Grant Aid Projects/Standard Indicator Reference (Energy)

Development strategic objectives (*)	Mid-term objectives	Sub-targets of mid-term objectives	Types of infrastructure	Standard indicator examples		Policy and methods for setting indicators	Examples of project objectives (project image)	Country name	Project name	FY of evaluation
				Operation indicators	**Basic indicators** Maximum output (MW), electricity generated (kWh) Plant capacity factor (%) Gross thermal efficiency (generating-end) (%) A reduction in fuel consumption CO_2 reduction ratio (%) (per unit of electricity generated) SO_2 reduction ratio (%) (per unit of electricity generated) **Supplementary indicators** Availability factor (%) Auxiliary power ratio (%) The percentage of electricity generated by the generator provided by the grant aid project out of the total amount of electricity generated (%) Installed capacity of base load generation facilities Reserve margin	· Plant capacity factor (%) = Electricity generated per year / (rated output × hours per year) × 100 <To assess if the power plant is adequately operated> · Gross thermal efficiency = (Gross electricity generated per year × 860) / (fuel consumption per year × heat release value of the fuel) × 100 (To check the levels of performance retention and energy conservation levels) · Availability factor (%) = Operating hours per year / hours per year) × 100 <To confirm the relevance of the original operation plan> · Auxiliary power ratio (%) = (Auxiliary electricity consumption per year / gross electricity generated) × 100 <To check the levels of performance retention> · Net electric energy production = (Rated output × hours per year × Plant capacity factor) or (Gross electricity generated − auxiliary electricity consumption) <To check if the assumed amount of electricity was actually generated > · Capacity of base load generation facilities: The capacity of power sources that generate the minimum required amount of electricity 24 hours a day except for inspection times · CO_2 reduction ratio (%) (per unit of electricity generated) = (Emissions from the existing plant − emissions after the project) / (emissions from the existing plant) × 100 · SO_2 reduction ratio (%) (per unit of electricity generated) = (Emissions from the existing plant − emissions after the project) / (emissions from the existing plant) × 100 · Dust reduction ratio (%) (per unit of electricity generated) = (Emissions from the existing plant − emissions after the project) / (emissions from the existing plant) × 100 · Fuel reduction ratio (%) (per unit of electricity generated) = (Fuel consumption at the existing plant − fuel consumption after the project) / (fuel consumption at the existing plant) × 100	In South Tarawa which is the capital city of the Republic of Kiribati, the existing power generation facilities were extremely deteriorated. A decline in their power generation capacity led to a notable supply capacity shortage and decline in the reliability in electricity supply. The distribution facilities were also in a very poor condition: they had more than a 20% power loss in addition to suffering from deterioration and a distribution capacity shortage. In order to improve the situation urgently, the project aimed to augment the power generation facilities and improve the distribution facilities.	Kiribati	The Project for Upgrading of Electric Power Supply in Tarawa Atoll (Phase II)	2009
							The objective of the project was to reduce electricity shortages in the country by providing two 5 MW diesel generators for the Aimeliik Power Plant on Babeldaob Island.	Palau	The Project for Enhancing Power Generation Capacity in the Urban Area in the Republic of Palau	2012
							The objective of the project was to ensure a highly reliable, economical, and stable power supply in Dili through the rehabilitation of power generation facilities at Comoro Power Station.	East Timor	The Project for Rehabilitation of Power Supply in Dili	2009
							In South Tarawa which is the capital city of the Republic of Kiribati, the existing power generation facilities were extremely deteriorated. A decline in their power generation capacity led to a notable supply capacity shortage and decline in the reliability in electricity supply. The distribution facilities were also in a very poor condition: they had more than a 20% power loss in addition to suffering from deterioration and a distribution capacity shortage. In order to improve the situation urgently, the project aimed to augment the power generation facilities and improve the distribution facilities.	Kiribati	The Project for Upgrading of Electric Power Supply in Tarawa Atoll	2006
1. Energy supply with low-cost, low-carbon, and low-risk	1-1. Develop a power source to realize a low-carbon society	1-1-1. Introduce highly efficient thermal power	Thermal power	**Effect indicators**	**Basic indicators** Net electric energy production (sending-end) (annual) (MWh/year) Outage hours for every cause (hours/year or days/year) A reduction in fuel costs (yen) Electricity tariff (USD/kWh) Dust reduction ratio (%) (per unit of electricity generated) Fuel reduction ratio (%) (per unit of electricity generated) Values checked by environmental monitoring (SO_2, NO_2, suspended particles) **Supplementary indicators** Electricity consumption Electric energy sold (kWh) The number of households consuming electricity (households) The number of individual contractors The number of commercial contractors The number of contracting		The objectives of the project were to recover the maximum output, improve the thermal efficiency and durability of Units 3 and 4 of steam turbine power generation facilities of the Gresik Thermal Power Plant located to the northwest of Surabaya in East Java Province, by rehabilitating the turbine system, replacement of the existing turbine rotor blades, the repair of feed pumps, and other measures.	Indonesia	The Project for Rehabilitation of Gresik Steam Power Plant Units 3 and 4	2009
							The objectives of the project was to recover the maximum output, reduce operating costs and contribute to reducing environmental impacts by rehabilitating the parts which had deteriorated through aging and completing the modification of power generation facilities into a gas-fired model at Units 1 and 2 of the Gresik Steam Power Plant which were constructed in 1975 and 1977 using a Japanese ODA loan. The modification of power generation facilities had been started independently by PT PLN (Persero), but it could not complete the work.	Indonesia	The Project for Rehabilitation of Gresik Steam Power Plant Units 1 and 2	2005
							Electricity for Siem Reap (the capital of Siem Reap Province) and for the neighboring areas had been supplied by four diesel generators given through	Cambodia	The Project for Expansion of Electricity	2007

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						government agencies The increase rate of the number of contractors (%) Outage times (times/year) Outage hours per year A reduction in voltage drops		grant aid from the former Soviet Union and four portable diesel generators leased by a domestic private business. However, the supply capacity of the leased generators and the generators made in the former Soviet Union which can only operate for a short time could not meet the increasing demand and there was a concern about a serious electricity shortage. Therefore, the Cambodian government requested that the Japanese government conduct the grant aid project in order to reduce electricity shortages in Siem Reap.		Supply Facilities in Siem Reap	
1. Energy supply with low-cost, low-carbon, and low-risk	1-1. Develop a power source to realize a low-carbon society	1-1-2. Develop hydropower	Hydropower		**Operation indicators**	**Basic indicators** Plant capacity factor (%) Comprehensive circulating efficiency (%) Maximum output (MW), electric energy generated (GWh) **Supplementary indicators** Operating hours (hours) Hydro utilization factor (%) Annual total volume of inflow to the reservoir (m^3/year) Volume of sedimentation in the reservoir (m^3/year) The percentage of electricity generated by the generator subject to the project out of the total amount of electricity generated by the power plant (%) Expected life span of the equipment (years)	· Plant capacity factor (%) = Electricity generated per year / (rated output × hours per year) × 100 <To assess if the plant performance has been maintained and exhibited> · Comprehensive circulating efficiency (%) = (Net electric energy) ÷ (electricity used for pumping) × 100 <To assess if the power plant performance has been maintained> ·Annual total volume of inflow to the reservoir: Annual total volume of inflow to the dam reservoir from rivers <Primary indicator to show dam control and drought conditions> · Hydro utilization factor = (Net electric energy) ÷ (possible power generation in a given year) × 100	The Bajina Basta Pumped Storage Hydroelectric Power Plant was constructed using a loan from the then Export-Import Bank of Japan and started commercial operations in 1982. However, due to the economic blockade from 1992 onwards, normal inspections and repairs could not be carried out similarly to other power plants. Over the past 10 years, the reversible pump-turbine and the generator-motor (which are the main parts of power generation facilities) have been damaged and have deteriorated, and it was greatly affecting the operation of the power generation facilities. The objectives of the project were to improve the electricity supply in the country and to contribute to the stabilization and the improvement of civic life, social and economic activities, by rehabilitating the power generation facilities and making them reliable.	Serbia	The Project for Rehabilitation of the Bajina Basta Pumped Storage Hydroelectric Power Plant (2nd term)	2008
					Effect indicators	**Basic indicators** Net electric energy production (sending-end) (GWh/year) Electrification rate of households (%) Electricity consumption (GWh) Unplanned outage hours (hours or days/year) Planned outage hours (hours) CO_2 emissions reduction effect (tons/year) **Supplementary indicators** A reduction in fossil fuel consumption (tons/year) The number of failure cases (cases) Annual total income from electricity generation Maintenance costs		The objectives of the project were to restore the performance and reliability of electricity supply as well as to improve skills of technicians in charge, by rehabilitating the significantly deteriorating Unit No. 1 and Unit No. 2 of the Nam Ngum I Hydropower Station (located in Keo Oudom District, Vientiane Province) and their associated common equipment which were essential to their operation.	Laos	The Project for Rehabilitation of the Nam Ngum I Hydropower Station	2009
		1-1-3. Develop geothermal power	Geothermal power		**Operation indicators**	**Basic indicators** Maximum output (MW) Plant capacity factor (%) Gross thermal efficiency (generating-end) (%) Outage times for every cause **Supplementary indicators** Availability factor (%) Auxiliary power ratio (%) Outage times for every cause (times/year)					
					Effect indicators	**Basic indicators** Net electric energy production (sending-end) (annual) (MWh/year) Maximum output (actual value) CO_2 emissions reduction effect					
		1-1-4. Develop new	Renewable	Photovoltaic	**Operation indicators**	**Basic indicators**		· The objectives of the project were to increase	Tajikistan	The Project for	2009

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		energy sources/ renewable energy	energy	systems		Unplanned outage hours (hours or days/year) Plant capacity factor (%) Net electric energy production (sending-end) (MWh/year) Maximum output		power generation capacity, diversify energy sources and raise Tajikistan nationals' awareness about the utilization of renewable energy, by procuring photovoltaic power generation-related equipment and supporting the training of engineers, in the central district of the capital city Dushanbe. Thereby, the project aimed to contribute to Japan's initiatives in promoting both developed and developing countries' efforts on climate change measures.		Introduction of Clean Energy by Solar Electricity Generation System	
								· The objectives of the project were to increase power generation capacity, diversify energy sources and raise Pakistani nationals' awareness about the utilization of renewable energy, by procuring photovoltaic power generation-related equipment and supporting the training of engineers, in Islamabad. Thereby, the project aimed to contribute to Japan's initiatives in promoting both developed and developing countries' efforts on climate change measures.	Pakistan	The Project for Introduction of Clean Energy by Solar Electricity Generation System	2009
					Effect indicators	**Basic indicators** CO_2 emissions reduction effect (tons/year) Electrification rate of households (%) A reduction in electricity charges **Supplementary indicators** A reduction in fossil fuel consumption (tons/year) Annual amount of electric energy imported		· The objectives of the project were to increase power generation capacity, diversify energy sources and raise Marshallese nationals' awareness about the utilization of renewable energy, by procuring photovoltaic power generation-related equipment and supporting the training of engineers, in the capital city Majuro and its suburbs. Thereby, the project aimed to contribute to Japan's initiatives in promoting both developed and developing countries' efforts on climate change measures.	The Marshall Islands	The Project for Introduction of Clean Energy by Solar Electricity Generation System	2009
				Solar thermal systems	**Operation indicators**	**Basic indicators** Maximum output (MW) Plant capacity factor (%) Outage hours for every cause (human error, machine trouble and regular inspection) (hours/year) **Supplementary indicators** Facility availability factor (%) Gross thermal efficiency (generating-end) (%)		· The objectives of the project were to produce electricity to be supplied to the domestic electricity network and to use solar thermal energy as supplementary energy for power generation in order to reduce the environmental impacts of electricity supply by constructing a 150 MW integrated solar combined cycle power plant in Kuraymat district located about 100 km south of Cairo. Thereby, the project aimed to contribute to economic development and environmental improvement.	Egypt	The Kuraymat Integrated Solar Combined Cycle Power Plant Project (II) [Japanese ODA loan]	2008
					Effect indicators	**Basic indicators** Net electric energy production(sending-end) CO_2 emissions reduction effect (tons/year)					
1. Energy supply with low-cost, low-carbon, and low-risk	1-1. Develop a power source to realize a low-carbon society	1-1-4. Develop new energy sources / renewable energy	Renewable energy	Wind power	**Operation indicators**	**Basic indicators** Plant capacity factor (%) Unplanned outage hours – due to mechanical outage Unplanned outage hours – due to other factors: natural disasters, etc. (hours or days) Planned outage hours (hours or days) **Supplementary indicators** Plant availability factor (%) or operating hours (hours) Maximum output (MW)	· Plant capacity factor = {Annual gross generated output (kWh) / rated output (kW) × annual hours} × 100 · Plant availability factor = {Annual operating hours / annual hours} × 100				
					Effect indicators	**Basic indicators** Net electric energy production (sending-end) CO_2 emissions reduction effect (tons/year) **Supplementary indicators**	· Net electric energy production (sending-end) = Gross electric energy production (generating-end) (kWh) – plant auxiliary electric consumption (kWh) (the annual total)				

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					A reduction in fossil fuel consumption (tons/year)					
	1-2. Efficient power system	1-2-1. Improve the electric power system	Transmission facilities	**Operation indicators**	**Basic indicators** Availability factor **Supplementary indicators** Voltage drop at end user (%) Electricity supply at sending-end (GWh) Transmission loss (%) Transmission and transformation loss (%) Voltage	· Availability factor (%) = Maximum load (MW) / {rated capacity of the facility (MVA) × power factor} <To assess if the facility is properly operated> · Voltage drop at end user = Maximum voltage drop (V) / standard voltage (V) <To assess if the quality is maintained at the end user> · Electricity supply: Annual electric energy transmitted from the target electrical transformer <To confirm that the transmission lines and the substation are adequately utilized> · Transmission and transformation loss (%) = {Electricity supply (kWh) - electricity consumption at the substation (kWh) - receiving electric energy (kWh)} / electricity supply (kWh) <To confirm that the transmission lines and the substation are adequately utilized> · SAIDI = Sum of all customer outage hours / total number of customers served · SAIFI = Total number of customer outage / total number of customers served	The objective of the project was to ensure a stable electricity supply for the residents of the central area of the Kilimanjaro Region, by improving (e.g. updating and constructing) the electrical infrastructure, including substations and equipment for transmission and distribution facilities, in the area.	Tanzania	The Project for Rehabilitation of Substation and Transmission Line in Kilimanjaro Region	2010
				Effect indicators	**Basic indicators** Accidental outage hours per user (min/year) SAIDI (System Average Interruption Duration Index) SAIFI (System Average Interruption Frequency Index) **Supplementary indicators** Outage times Outage frequency (times/day) Accidental outage hours (hours/month) Hours of supply restrictions (hours/month)		Outages were frequently occurring in Dar es Salaam due to the excess load on deteriorated electricity supply facilities in the city. In order to solve the problem, there was a need for improvement and rehabilitation of the equipment for transmission, distribution and transformation as well as construction of new substations. In addition, the project aimed to promote socio-economic development by enabling the supply of electricity to potential users who had to wait for electricity supply due to a capacity shortage.	Tanzania	The Project for Power Supply Expansion in Dar es Salaam (Phase 2) (a project evaluated by the Ministry of Foreign Affairs)	2005
							The objective of the project was to ensure a more stable supply of electricity to the residents of Unguja Island in Zanzibar, by improving (e.g. updating and constructing) the electrical infrastructure, including substations and equipment for distribution facilities, on the island.	Tanzania	The Project for Reinforcement of Power Distribution in Zanzibar Island	2010
		1-2-2. Improve distribution network	Distribution facilities	**Operation indicators**	**Basic indicators** Peak load (kW) **Supplementary indicators** Installed capacity of the electricity supply facilities (MW)	· Accidental outage hours per user (min/year) = Total outage hours per year (min) / the number of users · SAIDI = Sum of all customer outage hours / total number of customers served · SAIFI = Total number of customer outage / total number of customers served · Distribution loss (%) = Distribution loss (kWh) × 100 / electricity transmitted (kWh) <To grasp the degree of distribution loss reduction> · Index of Progress of Distribution Network Automation: Set the indicator appropriately, considering the staff who engage in the maintenance of distribution cables (the number of persons) and personnel costs. <To grasp the degree of reduction in the number of staff and the personnel cost>	The objective of the project was to supply highly reliable electric power to the center of Katmandu city, by constructing a new substation for distribution lines (K3 substation) and by extending high voltage underground transmission lines from existing substations (Teku and Siuchatar substations) to the new substation.	Nepal	The Project for the Extension and Reinforcement of Power Transmission and Distribution System in Kathmandu Valley (Phase 3)	2009
				Effect indicators	**Basic indicators** Accidental outage hours per user (min/year) SAIDI (System Average Interruption Duration Index) SAIFI (System Average Interruption Frequency Index) **Supplementary indicators** Accidental outage hours (hours/month) Planned outage hours (hours/year) Unplanned outage hours (hours/year) Distribution loss (%) Distribution loss (MW) Index of Progress of Distribution Network Automation CO_2 emissions reduction effect (tons/year)		The areas subject to the project are important areas in the Phnom Penh metropolitan area, but many parts of the areas had not been electrified. In the electrified parts of the areas, demand had not been met due to capacity shortages and the poor quality of electricity. These problems caused the stagnation of industrial activities, accompanying declines in employment opportunities and unstable public welfare in the areas. In addition, there were large economic losses caused by increasing power loss and maintenance costs. In order to improve the situation, the project aimed to improve and expand the power distribution facilities that are needed to electrify the non-electrified parts of the areas, improve the electricity supply service and reduce power loss.	Cambodia	The Project for Rehabilitation and Upgrading of Electricity Supply Facilities in Phnom Penh (Phase 2)	2005
1. Energy supply with low-cost, low-carbon, and low-risk	1-3. Improve energy access	1-3-1. Extend the power grid	Transmission and distribution facilities	**Operation indicators**	**Basic indicators** Availability factor (%) The number of electrified rural centers or villages The number of households	· Availability factor (%) = Maximum load (MW) / {rated capacity of the facility (MVA) × power factor} <To assess if the facility is properly operated>	The objective of the project was to supply highly reliable electric power to the center of Katmandu city, by constructing a new substation for distribution lines (K3 substation) and by extending high voltage underground transmission lines from	Nepal	The Project for the Extension and Reinforcement of Power	2009

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					electrified (or the electrification rate of households (%)) Installed capacity of the electricity supply facilities (kW) The length of distribution line/cables newly installed (km) **Supplementary indicators** Voltage drop at end user (%) Electricity supply at sending-end (GWh) (kWh) Transmission and transformation loss (%)	· Electrification rate of households (%) = Number of households electrified × 100 / total number of households <To grasp the increased demand> · Voltage drop at end user = Maximum voltage drop (V) / standard voltage (V) <To assess if the quality is maintained at the end user> · Electricity supply: Annual electric energy transmitted from the target electrical transformer <To confirm that the transmission lines and the substation are adequately utilized> · Transmission and transformation loss (%) = {Electricity supply (kWh) - electricity consumption at the substation (kWh) - receiving electric energy (kWh)} / electricity supply (kWh) <To confirm that the transmission lines and the substation are adequately utilized>	existing substations (Teku and Siuchatar substations) to the new substation.		Transmission and Distribution System in Kathmandu Valley (Phase 3)	
							Outages were frequently occurring in Dar es Salaam due to the excess load on deteriorated electricity supply facilities in the city. In order to solve the problem, there was a need for improvement and rehabilitation in the equipment for transmission, distribution and transformation as well as construction of new substations. In addition, the project aimed to promote socio-economic development by enabling the supply of electricity to potential users who had to wait for electricity supply due to a capacity shortage.	Tanzania	The Project for Power Supply Expansion in Dar es Salaam (Phase 2)	2005
							Commewijne District (population 24,000) and Saramacca District (population 15,000) in Suriname, neighbor Paramaribo the capital city and their residential populations are increasing. However, some parts of the districts had no distribution lines, or their power grids were isolated or very unstable. Therefore, the objectives of the project were to ensure the stable supply of electricity to a larger number of residents and to promote the development of local industries, by connecting the power grids of the districts with the one in Paramaribo as well as expanding the distribution networks in the districts.	Suriname	The Project for Expansion of Transmission and Distribution Grid for the Districts Commewijne and Saramacca	2005
							The objective of the project was to achieve a stable supply of electricity to non-electrified areas, by developing transmission networks in the four areas which were designated as priority areas in the rural electrification master plan made by the Uganda government.	Uganda	The Rural Electrification Project	2006
							The objective of the project was to supply electricity to an additional 16,000 residents or so (at the time of the basic design study), by developing transmission and distribution networks in the non-electrified Amansie West District in the Ashanti Region. Thereby, the project was expected to improve the living conditions of local residents through enabling the use of electric appliances in their homes and public facilities. It was also expected that the electricity supply would reduce energy-related expenditures by residents.	Ghana	The Project for Rural Electrification (2nd term)	2008
				Effect indicators	Basic indicators Beneficiary population (people) Supplementary indicators <Indicators related to the electrification of rural centers> The number or percentage of public facilities and business establishments where electric lights were introduced (public facilities: schools (classrooms), health centers, government facilities, streetlights, public markets, etc.) The number of public facilities where PCs were introduced (schools, government facilities, public markets, etc.)		The objective of the project was to ensure a highly reliable, economical, and stable power supply in Dili through the rehabilitation of power generation facilities at Comoro Power Station.	East Timor	The Project for Rehabilitation of Power Distribution Network in Dili	2008
							The objective of the project was to supply electricity to an additional 16,000 residents or so (at the time of the basic design study), by developing transmission and distribution networks in the non-electrified Amansie West District in the Ashanti Region. Thereby, the project was expected to improve the living conditions of local residents through enabling the use of electric appliances in their homes and public facilities. It was also expected that the electricity supply	Ghana	The Project for Rural Electrification (1st term)	2007

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						The number of health centers, etc. where major pieces of equipment were introduced such as refrigerators for storing vaccines and drugs, and equipment for sterilization and disinfection treatments The number of electric pumps installed which will contribute to rural water supply, irrigation, etc. <Indicators related to the electrification of individual households> Power generation capacity (kW) The number of houses where electric lights have been installed		would reduce energy-related expenditures by residents.			
								In Nigeria, the electrification rate in rural areas is very low. In order to supply good quality stable electricity to rural areas in the medium to long term, the government planned to connect rural areas with existing transmission networks and electrify the areas. However, implementation was difficult due to the tight financial situation. In light of the situation, the project procured the materials and equipment for transmission and distribution which were needed to implement its Rural Electrification Projects in five areas with particularly low electrification rates: Awe and Keana in Nasarawa state, Bogoro in Bauchi state, Kashingi in Gombe state, and Damasak in Borno state.	Nigeria	The Project for Rural Electrification (3rd term) (a project evaluated by the Ministry of Foreign Affairs)	2007
								The Nigerian government prioritizes infrastructure development in its national policies. In particular, it places the highest priority on the electricity sector among all types of infrastructure and wants to improve the living conditions of rural residents, improve administrative and public services and develop industry by promoting rural electrification. In order to contribute to the achievement of these goals, the project aimed to electrify non-electrified areas.	Nigeria	The Project for Rural Electrification (1st term) (a project evaluated by the Ministry of Foreign Affairs)	2005
1. Energy supply with low-cost, low-carbon, and low-risk	1-3. Improve energy access	1-3-2. Electrify off-grid communities by utilizing renewable energy	Renewable energy	Photovoltaic power, small hydropower, wind power, etc.	**Operation indicators**	**Basic indicators** The number of electrified rural centers or villages The number of households electrified (or the electrification rate of households (%)) **Supplementary indicators** Installed capacity per electricity supply system (Wp) (photovoltaic power) Unplanned outage hours (hours or days/year) (hydropower)	· Plant capacity factor (%) (hydropower) = (Net electric energy) ÷ (maximum output × hours per year) × 100 · Unplanned outage hours should be calculated for two types of causes: mechanical outage and outage due to other factors (natural disasters, etc.) · Plant capacity factor (%) (wind power) = {Annual gross generated output (kWh) / rated output (kW) × annual hours} × 100	·The objectives of the project were to increase the electrification rate, diversify energy sources and raise Tongan people's awareness about the utilization of renewable energy, by procuring photovoltaic power generation-related equipment and supporting the training of engineers, in parts of the Vava'u Islands and the Tongatapu island group (the electrification of non-electrified areas and outlying islands). Thereby, the project aimed to contribute to Japan's initiatives in promoting both developed and developing countries' efforts on climate change measures.	Tonga	The Project for Introduction of Clean Energy by Solar Home System	2009
						Unplanned outage hours for each type of cause (wind power) Planned outage hours (hours or days) (wind power) Plant capacity factor (%) (hydropower/wind power) Net electric energy production (MWh/year) (hydropower/wind power) Maximum output (hydropower/wind power) Plant availability factor (%) or operating hours (hours) (wind power)	· Plant availability factor = {Annual operating hours / annual hours} × 100 · Net electric energy production = Gross electric energy production (kWh) – plant auxiliary electric consumption (kWh) (the annual total) (wind power)	· The objectives of the project were to reduce electricity imports from China and to stabilize the electricity at power grid terminals by constructing a mini-hydropower plant in Gnod ou District, Phongsaly Province. The project also aimed to contribute to achieving the Laos government's rural electrification goals by increasing the electrification rate of Gnod ou District, Phongsaly Province, through extending distribution cables to surrounding non-electrified villages.	Laos	The Mini-Hydropower Development Project	2012
								· The objectives of the project were to provide reliable power supplies and diversify energy sources in rural regions, by constructing a small hydropower plant and rehabilitating an existing small hydropower plant in Rattanakiri Province in the northeastern part of Cambodia. Thereby, the project aimed to contribute to the social economic development of Cambodia and the reduction of greenhouse gas emissions.	Cambodia	The Project for Construction and Rehabilitation of Small Hydropower Plants in Rattanakiri Province	2012
					Effect indicators	Basic indicators Beneficiary population (people) CO_2 emissions reduction effect (tons/year) Supplementary indicators <Indicators related to the electrification of rural centers> The number or percentage of public		· The objectives of the project were to promote the use of renewable energy and to use the revenues from power generation to augment the Rice Terraces Conservation Fund, by constructing the Likud mini-hydropower plant (maximum output 820 kW) in Haliap barangay in Asipulo municipality, the Province of Ifugao. Thereby, the project aimed to contribute to energy source	The Philippines	The Mini-Hydropower Development Project in the Province of Ifugao	2012

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						facilities and business establishments where electric lights were introduced (public facilities: schools (classrooms), health centers, government facilities, streetlights, public markets, etc.) The number of public facilities where PCs were introduced (schools, government facilities, public markets, etc.) The number of health centers, etc. where major pieces of equipment were introduced such as refrigerators for storing vaccines and drugs, and equipment for sterilization and disinfection treatments		diversification, the local electricity supply and the reduction of greenhouse gas emissions.			
								The objective of the project was to promote the use of renewable energy by constructing micro/mini hydropower plants in the irrigated areas of rural regions in the Philippines, thereby contributing to the diversification of energy sources, the reduction of greenhouse gas emissions and increasing the electricity supply coverage in the areas.	The Philippines	The Micro/Mini Hydropower Development Project (Irrigation)	2012
								The objectives of the project were to promote the use of renewable energy and the efficient management of water treatment stations (a reduction in electricity bought) which are managed by National Autonomous Water and Sewerage Service (SANAA), by constructing micro-hydroelectric power generation plants (total output 430 kW) using unused hydro-energy within the water treatment stations. Thereby, the project aimed to contribute to the economic and social development of Honduras and the reduction of greenhouse gas emissions.	Honduras	The Micro-Hydroelectric Power Generation Project in Metropolitan area of Tegucigalpa	2012