



Evaluation Directorate

Independent Evaluation Department

# Highlights on the Joint Evaluation “66kv Electricity Transmission Development Project, Bahrain”



# Project Overview for the joint evaluation

## Key project information

|                                       |  |
|---------------------------------------|--|
| <b>Project name</b>                   | <b>66kv Electricity Transmission Development Project</b> |
| <b>Country</b>                        | <b>Kingdom of Bahrain</b>                                |
| <b>Sector</b>                         | <b>Energy sector</b>                                     |
| <b>Executing Agency</b>               | <b>Electricity and Water Authority</b>                   |
| <b>Total Cost</b>                     | <b>\$ 276.58 Million</b>                                 |
| <b>IsDB contribution</b>              | <b>\$ 110.29 Million</b>                                 |
| <b>SFD contribution</b>               | <b>\$ 76.26 Million</b>                                  |
| <b>Project Effective date</b>         | <b>December 2010</b>                                     |
| <b>Planned completion date</b>        | <b>July 2014</b>   |
| <b>Actual Project completion date</b> | <b>March 2017</b>  |





# Project financing by component and co-financier

US Million Dollar

|   | SFD          | IsDB          | ADFD        | GoB          | Total                |
|---|--------------|---------------|-------------|--------------|----------------------|
| <b>1- 24 new 66kV Substations:</b>                  |              |               |             |              |                      |
| <b>a. Seventeen 66kV City Type Substations</b>      | -            | 94.39         | -           | 28.21        | 122.6                |
| <b>b. Seven 66 kV Loop Type Substations</b>         | -            | -             | 7.68        | 37.56        | 45.24                |
| <b>2- Expansion of one existing 66kV substation</b> | -            | -             | 1.13        | 1.52         | 2.65                 |
| <b>Additional sub-stations</b>                      | -            | 15.9          | -           | 0.63         | 16.53                |
| <b>3- 66 V Cable Feeders</b>                        |              |               |             |              |                      |
| <b>a. Supply of Cable Feeders</b>                   | 28.98        | -             | -           | 2.05         | 31.03                |
| <b>b. Cable installation</b>                        | 13.63        | -             | -           | 0.9          | 14.53                |
| <b>4- Civil Works</b>                               | 33.65        | -             | -           | <b>0.7</b>   | <b>33.72</b>         |
| <b>5- Consultancy Services</b>                      | -            | -             |             | 10.28        | 10.28                |
| <b>Sub-Total</b>                                    | 76.26        | 110.29        | 8.81        | 81.22        | 276.58               |
| <b>Contingency ( ~5%)</b>                           | -            | -             | -           | -            | -                    |
| <b>Total</b>  | <b>76.26</b> | <b>110.29</b> | <b>8.81</b> | <b>81.22</b> | <b><u>276.58</u></b> |

# OECD DAC evaluation criteria

## Evaluation Criteria description



- Evaluation Directorate has adopted the **OECD DAC evaluation criteria**, which is a commonly used normative framework for **evaluating the value of an intervention**.
- Each criteria receives a **score between 0-100%** which is **determined by a set of sub-criteria** (*Find more in Appendix*)

# Findings

# Relevance

- The project was in line with the **GoB priorities** in satisfying the increasing demand for electricity.
- Moreover, the project is also in line with **SDG 7**: ensure access to affordable, reliable, sustainable and modern energy for all.
- The 66 kV substations and related cable feeders completed under this project were required to provide **relief to overloaded nearby substations and to supply electricity to new developments in the local areas**, such as new housing projects, new commercial districts, etc.
- The project design was **consistent with its objectives and displayed coherence** between outputs and outcomes.

# Effectiveness

- The achieved outputs, **exceeded the targets** at appraisal slightly, as there were: (i) construction and installation of 26 new 66-kV substations compared to 24 targeted at appraisal, out of which IsDB financed 19 against the planned 17; (ii) extension of an existing 66-kV dry dock substation, and (iii) supply and installation of 115 km of 66-kV cable feeders compared to 88 km planned.
- These outcomes contributed to **meeting the increasing electricity demand and supporting the population and economic growth**. The electricity transmission capacity increased by 1560MVA by 2016 compared to the target of 1440 MVA at appraisal.
- Moreover, the project contributed to **reducing load shedding** of the existing substations and electricity outages during the peak load.
- The **transmission losses decreased** from 4% in 2009 to 1.41% in 2021, while the system average interruption duration index (SAIDI) dropped from 251 in 2012 to 9 in 2021.



# Efficiency

- The actual implementation schedule of the project was longer than planned by **30 months**, mainly due to the delays in securing substation plots and getting the permissions and wayleaves for the cable routing.
- IsDB disbursed USD 110.29 million (89% of the approved amount), while SFD provided financing of USD 76.25 million. The GoB allocated an amount of USD 81.22 million, and Abu Dhabi Fund for Development financed the remaining amount of USD 8.81 million (This contribution wasn't initially planned at the appraisal phase). The actual project cost was USD 276.58 million compared to USD 287 million estimated at appraisal, resulting in a **cost underrun of USD 10.42 million (3.6%)** despite adding two substations to the original scope.
- The main reasons for this variation are: (i) non-utilization of contingencies; and (ii) reduction in the prices of supplied equipment globally during the implementation.

# Sustainability

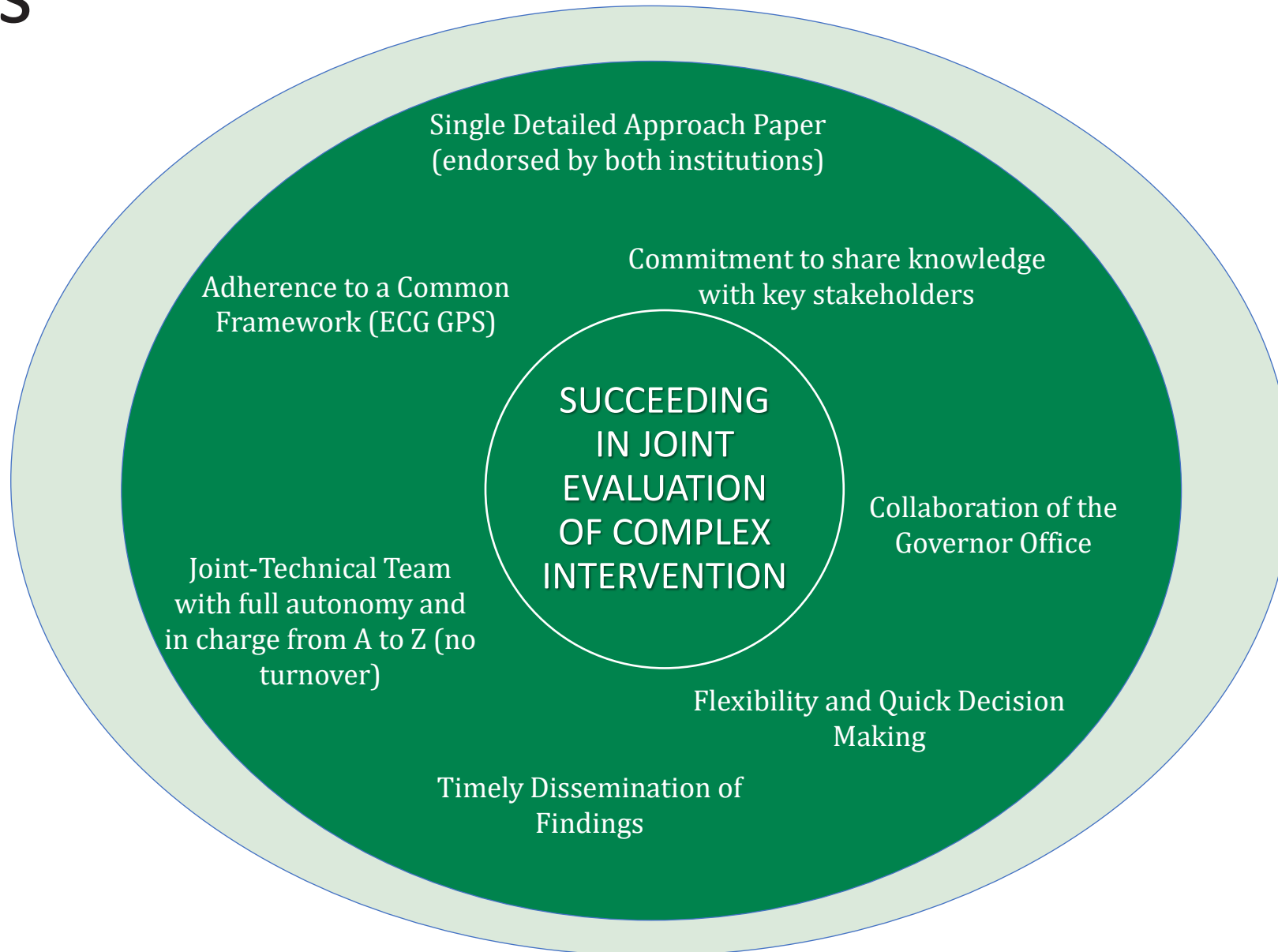
- Based on the field visits and records examined, all the stations are in **good condition and working optimally**. EWA employs highly qualified staff in charge of switchgear maintenance.
- The maintenance policy follows best practices such as condition assessment, preventive maintenance, corrective maintenance, and fault maintenance.
- The Executing Agency has a **Computerized Maintenance Management System (CMMS)** that automates the management and recording of all maintenance activities on the substation equipment.
- Regarding financial sustainability, although the current tariff is not cost-reflective, **the GoB is highly committed to supporting the sector with the required subsidies**.

# Overall Assessment

- The feedback received from consulted stakeholders confirms that IsDB & SFD are **highly respected development partners** and that their interventions were conducted professionally.
- Overall, the evaluation mission concluded that the project has been successful and showed good performance.
- The project rating was:
  - Highly Relevant
  - Highly Effective
  - Less Efficient and
  - Most Likely Sustainable.
- Therefore, the overall project rating was **“Successful”**.

# Lessons learned from Joint Evaluation

# Lessons





# Thank You