INTEGRATED SAFEGUARDS DATA SHEET
CONCEPT STAGE

Report No.: ISDSC8329

Date ISDS Prepared/Updated: 28-May-2014

Date ISDS Approved/Disclosed: 05-Jun-2014

I. BASIC INFORMATION

A. Basic Project Data

Country:	India	**Project ID:**	P147818
Project Name:	Greening the Energy Mix in DVC (P147818)		
Task Team Leader:	Mohua Mukherjee		
Estimated Appraisal Date:		**Estimated Board Date:**	15-Sep-2015
Managing Unit:	SASDE	**Lending Instrument:**	Investment Project Financing
Sector(s):	Transmission and Distribution of Electricity (20%), Other Renewable Energy (80%)		
Theme(s):	Infrastructure services for private sector development (50%), Other public sector governance (30%), Corporate governance (20%)		

Financing (In USD Million)

Total Project Cost:	486.00	Total Bank Financing:	243.00
Financing Gap:	0.00		

Financing Source	Amount
Borrower	243.00
International Bank for Reconstruction and Development	243.00
Total	486.00

Environmental Category:	B - Partial Assessment
Is this a Repeater project?	No

B. Project Objectives

The proposed project development objectives are (i) To green the energy mix of DVC through increase in grid connected solar energy generation; and (ii) To improve power system reliability and efficiency by modernizing and improving operation of DVC's grid network.

C. Project Description

Damodar Valley Corporation (DVC) is an organization set up under an Act of Parliament (DVC Act 1948) and is owned by 3 (three) participating Governments viz. Government of India and State Governments of West Bengal and Jharkhand. DVC was formed to construct and operate various dams, reservoirs, hydro-electric plants and irrigation canals, etc. in the Damodar river basin primarily to control recurring devastating floods in the lower basin and also to derive other benefits e.g. providing irrigation, generating electricity and providing water supply to industries and domestic consumers along with improvement in the socio economic condition of the people residing in the DVC Command Area.

The network of investments along the basin has successfully controlled and moderated large floods since the 1950s. Over the years, leveraging its locational advantage, DVC has progressed towards becoming a leading power producer in Eastern India. DVC has around 3,710 MW of thermal capacity and 144 MW of hydel capacity under operation and another 4,200 MW of thermal plants under construction scheduled to be commissioned in the 12th Plan period by FY2014. Another 1,320 MW is planned to come up by the year 2018 with overall capacity reaching 9,230 MW, almost a three-fold increase on the current operational capacity. In addition, DVC also distributes power to about 290 High Voltage consumers (voltages above and including 33 kV) in the Damodar Valley Command area. Its current consumers include the Indian Railways, steel plants, and collieries. DVC has recently also agreed to supply 120 MW in 2016 and scale-up to 360 MW in the next 4 to 5 years, to the Dedicated Freight Corridor Corporation of India Limited (DFCCIL), to meet the requirements of the electrified Eastern Dedicated Freight Corridor, which is under construction at present. This freight corridor is expected to be a growth pole for regional development in the coming years.

In the past, DVC's focus has been only on development of thermal projects but now DVC is keen to green its energy generation mix and also improve the quality of power supplied to its consumers. On the solar side, DVC's initial plan is to scale up its solar capacity to around 235 MW by FY 2017 and upto 1,000 MW by 2022. To improve the power quality, DVC plans to implement a system strengthening and modernizing project on a pilot area and also extend the Automated Meter Reading system implemented recently on all consumers, to power injection and interchange points, in order to build an efficient energy accounting system. Whether this will cover only the pilot area or the entire DVC network, will be decided during project preparation.

The proposed project is planned to have three components:

(a) Investment in Greenfield Solar Generation (Estimated cost - US$ 386 million): DVC's assets include almost 25000 acres of land, a significant percentage of which is presently not utilized and a network of irrigation canals maintained by the respective state government. DVC's primary objective in diversifying into solar energy investments is to diversify its energy mix to offset the challenges faced in thermal generation capacity addition while utilizing its vast holdings of unused land and spaces. Addition of solar capacity will also enable DVC towards meeting its RPO targets as a deemed licensee, and replace a part of its thermal generation in future. The initial plan is to scale up its solar capacity to around 200 MW by 2017, as the first phase of its proposed program to invest in 1,000 MW of grid-connected solar PV by 2022. This would complement its 5,000+ MW of thermal power generation assets. Since there is no prior in-house experience with solar power, DVC is already piloting with its own funds a 15MW canal-top grid-connected solar PV investment to better understand solar procurement (in this case, on a supply and install basis with operation and maintenance for three years), and to establish and train an in-house solar PV team to complement its vast expertise in conventional generation. This 15 MW solar pilot project, the largest of its kind in

India (so far, only a 1 MW pilot project of grid-connected irrigation canal-top solar PV has been undertaken near Ahmedabad in Gujarat),will be mounted over a stretch of irrigation canals (in Burdwan district of West Bengal), that are part of a vast irrigation network owned by DVC and maintained by the Irrigation Department of West Bengal.

DVC proposes to undertake a program to invest in 1,000 MW of grid-connected solar PV on its available vast holdings of un-utilized land. DVC's available land holdings can be classified in various categories: (i) wastelands owned by DVC, (ii) stretches inside the protected boundaries of thermal power plants; (iii) land under its transmission infrastructure; (iv) flat hydel catchment area; (v) sloping embankments of its dams; (vi) outside the perimeter fence of power plants, for example, on the shores of reservoirs or other un-utilized flat land; (vii) the irrigation canal network in owned by DVC and maintained by West Bengal; (viii) partial use of space above existing productive water bodies located on DVC land such as cooling ponds. Considering a minimum requirement of 5 acres per megawatt for ground-mounted solar panels, DVC's proposed overall investment targets will therefore require at least 5,000 acres. This translates to a little over 20 sq km, if it were assumed to be entirely ground-mounted solar installations. Judicious use of available spaces for installing solar generation capacity is therefore a hallmark of this proposed investment program if DVC succeeds in greening its energy mix to 1,000 MW which is far above its minimum regulatory requirements, as it proposes to do.

DVC is in the process of engaging a consultant, under its own funding, to prepare the Detailed Project Report for Phase 1 of its Solar PV Investment Program, proposed to be funded under the project. Further, as some of the investments in solar component are likely to be on unconventional surfaces (e.g. water bodies or sloping land etc.), technical and environmental issues associated with these investments will be carefully assessed during project preparation. DVC will prepare an Environment and Social Management Framework (ESMF) and undertake social and environmental screenings for sub-projects to identify and categorize adverse impacts, and accordingly prepare and implement Environment and Social Mitigation Plans (ESMPs) to minimize and mitigate the adverse impacts and enhance positive impacts.

(b) Investments in DVC's Grid Network to Improve Reliability and Efficiency (Estimated Cost - US$ 90 million): DVC's existing electricity distribution operation has shown a demand growth of 9% per annum and this is expected to continue over the 12th (2012-17) and 13th (2017-22) five year plan periods, aided by rapid industrialization in the Damodar River Valley. Over these two plan periods, DVC plans to undertake significant capital investments to build the backbone transmission and sub-transmission infrastructure to address the demand growth and ensure reliability of supply.

DVC has divided its grid network into six operational divisions and has identified a pilot zone consisting of parts of three divisions. The pilot zone covers about 14 sub-stations, 4 switch yards of thermal and hydro power generation stations and feeder points for 50 critical consumers. DVC plans to strengthen and modernize the grid network in the pilot zone and invest in improving its efficiency in the first phase of the project. DVC has identified the pilot zone based on availability of communication infrastructure and critical consumer coverage. This zone is proposed to be strengthened, augmented and modernized to improve reliability and operational efficiency by augmenting existing sub-stations and lines and building new assets. A SCADA cum EMS is also proposed to be installed along with a suitable Management Information System. The upgradation and modernization of the switchyards included in the pilot zone is critical to attaining the end-objective of improving the quality of power supply to consumers but there are no investments envisaged in the power stations themselves. DVC has already prepared a concept note about the proposed investment

and is currently preparing the Detailed Project Report, which will help the Bank team in preparing a phased plan and also in identifying the suitable investments under this component.

(c) Technical Assistance Component (Estimated Cost - US$ 10 million): DVC's organization and institutional practices have not evolved as required, over time and the organization is presently not fully equipped to take on the challenges of business expanding by three times in 7 years and several new critical initiatives being planned. DVC's Corporate Plan has been prepared recently for the period 2012-22 with a perspective plan up to 2027. The Corporate Plan of DVC identifies several critical areas of institutional strengthening, which need to be implemented in order to improve the effectiveness and efficiency of such large investments and to make the organization deliver sustainably on its intended objectives in the Valley and beyond. DVC is keen on using the association with the Bank in improving its technical and organizational capacity, learning from the experiences of other key CPSUs like NTPC and POWERGRID in the power sector, who have had long association with the Bank and which today are recognized as flagships, being listed on the Indian stock market and operating according to international best practices. The Technical Assistance component will aim to assist DVC to conduct institutional assessments across all key functions of DVC, developing a comprehensive business process reorganization plan to enhance core capacities of the organization across functions such as human resources, project management and monitoring, operation and maintenance, financial management and implementation of enterprise wide IT and assistance in project management support in implementation of the two investment components indicated above. In addition, DVC is also keen on getting exposure to the latest tools and technologies in the area of solar investment and smart grid investments. The specific interventions will be designed and agreed with DVC during project preparation.

D. Project location and salient physical characteristics relevant to the safeguard analysis (if known)

The DVC owned land areas are located in the states of West Bengal and Jharkhand, in the catchment of the Damodar river which eventually flows into the Ganges. Most of these areas are in Gangetic Plain and some extend into the Jharkhand plateau. Some of the potential sites are located close to or within Forest lands. Several candidate sites are located close to the Damodar or its tributaries like Konar and Barakar, and some others close to man-made reservoirs.

The long list of candidate sites identified for the two investment component are located in areas acquired and transferred to DVC earlier by the state governments of West Bengal and Jharkhand. Specifically, the proposed sites include: (a) West Bengal: (i) open spaces above 15 kms of the right bank main canal of Damodar river at Khanda Ghosh in Bardhawan; (ii) land areas acquired at Panagarh for switch yards; (iii) land areas and open spaces over reservoirs owned by DVC in and around Mejia Thermal Power Station premises; (iv) land areas acquired earlier near the Durgapur Thermal Power Station; (v) lands available at the Panchet Zero Point beyond the catchment areas, and lands available along right side and left side of the river downstream the Panchet dam; and (b) Jharkhand: (i) Land acquired for Tail Pool Dam downstream of Panchet Dam and not utilized; and (ii) lands beyond catchment areas of Maithon Dam and lands around the dam township.

Most of these areas are clear (barren/waste) lands free from encumbrances, except a few small parcels under agricultural activities by the local farmers or previous owners; which means the proposed activities could affect livelihoods of some local people at some sites. No formal settlements exist on these lands; however, presence of any squatters will need to be verified. A few of these sites are located closer to tribal habitations, and presence of tribal communities in the proposed areas will need to be verified. These sites are generally away from habitations, however, any impacts with

regard to people's mobility and any hazard risks shall assessed in order to minimize and mitigate the same.

E. Borrowers Institutional Capacity for Safeguard Policies

DVC has an environment department working out of its headquarters with environmental professionals at each of its existing power plants. It also has a Directorate of Forests headquartered in Hazaribaug that undertakes forestry and soil conservation related works. DVC has obtained environmental clearances for its power plants and has carried out afforestation as compensation, as well as Corporate Social Responsibility (CSR) activities. However, their familiarity is with Safeguards Policies is only beginning with this engagement.

DVC has a CSR cell comprising a team of social development professionals and implements a Social Integration Program (SIP) in about 300 villages with an annual budget of some USD 6 million. It has been implementing community development activities including rural infrastructure, education, vocational training for women, and community health, in consultation with village development advisory committees (VDAC) at the project level. DVC has a Land Cell to coordinate land acquisition activities with the concerned state government. Even though DVC, as a requiring body, does not have direct experience in managing land acquisition or resettlement activities and has so far played only a liaising role in this regard, its CSR Cell, which has 10 social development professionals already. This CSR Cell shall be established as the Social Development Unit (SDU) with additional safeguards management capacity as required. The Bank will support capacity building of the SDU to carry out social screening, impact assessment, and prepare, and implement social management framework' in a manner consistent with the Bank safeguards policies and with addressing 'gender equality and social inclusion' issues.

F. Environmental and Social Safeguards Specialists on the Team

Gaurav D. Joshi (SASDI)

Satya N. Mishra (SASDS)

II. SAFEGUARD POLICIES THAT MIGHT APPLY

Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/ BP 4.01	Yes	The project activities have the potential to cause impacts on the environment. These could include impacts on the land use, soil leveling, habitat loss, etc. These will be assessed during preparation and suitable tools for managing these will be developed. Frameworks / Policy and Procedures for guiding the management of environmental and social issues in transmission and in solar PV connected to the grid will be prepared for the project. In addition, investment specific mitigation/management plans will be prepared as investments get identified and finalized. It is envisaged that DVC will prepare ESMFs for the Transmission and Distribution, as well as Solar PV components for guiding the preparation of the management plans before

		appraisal. It will also prepare Management Plans for the investments identified for implementation in the first 18 months during the preparation phase. The management plans for the remaining investments will follow the respective ESMFs and will be finalized as sub-projects are finalized.
Natural Habitats OP/BP 4.04	TBD	Some sites or parts of sites may be located on or close to Natural Habitats. This will be confirmed during site selection and subsequent analysis.
Forests OP/BP 4.36	Yes	While no commercial logging is to be undertaken as part of the project, some activities could affect their health especially if solar PV arrays are installed or transmission lines connecting to the grid cross such areas.
Pest Management OP 4.09	TBD	This will be determined during preparation as there is potential for use in case of ground maintenance during operation phase.
Physical Cultural Resources OP/ BP 4.11	Yes	Some installations under the project may cause impacts on locally important cultural properties. In addition, during construction, there is a chance of finding important artifacts that would need to be managed.
Indigenous Peoples OP/BP 4.10	TBD	A few of these sites are located closer to tribal (IPs) habitations. A Social Screening will be carried out to verify and confirm physical presence of IPs within the project area, and tribal people not living strictly within the project boundary but who may be impacted by the project through loss of livelihood, etc. Based on the screening results, OP 4.10 shall be triggered and appropriate safeguards measures taken, consistent with the policy.
Involuntary Resettlement OP/BP 4.12	Yes	Most of these areas are clear (barren/waste) lands free from encumbrances, except a few small parcels under agricultural activities by the local farmers or previous owners; which means the proposed activities could affect livelihoods of some local people at some sites. No formal settlements exist on these lands; and the presence of any squatters on the lands selected for the project will needto be verified. Based on the social screening of sites identified, an assessment of key social issues and risks, an Environment and Social Management

		Framework (ESMF) including a Resettlement Policy Framework (RPF) shall be prepared consistent with the OP 4.12. Based on the ESMF, Social Management Plans shall be prepared and implemented for individual sub-projects (sites) based on detailed assessment of adverse impacts on livelihoods and shelter, etc. The Social Management Plan will provide details of the site identified for sub-project including the process of land acquisition completed prior to site transfer in a manner compliant with OP 4.12.
Safety of Dams OP/BP 4.37	TBD	This will depend on whether the final site selection will include any dam locations.
Projects on International Waterways OP/BP 7.50	No	There is no activity under the project that can significantly affect water flowing in the Damodar river or its tributaries.
Projects in Disputed Areas OP/BP 7.60	No	The project does not involve any disputed areas.

III. SAFEGUARD PREPARATION PLAN

A. Tentative target date for preparing the PAD Stage ISDS: 11-May-2015

B. Time frame for launching and completing the safeguard-related studies that may be needed. The specific studies and their timing[1] should be specified in the PAD-stage ISDS:

The tentative timeline for completing the safeguard related studies is May 2015.

IV. APPROVALS

Task Team Leader:	Name: Mohua Mukherjee	
Approved By:		
Regional Safeguards Coordinator:	Name: Francis V. Fragano (RSA)	Date: 28-May-2014
Sector Manager:	Name: Julia Bucknall (SM)	Date: 05-Jun-2014

[1] Reminder: The Bank's Disclosure Policy requires that safeguard-related documents be disclosed before appraisal (i) at the InfoShop and (ii) in country, at publicly accessible locations and in a form and language that are accessible to potentially affected persons.