



Restructure: Eskom Renewables Support Project Component 2

Country / Region: **South Africa** | Project Id: **XCTFZA231A** | Fund Name: **CTF** |

MDB : **International Bank for Reconstruction and Development**

Comment Type	Commenter Name	Commenter Profile	Comment	Date
Comment 1	Beatriz Curiel	Spain	As we requested during the call, since reference is made in the document to the project's demonstration potential and this is the very first project of its kind in Sub-Saharan Africa, we would appreciate more rationale on the potential replication of the project in the region. Moreover, we would welcome more information of such programs, mentioned in the document, on battery storage technology being developed by other power utilities around the world. Kind regards, Beatriz	Jun 22, 2018
Response 1	Monyl Nefer Toga Makang	IBRD	Thank you for giving us the opportunity to address your concern. Potential for replication of this battery storage program in Sub-Saharan Africa (SSA) is very important, in particular in countries / utilities having (i) grid reliability issues, (ii) high averaged power generation cost and/or (iii) high potential for wind and solar development. High flexibility and low maintenance needs of the batteries, modularity and scalability of investment, and variety of uses it could have makes it an ideal tool to serve the power sector's biggest challenge, to have the electricity available when you need it most. Similarly, large on-grid PV plants and solar market scale up benefit to smaller PV solutions for rural electrification in SSA, the deployment of a large battery storage program will attract batteries suppliers in the region and diversify the variety of offers (e.g., for minigrids and household systems). Main barrier to deployment of grid scale batteries in SSA is the demonstration effect; we expect utilities in the region to replicate Eskom's battery storage program the same way replication is currently happening in European power systems (regional integration and power pools development in SSA would contribute to this replication).	Jun 27, 2018
Response 2	Monyl Nefer Toga Makang	IBRD	Q. Information of programs on battery storage technology being developed by other power utilities around the world. A. Grid scale battery storage technology has taken off since 2010, benefiting from technical progress – and cost reduction - made on batteries for electric vehicles. Utilities already using hydro pumping stations in countries having wind/solar potential have been the pioneers on piloting then scaling up similar programs (batteries have also been deployed in countries where battery manufactures are present). According to US DOE Global Energy Storage Database, around 5,000 MW of battery capacity is currently in operation worldwide. If main technology utilized is lithium-ion, the other technologies are evolving very fast to adjust to operational needs at competitive cost. The largest battery storage programs running today are located in China, USA, South Korea and Europe. Countries like Australia and Japan intend to develop similar programs. Q. Technology maturity and examples of projects where battery storage is commercially viable A. All battery programs initiated in countries mentioned above were not economically viable in the first place. VRE plus storage became competitive after 2016 in modern economies, when cost of wind, solar and battery technology dramatically decreased. Particular cases are being island power systems, where battery VRE and storage is commercially viable when compared to alternative sources (mainly oil-based), and specific grid configurations where batteries allow to defer large grid investments. French Caribbean islands have just released their third call for tender on VRE plus storage, totaling more than 120MW of installed storage capacity in operation. As of today, despite its dispatchable aspect, VRE plus storage is still not the technology of choice in fragile power systems, because of the innovative character of grid scale battery systems in those environments.	Jun 27, 2018



South Africa is between these two contexts, as VRE is being widely deployed (engendering a need for more flexibility in the power system operation) while battery storage is a completely new technology (inducing higher implementation costs than systems having batteries already). This specific context is the primary justification for the use of concessional financing to develop the country's first battery storage investment program.