ADB CONTRIBUTIONS AND ACHIEVEMENTS UNDER THE FIRST AND SECOND PUBLIC-PRIVATE INFRASTRUCTURE DEVELOPMENT FACILITY

A. Summary Experiences of the First Public-Private Infrastructure Development Facility and the Second Public-Private Infrastructure Development Facility

1. Since 2008, ADB has provided two standalone financing facilities, i.e. Public-Private Infrastructure Development Facility (PPIDF1) and Second Public-Private Infrastructure Development Facility (PPIDF2) to the government of Bangladesh (the government) for relending to Infrastructure Development Company Limited (IDCOL)[1] to develop mostly public-private partnership (PPP) infrastructure projects.

2. **PPIDF1.** In October 2008, ADB approved a total of $165 million, which consisted of: (i) ordinary capital resources (OCR) loan amounting to $82 million to finance private sector-sponsored large infrastructure subprojects (with project costs higher than $30 million), (ii) Asian Development Fund (ADF) loan amounting to $5 million equivalent to finance in local currency small- and medium-sized infrastructure subprojects (with project costs below $30 million), and (iii) ADF loan amounting to $78 million for promoting renewable energy systems in Bangladesh and supporting IDCOL's solar home system program (SHS). PPIDF1 was also complemented by a capacity development technical assistance (TA) of $500,000 to (i) help foster an enabling PPP operating environment in Bangladesh; (ii) assist IDCOL in catalyzing PPP transactions; and (iii) establish a comprehensive environment and social management system at IDCOL. Two supplementary grants totaling $3.3 million from the Asian Clean Energy Fund and the Climate Change Fund (both funds being administered by ADB) supported renewable energy projects and provided buy-down grants for individual SHS to reduce initial capital cost for the SHS installation.

3. The identification and selection of large infrastructure projects under the OCR loan of PPIDF1 took time because of the nascent state of the PPP framework in Bangladesh.[2] At the end of the five-year utilization period, IDCOL was able to identify and financially close three subprojects in the energy sector which fully utilized the $82 million OCR allocation under the facility. Those three subprojects reflected the increased interest by the private sector in infrastructure investments in the country and the emerging PPP sector which led to a much

[1] Infrastructure Development Company Limited (IDCOL) is a 100% government-owned nonbank financial institution established in 1997 with the mandate to promote infrastructure development primarily for PPP projects.

[2] The concept of a PPP is relatively new in Bangladesh. Before the mid-1990s, the government had only entered into few individual PPP transactions. 1996 marked the first time that a policy framework was introduced for PPPs to enable private sector partnerships in power generation. It took five years (until 2001) before the 450 MW Meghnaghat power plant, the first large power project in Bangladesh—structured as a PPP—was successfully contracted with the support of ADB. To build on this success in other areas of infrastructure, the government introduced the *Private Sector Infrastructure Guidelines* in 2004. This marked the start of the program-based PPP initiatives in Bangladesh. However, the results during this period were modest, with only a handful of projects coming to fruition. There was an urgent need to revise the PPP program so that it could match the government's long term vision of growth and prosperity. It took another 6 years before the PPP Policy 2010 was introduced, which comprised of a comprehensive range of reforms, including tax incentives for PPP projects. The policy was designed to develop a sustainable PPP program across multiple sectors. These reforms were reinforced by the allocation of more than $300 million for PPPs in the 2009/10 budget to support the development, financing and funding of PPPs. The Ministry of Finance also instituted a Viability Gap Fund for the financing of up to 30 percent of capital costs of PPP projects. In 2012, the PPP Office (PPPO) became operational under the Prime Minister's Office, and has been a key component of the new reforms. To support these initiatives, the government requested ADB's help to operationalize its PPP program particularly by assisting the establishment of the PPPO, a PPP Unit (PPPU) under the Ministry of Finance, and the drafting of a PPP law. In response to the government's request, TA 7691-BAN: Public-Private Partnership Program Operationalization was approved in 2010 to strengthen these new institutions and to draft the PPP law which was finally enacted and gazetted in September 2015.

stronger deal pipeline for the subsequent ADB interventions, i.e. PPIDF2 and ultimately the Third Public-Private Infrastructure Development Facility (PPIDF3).

4. **PPIDF2.** In September 2013, ADB approved $110 million, which consisted of: (i) OCR loan amounting to $100 million to finance large infrastructure subprojects (project costs higher than $30 million), and (ii) ADF loan amounting to $10 million equivalent to finance IDCOL's SHS program.

5. **Achievements of PPIDF1 and PPIDF2**. Key impact results are as follows:

(i) First, the OCR loans totaling $182 million under PPIDF1 and PPIDF2[3] have so far catalyzed total investments of around $840 million (based on total projects costs) to fund eight PPP subprojects in the power, port, and information technology sectors, thereby leveraging 3.6 times financing from the private sector.[4] Six of the projects funded are in the power sector which added 768 megawatt (MW) of generation capacity to Bangladesh's national grid. This accounted for an estimated 7% of the country's generation capacity at the time of the investment.

(ii) Second, the ADF loans totaling $93 million under PPIDF1 and PPIDF2 have mostly contributed to IDCOL's SHS program, which is the largest and one of the most successful off-grid renewable energy programs in the world. By providing solar panels primarily in rural regions with no access to power, the SHS program has had a very important development impact in rural Bangladesh, and transformed the lives of over 16 million people—10% of Bangladesh's population—living in off-grid rural areas. The program is also saving about 200,000 tons of fossil fuel per year and has created jobs for over 75,000 people.

6. Tables 1 and 2 contain the list of subprojects funded under PPIDF1 and PPIDF2. The tables also provide the safeguard categorization for each subproject. All subprojects have been in full compliance with ADB's safeguard policies and national norms.

Table 1: List of subprojects funded under PPIDF1

ADB Loan/Grant Number	Name of Subproject	Location	Sector	Capacity	Total Project Cost ($ million)	Equity from Borrower ($ million)	IDCOL Financing ($ million)	Financing by Other Financiers ($ million)	Safeguard Categorization			Commercial Operation Date
									ENV	IR	IP	
L2454-BAN	Energypac Confidence Power Venture Chittagong Ltd	Kolgaon, Patia, Chittagong	Power	108 MW	92.86	32.46	30.00	30.40	B	C	C	14-Jan-2015
L2454-BAN	Regent Energy and Power Limited	Ghorashal, Polash, Norshinggdi	Power	108 MW	84.18	30.18	30.00	24.00	B	C	C	16-Jul-2014
L2454-BAN	Summit Meghnaghat Power Company Ltd	Meghnaghat, Naryanganj	Power	335 MW	318.73	136.73	22.00	160.00	B	C	C	1-Jun-2015
L2453-BAN(SF)	Banglalion Communications Ltd	Dhaka	Information Technology	Not applicable	47.52	18.60	3.61	25.32	C	C	C	5-Jul-2005
L2453-BAN(SF)	Fiber@Home Limited	Dhaka	Information Technology	Not applicable	14.54	7.20	1.39	5.95	C	C	C	1-Jun-2010
L2453-BAN(SF)	Solar Home System Program	Remote Offgrid Areas of Bangladesh	Renewable Energy	19.8 MW	97.50	19.50	78.00	0.00	C	C	C	In operation
G0253	Hydron Mini Grid	Bagha, Rajshahi	Renewable Energy	141 kWp	0.84	0.17	0.42	0.25	B	C	C	9-Mar-2015

[3] The funds under PPIDF1 amounting to $165 million were fully disbursed in December 2014. The funds under PPIDF2 are fully committed and implementation is ongoing.

[4] Under ADB's financing facility, IDCOL on-lends up to a total of 40% of total subproject cost.

G0253	Resource Development Foundation Solar Irrigation Pump	Meherpur and Kushtia	Renewable Energy	78.71 kWp	0.26	0.05	0.10	0.10	B	C	C	27-Aug-2014
TOTAL	**PPIDF 1**				**656.43**	**244.89**	**165.52**	**246.02**				

ENV = environmental safeguards, IDCOL = Infrastructure Development Company Limited, IP = Indigenous Peoples safeguards, IR = involuntary resettlement safeguards, kWp = kilowatt peak, MW = megawatt.
Note: All subprojects funded under PPIDF1 were assessed following ESSF (2011) consistent with ADB's SPS (2009).
Source: Infrastructure Development Company Limited.

Table 2: List of subprojects funded under PPIDF2

ADB Loan/Grant Number	Name of Subproject	Location	Sector	Capacity	Total Project Cost ($ million)	Equity from Borrower ($ million)	IDCOL Financing ($ million)	Financing by Other Financiers ($ million)	Safeguard Categorization			Commercial Operation Date
									ENV	IR	IP	
L3045-BAN	Lakdhanavi Bangla Power Limited	Comilla, Bangladesh	Power	52.2 MW	50.08	15.08	15.00	20.00	B	C	C	Dec-2014
L3045-BAN	Summit Barisal Power Limited	Barisal, Bangladesh	Power	110 MW	73.59	23.59	30.00	20.00	B	C	C	Apr-2016
L3045-BAN	Summit Narayanganj Power Unit 2 Limited	Naryanganj, Bangladesh	Power	55 MW	39.48	11.83	15.00	12.65	B	C	C	Feb-2016
L3045-BAN	Summit Alliance Port Limited	Munshiganj, Bangladesh	Port	120,000 TEU	35.36	4.85	10.00	20.51	B	C	C	Dec-2017
L3045-BAN	Karnafully Drydock Limited (Drydock Facility)	Chittagong, Bangladesh	Port	100,000 DWT	142.64	50.78	30.00a	61.86	B	C	C	Early 2018
L3046-BAN	Solar Home Systems Program	remote offgrid areas of Bangladesh	Renewable Energy	2.5 MW	13.50	2.00	10.00	1.50	C	C	C	In operation
TOTAL	**PPIDF 2**				**354.65**	**108.13**	**110.00**	**136.52**				

DWT = deadweight tonnage, ENV = environmental safeguards, IP = Indigenous Peoples safeguards, IR = involuntary resettlement safeguards, MW = megawatt, TEU = twenty-foot equivalent unit.
[a] The remaining funds will be disbursed to Karnafully Drydock Limited, which is currently under construction.
Source: Infrastructure Development Company Limited.

B. Contributions to the SHS Program under PPIDF1 and PPIDF2[5]

7. ADB's financing of the SHS program catalyzed over $23 million in investments from the private sector. ADB's contribution to SHS has generated savings to low-income households of over $560 million (largely from household substitution of the more expensive kerosene-based lighting) and reduced carbon dioxide (CO_2) emissions by 1.5 million tons over a 20-year SHS lifecycle[6].

8. **Health and safety benefits for end-users.** In Bangladesh, like in many other developing countries, the poor population without electricity use mostly kerosene-based lighting, which poses serious health and safety hazards, along with contributing to global warming. Kerosene lamps are one of the major sources of household air pollution in Bangladesh, emitting black carbon, which can cause chronic pulmonary diseases and other respiratory problems. Those who are most exposed to the kerosene vapors are typically women and children, as they are the ones who

[5] N. Bertsch and P. Marro. 2015. Making Renewable Energy a Success in Bangladesh: Getting the Business Model Right. *ADB South Asia Working Paper Series*. No. 41. Manila: Asian Development Bank. https://www.adb.org/sites/default/files/publication/177814/ban-making-renewable-energy-success.pdf

[6] N. Bertsch and P. Marro. 2015. Making Renewable Energy a Success in Bangladesh: Getting the Business Model Right. *ADB South Asia Working Paper Series*. No. 41. Manila: Asian Development Bank. https://www.adb.org/sites/default/files/publication/177814/ban-making-renewable-energy-success.pdf

spend most time inside the house. Acute respiratory infections like influenza and pneumonia kill nearly two million children in developing nations each year. In Bangladesh, 32,330 children below five years old die as a result of indoor pollution.[7]

9. In addition, the use of kerosene lamps and candles inside houses involves high risks of fire accidents. Over 95% of fatal fire-related burns occur in low- and middle-income countries.[8] The ongoing wide dissemination of SHS among low-income households in Bangladesh will make a valuable contribution to improved health and safety conditions amongst the most vulnerable groups within the country.

10. **Improved educational opportunities.** Traditional lighting devices like kerosene lamps and candles in non-electrified areas of developing countries such as Bangladesh, do not provide sufficient lighting conditions for studying and reading. Literacy and school performance are often constrained due to limited time to study during the night. One case study from the World Bank, based on a data from Bangladesh, confirmed the positive correlation of access to electricity by households to educational enrollment ratios.[9]

11. In a comprehensive effort to measure the social benefits of improving educational opportunities and conditions in monetary terms, it has been estimated that there is a potential return of $80–$150 per month per rural household from access to modern energy sources (ESMAP 2002).[10] SHSs are a relatively low-cost option for improved lighting and, thus, offer opportunities to improve studying conditions to large numbers of households of the lower-income strata. They can thereby help enhance the educational performance in developing countries.

12. **Environmental benefits on global warming and greenhouse gas emissions.** Fuel-based lighting is the primary source of greenhouse gas emissions related to lighting in developing countries. 244 million tons of CO_2 are emitted each year through the use of fuel-run lighting devices like kerosene lamps, oil lamps, gas lamps, and candles. Finding alternative clean lighting solutions that are affordable for low-income households in non-electrified areas (like SHS) is therefore an important entry point for reducing global greenhouse gas emission. They also offer relatively low-cost opportunities for emerging economies with large rural populations like Bangladesh to pursue low-carbon development paths without compromising the continuous improvement of living standards.

13. A 2012 survey by the Bangladesh Institute of Development Studies and the World Bank estimated the reduction in CO_2 emissions from kerosene replacement due to SHS adoption to be approximately 5.5 kilograms a month per household.[11] This translates to more than half a million tons in avoided CO_2 emissions each year for all SHS households in Bangladesh—a substantial reduction. Considering that only about 10% of people in offgrid areas have adopted SHS, the potential for even greater reductions is large.

C. ADB's Contribution to Strengthening IDCOL

[7] World Health Organization. 2007. *Indoor Air Pollution: National Burden of Disease Estimates*. http://www.who.int/indoorair/publications/nationalburden/en/

[8] World Health Organization. http://www.who.int/violence_injury_prevention/other_injury/burns/en/

[9] S. R. Khandker, D. F. Barnes, and H. A. Samad. 2009. Welfare Impacts of Rural Electrification: A Case Study from Bangladesh. *World Bank Policy Research Working Paper Series.* No. 4,859. Washington, DC.

[10] ESMAP Annual Report. http://documents.worldbank.org/curated/en/236721468315853240/ESMAP-Annual-Report-2002

[11] Bangladesh Institute of Development Studies and World Bank. 2012. *Household Survey Data on Impact Evaluation of Solar Home Systems in Bangladesh.* Dhaka

14. Since 2007, ADB has transformed IDCOL from a nascent infrastructure financier into a more efficient, commercially-driven, and respected nonbank financial institution (NBFI). This was achieved through a combination of regular and continuous policy dialogue and TA support, and served to enhance the sustainability of ADB's assistance. ADB's TA developed IDCOL's environmental and social safeguards framework (ESSF) under PPIDF1 and this was updated during the processing of PPIDF2 to be consistent with ADB's *Safeguard Policy Statement* (SPS) 2009.[12] Capacity building was also provided to IDCOL on conducting project appraisal to ensure that the company can carry out the environmental and safeguards assessments and due diligence of its subprojects; and in mainstreaming PPP activities. Paras. 2, 17 and 18 detail the earlier TA and capacity building support to IDCOL. While the current level of IDCOL's capacity is sufficient for the time being, there is a need to continue strengthening the company's capabilities and skills in view of the increase of lending volume through the proposed PPIDF3. The proposed TA under PPIDF3 will support IDCOL's consolidation drive to be the leading financier of PPP infrastructure projects in Bangladesh.

1. Environmental and Social Safeguards Framework

15. During the processing of PPIDF1 in 2008, ADB provided independent consultancy support to IDCOL in developing a comprehensive ESSF, which was developed and implemented with the help of a team of experienced consultants and with guidance from ADB's Sustainable Development and Climate Change Department.[13] The ESSF was later updated during the processing of PPIDF2 in 2013 to be consistent with the ADB's SPS (2009).[14,15] All subprojects financed from the OCR loans under PPIDF1 and PPIDF2 were assessed following ESSF (2011)[16] As a condition under PPIDF3, no category A subproject will be funded by ADB.

2. Institutional Capacity Building

16. The TA piggybacked to PPIDF1 further enhanced the sustainability of PPIDF1 by supporting the capacity development of IDCOL on appraisal and implementation of subprojects. Trainings were provided to IDCOL and staff of relevant government agencies on credit, risk assessment, management and mitigation; and in the environmental and social assessment of subprojects. The TA also assisted line ministries in the drafting of PPP frameworks and policies in Bangladesh based on IDCOL's experience in financing private sector-led infrastructure subprojects upon the request of those line ministries. This included providing the government and its agencies with market feedback on the challenges, issues, and concerns from private sector sponsors and offer advice and solutions; conducting economic, sector, and industry studies; and mainstreaming PPP in public sector entities.

17. The key achievements under the TA 7143-BAN: Capacity Development Technical Assistance under PPIDF1 (amount approved: $500,000) are as follows:

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[12] ADB. 2009. *Safeguard Policy Statement.* Manila.

[13] ADB. 2008. *Report and Recommendation of the President to the Board of Directors: Proposed Loans and Technical Assistance Grant to the People's Republic of Bangladesh for the Public–Private Infrastructure Development Facility.* Manila.

[14] ADB. 2013. *Report and Recommendation of the President to the Board of Directors: Proposed Loans to the People's Republic of Bangladesh for the Second Public–Private Infrastructure Development Facility.* Manila.

[15] ADB. 2009. *Safeguard Policy Statement*. Manila.

[16] Infrastructure Development Company Limited. 2011. *Environmental and Social Safeguards Framework: Policy and Procedures*. http://idcol.org/download/1d8514287c3e7cda76423b33a781f79c.pdf

(i) A diagnostic review report on IDCOL's operating policies and procedures, credit policy, portfolio and pipeline review, and funding operations;
(ii) Training of IDCOL staff on risk management, particularly on environment and social safeguard due diligence;
(iii) Training on ESSF;
(iv) Training for IDCOL's environmental and social safeguard management unit (ESSMU);
(v) Stakeholder consultations with the government and private sector on PPP, which laid the groundwork for subsequent ADB intervention on PPP in Bangladesh. The government issued the Policy and Strategy for PPP 2010 (PPP Policy 2010)[17] to facilitate the development of core sector public infrastructure and services, which eventually led to PPP law being passed by the government in 2015[18]; and
(vi) Mainstreaming of PPP concepts in various line ministries through various consultations (which complemented another ADB TA that led to the establishment of the PPP Office (later renamed to PPP Authority) under the Ministry of Finance and PPP Unit under the Prime Minister's Office)

18. In 2013, additional support to IDCOL was also provided through independent consultancy to help IDCOL in identifying opportunities for potential ADB and IDCOL involvement in commercially-viable business models for renewable energy applications to increase access to energy to rural commercial and household consumers in Bangladesh. This has led to IDCOL slowly diversifying its renewable energy program from a focus on SHS to financing and installation of solar irrigation systems, biomass gasifiers, solar micro-grids, wind energy, and micro-hydro installations.

D. Assessments and Lessons from PPIDF1 and PPIDF2

19. While all subprojects financed under PPIDF1 are fully operational, some of the subprojects under PPIDF2 are still under construction and not yet operational. Although it is too early to make a final assessment on the success of PPIDF2, none of the subprojects is experiencing any significant issues or delays. Based on the processing team's own assessment and validated through extensive consultation across recipients, counterpart agencies, and other stakeholders, PPIDF1 was successful. This assessment was further confirmed by the Bangladesh Validation of the Country Partnership Strategy Final Review 2011–2015 conducted by ADB's Independent Evaluation Department which rates the performance of PPIDF1 as successful.[19]

20. The assessment highlights important lessons:

(i) The wholesale financial intermediation lending through IDCOL has been successful in effectively channeling long-term resources to deliver much needed infrastructure development.
(ii) IDCOL has made appreciable gains as a major provider of infrastructure finance in the country through ADB's policy dialogue and TA support.
(iii) Scaling up of ADB operations through IDCOL is recommended. This is based on the success of the first two ADB programs and IDCOL's proven track record and the large infrastructure financing demand in Bangladesh. IDCOL has grown over

[17] Policy Strategy and Strategy for PPP in Bangladesh. http://www.unescap.org/sites/default/files/3-Bangladesh.pdf
[18] The Bangladesh Public–Private Partnership Act, 2015. http://www.pppo.gov.bd/download/ppp_office/PPP_Law_2015_(Approved_Translation).pdf
[19] ADB. 2009. *Validation Report: Country Partnership Strategy Final Review 2011–2015*. Manila.

time and has established a leading position in appraising and financing subprojects in the power and renewable energy sector.

21. In line with the changing market dynamics, ADB's support to IDCOL will need to deepen reflecting (i) a need to diversify its loan portfolio, (ii) efforts to improve project readiness, and (iii) the current saturation in the SHS market. As such, improving risk and treasury management, further strengthening of its environmental and social management system, and enhancing corporate governance are important areas to sustain IDCOL's growth and to be supported under the PPIDF3 TA.

22. Furthermore, the work on PPPs undertaken by the TA piggybacked to PPIDF1 increased awareness and the buy-in from the public for the establishment of an enabling regulatory and institutional framework for PPPs that culminated in the establishment of the PPPO (later renamed to PPP Authority) in 2012 under the Prime Minister's Office and the enactment of the PPP law in 2015[20] (see footnote 2).

23. Another lesson learned is the need for IDCOL to diversify its mix of products and exposure to a single sector. Currently, IDCOL's SHS program accounts for 70% of its loan portfolio which represents a significant cluster risk.

24. While IDCOL's SHS program has experienced rapid growth over the last years and has been a phenomenal success by becoming one of the largest off-grid renewable energy programs in the world, its growth has slowed since FY2013 and has lately started to face some challenges in the form of an "inclusive growth program" spearheaded by the government which provides poor households with free SHS and the entry of unregulated market entrants from the private sector which offer cheaper SHS to the public but at lower quality and with no after-sales support.

25. In response to these issues, IDCOL has instituted a number of proactive measures to mitigate these risks such as increasing its debt recovery efforts to help the organizations participating in its SHS program improve the efficiency of their collections in areas where the rates are poor, and pursuing defaulting debtors through legal proceedings. These measures have already yielded tangible results in the form of lower levels of nonperforming loans and significant recoveries from outstanding claims.

26. On advice from ADB, IDCOL has agreed to intensify these efforts by appointing four new senior staff members - to be completed prior to ADB loan effectiveness under tranche 1 of PPIDF3. Specifically, IDCOL will establish a recovery unit led by a new senior staff member who will report to the head of IDCOL's credit management department. IDCOL will also strengthen its internal control and risk management capacity and process to ensure that sound financial management practices are in place. To do so, it will appoint a senior manager with background in risk management to head credit management and become a voting member of the company's credit risk management committee. The company will engage an internal auditor at senior level to head its internal audit unit, which will report directly to IDCOL's board of directors. Finally, a senior officer will be added to IDCOL's infrastructure team reviewing large transactions to further strengthen the capacity of this important unit.

[20] The Bangladesh Public-Private Partnership Act, 2015.
http://www.pppo.gov.bd/download/ppp_office/PPP_Law_2015(Approved_Translation).pdf