

The Islamic Republic of Pakistan

FY2017 Ex-Post Evaluation of Japanese ODA Loan Project  
“Energy Sector Reform Program” and “Energy Sector Reform Program (II)”

External Evaluator: Juichi Inada, Waseda University

**0. Summary**

The objective of the project is to support the reform of the energy sector, with co-financing from the World Bank and the Asian Development Bank (ADB), by addressing the sector’s structural problems that have led to the deterioration of Pakistan’s financial status and international balance of payments.

The project coincides with the development policy and needs of Pakistan at the time of both appraisal and ex-post evaluation. The project also coincides with Japan’s Official Development Assistance (ODA) policy at the time of the appraisal. As a result of examining the process of formulating the policy matrix in coordination with other donors, no major problems could be found in terms of the appropriateness of the project planning and approach. Therefore, the relevance is high.

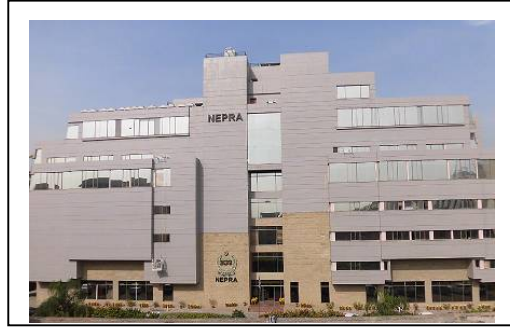
With regard to effectiveness, the operation and effect indicators of power sector subsidies (ratio to the GDP), power transmission and distribution loss rates (%), and collection rate of electricity tariffs (%) reached their target values. However, the number of notifications of energy-efficiency standards did not reach its target. Of the 14 indicators set by the policy matrix formulated by the donors, 6 indicators did not reach or only partly reached their targets. With regard to impact, the deficits of the budgetary balance and international balance of payments have been improving up to 2015, but the deficits increased after 2016. It is difficult to verify how much the power sector reforms have made an impact on the financial status and vitalization of economic activities because several external factors other than the power sector reforms have affected them. Because the total national capacity of power generation and total electricity generation and sales have been increasing since 2015, partly because of the entry of many independent power producers (IPPs) and the decrease in total average hours of load shedding, the impact of the project on the sustainable and stable provision of electricity can be determined to some extent. Therefore, the effectiveness and impact of the project are fair.

With regard to sustainability, one of the challenges is the lack of a unitary system to monitor the progress of all aspects of the power sector reforms.

## 1. Project Description



Project Location<sup>1</sup>



National Electric Power Regulatory Authority (NEPRA)

### 2.1 Background

The Islamic Republic of Pakistan (Pakistan) faced a severe power shortage at the time of its appraisal. For example, the power shortage had reached more than 30% of the demand for electricity, and there were some areas where average hours of load shedding had reached ten and a half hours per day (statistics of 2012). The electricity necessary for the operation of factories and commercial activities could not be fully provided, causing a decrease in private investment, foreign direct investment, and hindering the development of economic activities. The shortage in the electricity supply was due to the fact that power generation plants could not operate fully because of a shortage of necessary revenue, caused by a number of factors, including inappropriate power tariffs, the low payment collection rate of tariffs, and a high level of power transmission and distribution losses, as well as the fact that the electricity supply could not keep up with the rapid increase in electricity demand. The Pakistani government provided subsidies to supplement the lack of money for operations, and this has caused considerable financial stress to the government. Under such conditions, power sector reforms were an urgent issue in Pakistan, in terms of both its economy and finance.

Against this backdrop of financial balance and deterioration in the international balance of payments, the Pakistani government requested that the International Monetary Fund (IMF) provide assistance to avoid a financial crisis resulting from further deterioration. Negotiations with the IMF were conducted after July 2013, and in September 2013 the IMF decided to offer an Extended Fund Facility (EFF) of 6.6 billion dollars for a period of three years, but a large financial gap still existed. In response, the Pakistani government requested additional financial support for its Energy Sector Reform Program from the World Bank and the ADB in November 2013, and from the Japan International Cooperation Agency (JICA) in February 2014.<sup>2</sup>

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<sup>1</sup> The map is based on a map of the United Nation and modified by JICA. The depiction of boundaries, place names, and data shown on the map does not necessarily imply official endorsement or acceptance by JICA.

<sup>2</sup> Document provided by JICA.

## 2.2 Project Outline

The objective of this program is to support the reform of the energy sector in Pakistan, with co-financing from the World Bank and the ADB, by (1) establishing appropriate electricity tariffs and reducing the amount of subsidies, (2) reducing power generation costs, and (3) improving accountability and transparency in the energy sector, thereby contributing to a sustainable and stable power supply as well as contributing to improving Pakistan's financial status and its international balance of payments.

Loan Approved Amount/Disbursed Amount	(Phase 1) 5,000 million yen/5,000 million yen (Phase 2) 5,000 million yen/5,000 million yen
Exchange of Notes Date/Loan Agreement Signing Date	(Phase 1) June 2014/June 2014 (Phase 2) February 2016/February 2016
Terms and Conditions	Interest Rate (Phase 1) yen LIBOR-10bp% (Phase 2) yen LIBOR+10bp% Repayment Period 30 years (Grace Period 10 years) Conditions for Procurement General untied
Borrower/Executing Agency	The President of the Islamic Republic of Pakistan/Ministry of Finance
Project Completion	February 2016
Main Contractor	—
Main Consultant	—
Related Studies (Feasibility Studies, etc.)	Information Collection Survey on Energy Sector Reform in Pakistan (2014)
Related Projects	[Technical Assistance] <ul style="list-style-type: none"> <li>• Project for Least Cost Generation and Transmission Expansion Plan (Technical Assistance related to ODA Loan) (2014–2016)</li> <li>• Dispatch of Expert for Promoting Institution Building of Energy Conservation and Efficiency (Technical Assistance related to ODA Loan) (2014)</li> <li>• Dispatch of Expert for Energy Conservation and Efficiency (Technical Assistance related to ODA Loan) (2015–2016)</li> <li>• Dispatch of Expert for Implementing Energy Sector Reform (Technical Assistance related to ODA Loan) (2016–2017)</li> </ul> [Grant Aid] <ul style="list-style-type: none"> <li>• Project for Strengthening of Training Center on Grid System Operation and Maintenance (2016)</li> </ul> [Yen loan] <ul style="list-style-type: none"> <li>• National Transmission Lines and Grid Stations Strengthening Project (2010)</li> <li>• Islamabad and Burhan Transmission Line Reinforcement Project (Phase 1) (2017)</li> </ul> [Other organizations] (Phase 1) <ul style="list-style-type: none"> <li>• The World Bank (WB), Power Sector Reform: First Development</li> </ul>

	Policy Credit (2014–2015) <ul style="list-style-type: none"> <li>• ADB, Sustainable Energy Sector Reform Program: Subprogram 1 (2014–2015) (Phase 2)</li> <li>• WB, Power Sector Reform: Second Development Policy Credit (2015–2016)</li> <li>• ADB, Sustainable Energy Sector Reform Program: Subprogram 2 (2015–2016) (Phase 3)</li> <li>• ADB, Sustainable Energy Sector Reform Program: Subprogram 3 (2016–2017)</li> <li>• Agence Française de Développement (AFD), Sustainable Energy Sector Reform Program 3 (2016–2017)</li> </ul>
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## 2. Outline of the Evaluation Study

### 2.1 External Evaluator

Juichi Inada, Waseda University<sup>3</sup>

### 2.2 Duration of the Evaluation Study

This evaluation study was conducted according to the following schedule.

Duration of the Study: November 2017–January 2019

Duration of the Field Study: January 2018–September 2018 (information collection survey conducted by local consultant)

### 2.3 Constraints during the Evaluation Study

In this ex-post evaluation, for security reasons, based on the instructions of JICA evaluation department, the evaluator did not conduct a field survey, instead conducting a desk survey based on relevant documents and on information collected by a local consultant under the supervision of the evaluator.

As the project concerned a program loan, the evaluation analysis was made mainly on t “Relevance,” “Effectiveness,” “Impacts,” and, to the extent possible, “Sustainability,” while the basic evaluation framework was based on the five evaluation criteria of the Development Assistance Committee (DAC).

## 3. Results of the Evaluation<sup>4</sup>

### 3.1 Relevance (Rating : ③<sup>5</sup>)

#### 3.1.1 Consistency with the Development Plan of Pakistan

<sup>3</sup> Professor in the School of Economics at Senshu University and a supplementary staff member at Waseda University (the main contractor).

<sup>4</sup> Sub-rating is made only on “Relevance,” “Effectiveness,” and “Impacts,” and there is no overall rating.

<sup>5</sup> ③: High, ②: Fair, ①: Low

At the time of the appraisal, the Pakistani government had made reform of the energy sector an agenda with highest priority and was tackling energy sector reform under its *National Power Policy 2013* published in July in 2013, which described its vision as follows: “Pakistan will develop the most efficient and consumer centric power generation, transmission, and distribution system that meets the needs of its population and boosts its economy in a sustainable and affordable manner.”

Energy sector reform was regarded as indispensable to strengthening the financial status of the Pakistani government under the IMF’s EFF, which was approved in September 2013. This project supplemented the power sector reform agenda of the IMF program, and JICA conducted joint monitoring of the progress of the energy sector reform in coordination with the World Bank and the ADB, and at the same time as the quarterly reviews of the IMF program. The donors’ policy matrix for the project was formulated on the basis of the *National Power Policy 2013* and the Pakistani government’s policy matrix. There has been no new basic policy paper since *National Power Policy 2013*, which continues as the basic policy at the time of the ex-post evaluation.<sup>6</sup> The project comprehensively supports the several reform agendas of the Pakistani government’s energy sector reform and coincides with the basic policy of the Pakistani government.

### 3.1.2 Consistency with the Development Needs of Pakistan

This project aimed to assist with reform of the structural problems in the energy sector that caused the financial deficit and the deficit in the international balance of payments by providing a development policy loan. The Pakistani government’s financial gaps for the three years from fiscal year (FY) 2013–14 to FY2015–16 were predicted to be approximately 3.3 billion dollars, 4.5 billion dollars, and 4.7 billion dollars, respectively. Even with the financial support of the IMF’s EFF program, there will still be financial gaps of approximately 1.1 billion dollars, 2.3 billion dollars, and 2.4 billion dollars, respectively, for these three years.<sup>7</sup> The total amount of the loans provided by the World Bank, ADB, and JICA was approximately 1.04 billion dollars in Program 1, 940 million dollars in Program 2, and 430 million dollars in Program 3 (in which JICA did not participate); these were expected to reduce the budget deficit of Pakistan to some extent. JICA provided loans of 5 billion Japanese yen for each of the program in which it participated, and the amount was limited to about 3.6% of the amount of the budget deficit in each year. However, together with the loans from the World Bank and the ADB, Program 1 constituted about 95% of the deficit and Program 2 constituted about 41%, a relatively large

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<sup>6</sup> At the time of ex-post evaluation in October 2018, a new *National Electricity Policy and Plan* is under the process of formulation with the support of the ADB, and is still at the stage of drafting.

<sup>7</sup> *IMF Staff Report for the 2013 Article IV Consultation and Request for an Extended Arrangement under the Extended Fund Facility*, International Monetary Fund, September 2013.

supplement, contributing to easing the budgetary situation of Pakistan.

The largest problem for Pakistan's energy sector is the gap between the supply and demand of electricity. Compared to the peak demand of 18,827 MW in 2013, the operating capacity of power generation facilities in Pakistan was only 13,577 MW (total power generating capacity: 23,663 MW), resulting in a shortage of approximately 27.9% of demand. Due to supply–demand gaps such as this, power outages occurred frequently—as long as 12 hours (maximum) per day in urban areas and 18 to 20 hours per day in rural areas. It was estimated that these power shortages reduce Pakistan's GDP by approximately 2%.<sup>8</sup>

The most important factor leading to serious power shortages in Pakistan has been a structural problem with the energy sector known as “circular debt.” Circular debt refers to a state in which, due to a number of factors, including electricity tariffs being kept artificially low for political reasons, the low payment collection rate, and power transmission and distribution losses, electric power companies (including generation, transmission and distribution) cannot earn sufficient income to cover their costs. As a result, power distribution companies owe debts to power transmission companies; power transmission companies owe debts to power generation companies; and power generation companies owe debts to fuel supply companies. Thermal power generation by imported petroleum accounts for about two thirds of power generated in Pakistan (68% of total power generation and 66% of the capacity of power generation facilities in 2014).<sup>9</sup> Due to circular debt, power generation companies have been unable to obtain sufficient amounts of fuel, including petroleum, leading to a low operating rate for power generation facilities, which in turn resulted in the above supply–demand gap. In addition, the low efficiency of outdated power generation facilities and the inefficient management of electric power companies have been identified as factors that increased the scale of the circular debt.<sup>10</sup>

In order to hold down the electricity tariffs to the level determined by the NEPRA, the Pakistani government provides subsidies for electricity tariffs. The total amount of such subsidies from FY2003–04 to FY2013–14 was estimated at about 1.7 trillion Pakistani rupees (PKR), the amount of subsidies for FY2013–14 comprising about 1.1% of GDP. In addition, there were delays and failures to pay the subsidies due to the aforementioned budget shortages, which resulted in further decreases in power generation and increases in the supply–demand gap, thereby magnifying the negative effects of power outages on the economy. Consequently, to improve its financial status and achieve economic growth, the Pakistani government urgently needed to reduce the amount of subsidies to the energy sector and to eliminate the power

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<sup>8</sup> *Implementation Completion and Results Report for Power Sector Reform Development Policy Credits I & II*, World Bank, December 2017 (p. 1).

<sup>9</sup> *State of Industry Report 2015*, National Electric Power Regulatory Authority (NEPRA).

<sup>10</sup> Document provided by the JICA.

supply–demand gap.<sup>11</sup>

At the time of the appraisal, the gap between the supply and demand of electricity was a serious problem, and the project intended to respond to this serious problem coincided with development needs at the time. At the time of ex-post evaluation, subsidies for the total electricity tariff had been reduced to 0.4% of the GDP, the gap between supply and demand had not yet been solved, and the project continued to coincide with development needs.

### 3.1.3 Consistency with Japan’s ODA Policy

In Japan’s *Country Assistance Policies for Pakistan* (April 2012), the Japanese government adopted a basic policy of developing a stable, sustainable social system in Pakistan through economic growth and the defined improvement and development of economic infrastructure (transportation and energy) as a development goal with respect to the improvement of the economic base, which was among the high-priority areas of the assistance strategy. In the *JICA’s Country Analysis Paper (March 2014)*, the “program of expanding and improving electricity” was raised as a prioritized assistance program in the mid-range target of “improvement of economic infrastructure,” and assistance to energy sector reform was mentioned as a direction for JICA’s assistance to Pakistan. Therefore, this project, aiming at a stable supply of electricity and sustainable economic growth by energy sector reform, is consistent with the priority of Japanese ODA policy.

### 3.1.4 Appropriateness of the Project Plan and Approach

The project was originally designed as having five phases in total, from FY2013 to FY2017. Concrete targets of energy sector reform were summarized as a policy matrix, and policy actions were set as triggers for program loans. In fact, the program consisted of three phases up to 2017. Major reasons for the shortening of the project period from five phases to three are that it took more time to implement the reform program in each phase and that the loan amount in each phase was increased; in addition, it became necessary to scrutinize the policies and organizations of the new government after the national election scheduled in 2018.<sup>12</sup> The World Bank and JICA did not continue with Program 3, but the ADB continued to provide its loan in collaboration with the French Development Agency (Agence Française de Développement: AFD). The World Bank discontinued its program after the second phase on the basis that the road map toward privatization had stagnated, but the ADB continued with the third phase of the program by setting more realistic policy actions since the ADB anticipated five years of assistance from

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<sup>11</sup> *Ibid.*

<sup>12</sup> Based on interviews with JICA staff. As a result of the national election (lower house) conducted on July 25, 2018, the former opposition party, the Pakistan Movement for Justice (Pakistan Tehreek-e-Insaf: PTI) became the ruling party, instead of the Pakistan Muslim League (PML).

the beginning and made much of the continuation of energy sector reform.<sup>13</sup>

A policy matrix for the program was formulated on the basis of consultations between the three major donors—the ADB, the World Bank, and JICA (the ADB was the lead donor)—and relevant Pakistani institutions (the Ministry of Finance and related organizations in the energy sector). In this project, the policy matrix was composed of the three pillars and ten reform goals comprising the important agenda of energy sector reform. The policy actions of at the time of Phase 1 and Phase 2 were slightly different. The preconditions of providing loans in Phase 2 included the continuation of the policy actions of Phase 1, in addition to the implementation of the policy actions of Phase 2.

A review (reduction and/or revision) of policy actions that were regarded as difficult to achieve during the implementation period was made in Phase 2. This meant that the original goals of the policy reform turned out to be difficult to achieve after the start of the reform program. One positive aspect of the review was that it encouraged policy reforms by setting realistic policy actions, based on the progress of each phase. This kind of modification was regarded as necessary to support policy reform based on actual conditions.<sup>14</sup>

In formulating the policy actions of the program, consensus was achieved through a coordination process among the major donors, although each donor had its own priority policy agenda. The World Bank took account of efforts to commercialize public companies in the power sector and the opening of the gas market, whereas JICA made much of the promotion of energy conservation and the effective management of electricity generation costs by the formulation of the Least Cost Generation and Transmission Plan (LCP); it dispatched experts and provided technical assistance to encourage concrete implementation of policy actions in those areas in parallel with its loans. Specifically, JICA supported policy and institutional reforms of the energy sector in Pakistan through the “Project for the Least Cost Generation and Transmission Expansion Plan” (Technical Assistance related to ODA Loan) and the “Dispatch of Experts for Energy Conservation and Efficiency,” among others. The JICA’s assistance for this specific technical agenda was regarded as useful in realizing policy actions, given Pakistan’s limitations in capacity and knowledge to implement policy actions.

This project was highly relevant to Pakistan’s development plan and development needs, at the time of planning as well as at the time of evaluation. The program was also relevant to Japan’s ODA policy. There were no specific problems in the project planning and approach. Therefore, its relevance is high.

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<sup>13</sup> Based on interviews with World Bank staff.

<sup>14</sup> The World Bank evaluated its assistance program at the times of planning and commencement as “highly satisfactory” in its ICR (*Implementation Completion and Results Report for Power Sector Reform Development Policy Credits I & II*, World Bank, December 2017).



## 3.2 Effectiveness and Impacts<sup>15</sup> (Rating: ②)

### 3.2.1 Effectiveness

#### 3.2.1.1 Policy actions

The project categorized the policy matrix formulated by the Pakistani government into three policy areas as follows: Policy area A—Reducing subsidies and improving tariff policy; Policy area B— Improving Sector Performance and Opening the Market to Private Participation; Policy area C—Ensuring accountability and transparency. The project specified ten reform goals in each policy area and formulated a “donor policy matrix” indicating the policy actions taken in each phase of the program. It was planned to encourage the realization of the policy matrix by the Pakistani government through implementation of the program of the donor policy matrix.

Table 1. Three Policy Areas and Ten Reform Plan Goals of the Program

Policy area	Reform plan goals
A: Reducing subsidies and improving tariff policy	(1) Adoption of clear policies on tariffs and subsidies to target low-income consumers; ensuring policy implementation through NEPRA rules and regulations; reduction of discretionary policy decisions and lags in tariff approval and implementation
B: Improving Sector Performance and Opening the Market to Private Participation	(2) Loss reduction and improvement of collection in distribution companies (3) Improvement of demand-side efficiency and strengthening of energy conservation (4) Management of generation costs through Least Cost Planning (LCP) and ensuring that new-generation entrants follow the LCP (5) Increase in gas supply and opening the gas market for direct contracting sales to large gas consumers (6) Commercialization and improvement of performance of public companies in the power sector (7) Commercial operation of Central Power Purchasing Agency (CPPA) as an independent agency to buy power on behalf of distribution companies, and implementation of a multiple buyers’ market by allowing generators to contract sales directly with large consumers
C: Ensuring Accountability and Transparency	(8) Increase in access to information in the energy sector (9) Strengthening of NEPRA (10) Monitoring and Surveillance

Note: Documents provided by JICA.

<sup>15</sup> Sub-rating for Effectiveness is to be put with consideration of Impacts.

The achievement of policy actions of Phases 1 and 2 had largely been confirmed at the time of appraisal. In evaluating the effectiveness of the policy actions of the project, the state of progress of the reform agenda set as policy actions of Phase 2 were summarized as follows.<sup>16</sup>

[Policy area A: Reducing subsidies and improving tariff policy]

1. Notification of multi-year tariff by the NEPRA

Policy action: In order for NEPRA to start tariff determination, nine distribution companies (DISCOs) submit FY2014–15 tariff petitions with forms and data requirements stipulated in the guidelines to NEPRA. In addition, five DISCOs submit five-year investment plans in order for NEPRA to start the determination of multi-year tariff for FY2015–16 to NEPRA.

State of progress: Although notification of multi-year tariffs for at least two DISCOs had been expected in the policy action of Phase 3, there was no agreement on subsidies between NEPRA and each DISCO, and it was confirmed that more time would be needed.

2. Response to repayment of circular debt

Policy action: Ministry of Water and Power (MOWP) to publish on its website a cap for total overdue payables to power generators not to exceed PKR 314 billion, and a plan to reduce the flow of new overdue payables down to PKR 39 billion by FY2017–18.

State of progress: Although the cap on total overdue payables to power generators of PKR 314 billion was maintained, the figure reached PKR 321 billion in June 2016 and PKR 450 billion in November 2017. Therefore, the formulation of the action plan for this issue was delayed, the concrete target value of the reduction of overdue payables was deleted from the trigger, and the value has been monitored under the IMF Program.

[Policy area B: Improving Sector Performance and Opening the Market to Private Participation]

3. The number of notification of minimum energy performance standards

Policy action: MOWP to issue regulation(s) on minimum energy performance standards for at least three energy-intensive appliances or technologies and on appliance labeling.

State of progress: Although the policy action of issuing guidelines for at least three appliances was proposed, it took time to formulate concrete standards, and this policy action was mentioned as an ongoing action. Guidelines on minimum energy performance standards and labeling were issued for three appliances (ceiling fans, pump motors, ballast of fluorescent

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<sup>16</sup> The state of progress of policy actions of Phase 2 were based on *Implementation Completion and Results Report for Power Sector Reform Development Policy Credits I & II*, World Bank, December 2017. The state of progress of policy actions of Phase 3 were based on *Sustainable Energy Sector Reform Program (Subprogram 3): Report & Recommendation of the President*, ADB, May 2017 (Appendix 4) and documents provided by JICA.

lamps) during 2016. JICA dispatched its expert to provide technical assistance for this policy agenda.

#### 4. Reorganization of gas sector

Policy action: With a view toward opening up the gas market, the Ministry of Petroleum and Natural Resources (MPNR) to sign supplemental agreements agreeing revised prices for 92 exploration concessions at the levels set out in the 2012 Petroleum Policy, including 26 with the private sector.

State of progress: Although the plan was to make gas supply more effective by promoting a division of labor between conduit businesses and sales businesses in the gas supply chain, and by supporting private companies to participate in the gas market, it took more time than expected to obtain approval from the government on the plan to separate the roles of conduit businesses and sales businesses. Therefore, as a policy action for Phase 3 in 2017, the more realistic policy action of issuing directions to commence the study of the division of labor between conduit businesses and sales businesses was formulated, rather than the concrete policy of assisting with the participation of private companies in the gas market.

#### 5. Supply system of Liquefied Natural gas (LNG)

Policy action: Economic Coordination Committee (ECC) to approve a policy directive that LNG will be provided to consumers who pay its full cost through the tariff. (This was a policy action added into Phase 2 in response to the plan of importing LNG.)<sup>17</sup>

State of progress: A policy directive was issued. An additional terminal for importing LNG will be constructed in 2018, and one more in 2020. Consequently, the supply of LNG to the domestic market has been expanding.

#### 6. Performance contracts with public companies in the power sector

Policy action: MOWP to sign performance contracts with all generation companies (GENCOs), the National Transmission and Dispatch Company (NTDC), and all remaining DISCOs.<sup>18</sup>

State of progress: Performance contracts were concluded in 2015. Although concrete plans and implementation of efforts to keep revenues were supposed to be written into the performance contracts, the DISCOs did not propose any plans to obtain sufficient revenues, instead

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<sup>17</sup> As a background of this action, it was considered that the shortage of oil fuel caused by the increase in electricity generation must be supplemented by LNG, and this action was expected to contribute to the target of effect indicators.

<sup>18</sup> “Performance contracts” are concluded between MOWP, GENCOs, and the NTDC, clarifying the roles and the legal framework that each organization should have and setting concrete effect indicators for operational standards and targets. The aim is to make operations transparent and strengthen the efforts to attain targets by concluding the contracts. The performance contracts for a three-year period were signed in the first half of 2015, and it was anticipated that reform efforts would be implemented during this period in a concrete manner.

formulating their own plans to reduce deficits, and the IMF has been monitoring those plans.<sup>19</sup>

#### 7. Road map of privatization of public companies in the power sector

Policy action: A roadmap for privatization to be formulated and initiated.

State of progress: This action was aimed at promoting the participation of private companies in the energy sector and making electricity service more effective. Although the privatization of DISCOs was an aim of the World Bank's Development Policy Credit (DPC) and the IMF Program, there was no progress in privatization because agreement between stakeholders could not be reached. After that, some DISCOs began to prepare for an Initial Public Offering (IPO),<sup>20</sup> and the policy action of "The Cabinet Committee on Privatization approves the IPO of three DISCOs" was included in the policy actions of Phase 3.<sup>21</sup>

#### 8. Independence of CPPA

Policy action: CPPA, which became independent from the NTDC, to demonstrate its operational capability to handle all steps in the billing and settlement cycle of electricity sales by generators and purchases by DISCOs. NEPRA to grant an amendment to NTDC licenses to eliminate CPPA functions.

State of progress: The CPPA became an independent organization in June 2015, in advance of the provision of Phase 2 loan (February 2016), and subsequently, all contracts to buy electricity have been made through the independent CPPA.

[Policy area C: Ensuring accountability and transparency]

#### 9. Increasing access to information in the energy sector

Policy action: CPPA to disclose publicly on its website the monthly amounts due and payments made by each DISCO to CPPA, and by CPPA to generators, including arrears.

State of progress: The policy action of Phase 1 "Each DISCO to publish on its website monthly billing and collection data" continued as a policy action in Phase 2. The CPPA has already disclosed monthly data on its website. On the other hand, DISCOs have disclosed annual reports on their website, not as monthly data.

#### 10. Strengthening of NEPRA and disclosure of information

Policy action: NEPRA to disclose annual DISCOs performance and evaluation reports, and to initiate outreach actions to consumers on the content thereof. DISCOs to disclose their annual

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<sup>19</sup> Based on ICR of the World Bank (*op.cit.*).

<sup>20</sup> Document provided by the JICA.

<sup>21</sup> *Sustainable Energy Sector Reform Program (Subprogram 3): Report & Recommendation of the President*, ADB, May 2017.

performance reports on their respective websites.

State of progress: NEPRA has disclosed the annual performance and evaluation reports every year from FY2012–13 to FY2015–16, but it takes time for disclosure. DISCOs are disclosing their annual performance reports on their websites.<sup>22</sup>

### 3.2.1.2 Quantitative effects (operation and effect indicators)

The effect of the policy actions were to be realized after s July 2017three years after the completion of Phase 1 (June 2014). In the ex-ante evaluation report for Phase 2, the timing of the ex-post evaluation was set at the time of the completion of the policy actions of Phase 5 in 2017. At the time of formulating the policy matrix in 2014, Phase 5 was expected to be over by 2017, so the target year was set as 2017. However, progress of the reforms had been delayed, Phase 2 came in 2016, and Phase 3 in 2017. Consequently, the plan to complete five phases was changed to three phases. However, the target values and target year were not revised, so a comparison between the original target values and actual values was made in this ex-post evaluation.

Table 2 shows the baseline values, target values, and actual values of the four operation and effects indicators written in the ex-ante evaluation report. In terms of the three indicators for the energy sector subsidies (proportion of GDP), the power transmission and distribution loss rate (%) and the power distribution companies' electricity tariff collection rates (%) achieved their targets, but the number of notifications of energy-efficiency standards reached only three, instead of the target of five.

Table 2. Baseline Values, Target Values, and Actual Values of Operation and Effect Indicators

Indicator	Baseline (2013 results)	Target 2017	Actual Results 2017
Energy sector subsidies (proportion of GDP) (%)	1.8	0.3–0.4	0.4
Power transmission and distribution loss rate (%)	21.9	17.9	17.9
Power distribution companies' electricity tariff collection rate (%)	86	94	94
No. of notifications of energy-efficiency standards *	NA	5	3

Source: Baseline values and target values are based on ex-ante evaluation of Phase 1 and Phase 2. Actual values are provided by executing agency.

Note: \* Minimum energy performance standards were defined according to each appliance.

In addition to the operation and effects indicators mentioned in the ex-ante evaluation report, monitoring indicators to check the effects of the 10 agendas of the donor policy matrix were also provided.<sup>23</sup> These are quantitative indicators to check the progress of reform in the

<sup>22</sup> State of progress varies for each DISCO.

<sup>23</sup> Document provided by JICA.

implementation of policy actions. Table 3 is a summary of the status of the monitoring indicators with respect to the 10 items of the donor policy matrix (14 indicators in total). Among 14 indicators, 4 indicators of (3) Energy sector subsidies, (4) Power transmission and distribution loss rate, (5) DISCOs' electricity tariffs collection rate, and (7) No. of notification of energy efficiency standards are listed in the ex-ante evaluation report as operation and effects indicators, as shown in Table 2.

As shown in Table 3, eight out of 14 indicators achieved their targets, whereas targets of six indicators were not achieved or partly achieved.

Table 3. Monitoring Indicators of Policy Reforms (Baseline, Target, and Actual Values)

Policy Area	Baseline Values	Target Values	Actual Values in May 2017
Policy area A: Reducing Subsidies and Improving Tariff Policy	(1) Time taken for DISCOs tariff determination <b>Baseline (FY2012/13):</b> more than seven months after admission of petition for DISCOs	(1) <b>Target (FY2016/17):</b> within four months admission of petition for DISCOs	(1) (Partially achieved) Most petitions of the tariff were admitted within four months by NEPRA, but it took five months in the case of GEPCO (Gujanwala Electric Power Company)
	(2) Regulation for DISCOs tariff determination <b>Baseline (FY2012/13):</b> not notified	(2) <b>Target:</b> notified by January 2015 by NEPRA	(2) (Partially achieved) Notification was not realized by January 2015, and the NEPRA notified the multi-year tariff of three DISCOs at the time of the ADB mission in April 2017; thus, the introduction of the framework for the multi-year tariff was realized
	(3) Subsidies reduced <b>Baseline (FY2012/13):</b> 1.8% of GDP	(3) <b>Target (FY2016/17):</b> 0.3–0.4% of GDP	(3) (Achieved) The ratio of subsidies to GDP in FY2016/17 was 0.4%
Policy area B: Improving Sector Performance and Opening the Market to Private Participation	(4) Reduction in distribution and transmission losses <b>Baseline (FY2012/13):</b> 21.9%	(4) <b>Target (FY2016/17):</b> 17.9%	(4) (Achieved) Distribution and transmission loss rate in FY2016/17 was 17.9%
	(5) Increase collection in DISCOs <b>Baseline (FY2012/13):</b> 86%	(5) <b>Target (FY2016/17):</b> 94%	(5) (Achieved) Tariff collection rate in FY2016/17 was 94.4%
	(6) Reduction of government receivables <b>Baseline (FY2012/13):</b> provincial 410 days, federal 180 days	(6) <b>Target (FY2013/14):</b> 90 days	(6) (Partially achieved) Government receivables more than 90 days were adjusted at the federal level; however, there is no provincial level data
	(7) Notification of energy efficiency standards <b>Baseline (FY2012/13):</b> 0	(7) <b>Target (FY2016/17):</b> at least five	(7) (Partially achieved) Energy efficiency standards and labeling were issued for three appliances (ceiling fans, pump motors, and ballast of fluorescent lamps); it is still on the way and not yet completed for two appliances

			(microwave oven and air conditioner)
	(8) Introduce LCP and entry of new generation based on LCP <b>Baseline (FY2012/13):</b> no approved LCP	(8) <b>Target (FY2016/17):</b> LCP issued and additions to new generation capacity based on LCP	(8) (Partially achieved) LCP was formulated (by support from JICA), and approved by the Ministry of Energy (MoE), but no concrete project based on the LCP was realized at the time in May 2018; it is now in the process of revision for obtaining approval from NEPRA by April 2019
	(9) Increasing gas supply <b>Baseline (FY2012/13):</b> 3.8 billion scf/day	(9) <b>Target (FY2016/17):</b> 5 billion scf/day	(9) (Partially achieved) The amount of gas supply in April 2017 was 4.6 billion scf/day; the amount of imported LNG during 2017 was 0.6 billion scf/day
	(10) DISCOs meet key targets in performance contracts <b>Baseline (FY2012/13):</b> three DISCOs signed performance contracts	(10) <b>Target (FY2016/17):</b> DISCOs meet set performance targets	(10) (Not achieved) The World Bank report mentioned that DISCOs did not present and implement any revenue securing plan; instead, they formulated their own plan of reducing the deficit, and the IMF would monitor the progress <sup>24</sup>
	(11) CPPA is independent from NTDC <b>Baseline (FY2012/13):</b> CPPA is still a unit within NTDC	(11) <b>Target (FY2016/17):</b> all contracted power generated by IPPs, GENCOs, and WAPDA is traded through an independent CPPA	(11) (Achieved) CPPA became independent from NTDC in 2015, and had its own building in late 2017; all contracted power generated by IPPs, GENCOs, and WAPDA is being traded through CPPA
Policy area C: Ensuring Accountability and Transparency	(12) Access to operational and payment information publicly available from the website <b>Baseline (FY2012/13):</b> not available	(12) <b>Target (FY2016/17):</b> available on CPPA and DISCOs' websites	(12) (Achieved) Management data were available at the NTDC website, while operational and payment information is available at the CPPA website
	(13) Access to licensees' performance available on the NEPRA website <b>Baseline (FY2012/13):</b> available only in NEPRA's published report	(13) <b>Target (FY2016/17):</b> available on NEPRA website	(13) (Achieved) NEPRA has disclosed the information on performance of DISCOs, NTDC, and K-Electric (private generation and distribution company in Karachi) in its reports, available at its website, since 2015

<sup>24</sup> The IMF decided to offer EFF of \$6.6 billion for three years in September 2013. The EFF requested Pakistan to expend certain efforts, including energy sector reform. If the performance criteria set in the program is reached, the funds would be provided.

	(14) Quarterly reporting and public disclosure on the implementation status of the energy sector reform <b>Baseline (FY2012/13):</b> not available	(14) <b>Target (FY2013/14):</b> the reports are published quarterly.	(14) (Partially achieved) MOWP has published its monitoring reports since 2014, but not quarterly, <sup>25</sup> the summary report of the progress of the program is under the process of formulation and publishing
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(Note) Indicators are cited from documents provided by JICA. The status of indicators in May 2017 was based on the following documents: *Sustainable Energy Sector Reform Program (Subprogram 3): Report & Recommendation of the President*, ADB, May 2017, Appendix 4; *Implementation Completion and Results Report for Power Sector Reform Development Policy Credits I & II*, World Bank, December 2017, p. 1.; and documents provided by JICA.

### 3.2.1.3 Qualitative Effects (Other Effects)

The ex-ante evaluation report mentions that "...this program supports implementing a variety of energy sector reform promoted by the Pakistani government as well as enhancing the government's financial status and stimulating economic activity."<sup>26</sup> However, since "enhancing financial status" and "stimulating economic activities" are considered to be indirect and long-term effects, they are analyzed in section 3.2.2 Impacts.

## 3.2.2 Impacts

### 3.3.2.1 Intended Impacts

#### 1) Impacts on enhancing financial status and stimulating economic activities

The Pakistan government proposed its economic reform plan to the IMF and requested the IMF to resume its support in July 2013 in response to the financial stress and circular debt. After the IMF Program to Pakistan went off-track in 2011, there was no financial support from the IMF. However, it decided to offer an EFF of \$6.6 billion for three years in September 2013 in order to reduce financial deficit and promote investment and economic growth through economic structural reforms. The EFF requested Pakistan to make efforts toward reducing the budgetary deficit, increasing revenues, reforming the energy sector, improving the investment environment, and reforming state owned companies among others. The fund was to be released in phases after confirming the achievement of performance criteria set in the program through reviews (12 times in total), and was expected to contribute to economic stability. The completion of the program was approved in September 2016, and a final review was conducted. It was then confirmed that all performance criteria were reached.

Table 4 shows the progress of the main economic indicators of fiscal balance, international balance of payments, and economic growth rate of Pakistan between 2013 and 2017.

<sup>25</sup> The latest report was published in June 2017 at the time of *ex-post* evaluation in September 2018.

<sup>26</sup> The ex-ante evaluation report.



Table 4. The Progress of Main Macroeconomic Statistics

	2013	2014	2015	2016	2017
Fiscal Balance (ratio to the GDP) (%)	-8.2	-5.5	-5.3	-4.6	-5.8
Amount of Fiscal Deficit (1 billion PKR)	1,834	1,389	1,457	1,349	1,864
Gross Public Debt (ratio to the GDP) (%)	63.9	63.5	63.3	67.6	67.2
International Balance of Payments (ratio to the GDP) (%)	-1.08	-1.28	-1.00	-1.75	-4.09
Real Economic Growth Rate (%)	3.68	4.05	4.06	4.51	5.28

(Source) Fiscal balance (ratio to the GDP) and gross public debt are drawn from the Ministry of Finance (Federal Budget: Budget in Brief, Annual report) website. The amount of fiscal balance and international balance of payment (ratio to the GDP) are drawn from State Bank of Pakistan's website (Annual Report). The real economic growth rate (2005/06 standard) is drawn from Statistical Bureau of Pakistan's website.

Fiscal balance gradually improved from 2014 to 2016, but worsened in 2017. The ratio of gross public debt to GDP also improved gradually between 2013 and 2015, with an increase post-2016. The deficit of international balance of payments (ratio to the GDP) also increased on and after 2016, showing a rapid increase in 2017. This deterioration of financial status was partly caused by the expansion of debt and imports for big projects, such as China–Pakistan Economic Corridor (CPEC).<sup>27</sup>

Statistics of the annual economic growth rate show steady figures of 4–5%, but it is difficult to measure the extent to which energy sector reforms have contributed to the improvement of macroeconomic data.<sup>28</sup>

## (2) Sustainable and stable supply of electricity

Table 5 shows the basic indicators to check conditions of sustainable and stable supply of electricity. Total national capacity of power generation and the total generation and sales (consumption) of electricity have been expanding since 2015, partly because of market participation of independent power producers (IPP). The total national capacity of power generation at the end of FY2017/18 was 30,467 MW.<sup>29</sup> On the other hand, demand for electricity has been increasing along with the expansion of economic activities. However, the electricity supply cannot catch up with increasing demand, although the amount of electricity generation has been increasing. The gap between supply and demand still exists, leading to frequent load shedding, but these conditions have gradually been improving.

The existence of circular debt was the biggest factor stifling stable electricity supply; the reduction of subsidies to electricity tariff and improvement of collection rate of DISCO tariff

<sup>27</sup> *First Post-Program Monitoring Discussions, IMF Country Report No. 18/78*, March 2018

<sup>28</sup> The gap between supply and demand of electricity still reportedly exists, and Pakistan's GDP has reduced by approximately 2% because of load shedding and shortage of electricity (*Implementation and Completion and Results Report for Power Sector Reform Development Policy Credits I & II*, World Bank, 2017/12, p. 1.)

<sup>29</sup> Document provided by the MoE.

were important goals of the project. As shown in Table 5, the total amount of energy sector subsidies and its ratio to GDP steadily reduced from 2013 to 2017. Besides, the collection rate of DISCO tariffs reached 94% in FY2016/17. The target of the reduction of government receivables was set to reduce from 410 days at the level of the provincial government and 180 days at the level of the federal government in FY 2012/13 to 90 days in FY2014/15. The Implementation Completion Reports of the World Bank and the ADB reported that, while the goal was reached at the federal level, there was no concrete data at the provincial level. This implied that improvements were still progressing at the provincial level.<sup>30</sup>

Table 5. Changes of Major Indicators of Power Sector

	FY2013/ 14	FY2014/ 15	FY2015/ 16	FY2016/ 17
Total National Capacity of Power Generation (MW)	23,702	24,961	25,421	28,399
Total sales (consumption) of electricity (GWh)	87,948	89,929	94,354	99,391
Total generation of electricity (GWh/month)	105,698	108,916	114,093	120,621
Total amount of energy sector subsidies (billion PKR) (ratio to the GDP, %)	472.1 (1.8%)	292.0 (1.1%)	171.2 (0.7%)	118.0 (0.4%)
Power transmission and distribution loss rate (%)	18.6	18.8	17.9	17.9
Load Shedding hours (average hour/day) (industry sector below)	8–9 (8)	6–8 (1)	5–7 (0)	3–4 (0)

(Source) (1) Total national capacity of power generation, total sales (consumption) of electricity, and total generation of electricity are based on NEPRA, *State of Industry Report 2017*. Total sales (consumption) of electricity is the amount of electricity purchased by distribution companies. (2) The total amount of energy sector subsidies is based on the interview to the MoE. (3) Power transmission and distribution loss rate, load shedding hours are based on the documents of MoWP.

Much importance was attached to the privatization or introduction of a market mechanism (competition) in the reform for sustainable and stable supply of electricity. Privatization and introduction of a market mechanism did not progress as originally planned, and both continue to be an obstacle for sustainable and stable supply of electricity. Its current status is outlined below.

In the power generation sector, independent power producers (IPPs) exist; their number and shares have also been increasing. In the transmission sector, NTDC is still only one public company, and there is no plan for changes because this sector is not profitable. In the power distribution sector, privatization or participation of private distribution companies in the market was expected, but no progress took place. The sector continues to be dominated by public distribution companies in each area. The government proposed to partly sell the stocks of public

<sup>30</sup> The information and data of debt status of companies in the energy sector could not be attained (both the Ministry of Finance and the MoE do not disclose detailed data, and provided no answer to the questionnaire of the evaluation team). Therefore, it is difficult to analyze the extent to which the conditions of circular debt have improved.

power distribution companies. However, this has not been realized, because of the following reasons.

1) Trade unions in public companies are opposed to privatization and introduction of competition in the market because they seek to maintain their jobs. Opposition parties have also resisted privatization.

2) It was difficult to introduce competition in the power distribution sector, since electricity supply is far below its demand.

3) A public distribution company in Karachi, Karachi Electric Supply Company (KES), was privatized to K-Electric in Sindh Province. However, its management suffers from poor performance (high distribution loss rate, power failure, corruption, etc.), discouraging the privatization of other DISCOs.

The introduction of competition in the gas distribution sector was also proposed as a reform agenda, but public companies still continue to dominate gas distribution in each area.

#### 3.2.2.2 Other Positive and Negative Impacts

##### (1) Impacts on the Natural Environment

Based on JICA's Guidelines for Environmental and Social Considerations (issued in April 2010), this project is not expected to have serious adverse effects on the environment in light of sector, project, and region characteristics. Therefore, it was considered "Category B." At the time of the ex-post evaluation, it was confirmed through the executive agency that no negative impacts on natural environment have occurred from the implementation of policies related to this project.

At the time of appraisal, it was planned that a strategic environmental assessment (SEA) would be conducted for the policy actions related to the least cost planning (LCP) through the Project for Least Cost Generation and Transmission Expansion Plan. Its current status is outlined below.

It was clearly mentioned that the SEA should have been introduced promptly in making decisions regarding environmental conservation policy in the *National Environmental Conservation Policy 2005* (Close No. 5, Section No. 1, d). This is Pakistan's basic plan for environmental conservation. On the other hand, the implementation of SEA in the process of formulating policies and plans is not an obligation under the country's environmental protection law. By an amendment of the constitution, the national environmental policy came under the jurisdiction of each province. SEA implementation was added to provincial environmental protection laws in Baluchistan Province and Sindh Province, but there are no clauses for SEA in Punjab Province and Khyber Pakhtunkhwa (KP) Province. Although comprehensive LCP of generation, transmission, and distribution of electricity was formulated as part of JICA's

technical assistance for the program's policy actions, LCP is a comprehensive mid- and long-term plan, and substantial policies and plans of each province have not been materialized, then the SEA has not yet been implemented.<sup>31</sup>

### (2) Resettlement and Land Acquisition

At the time of appraisal, no specific impact on the issues of resettlement and land acquisition was expected. No resettlement and land acquisition issues have been observed at the time of ex-post evaluation as well.

### (3) Unintended Positive/Negative Impacts

At the time of appraisal, the project was expected to mitigate the impacts of climate change, because it contributed to energy conservation and reduction of the transmission and distribution loss rate. However, it is difficult to measure these effects and loss rates arising from energy sector reform. Thus, the impacts of the project on mitigation of climate change could not be verified.

Therefore, regarding the effectiveness, operation and effect indicators of power sector subsidies (ratio to the GDP), the power transmission and distribution loss rate (%) and the collection rate of the electricity tariff (%) reached the target values. However, the numbers of notification of energy efficiency standards failed to reach the target. Among 14 indicators set by the policy matrix formulated by donors, six indicators did not reach the target or partially reached it during FY2016/17. Regarding impacts, the deficits of fiscal balance and international balance of payments gradually improved until 2015; then, the deficits increased after 2016. It is because various external factors other than power sector reforms such as increase in loans and imports for CPEC related projects have affected them. Thus, it is difficult to verify the extent to which power sector reforms have affected the macro economy in terms of financial status and vitalization of economic activities. On the other hand, the impact of the program on sustainable and stable provision of electricity can be identified to some extent because the total national capacity of electricity facility, as well as the annual electricity generation and sales, has been increasing since 2015 partly because of IPP entries. Moreover, the total average hours of load shedding has been decreasing.

In short, this project has, to some extent, achieved its objectives. Therefore, the effectiveness and impact of the project are fair.

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<sup>31</sup> The situations of the SEA in the gas sector are almost the same as that in the power sector. Project-based environmental assessment in the energy sector is conducted as EIA (environmental impact assessment) not as SEA.

### 3.3 Sustainability

#### 3.3.1 Institutional/Organizational Aspect of Operation and Maintenance

In the energy sector in Pakistan, since 1958 the Water and Power Development Authority (WAPDA) under the Ministry of Water and Power (MoWP) had been responsible for all of generation, transmission, and distribution of electricity. Moreover, it was a vertically integrated executing agency for providing electricity in all areas except Karachi. In 1998, to encourage efficacy in electricity supply, the WAPDA gained responsibility only for hydro power, while the responsibility of other sectors were divided as follows: four GENCOs in generation sector, one NTDC in transmission sector, and 10 DISCOs in distribution sector. Regulations, such as approval of power producers, decisions regarding electricity tariff are conducted by NEPRA, which was established in 1995. Electricity provided by WAPDA, GENCOs and IPPs is purchased by the CPPA as a single buyer, which sells electricity to each DISCO.<sup>32</sup>

The executing agency of the project was the Ministry of Finance, which supervised the progress of the whole program. Each action plan was administered by the MoWP and the Ministry of Petroleum and Natural Resources (MPNR). The program monitoring unit (PMU) established in those ministries have been monitoring the progress of each item of reform. The members of the PMU were designated from related organizations under each ministry, such as NTDC. They were to draft quarterly monitoring reports on the reform's progress, and to report the progress to the Economic Coordination Committee (ECC). The reports were supposed to be disclosed to the public by each ministry.<sup>33</sup> In fact, a monitoring report was published by the MoWP in March 2017, which summarized the progress of the reform.<sup>34</sup>

After 2014, the CPPA, which was a department inside the NTDC owing to organizational reform, gained independence from NTDC because of the policy action of the reform program in 2015. Then, the MoWP and the MPNR were integrated into the Ministry of Energy (MoE) in 2017.

The jurisdiction of the WAPDA changed from all electricity sectors to the hydro power sector in 1998; the generation, transmission and distribution of electricity were divided based on each function and public companies of generation and distribution were established in each area of Pakistan. At the time of the ex-post evaluation, each sector of generation, transmission, and distribution is vertically divided, and distribution companies are already separated horizontally according to each franchise area.

On the other hand, there is a lack of specialized unit that can be responsible for all reform agendas and collect detailed information of the whole power sector. Relevant organizations of

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<sup>32</sup> Document provided by JICA.

<sup>33</sup> Document provided by JICA.

<sup>34</sup> *Monitoring Report: Energy Sector Reforms Program*, MOWP, March 2017. No new report was published later in August 2018.

power sector are managing individually and independently. Therefore, it is one of the major challenges in combining all policy efforts and actions together.<sup>35</sup> While policy actions of this reform program are related to several different organizations and sections, there is no institutional mechanism (unit) for supervising the implementation of policy actions as a whole. During the program, there was a PMU in both MoWP and MPNR that monitored the progress of each policy reform agenda. However, no such specific unit responsible for monitoring continuously the entire policy reform agenda exists after the completion of the program, while each policy action has been continuously implemented by relevant offices.

For example, the project of formulating the “Least Cost Generation and Transmission Expansion Plan” was implemented by designating NTDC a main counterpart. This is because NTDC is singularly responsible for transmission, while there are numerous organizations in generation and distribution sectors. Close coordination is necessary between organizations in generation, transmission, and distribution sectors for implementing the Least Cost Generation and Transmission Expansion Plan formulated by the project and a mechanism for mutual coordination is essential. Thus, to formulate the total plan of generation, transmission, and distribution of electricity, and to make it effective, it is necessary to create an unit within the MoE or others, which can formulate a comprehensive energy sector plan, collect and analyze related information and data and to strengthen a monitoring mechanism for grasping the whole process of reforms.<sup>36</sup>

### 3.4 Added value by JICA

The donor policy matrix and the policy actions framework of the project were formulated through a dialogue between the ADB (as a lead donor), the World Bank, JICA, and the Pakistani government based on the *National Power Policy 2013*. While a common policy matrix was a basis of financing among these donors, each donor provided its own technical assistance for policy actions it emphasized. JICA provided its technical assistance to implement the policy actions in Policy Area B (improving sector performance and opening the market to private participation), such as “Energy Conservation and Efficiency” and “Least Cost Generation and Transmission Expansion Plan”<sup>37</sup> (Reportedly, the World Bank provided technical assistance, focusing on privatization and introduction of competition in the distribution sector<sup>38</sup>).

JICA supported policy and institutional reform by dispatching experts to formulate the “Guidelines on minimum energy performance standards and labeling” and the “Least Cost

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<sup>35</sup> Based on the interviews with experts.

<sup>36</sup> Based on an interview to an expert and field survey of a local consultant. A new *National Electricity Policy and National Electricity Plan 2018* is now in the process of formulation, and a unit of “Power Coordination, Policy and Finance Wing” of the MoE (Power Division) is in charge of its coordination.

<sup>37</sup> Based on interviews to JICA experts in the sector.

<sup>38</sup> Based on the ICR of the WB and interview to the WB staff who were in charge of the program at the time.

Generation and Transmission Expansion Plan”. The framework of the development policy loan was designed to encourage policy reform efforts by using budgetary support as leverage. The technical assistance which was provided to support the realistic implementation and realization of each policy action, made a significant contribution to implementation of the policy actions, considering Pakistan’s limited capacity and knowhow in those areas.

#### **4. Conclusion, Lessons Learned and Recommendations**

##### 4.1 Conclusion

The objective of the project is to support the reform of the energy sector, with co-financing from the World Bank and ADB, by addressing the sector’s structural problems that have led to the deterioration of Pakistan’s financial status and international balance of payments.

The project coincides with the development policy and needs of Pakistan at the time of both appraisal and ex-post evaluation. The project also coincides with Japan’s ODA policy at the time of the appraisal. As a result of examining the process of formulating the policy matrix in coordination with other donors, no major problems could be found in terms of the appropriateness of the project planning and approach. Therefore, the relevance is high.

With regard to effectiveness, the operation and effect indicators of power sector subsidies (ratio to the GDP), power transmission and distribution loss rates (%), and collection rate of electricity tariffs (%) reached their target values. However, the number of notifications of energy-efficiency standards did not reach its target. Of the 14 indicators set by the policy matrix formulated by the donors, 6 indicators did not reach or only partly reached their targets. With regard to impact, the deficits of the budgetary balance and international balance of payments have been improving up to 2015, but the deficits increased after 2016. It is difficult to verify how much the power sector reforms have made an impact on the financial status and vitalization of economic activities because several external factors other than the power sector reforms have affected them. Because the total national capacity of power generation and total electricity generation and sales have been increasing since 2015, partly because of the entry of many IPPs and the decrease in total average hours of load shedding, the impact of the project on the sustainable and stable provision of electricity can be determined to some extent. Therefore, the effectiveness and impact of the project are fair.

With regard to sustainability, one of the challenges is the lack of a unitary system to monitor the progress of all aspects of the power sector reforms.

##### 4.2 Recommendations

###### 4.2.1 Recommendations to the Relating Agency (Ministry of Energy)

Although the policy reform agendas raised in this project have been continuously

implemented by each relevant section, there is no specialized unit that could be responsible for grasping the progress of the entire reform agenda. Relevant organizations of power sector are managing individually and independently. Thus, consolidating all efforts of each policy action is a major challenge.

It is desirable to create a dedicated unit for monitoring the progress of policy actions, formulating a comprehensive energy sector plan, collecting and analyzing related information and data (taking the role of think-tank) within the MoE or others, and strengthening the mechanisms thereof by arranging qualified and experienced staff, as soon as possible.

#### 4.2.2 Recommendations to JICA

Although the policy reform agenda raised in this project has been continuously implemented by each relevant section, there is no specialized section that could be responsible for monitoring the entire reform agenda continuously. Thus, it is also difficult to grasp the progress of the policy reform after the project's completion. It is desirable for JICA to request Pakistan for monitoring the progress of reform agenda, collecting information on the results in a timely manner, and using the information to formulate JICA's future assistance policy in the energy sector.

#### 4.3 Lessons Learned

(1) A development policy loan using a common policy framework coordinated with other major donors can effectively encourage policy reform in the target sector:

The development policy loan framework was designed to encourage efforts toward policy reform through budgetary support as leverage. It effectively encouraged serious efforts by the Pakistan government toward more reform. Co-financing using a common policy framework coordinated with other major donors effectively strengthened the pressure for reform too.

(2) The combination of development policy loan and technical assistance in the policy agenda can effectively accelerate policy reform:

To support concrete implementation of policy actions under the development policy loan, it was effective for JICA to realize the policy reform and its implementation by providing technical cooperation, such as dispatching experts and conducting development study, as well as providing the development policy loan.