karnataka, Madhya Pradesh, and Telangana.	M	RE	wind (20)/ solar (25)	na	1,400,000	709	1,200,000	• 398 MW of solar capacity commissioned by 2018 • 311 MW of wind capacity commissioned by 2017 • 1,400 GWh generated annually • 1.2 million tons of CO2 avoided annually • Number of jobs provided during operation amount to at least 200 • Direct contribution (corporate tax) to government revenues amounts to an average of $11.6 million per year, during project life	194.60	-

#	Link to More Information	Project Name (Number/Year Loan Approved and Description)	A/M[a]	RE or EE	Project Life (Years)[b]	Annual Energy Savings (MWh)[b]	Annual Energy Produced (MWh)[b]	Renewable Capacity Added (MW)[b]	Annual Greenhouse Gas Emission Avoided (Tons of CO2eq)[b]	Target Results[b]	Committed Amount (US$ mil)	Allocated Amount (US$ mil)[c]
28	https://www.adb.org/projects/documents/tha-grid-parity-rooftop-solar-project-rrp	**Thailand-Thai-Sunseap Asset company Limited (Grid Parity Rooftop Solar) (7494/3490/FY2016):** The project involves the rollout of multiple solar photovoltaic installations, each with a capacity ranging from 400 kWp to 10 MWp, on rooftops or elsewhere on the premises of commercial and/or industrial buildings owned or leased by host companies in thailand up to an aggregate capacity of 100 MW and will be installed with no upfront cost to the host companies.	M	RE	25	na	120,000	100	61,056	• 100 MW of solar panels installed • More than 120,000 MW-hours of solar power generated annually • 61,056 tons of carbon dioxide emissions avoided annually • 15 FTE local jobs created during operation	43.56	-
29	https://www.adb.org/projects/50200-001/main	**Pakistan: Triconboston Consulting Corporation (Private) Limited (Triconboston Wind Power) (7487/3448/FY2016):** The project involves the construction, commissioning, and operation of three 50-MW wind power projects located in Thatta District, Sindh Province, in the south of Pakistan.	M	RE	20	na	520,000	150	380,000	• 150 MW of wind capacity commissioned • 520 GWh generated annually • 380,000 tons of carbon dioxide avoided annually • At least 35 FTE local jobs created during operations	75.00	-
30	https://www.adb.org/projects/49366-001/main	**Thailand: Stumpf Energy Solutions (Thailand) and Stumpf Energy Tranche B (Distributed Commercial Solar Power) (7483/3412/FY2016):** The project involves the rollout of multiple solar photovoltaic installations, each with a capacity ranging from 400 kWp to 5 MWp, on rooftops or elsewhere on the premises of commercial and/or industrial buildings owned or leased by host companies in Thailand up to an aggregate capacity of 100 MW and will be installed with no upfront cost to the host companies.	M	RE	25	na	120,000	100	73,200	• Rollout and operation of multiple solar photovoltaic installations on rooftops or elsewhere on the premises of commercial and/or industrial buildings, with a total capacity of up to 100 MW • 73,200 tons of CO2 avoided annually	47.00	-

#	Link to More Information	Project Name (Number/Year Loan Approved and Description)	A/M[a]	RE or EE	Project Life (Years)[b]	Annual Energy Savings (MWh)[b]	Annual Energy Produced (MWh)[b]	Renewable Capacity Added (MW)[b]	Annual Greenhouse Gas Emission Avoided (Tons of CO2eq)[b]	Target Results[b]	Committed Amount (US$ mil)	Allocated Amount (US$ mil)[c]
31	https://www.adb.org/projects/49241-001/main	**India: Mytrah Energy (India) Limited (Mytrah Wind and Solar Development Project) (7474–7479/3379–84/FY2016):** The transaction being financed comprises 476 MW of wind projects in four SPVs in Rajasthan, Madhya Pradesh, Andhra Pradesh, and Karnataka and 100 MW of solar projects in two SPVs in Telangana and Punjab.	M	RE	wind (20)/ solar (25)	na	1,200,000	576.2	1,185,165	• 241 MW wind farm project commissioned by 2016 • 234 MW of additional wind capacity commissioned by 2017 • 100 MW of solar capacity commissioned by 2016 • 1,200 GWh generated annually • 1,185,165 tons of CO2 avoided annually • At least 64 FTE local jobs and 415 contractual jobs are created for operations • Direct contribution (corporate tax) to government revenues amounts to an average of Rs890 million ($13 million equivalent) annually	175.00	41.25
32	https://www.adb.org/projects/48224-002/main	**India: Demand-Side Energy Efficiency Sector Project (3436/FY2016):** ADB will provide a loan to Energy Efficiency Services Limited (EESL) to support demand-side energy efficiency investments in several Indian states. ADB's loan will cover high-priority areas under EESL's energy services company through the use of (i) more efficient LED municipal street lighting equipped with remote operating technology, (ii) more efficient domestic lighting through replacement of incandescent lights with LEDs, and (iii) more energy efficient agricultural water pumps.	M	EE	LED (11) / pumps (10)	3,800,000	na	na	3,000,000	• Efficiency of street lighting in one or more municipalities in eligible states (including Goa, Maharashtra, Rajasthan, and Telangana) enhanced; 1.5 million streetlights replaced with LED lamps • Efficiency of bulbs, tube lights, and electric fans in households and institutions in utility service areas in eligible states (including Andhra Pradesh, Maharashtra, Rajasthan, and Uttar Pradesh) enhanced; 42 million LED lamps, ceiling fans, and LED tube lights installed • Efficiency of agricultural water pumps in utility service areas in eligible states (including Andhra Pradesh, Karnataka, Maharashtra, and Rajasthan) improved;225,000 inefficient agricultural water pumps replaced with more efficient models • Electricity consumption in subproject areas reduced by 3,800 GWh per annum • Additional aggregate greenhouse gas emissions reduced by 3 million tCO2eq per year	200.00	-

#	Link to More Information	Project Name (Number/Year Loan Approved and Description)	A/M[a]	RE or EE	Project Life (Years)[b]	Annual Energy Savings (MWh)[b]	Annual Energy Produced (MWh)[b]	Renewable Capacity Added (MW)[b]	Annual Greenhouse Gas Emission Avoided (Tons of CO2eq)[b]	Target Results[b]	Committed Amount (US$ mil)	Allocated Amount (US$ mil)[c]
33	https://www.adb.org/projects/49056-002/main	**Pakistan: Access to Clean Energy Investment Program (3436/FY2016):** The project involves (i) expanding access to renewable energy, notably micro-hydropower plants in rural off-grid areas of , and decentralized solar plants for education and primary health care facilities in Khyber PakhtunKhwa and Punjab; (ii) providing women and girls with increased opportunities to obtain energy services and benefits; (iii) enhancing institutional capacity to foster sustainability; and (iv) promoting public sector energy efficiency in Punjab.	M	RE & EE	25	na	149,300	182	74,800	• By 2021, power generation capacity from clean energy sources is increased by 182 MW • By 2021, at least 26,587 sites have renewable energy-based power plants installed • By 2021, girls' schools account for at least 30% of schools with solar plant installed • By 2021, households headed by women account for at least 7% of target households that are newly connected to electricity • By 2021, 500 PHFs used by women for delivery or antenatal care are equipped with solar plants. • By 2021, 3,000 women are trained to equip them in using energy benefits • By 2019, energy audits are conducted on 100% of identified public sector buildings and a model net-zero energy building is constructed	247.00	-
										Total committed and allocated for renewable energy and energy efficiency	**2,638.28**	**744.58**

ADB = Asian Development Bank, CO2 = carbon dioxide, EE = energy efficiency, FTE = full-time equivalent, GHG = greenhouse gas, GWh = gigawatt-hours, kWp = kilowatt peak, LED = light emitting diode, MSW = municipal solid waste, MW = megawatt, MWh = megawatt-hour, MWp = megawatt peak, RE = renewable energy, SPV = special purpose vehicle, WTE = waste to energy.

[a] Column indicates whether the project aims to mitigate climate change (M) or adapt to climate change (A).

[b] "--" means not measured or not reported for this project and "na" means not applicable. Expected impacts or results are based on ex-ante estimates. GHG emission reductions presented in this report use the multilateral development banks' harmonized approach to greenhouse gas accounting.

[c] "-" means no disbursements as of 31 December 2016.

B. Sustainable Transport
As of 31 December 2016

#	Link to More Information	Project Name (Number/Year Loan Approved and Description)	A/M[a]	Target Results[b]	Committed Amount (US$ mil)	Allocated Amount (US$ mil)[c]
1	http://www.adb.org/projects/43441-013/main?page-2=1	**Turkmenistan: North–South Railway (2737/FY2011):** improve accessibility, increase regional trade, and contribute to economic growth and the development of an integrated and efficient railway system in the region	M	• Total national transit tonnage increased to 6 million tons (2008 baseline: 3 million tons) • About 1.6 million tons of minerals transported on the project railway in 2015 • Performance tracking system developed for periodic inspection, supervision, and testing • CO2 emissions reduced to 26,800 tons by 2020 (2008 baseline: estimated at 37,000 tons)	125.00	44.33
2	http://www.adb.org/projects/40080-013/main?page-2=1&page-3=1	**Vietnam: Ha Noi Metro Rail System (Line 3: Nhon-Ha Noi Station Section) (2741/FY2011):** facilitate public transport connectivity, greatly enhance access in five districts of Ha Noi, and be an important integral part of an improved public transport system, which aims to achieve increased public modal share through low-carbon transport that reduces greenhouse gas emissions	M	• Peak loading of 785,000 passenger-km per day and 5,800 passengers per hour per direction on line 3 by 2020 • Weighted average travel time per passenger along the project corridor reduced by 25% from 2011 baseline level of 52 minutes by 2020	293.00	25.44
3	http://www.adb.org/projects/43332-043/main	**China, People's Republic of: Railway Energy Efficiency and Safety Enhancement Investment Program, Tranche 3 (2765/FY2011):** improves energy efficiency, environmental protection and safety in PRC railways	M	• Energy efficiency, environmental protection, and safety enhancement equipment installed • Safety audit of a nominated railway administration completed • Capacity building provided	250.00	212.90
4	http://www.adb.org/projects/36330-023/main?page-3=1	**India: Railway Sector Investment Program, Tranche 1 (2793/FY2011):** improve transport system and greater mobility through an efficient, safe, reliable, and environment-friendly railway system.	M	• Expanded physical infrastructure and enhanced efficiency of infrastructure use • Improved operational efficiency • Implementation support provided to Ministry of Railways for mitigation and carbon credit activities	150.00	82.22
5	http://www.adb.org/projects/42169-013/main?page-3=1&page-4=1	**Bangladesh: Greater Dhaka Sustainable Urban Transport Project (2862/FY2012):** provides a holistic solution for integrated urban mobility through an energy efficient sustainable urban transport system in Gazipur City Corporation, which forms part of north Greater Dhaka	M	• Project saves average 40,000 tCO2 equivalent/year (versus without-project scenario) • Air pollutants (PM10) annual level decreases by 20% (2006 baseline: 76.72 µg/m3) • Gazipur City Corporation walkability index rating improves from 39 (2010: baseline) to 60 out of 100 • Residents' positive perception of public transport and urban life quality improves by 50% from 2012 baseline • BRT achieves 100,000 passengers/day ridership (at least 30% women) in first year of operation • Modal share of public transport increases from 40% (2011 baseline) to 50%	100.00	0.91
6	http://www.adb.org/projects/39256-024/main	**Mongolia: Urban Transport Development Investment Program, Tranche 1 (2934/FY2012):** increase use of bus rapid transit system that reduces traffic congestion, travel time, fuel use, and excessive vehicle emissions including greenhouse gases	M	By 2020: • Bus travel time in BRT corridors is decreased by 30% during peak hours in the central business district compared to 2011. • Traffic delay is decreased by 30% during peak hours at major road intersections in BRT corridors compared to 2011. • Traffic accidents and casualties are reduced by 15% compared to 176 fatalities and 515 injuries in 2010.	29.70	0.05

#	Link to More Information	Project Name (Number/Year Loan Approved and Description)	A/M[a]	Target Results[b]	Committed Amount (US$ mil)	Allocated Amount (US$ mil)[c]
7	http://www.adb.org/projects/39500-033/main?page-2=1	**Viet Nam: Ho Chi Minh City Urban Mass Rapid Transit Line 2 Investment Program-Tranche 2 (2956/FY2012):** establish a sustainable urban transport system for Ho Chi Minh City including integration of MRT and public bus system to improve the urban environment along the MRT2 corridor and reduce greenhouse gas emissions	M	• Construction of the first stage of MRT Line 2 completed, from Ben Thanh to Tham Luong with 10 stations and the remaining depot site works, including twin bored tunnels, underground stations, elevated station, transition, viaduct, spur line, track work, and third rail.	500.00	2.37
8	http://www.adb.org/projects/45023-002/main?page-2=1&page-3=1	**China, People's Republic of: Hubei–Yichang Sustainable Urban Transport Project (3014/FY2013):** improve overall traffic flow and reduce congestion and associated emissions as well as noise level along the main corridor in the city center by building a BRT corridor including BRT depots, improve provision for pedestrian and bicycles facilities, establish parking management plan, and other traffic demand management measures	M	By 2018: • Bus traffic speed increased to 25 km/h from 15 km/h in 2011 on BRT corridor • Passenger travel time reduced to 10 minutes on average, from 20 minutes in 2011 • Freight travel time between inland ports and logistics centers reduced by 20% from 2011 • Pass-dam transshipment freight travel time to logistics centers reduced to 1 hour, from 2 hours in 2011	107.60	87.63
9	http://www.adb.org/projects/46417-001/main?page-2=1&page-3=1	**India: Jaipur Metro Rail Line 1- Phase B Project (3062/FY2013):** provide mass rapid transit capacity for the city's major mobility corridors, aiming to reverse the rising shift to private cars and achieve a vision of an improved public transport system in Jaipur—optimizing general mobility, enhancing quality of life, and making the city more pleasant to live and work in	M	• Average daily number of passengers using Line 1-Phase B reaches 126,000 in the first year of operation (2018–2019) • Underground rail infrastructure of 2.3 km and two stations completed by 2018	176.00	40.35
10	http://www.adb.org/projects/43332-053/main	**China, People's Republic of: Railway Energy Efficiency and Safety Enhancement Investment Program, Tranche 4 (3082/FY2013):** provide significant environmental and safety benefits by introducing environmental protection and railway safety enhancement equipment such as anti-seismic bridge bearings, enhanced railway fasteners, heavy duty switches, and signaling system facilities	M	• Transport capacity expanded in the southwestern PRC to 470 billion ton-km for freight and 150 billion passenger-km for passengers in 2020 • Cost of travel reduced from 35 fen/km in 2008 to 15 fen/km in 2020 • A 20% reduction in rate of accidents per billion traffic by 2020 from 2008	180.00	85.49
11	http://www.adb.org/projects/32234-053/main	**Bangladesh: Railway Sector Investment Program, Tranche 3 (3097/FY2013):** improve railway transport capacity in the mainline network of Bangladesh Railway	M	• Number of daily passenger trains increased by 10 (2011 baseline: 289) • Number of annual passengers increased by 10% (2011 baseline: 66 million)	100.00	72.65
12	http://www.adb.org/projects/43332-054/main	**China, People's Republic of: Railway Energy Efficiency and Safety Enhancement Investment Program-Tranche 5 (3109/FY2014):** support the development of a sustainable, energy-efficient, safe, reliable, affordable, and environment-friendly railway system in the PRC by procurement and installation of railway electrification system, railway electric power supply system, track safety operation and maintenance equipment, enhanced railway fasteners, antiseismic bridge bearings, railway telecommunication system, and railway signaling system	M	• Transport capacity expanded in the southwestern PRC to 470 billion ton-km for freight and 150 billion passenger-km for passengers in 2020 • Energy consumption on the PRC railways per unit of revenue is reduced by 23% from 2009 to 2020	170.00	35.21
13	http://www.adb.org/projects/46168-001/main?page-2=1	**Bangladesh: South Asia Subregional Economic Cooperation Railway connectivity: Akhaura–Laksam double track (3169/FY2014):** increase the capacity of the Dhaka–Chittagong corridor by completing double tracking on the entire corridor, which accounts for more than 40% of all passenger journeys by railway in Bangladesh and upgrading and reconstruction of the existing track	M	• Number of daily passenger trains from Dhaka to Chittagong increased to 17 (2013 baseline: 14 trains per day and direction) • Journey time of trains between Akhaura and Laksam reduced by 20% (2013 baseline: 77 minutes)	400.00	26.85

#	Link to More Information	Project Name (Number/Year Loan Approved and Description)	A/M[a]	Target Results[b]	Committed Amount (US$ mil)	Allocated Amount (US$ mil)[c]
14	http://www.adb.org/projects/40080-025/main?page-2=1	**Viet Nam: Ha Noi Metro Line System Project (Line 3: Nhon-Hanoi Station Section) (Additional Financing) (3363/FY2015):** facilitate public transport connectivity, greatly enhance access in five districts of Ha Noi, and be an important integral part of an improved public transport system, which aims to achieve increased public modal share through low-carbon transport that reduces greenhouse gas emissions	M	• Peak loading of 785,000 passenger-km per day and 5,800 passengers per hour per direction on line 3 by 2020 • Weighted average travel time per passenger along the project corridor reduced by 25% from 2011 baseline level of 52 minutes by 2020	59.00	-
15	http://www.adb.org/projects/49094-001/main?page-2=1	**Bangladesh: Railway Rolling Stock Project (3301/FY2015):** Increase railway transport capacity in the main line network of Bangladesh Railway	M	• Number of daily passenger trains increased by 10 (2011 baseline: 289) • Number of annual passengers increased by 10% (2011 baseline: 66 million)	200.00	-
16	https://www.adb.org/projects/32234-063/main	**Bangladesh: Railway Sector Investment Program, Tranche 4 (3376/FY2016):** to improve efficiency and safety of railway transport in Bangaladesh	M	• Number of daily passenger trains in Tongi-Bhairab Bazar increased by 25% (2011 baseline: 44) • Number of annual passengers increased by 10% (2011 baseline: 66 million)	50.00	22.71
17	https://www.adb.org/projects/46452-003/main	**Bangladesh: South Asia Subregional Economic Cooperation Chittagong–Cox's Bazar Railway Project, Phase 1, Tranche 1 (3438/FY2016):** will support the construction of new 102-km Dohazari-Cox's Bazar railway corridor in southeastern Bangladesh, and strengthen the capacity of the railway sector in project management and implementation to improve the national and subregional railway network	M	By 2024: • 10 passenger trains operate daily between Chittagong and Cox's Bazar (2016 baseline: no train services) • 2.9 million annual passengers transported between Chittagong and Cox's Bazar (2016 baseline: 0) • Cox's Bazar district connected to the national and subregional railway network (2016 baseline: not connected)	210.00	-
18	https://www.adb.org/sites/default/files/project-document/200246/47279-003-pda.pdf	**Pakistan: Karachi Bus Rapid Transit Project Project Design Advance (6008/FY2016):** provide a holistic solution for integrated urban mobility through a BRT	M	• Improved public transport in Karachi, benefiting a population of 1 million • This PDA will finance consulting services and will result in a procurement-ready project	9.70	-
19	https://www.adb.org/projects/48289-003/main	**Pakistan: Peshawar Sustainable Bus Rapid Transit Corridor Project Project Design Advance (6009/FY2016):** provide urban mass transit, a BRT, to improve mobility and urban public space	M	• Improved public transport in Peshawar, directly benefiting a population of at least 0.5 million • The PDA will result in a procurement-ready project • PDA covers consulting services for (i) engineering, procurement, and construction management; (ii) the operational design and business model; and (iii) project management, coordination, and capacity building	9.80	-
				Total committed and allocated for sustainable transport[d]	**3,119.80**	**739.11**

CO2 = carbon dioxide, BRT = bus rapid transit, km = kilometer, km/h = kilometers per hour, PDA = project design advance, PRC = People's Republic of China.

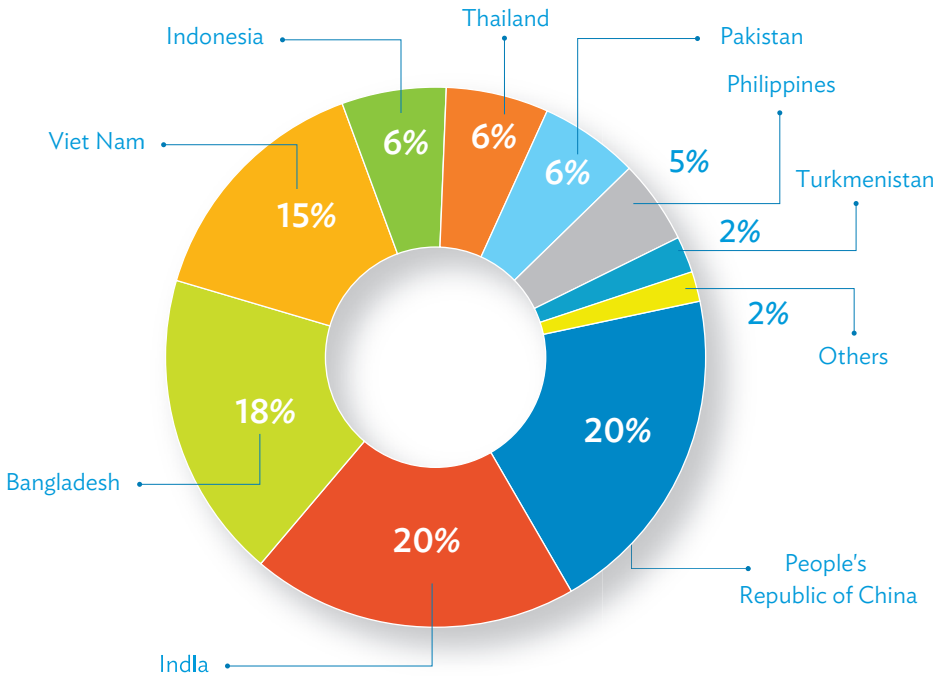
[a] Column indicates whether the project aims to mitigate climate change (M) or to adapt to climate change (A).

[b] Expected impacts/results are based on ex-ante estimates. Greenhouse gas emission reductions presented in this report use the IFI harmonized approach to greenhouse gas accounting.

[c] "-" means no disbursements as of 31 December 2016. 0.00 is less than $0.01 million.

[d] Sustainable transport have been revised to include total committed amount (not just the clean energy component as in previous report), consistent with the green bond framework.

Green Bond Commitments by Country



Green Bond Commitments by Sector