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**MANAGEMENT REPORT AND RECOMMENDATION
IN RESPONSE TO THE
INSPECTION PANEL INVESTIGATION REPORT**

INDIA

**VISHNUGAD PIPALKOTI HYDRO ELECTRIC PROJECT
(LOAN NO. 8078-IN)**

August 13, 2014

**MANAGEMENT REPORT AND RECOMMENDATION
IN RESPONSE TO THE INSPECTION PANEL INVESTIGATION REPORT
OF THE
INDIA
VISHNUGAD PIPALKOTI HYDRO ELECTRIC PROJECT
(LOAN NO. 8078-IN)**

Pursuant to paragraph 23 of the Resolution Establishing the Inspection Panel (IBRD Resolution 93-10 and IDA Resolution 93-6), attached for consideration by Executive Directors is Management's Report and Recommendation in response to the findings set out in the Investigation Report No. 89109-IN dated July 1, 2014, of the Inspection Panel on the captioned Project (Vishnugad Pipalkoti Hydro Electric Project, Loan No. 8078-IN).

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IN RESPONSE TO THE
INSPECTION PANEL INVESTIGATION REPORT NO. 89109-IN**

**INDIA
VISHNUGAD PIPALKOTI HYDRO ELECTRIC PROJECT
(LOAN NO. 8078-IN)**

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ABBREVIATIONS AND ACRONYMS

BP	Bank Procedures
CAT	Catchment Area Treatment
CEA	Central Electricity Authority
CSR	Corporate Social Responsibility
Cumec	Cubic Meter per Second
EA	Environmental Assessment
EMP	Environmental Management Plan
GHG	Greenhouse Gas
GOI	Government of India
GWh	Gigawatt Hour
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
LADF	Local Area Development Funds
MAW	Minimum Agricultural Wage
MoU	Memorandum of Understanding
NH	National Highway
OP	Operational Policy
PAD	Project Appraisal Document
PGCIL	Powergrid Corporation of India
POWERGRID	Central Transmission Utility
PTCUL	State Transmission Utility
PWD	Public Works Department
RAP	Resettlement Action Plan
TBM	Tunnel Boring Machine
THDC	Tehri Hydro Development Corporation Limited
VPHEP	Vishnugad Pipalkoti Hydro Electric Project

CURRENCY EQUIVALENTS

(Exchange Rate Effective July 18, 2014)

Currency Unit = Indian Rupee (INR)

1,00 = US\$0.016

US\$1.00 = 60

EXECUTIVE SUMMARY

Background

1. On August 3, 2012, the Inspection Panel registered a Request for Inspection concerning the India Vishnugad Pipalkoti Hydro Electric Project. The Request was submitted by residents of Chamoli district in the State of Uttarakhand. Management responded to the claims in the Request on October 24, 2012. In its Report to the Board, the Panel found the Request eligible and recommended that the Executive Directors authorize an investigation. On July 1, 2014, the Panel issued its report outlining the findings of the investigation. Management appreciates the Panel's clear and thorough presentation of its findings.

2. The Vishnugad Pipalkoti Hydro Electric Project (VPHEP) was approved by the Board of Executive Directors on June 30, 2011 and is currently under implementation. The Bank-funded components of the project are: (i) construction of the dam and hydropower facility (US\$638 million); and (ii) technical assistance for capacity building and institutional strengthening of Tehri Hydro Development Corporation Limited (THDC), the project implementing agency (US\$10 million).

3. The objectives of the VPHEP are to: (i) increase the supply of electricity to India's national grid through the addition of renewable, low-carbon energy; and (ii) strengthen the institutional capacity of THDC with respect to the preparation and implementation of economically, environmentally and socially sustainable hydropower projects. The VPHEP has been designed as a 444 MW run-of-river hydropower generation project on the Alaknanda River in Uttarakhand, India. It will generate 1,636 GWh in a 90 percent dependable year, and it will help reduce the need to expand thermal generation in the Northern Grid of India.

4. India's energy deficit represents a significant constraint to growth and is increasing in severity. More than 350 million people still lack access to electricity and 60 percent of Indian firms rely on back-up diesel generation. In response, the Government has set aggressive targets for all sources of energy, but coal-fired generation still represents more than 56 percent of installed capacity. The harnessing of India's significant hydropower potential represents one of the opportunities to promote clean energy at scale, and, in the Government's estimation, is a critical way to address both baseload and peaking electricity demand.

Panel Findings

5. **Cumulative Impacts.** The Panel found that Management complied with the provisions of OP/BP 4.01 by, inter alia, ensuring the preparation of a cumulative impact assessment for the Project and by incorporating the recommended increased minimum environmental flow (e-flow) into the project to mitigate cultural, religious and biodiversity impacts. With respect to transmission lines, the Panel noted that project documents did not address the proposed 30 km transmission line which will evacuate power from the Project to the Kuwari Pass pooling station, and also the wider proposed power transmission system in the area.

6. **Water Loss.** The Panel found that Management complied with OP/BP 4.01 by undertaking the baseline studies to document village water sources along the tunnel alignment routes and ensuring that THDC commits to provide alternative water sources in the event that an existing source is lost. However, the Panel found that the Bank did not identify detailed and adequate mitigation measures that could be operationalized if a water source is lost, in non-compliance with OP/BP 4.01.
7. **Risk relating to Structures, Landslides and Earthquakes.** The Panel noted the steps taken to use tunnel boring machine (TBM) technology to reduce potential harm from vibrations. The Panel found that this action complied with Bank Policy OP/BP 4.01 as a step to reduce or mitigate potential harm. The Panel found that, in compliance with OP/BP 4.37, Management took adequate measures to ensure the preparation of relevant studies by THDC during project design, appraisal and implementation stages to mitigate the risks raised in the Request. The Panel noted the importance of Management clarifying the issue of slurry disposal.
8. **Risk to Aquatic Life and Ecology.** The Panel found the project to be in compliance with OP/BP 4.01 with respect to the Requesters' claim about the project's impacts on fish and aquatic fauna. The Panel commended Management for advising Project authorities of the need to specifically study the issue of bedload, but found that the analysis was lacking.
9. **Resettlement and Livelihood Restoration.** The Panel understood that resettlement and rehabilitation efforts were underway and almost half of the eligible families had already received their R&R assistance. However, with respect to Hatsari (Hatsari is one of the three hamlets of Haat village, the other two being Dhobighat and Haat; eight families in Hatsari are affected by the project.), the Panel found that the project Resettlement Action Plan (RAP) did not adequately assess the Hatsari situation, in non-compliance with Bank Policy OP/BP 4.12 on Involuntary Resettlement, but did recognize Management's concern for the Hatsari issue to date and the fact that negotiations are still continuing.
10. **Gender Impacts.** The Panel found that the THDC Resettlement and Rehabilitation (R&R) Policy covering access to livelihood sources complies with the requirements of OP/BP 4.01 and OP/BP 4.12. The Panel found that insufficient attention had been given to the issue of women's security.
11. **Local Benefit Sharing.** The Panel found that important efforts were being made to restore the livelihoods of displaced people in accordance with the provisions of OP/BP 4.12. The Panel also noted the need for clarity on the use of the royalty payments and the revenue generated so that project-affected villages and others will benefit from these initiatives. The Panel further noted the importance of assessing the impact of the project on host communities at the end of RAP implementation.
12. **Community Conflicts and the Grievance Redress Mechanism.** The Panel found that the requirement of OP/BP 4.12 to establish an appropriate and accessible grievance mechanism had been met.

Management's Response

13. Management appreciates the Panel's recognition of the importance of the VPHEP for India, the complexity of the project and the local setting, the value of the Bank's engagement in this type of project, and the steps Management has already taken to address the Requesters' legitimate concerns.

14. Management welcomes the Panel's *findings of compliance* regarding, *inter alia*:

- OP 4.01 on cumulative impacts, baseline studies on water sources, mitigation measures for risks relating to structures, landslides and earthquakes, project impacts on fish and aquatic fauna, and gender impacts related to access to livelihood sources;
- OP 4.37 on studies to mitigate risks related to dam safety; and
- OP 4.12 on gender impacts related to livelihood sources; restoration of livelihoods of displaced people, and community conflicts and grievance redress.

15. With respect to the *findings of non-compliance* in regard to OP 4.01 and OP 4.12, Management wishes to note the following:

- *Potential water source losses*: Management is of the view that the identification of detailed and adequate mitigation measures that could be operationalized in case such a loss were to occur was subsumed in THDC's unequivocal commitment to provide a sustainable replacement water source. Based on the mitigation systems in place, Management is confident that THDC will be able to honor its commitment and provide an alternative water source to a village should the need arise. *Management will continue to work with THDC to conduct regular monitoring of the use of existing water sources throughout the life of the Bank project and prepare and implement action plans to supply alternative water should any of the current sources dry up.*
- *Resettlement and livelihood restoration – Hatsari*. In Management's view, THDC has demonstrated professionalism and commitment to improving the well-being of project-affected people by offering them a range of options including permanent and temporary relocation during the construction phase. THDC is continuing discussions with the Hatsari families in an effort to eliminate their exposure to the limited construction impacts. THDC remains willing to provide temporary relocation to the affected families throughout the construction phase, giving the families the option to reassess their choice not to relocate, once they experience the actual construction. As a result of these measures, Management is of the view that the project's approach to resettlement and impact mitigation with respect to Hatsari is in compliance with OP/BP 4.12.

Other Issues of Concern

16. **Transmission Lines.** Management will build on the recent discussions between THDC and the Bank to ensure that the transmission line impacts are adequately mitigated. The proposed evacuation line is needed for the VPHEP project to be operational and there should be sufficient time during project implementation to address any transmission issues.

17. **Slurry Disposal.** Management will ensure that THDC and the civil works contractor analyze the composition of the slurry and take appropriate measures, as needed, to remove any harmful particles or substances before disposal. The contractor will use, as needed, phased disposal and other preventive methods at the slurry disposal site, so that no slurry from the TBM operation flows into the river.

18. **Bedload Movement.** THDC has conducted silt management studies and has designed an effective silt management system. In addition, a real time flood forecasting system to plan flood routing is planned to be installed in the catchment area of VPHEP. Finally, a Catchment Area Treatment plan will be implemented (through the State Forests Department) over the next five years in the catchment area of the river up to the project area, with the objective of preventing sediment generation. In addition, Management is currently recruiting an independent expert to conduct a Remote Sensing review of the upper catchment of the Alaknanda River in Uttarakhand State for evidence of Glacial Lake Outburst Floods.

19. **Women's Security.** The following actions have been agreed by the civil works contractor and will be monitored during project implementation: (i) contractor will hire women staff as security officers and guards; and (ii) Contractor and THDC will conduct regular awareness campaigns in the labor camps about women's safety and to reinforce project boundaries, with penalties for violation of the same and availability of criminal prosecution. In addition, THDC will deploy women social mobilizers in each of the affected villages throughout the construction period. Further, the well-functioning GRM will be made gender-sensitive by inducting women members from the affected villages so that complaints about abuse of women can be properly and speedily logged and addressed. At least a third of the members will be women. GRM members will receive training on gender related issues from the social staff of THDC. At the appropriate time, a specific campaign will be conducted to let women know that there are dedicated conduits to file complaints about workers' behaviors and other possible threats.

20. **Royalty Payments.** The developer provides 12 percent free power as royalty to the host state, and the revenue generated from this power will be used as a source of revenue for host state development. An additional 1 percent of revenue collected, matched by a state government grant, will go directly to the project area and will be used to meet local infrastructure and development needs. THDC has already carried out a number of activities to maintain infrastructure and public services in the resettlement villages. Going forward, the following activities will be implemented: (i) THDC will carry out evaluation of host villages (if any) to establish baseline; (ii) the end-term evaluation of RAP implementation will also cover the impact evaluation for the host villages; and (iii) the

India

GRC will be made more accessible by holding GRC meetings in each of the affected villages, whenever possible.

I. INTRODUCTION

1. On August 3, 2012, the Inspection Panel registered a Request for Inspection, IPN Request RQ 12/04 (hereafter referred to as “the Request”), concerning the India Vishnugad Pipalkoti Hydro Electric Project (“the Project”) financed by the International Bank for Reconstruction and Development (IBRD). The Request for Inspection was submitted by residents of Chamoli district in the State of Uttarakhand, who have requested that their identity remain confidential, and by Dr. Bharat Jhunjhunwala of Tehri district, also in the State of Uttarakhand (hereafter referred to as the “Requesters”).

2. The Executive Directors and the President of IDA were notified by the Panel of receipt of the Request. The Management responded to the claims in the Request on October 24, 2012. In its Report to the Board, the Panel found the Request eligible and recommended that the Executive Directors authorize an investigation. The investigation was authorized by the Executive Directors on December 18, 2012, effective March 15, 2013.

3. On July 1, 2014, the Panel issued its report outlining the findings of the investigation. Management appreciates the Panel’s clear and thorough presentation of its findings. This report, responding to the findings of the Panel, is organized in six sections. Section II presents project background. Section III summarizes the findings of the Panel. Section IV presents Management’s response to the Panel’s findings. Section V describes Management’s actions in response to the findings, and Section VI concludes the report. The Panel’s findings, along with Management’s responses, are described in detail in Annex 1.

II. PROJECT BACKGROUND

4. ***Project Objectives.*** The Government of India (GOI) requested World Bank financing for the Vishnugad Pipalkoti Hydro Electric Project (VPHEP) in July 2006. The objectives of the project are to: (i) increase the supply of electricity to India’s national grid through the addition of renewable, low-carbon energy; and (ii) strengthen the institutional capacity of Tehri Hydro Development Corporation Limited (THDC), the project implementing agency, with respect to the preparation and implementation of economically, environmentally and socially sustainable hydropower projects.

5. ***VPHEP has been designed as a 444 MW run-of-river hydropower generation project on the Alaknanda River in Uttarakhand, India.*** It will generate 1,636 GWh in a 90 percent dependable year, and it will help reduce the need to expand thermal generation in the Northern Grid of India (please see paras. 6 and 7). The major features of the project infrastructure as designed are: (i) a 65 m diversion dam to create a small daily pondage in a V-shaped gorge; (ii) a 13.4 km headrace tunnel; (iii) an underground power house; and (iv) a 3 km tailrace tunnel that will return the diverted water to the Alaknanda River. The project infrastructure will be located on the sparsely populated right bank of the river (which is on the side opposite to National Highway 58) in Chamoli District of Uttarakhand. VPHEP is expected to reduce greenhouse gas (GHG) emissions by

approximately 1.6 million tons carbon dioxide equivalent per year over the plant operation period.

6. ***Development context.*** India's energy deficit of 9 percent and peak deficit of 6 percent represent a significant constraint on growth and are increasing in severity. Although the current installed capacity of 205 GW represents a 46 percent increase since 2007, power supply is still not able to keep pace with the rise in electricity demand. More than 350 million people (a third of all Indians) still lack access to electricity and 60 percent of Indian firms rely on back-up diesel generation (compared to 20 percent in China). In response, the GOI has set aggressive targets for all sources of energy, but coal-fired generation still represents more than 56 percent of installed capacity. According to the Central Electricity Authority (CEA), in the next five years, 60-64 GW of new coal-fired capacity is expected to be added to the electricity mix, bringing the overall coal-fired generation capacity to 176 GW by 2017. Hence, coal will continue to dominate the energy mix into the foreseeable future, which poses significant risks to the global environment. India has faced growing problems with its supply of coal from domestic sources and is increasingly relying on imported coal to supply installed capacity; consequently, its economy is more vulnerable to international coal price fluctuations.

7. The harnessing of India's significant hydropower potential represents one of the opportunities to promote clean energy at scale, and, in the Government's estimation, is a critical way to address both baseload and peaking electricity demand. India has not been able to make optimal use of its hydropower potential; in fact, growth of hydropower capacity has decelerated. From 44 percent in 1970, the share of hydropower in India's overall electricity generation capacity decreased to less than 19 percent by August 2012. This is suboptimal to meet peak load requirements as well as system and frequency stability needs. Hydropower's share of energy generated (as opposed to installed capacity) is even smaller, at 15.5 percent (2012). This reflects lower availability of the existing installed hydropower capacity relative to the thermal plants that predominate in India's electricity mix. If India can successfully harness its hydropower potential with due regard to social and environmental impacts, the planned hydropower expansion could alter the baseline trajectory for GHG emissions from the power sector, which currently contributes half of India's emissions.

8. ***Project Components.*** The Bank-funded components of the project are: (i) construction of the dam and hydropower facility (US\$638 million); and (ii) technical assistance for capacity building and institutional strengthening of THDC, the project implementing agency (US\$10 million). THDC is a public sector company, majority-owned by the GOI, which was set up in 1988 to develop baseload hydropower potential in Northern India, and which is now expanding its operations by developing primarily run-of-river projects, such as VPHEP.

9. ***In comparison to other projects of its type and size in terms of power generation, VPHEP is a relatively moderate risk project from an environmental and social perspective,*** with a very small footprint. The dam will be placed in a deep gorge with limited access or forest cover. In total, the project involves a relatively low level of resettlement – 265 families, as noted on page 102 of the Project Appraisal Document

(PAD); of these, 92 percent are families who requested relocation from Haat village to the other side of the river, as detailed in the PAD. No houses or other structures, agricultural land or common infrastructure will be submerged, and therefore no displacement will take place due to submergence. In total, 21 ha will be submerged, 109.93 ha of forest land (including government and van panchayat lands) and 31.64 ha of private land will be required by the project for road access, project and office space, switchyard, as well as for the quarry area, variously affecting 773 families (as noted in Annex 10 of the PAD).

10. **Status of project.** The VPHEP was approved by the Board of Executive Directors on June 30, 2011 and is currently under implementation. The current closing date is December 31, 2017. About US\$15.5 million have been disbursed to date. The contract for the construction of the civil works, which includes the dam, the headrace tunnel, the underground powerhouse and the tailrace tunnel, was awarded to HCC Ltd. in January 2014 after the project received all its mandatory clearances. The procurement process for the electro-mechanical equipment is well-advanced and the bid opening took place on July 11, 2014. Some preliminary work such as construction of access roads and bridges has been completed. The contractor has started the excavation of the diversion tunnel, as well as the adit for the de-silting chamber; and construction of the tail race tunnel road and the approach road from the Haat Bridge to the main access tunnel/ventilation tunnel/TBM platform, which will help prepare the ground for major construction work. Payments for land acquisition have largely been completed. In addition, disbursements to households eligible for assistance arising from the loss of community amenities are nearly completed, while disbursements for compensation for fuel and fodder will be ongoing for five years.

11. In order to ensure that the livelihoods of local people were not adversely affected by the project, THDC drew up an Income Restoration Plan. Under this plan, the Company has assisted the affected villages to form 21 cooperative societies, which undertake small community infrastructure works such as road repairs, bund and gabion wall construction, with costs up to INR 200,000 (about US\$3,300). THDC has also, to date, provided employment to 70 project-affected persons either directly in the Company or indirectly through contractors or as sub-contractors. Opportunities for employment will increase when the major construction works start. THDC also is constructing a small shopping centre in Jaisal near its staff colony. Nine of the 14 shops will be allocated to project-affected families from Jaisal village. THDC is also helping project-affected persons get vocational training in various trades such as motor mechanics, marketing, hospitality, including a one-year diploma in hotel management from Dehradun. The Company is collaborating with the Industrial Training Institute (ITI) in nearby Gopeshwar to ensure that 20 percent of places are guaranteed for youths from families affected by VPHEP. The ITIs at Rudraprayag and Srinagar have also been requested to provide short-term courses in areas of use to the hydropower industry so that trainees can find employment in various hydropower projects upon completion of their training.

12. Other income restoration schemes include distribution of high-yield seeds and fruit saplings and activities such as dairy development (in Guniyala village), vermicomposting and napier grass cultivation. “Self-help” groups of women from Haat

village are being assisted to start small knitting units. A more detailed Training Needs Assessment for individual project-affected persons will soon be conducted to better design individual livelihood restoration plans.

13. Corporate Social Responsibility (CSR) activities have been carefully planned with the involvement of the community and are being regularly implemented. So far, community works worth INR 4 million (about US\$66,700) have been implemented in various project-affected villages and more, worth around INR 5 million (about US\$83,300), are under implementation. Works include building pathways, ropeways and drinking water schemes for these remote mountain villages. In the current Fiscal Year 2013-14, THDC has thus far spent INR 7,62,371 (US\$12,700) and cumulatively an amount of INR 21.32 million (about US\$355,300) since activities commenced in the area under its CSR policy in 2009. The Company is also financing merit-based scholarships for students from project-affected villages. So far, 367 students (of which 201 are girls) have received these scholarships. THDC is now planning to also introduce a pension scheme for widows.

III. SUMMARY OF PANEL FINDINGS

Cumulative Impacts	The Panel finds that Management complied with the provisions of OP/BP 4.01 by ensuring the preparation of a cumulative impact assessment for the Project and by incorporating the recommended increased minimum environmental flow (e-flow) into the project to mitigate cultural, religious and biodiversity impacts.
Water Loss	The Panel finds that Management complied with OP/BP 4.01 by undertaking the baseline studies to document village water sources along the tunnel alignment routes and ensuring that THDC commits to provide alternative water sources in the event that an existing source is lost. However, the Panel finds that the Bank did not identify detailed and adequate mitigation measures that could be operationalized if a water source is lost, in non-compliance with OP/BP 4.01.
Risk relating to Structures, Landslides and Earthquakes	<p>The Panel notes the steps taken to use TBM technology to reduce potential harms from vibrations. The Panel finds that this complies with Bank Policy OP/BP 4.01 as a step to reduce or mitigate potential harm.</p> <p>The Panel finds that, in compliance with OP/BP 4.37, Management took adequate measures to ensure the preparation of relevant studies by THDC during project design, appraisal and implementation stages to mitigate the risks raised in the Request.</p>
Risk to Aquatic Life and Ecology	The Panel finds the project to be in compliance with OP/BP 4.01 with respect to the Requesters' claim about the project's impacts on fish and aquatic fauna.
Resettlement and Livelihood Restoration	The Panel understands that resettlement and rehabilitation efforts are underway and almost half of the eligible families have already received their R&R assistance. However, with respect to Hatsari (where eight families are affected), the Panel found that the project Resettlement Action Plan (RAP) does not adequately assess the Hatsari reality, in non-compliance with Bank Policy OP/BP 4.12 on Involuntary Resettlement. The Panel recognizes, however, Management's concern for the Hatsari issue to date and the fact that negotiations are still continuing with a wide range of options on offer to Hatsari residents.
Gender Impacts	<p>The Panel finds that the THDC Resettlement and Rehabilitation (R&R) Policy covering access to livelihood sources, i.e., fuel and fodder, complies with the requirements of OP/BP 4.01 and OP/BP 4.12.</p> <p>The Panel acknowledges the gender analysis included as part of the SIA, as required by OP/BP 4.01, which identifies differential impacts on women when a project changes access to resources in</p>

	<p>fragile ecosystems, which may have unanticipated impacts on women who use those resources.</p>
<p>Local Benefit Sharing</p>	<p>The Panel finds that important efforts are being made to restore the livelihoods of displaced people in accordance with the provisions of OP/BP 4.12.</p> <p>The Panel notes, as project implementation progresses, that Management is responsive to OP 4.12, paragraph 13 (b), which requires that infrastructure and public services are provided as necessary to new resettlement sites and host communities to improve, restore, or maintain accessibility and levels of service for the displaced persons and host communities.</p> <p>On the issue relating to community conflicts and the Grievance Redress Mechanism, the Panel finds that the requirement of OP/BP 4.12 to establish an appropriate and accessible grievance mechanism has been met. In accordance with the requirement of OP/BP 4.12, the Panel notes the importance of the project GRC being accessible to host communities so that their concerns can be heard and resolved when appropriate.</p>

IV. RESPONSE TO FINDINGS BY THE PANEL

14. **Management appreciates the Panel's findings on compliance and noncompliance.** Management takes the opportunity to respond to these findings below, and in greater detail in Annex 1. Moreover, Management appreciates the Panel's recognition of the importance of the VPHEP for India, the complexity of the project, the value of the Bank's engagement in this type of project, and the steps Management has already taken to address the Requesters' legitimate concerns.

A. Regional and Cumulative Impacts - Assessment of cumulative environmental and cultural impacts

15. **Panel Finding:** *The Panel finds that Management complied with the provisions of OP/BP 4.01 with regard to cumulative impact assessment for the project and minimum environmental flows. The Panel notes that the extent to which the cumulative impact assessments influenced other aspects of project design is not clear, but recognizes that Management will put forward additional measures as needed. The Panel emphasizes the importance of a coordinated river basin management approach. With respect to transmission lines, the Panel notes that project documents do not address the proposed 30 km transmission line which will evacuate power from the Project to the Kuwari Pass pooling station, and also the wider proposed power transmission system in the area.*

16. **Response.** Management welcomes the Panel's assessment of the Bank's compliance with the provisions of OP/BP 4.01 and also recognizes that a river basin management approach can be critical, both for the long-term sustainability of VPHEP and other projects along the Alaknanda River, as well as for the enhancement of these projects' positive outcomes on the lives of populations in the Himalayan region. Since the 2006 *River Basin Optimization Study* commissioned by the Bank, Management has endeavored to advance adoption of a coordinated hydropower development approach at various levels of government in India and reiterated this recommendation in the 2012 Uttarakhand Economic Report. Management will pursue this policy dialogue during the implementation of VPHEP and other operations in Uttarakhand as opportunities arise. Management is pleased to report that in Himachal Pradesh, another Himalayan state, progress is being made on that front with Bank collaboration, and hopes that similar results will also unfold in Uttarakhand.

17. Management agrees that the transmission line issues, both for the proposed 30 km evacuation line and the proposed wider transmission network, are not yet fully identified, as the actual scale of the proposed hydropower development is not fully clear yet. However, since the proposed evacuation line is part of the VPHEP project and is needed for it to be operational, Management is confident that it will be completed in a timely manner. Management is also pleased to report that significant progress has already been made since the preparation of the EIA and it is now envisaged that (i) the State Transmission Utility (PTCUL) will erect the transmission line corridor to evacuate power generated by VPHEP from Pipalkoti (Kuwari Pass) to Srinagar, and from Srinagar to the Uttarakhand state border near Kashipur; and (ii) the Central Transmission Utility, Power Grid Corporation of India (POWERGRID or PGCIL), will connect the transmission line

corridor to the national grid. As CEA, PTCUL, and POWERGRID have functioning mechanisms for planning and coordination, the design and construction of the transmission line for VPHEP output evacuation as well as of the regional network will follow the well-tested Environmental and Social Policy and Procedures (ESPP) of POWERGRID.

18. Going forward, Management will build on the recent discussions (held in May 2014) between THDC and the Bank to ensure that the transmission line impacts are adequately mitigated. The proposed evacuation line is needed for the VPHEP project to be operational and there should be sufficient time during project implementation to address any transmission issues since the transmission line is not on the project critical path, unlike the case for most hydropower projects.

B. Local Impacts – The risk to village water sources from blasting and tunneling

19. **Panel Finding:** *The Panel finds that Management complied with OP/BP 4.01 by undertaking baseline studies for village water sources and planning. However, the Panel finds that the Bank did not identify adequate mitigation measures if a water source is lost, in non-compliance with OP/BP 4.01.*

20. **Response.** Management welcomes the Panel's assessment that the project's baseline studies for village water sources and planning are in compliance with OP/BP 4.01. With respect to the Panel's concern regarding potential water source losses, Management is of the view that the identification of detailed and adequate mitigation measures that could be operationalized in case such a loss were to occur was subsumed in THDC's unequivocal commitment to provide a sustainable replacement water source. This commitment is also reflected in the RAP, CSR initiatives and in individual Memoranda of Understanding (MoUs) that THDC signed with the villages of the project area.

21. OP/BP 4.01 sets out the need to identify and anticipate impacts and to prepare mitigation plans for them. The environmental assessment (EA) did not identify any impacts on the 66 existing water sources in the project-affected villages (generally small settlements with limited number of families); however the baseline of these sources was sufficiently documented in the EA to prepare a specific mitigation plan if these sources were to be affected in the future. Arrangements are in place to detect changes in the flow from the 66 existing sources.

22. Based on the mitigation systems in place, Management is confident that THDC will be able to honor its commitment and provide an alternative water source to a village should the need arise. THDC has a solid track record in addressing water supply issues in the two relocation villages (Daswana and El Dana) for the inhabitants of Haat, where it took appropriate steps in a timely fashion to provide piped water supply to these two villages by identifying alternative sources.

23. Within the same framework, Management will continue to work with THDC to conduct regular monitoring of the existing water sources throughout the life of the Bank

project and prepare and implement action plans to supply alternative water, supply based on consultation with the project-affected communities, should any of the current sources dry up.

C. Local Impacts – Risk relating to structures, landslides and earthquakes

24. **Panel Finding:** *The Panel finds that the various measures to address these risks comply with OP/BP 4.01. The Panel also finds that, in compliance with OP/BP 4.37, Management took adequate measures to ensure the preparation of relevant studies by THDC during project design, appraisal and implementation stages to mitigate the risks raised in the Request related to earthquakes, landslides and extreme weather events. The Panel notes the importance of Management clarifying the issue of slurry disposal.*

25. **Response:** Management welcomes the Panel’s assessment of the Bank’s compliance with the provisions of OP/BP 4.01 and 4.37. Management agrees that the disposal of tunnel excavation by-products should be done in a way that prevents any contamination of the river and in an adaptive management mode. The VPHEP anticipates that the excavated spoil from the TBM operation will be transported from the tunnel face via conveyor belt to an intermediate location (temporary construction site for drying and desanding) from which it will be transferred to the spoil transport system, which may be by rail or diesel trucks. The spoil in this case will predominantly consist of rock pieces, and will not be mixed with slurry or chemicals.

26. The experience to date of many project developers indicates that the Himalaya rock is not likely to contain heavy metals such as chromium, lead or cadmium, nor has there been any report of release of heavy metals when the rock surface is exposed to air and water. However, the environmental monitoring plan contained in the environmental management plan (EMP) includes monitoring to detect release of heavy metals.

27. Under the adaptive management approach adopted by VPHEP, the selected civil works contractor has agreed to establish a systematic protocol, under the supervision of THDC and independent Third Party Monitoring Consultants, to regularly test slurry samples in the project laboratory facilities during the TBM operation to identify any heavy metal or hazardous substances and to treat the slurry as needed before disposal.

28. It is expected that the slurry will be dewatered and sun-dried at the intermediate site before being transported to designated spoil disposal sites. Management agrees that dewatering of slurry at the site should be done in way that the sediment level of the discharged water remains within permissible parameters. The purpose of the retaining structure at the tunnel mouth is to ensure that sediments are not discharged with the slurry water, and that the discharge remains similar to the natural water that flows from the slopes, particularly during the rainy season.

29. THDC should monitor, with the assistance of independent Third-Party Monitoring Consultants, the quality of the filtered slurry-discharge water along with the river water.

30. It is also planned that the spoil disposal sites will be regenerated using bio-engineering techniques.

31. Going forward, Management will ensure that THDC and the civil works contractor, with collective oversight from the environmental Panel of Experts and the Bank, analyze the composition of the slurry and take appropriate measures, as needed, to remove any harmful particles or substances before disposal, as provided for in the contractual documents. As discussed during the March 2014 implementation support visit and the May 2014 technical visit, the contractor will use, as needed, phased disposal and other methods to prevent overflow at the slurry disposal site so that no slurry from the TBM operation flows into the river.

D. Local Impacts – Risk to aquatic life and ecology from altered flow and sediment release

32. **Panel Finding:** *The Panel finds the project to be in compliance with OP/BP 4.01 with respect to impacts on fish and aquatic fauna. The Panel commends Management for advising Project authorities of the need to specifically study the issue of bedload, but found that the analysis is lacking. The Panel's expert believes it may be necessary to study this further.*

33. **Response:** Management welcomes the Panel's assessment of the Bank's compliance with the provisions of OP/BP 4.01.

34. Regarding bedload movement, THDC has conducted silt management studies through mathematical as well as physical modeling, using silt data for the last 16 years, and has designed an effective silt management system that can handle sediment of size 0.2 mm and above with an 90 percent efficiency.

35. In addition, a real time flood forecasting system to plan flood routing is planned to be installed in the catchment area of VPHEP, which will provide advance information for operation/preparations required at the dam site. Finally, a Catchment Area Treatment (CAT) plan will be implemented (through the State Forests Department) over the next five years in the catchment area of the river up to the project area, with the objective of preventing sediment generation. The CAT plan also identifies sites vulnerable to landslide and erosion that will be treated simultaneously during implementation, thus reducing one source of silt deposition in the river.

36. In the event of major bedload movement, several measures are in place to limit its impact at the VPHEP level.

37. First, at least three projects, one on the Alaknanda River and two HEPs under construction on the Dhauri Ganga River (a major tributary of river Alaknanda) are situated upstream of VPHEP. When completed, they will offer a physical damping effect by considerably reducing the bedload of the river before reaching VPHEP in case of flash flood or any other event.

38. At Full Reservoir Level (FRL), the reservoir starts around 2.9 km upstream of the diversion structure. The average bed slope of the river upstream of the diversion structure is very mild, i.e., 1.5 percent. In case of flood, any large boulders will accumulate at the

tip of the reservoir, and THDC does not anticipate that they would reach the dam, nearly 3 km downstream.

39. Smaller boulders and debris reaching the diversion structure will be flushed out by means of the following:

- (i) One (1) 12 m diameter spillway tunnel at river level (RL) 1228 m, on the left bank, just upstream of the diversion structure;
- (ii) Four (4) sluices, each 7.2 m (w) x 15 m (h) in size sluices, located at 1233 m, just 8 m above the river bed in the dam; and
- (iii) One (1) ogee type spillway at 1260 m to pass any floating debris.

40. The invert level of the sluices at 1233 m is 9.5 m below the invert level of the Power Intakes (at 1242.5 m). This arrangement will eliminate the possibility of any debris/silt deposition in front of the Power Intakes.

41. Apart from the above measures, during plant operation THDC plans to carry out reservoir flushing about four times each year so that at any given time the reservoir has sufficient storage capacity.

42. Management is currently recruiting an independent expert to conduct a Remote Sensing review of the upper catchment of the Alaknanda River in Uttarakhand State for evidence of Glacial Lake Outburst Floods (GLOFs). GLOFs are thought to be associated with the devastating floods of June 2013. Once completed, the study will further inform the assessment of VPHEP preparedness for such extreme events, as well as the preparation of the dam and plant operations manual.

E. Local Impacts – Resettlement and livelihoods restoration (Haat and Hatsari)

43. **Panel Finding:** *The Panel understands that resettlement and rehabilitation efforts are underway and almost half of the eligible families have already received their R&R assistance. With respect to Hatsari, however, which had 13 families residing, the Panel finds that the Project RAP did not adequately assess the Hatsari situation, in non-compliance with OP/BP 4.12 on Involuntary Resettlement. The Panel notes that 2 families from Hatsari have accepted the Haat package and 2 nonresident families have agreed to sell their land to THDC. Negotiations are still continuing with the remaining 6 Hatsari families that reside in the village.*

44. **Response:** Management appreciates the Panel's views on the RAP. Management wishes to stress that resettlement in hydropower projects is a dynamic process and as a result, the RAP is an evolving document that reflects the continuous design optimization process of the project facilities and the outcomes of the consultative process with the project-affected people. Hence, while the Hatsari situation was initially analyzed during the social impact assessment as part of the Haat revenue village (Hatsari is one of the three hamlets of Haat village, the other two being Dhobighat and Haat), THDC subsequently offered to the Hatsari families a customized R&R package that went beyond

the package they initially rejected. THDC put forward several enhanced relocation and compensation options, but these too were rejected by all eight Hatsari families. As a consequence, THDC changed the location of a switchyard and the alignment of the tail race tunnel and approach road to the surge shaft so that the Hatsari land would not be required for the project. Despite the fact that THDC does not require the Hatsari land for project construction, it offered to relocate the families (on a temporary or permanent basis), keeping in mind the potential temporary impacts on the community during construction. In addition to the adaptive management approach, THDC and the civil works contractor will implement other mitigation measures in accordance with the provision of the EMP to mitigate the remaining potential indirect construction-related dust, noise and traffic safety impacts.

45. In Management's view, THDC has demonstrated professionalism and commitment to improving the well-being of the project-affected people by offering them a range of options including permanent and temporary relocation during the construction phase. As the Panel noted, two households have accepted the original R&R package and have moved out to the Mayapur village, while two non-residents have indicated their willingness to sell their land at the price agreed upon in the original RAP. If the remaining families still elect to stay in Hatsari, THDC will respect their choice.

46. THDC is continuing discussions with the Hatsari families in an effort to eliminate their exposure to these limited construction impacts. THDC has offered to maintain its willingness to provide temporary relocation to the affected families all through the construction phase, giving the families the option to reassess their choice not to relocate as the actual impact of the construction becomes clear.

47. From the above, Management is of the view that the project 'is in compliance with OP/BP 4.12 with respect to Hatsari.

F. Local Impacts - Gender-related livelihood and security issues

48. **Panel Finding:** *The Panel finds that the THDC R&R Policy covering access to livelihood sources complies with the requirements of OP/BP 4.01 and OP/BP 4.12. Going forward, the Panel notes the need for monitoring/supervision and public consultation/information to ensure that Bank policy requirements with respect to livelihood restoration are being met, and that women are not disproportionately impacted. The Panel finds that insufficient attention has been given to the issue of women's security. A key issue will be regular monitoring of the labor camps with regard to women's security, and of gender-differentiated impacts of the project.*

49. **Response:** Management acknowledges the Panel's assessment of the Bank's compliance with the requirements of OP/BP 4.01 and OP/BP 4.12.

50. With respect to loss of van panchayat land, THDC will provide access roads to the residual van panchayat and/or grazing land. In addition, each affected household will be paid 100 days of minimum agricultural wage (MAW) per year for a period of 5 years. The amount will be paid as a grant toward the replacement of lost fuel and fodder. These

provisions are over and above the livelihood restoration plan currently being implemented under the project. In order to reduce drudgery and stress among women in collecting fodder from nearby forests, activities were introduced to promote plantation of fodder such as napier grass.

51. With regard to women's security, the civil works contractor is contractually obligated to undertake measures aimed at securing the safety of women living in villages around the labor camps. The labor force that will work on the construction site will be housed in two fenced camps (one near the dam site and the other close to the power house) to minimize its impact on local resources and communities. The contract contains very specific clauses to ensure that these camps have facilities for water supply, liquefied petroleum gas for cooking, toilets, and solid and liquid waste management. The labor force will not be allowed to access community forests so as to ensure the safety of local women collecting fuel and fodder there.

52. The following actions have already been agreed by the civil works contractor and will be monitored (gender-differentiated monitoring) during project implementation:

- Contractor will hire women staff as security officers and guards.
- Contractor and THDC will conduct regular awareness campaigns in the labor camps about women's safety and to reinforce project boundaries, with penalties for violation of the same (to be borne by contractors and workers alike) and availability of criminal prosecution.

Besides, THDC will deploy women social mobilizers in each of the affected villages throughout the construction period.

53. Further, the well-functioning GRM will be made gender-sensitive by inducting women members from the affected villages so that complaints about abuse of women can be properly and speedily logged and addressed. At least a third of the members will be women. GRM members will receive training on gender related issues from the social staff of THDC. At the appropriate time, a specific campaign will be conducted to let women know that there are dedicated conduits to file complaints about workers' behaviors and other possible threats.

G. Local Benefit Sharing and Grievance Handling

54. *Panel Finding: The Panel finds that the requirement of OP/BP 4.12 on Involuntary Resettlement that an appropriate and accessible grievance mechanism be established has been met. The Panel notes the importance of the project GRC being made accessible to host communities so that their concerns can be heard and resolved whenever appropriate. It also notes the need for clarity on the use of the 12% royalty payment to the State and of the 1% revenue generated under the National Hydropower Policy so that project-affected villages and others that are impacted will benefit from these initiatives. The Panel further notes the importance of assessing the impact of the project on host communities at the end of RAP implementation.*

55. **Response:** Management welcomes the Panel's assessment of the Bank's compliance with the provisions of OP/BP 4.12.

56. The developer provides 12 percent free power as royalty to the host state, and the revenue generated from this power will be used as a source of revenue for host state development.

57. An additional 1 percent of revenue collected as per the National Hydro Policy will go directly to the project area, following the guidelines for management of local area development funds (LADF) issued by the Ministry of Power in October 2013. These revenues will be utilized to meet the infrastructure and development needs of the local population. The State of Uttarakhand has yet to formulate a mechanism to utilize this fund; as per the guidelines issued by the Ministry of Power, the money will be directly deposited by the developer in the LADF and a 1 percent matching grant will be provided by the state government. The State of Uttarakhand will determine the details of the mechanism that will govern the use of these funds.

58. Currently THDC is carrying out development activities with funding from two sources, namely: (i) CSR funds (from 1 percent of THDC's profit) in the district; and (ii) INR 96.44 million as part of the RAP budget for community and area development in the affected villages.

59. The following activities have been carried out by THDC to maintain infrastructure and public services in the resettlement villages:

- A drinking water facility with two 5000-liter tanks has been installed for El Dana resettlement site. In Daswana, two tanks of 6000 liters each have been installed to supply drinking water.
- THDC has installed a separate three-phase transformer for power supply to the resettlement villages but it is currently being operated as a single-phase transformer. THDC is in the process of adding two more phases to cater for the increased electricity demand.
- THDC has planned to link Daswana village to National Highway (NH) 58 through Garhi village, for which the tendering is currently in process. This is an existing Public Works Department (PWD) road that passes through some private plots which will need to be acquired. THDC has also built internal footpaths to connect the two major settlement sites to an existing all-weather road.
- THDC has relocated the government-run primary school of Haat to the new site (the money for constructing the new building has already been deposited with the state government in the form of compensation) in a rented accommodation. THDC plans to construct a school building in the allocated site, which can be used for common purposes by the community once the education department constructs its own building.

60. Going forward, the following activities will be implemented:
- THDC will carry out evaluation of host villages (if any – other than Ghedora) by December 31, 2014 to establish baseline.
 - The end-term evaluation of RAP implementation will also cover the impact evaluation for the host villages.
 - The GRC will be made more accessible by holding GRC meetings in each of the affected villages, whenever possible.

V. MANAGEMENT’S ACTIONS IN RESPONSE TO THE FINDINGS

61. Management has carefully reviewed the Panel’s constructive findings and observations, and will seek to ensure that relevant considerations are reflected in the implementation of the project. In particular, Management proposes to clarify in greater detail how alternative water sources would be supplied if required as part of the mitigation measures, and to ensure a conclusion of the ongoing negotiations with the six households of the Hatsari hamlet that is compliant with Bank policy.

VI. CONCLUSION

62. Management believes that the Bank has made every effort to apply its policies and procedures and to pursue its mission statement in the context of the Project. Management believes that the proposed actions identified in its response address the Panel’s findings.

**MANAGEMENT REPORT AND RECOMMENDATION
IN RESPONSE TO THE INSPECTION PANEL INVESTIGATION REPORT ON
INDIA
VISHNUGAD PIPALKOTI HYDRO ELECTRIC PROJECT**

**ANNEX 1
FINDINGS, COMMENTS AND ACTIONS**

No.	Issue/Finding	OP/ BP	Comment/Action
1.	<p>Regional and cumulative impacts -assessment of cumulative environmental and cultural impacts</p> <p>The Panel considers that the VPHEP is closely linked, together with other hydro projects already constructed or planned, to cumulative impacts in the Alaknanda River. The Panel finds that Management complied with the provisions of OP/BP 4.01 by ensuring the preparation of a cumulative impact assessment for the Project and by incorporating the recommended increased minimum environmental flow into the Project to mitigate cultural, religious, and biodiversity impacts. The Panel notes that despite increasing the minimum environmental flow for the Project, the extent to which the cumulative impact assessments influenced other aspects of Project design is not clear. The Panel recognizes Management's statement indicating that additional environmental protection measures based on the recommendations of the cumulative impact assessments will be conveyed to THDC moving forward. The Panel notes the importance of Management's close monitoring of the implementation of these recommendations, within the context of the Project's adaptive management approach, to ensure continued sustainability and viability of the Project. In addition, taking into account the on-going broader debate in India regarding cumulative impacts of hydropower development in the Alaknanda and Bhagirathi river basins, the Panel notes the importance for the Project of adopting and implementing relevant recommendations which may result from this process. The Panel recognizes the complexities of coordinated river basin management when multiple HEPs are present, and emphasizes the importance of a mechanism to coordinate river basin management in the Alaknanda. With respect to transmission lines, the Panel understands that the Asian Development Bank is financing an integrated power transmission system under its multi-tranche Uttarakhand Power Sector Investment Program. The Panel notes that Project documents do not address the proposed 30 km transmission line which will evacuate power from the Project to the Kuwari Pass pooling station, and</p>	4.01	<p>Management welcomes the Panel's assessment of the Bank's compliance with the provisions of OP/BP 4.01 and also recognizes that a river basin management approach can be critical, both for the long-term sustainability of VPHEP and other projects along the Alaknanda River, as well as for the enhancement of these projects' positive outcomes on the livelihoods of populations in the Himalayan region. Since the 2006 <i>River Basin Optimization Study</i> commissioned by the Bank, Management has been working to advance adoption of a coordinated hydropower development approach at various levels of government in India; the Bank reiterated this recommendation in the 2012 Uttarakhand Economic Report. Management will pursue this policy dialogue during the implementation of VPHEP and other operations in Uttarakhand as opportunities arise. Management is pleased to report that in Himachal Pradesh, another Himalayan state, progress is being made on that front with Bank collaboration and hopes that similar results will also unfold in Uttarakhand.</p> <p>Management agrees that the transmission line issues, both for the proposed 30 km evacuation line and the proposed wider transmission network, are not yet fully identified, as the actual scale of the proposed hydropower development is not fully clear yet. However, since the proposed evacuation line is part of the VPHEP project and is needed for it to be operational, Management is confident that it will be completed in a timely manner. Management is also pleased to report that significant progress has already been made since the preparation of the EIA and it is now envisaged that (i) PTCUL will erect the transmission line corridor to evacuate power generated by VPHEP from Pipalkoti (Kuwari Pass) to Srinagar, and from Srinagar to the Uttarakhand state border near Kashipur; and (ii) the Central Transmission Utility, Power Grid Corporation of India (POWERGRID or PGCIL), will connect the transmission line corridor to the national grid. As CEA, PTCUL, and POWERGRID have functioning mechanisms for planning and</p>

	<p>also the wider proposed power transmission system in the area. The Panel emphasizes the need for a clarification of both these issues.</p>	<p>coordination, the design and construction of the transmission line for of VPHEP output evacuation as well as of the regional network will follow the well-tested Environmental and Social Policy and Procedures (ESPP) of POWERGRID.</p> <p>Going forward, Management will build on the recent discussions (held in May 2014) between THDC and the Bank to ensure that the transmission line impacts are adequately mitigated. The proposed evacuation line is needed for the VPHEP project to be operational and there should be sufficient time during project implementation to address any transmission issues since the transmission line is not on the project critical path, unlike the case for most hydropower projects.</p>
<p>2.</p>	<p>Local Impacts – The risk to village water sources from blasting and tunneling.</p> <p>The Panel finds that Management complied with OP/BP 4.01 by undertaking baseline studies to document village water sources along the tunnel alignment routes and ensuring that THDC commits to provide alternative water sources in the event that an existing source is lost. However, the Panel finds that the Bank did not identify detailed and adequate mitigation measures that could be operationalized if a water source is lost, in non-compliance with OP/BP 4.01. The Panel notes the importance of clarifying how alternative water sources will be provided in practical terms to villages for their domestic and irrigation needs, in case the risks materialize during Project implementation.</p>	<p>4.01 Management welcomes the Panel’s assessment that the project’s baseline studies for village water sources and planning are in compliance with OP/BP 4.01. With respect to the Panel’s concern regarding potential water source losses, Management is of the view that the identification of detailed and adequate mitigation measures that could be operationalized in case such a loss were to occur was subsumed in THDC’s unequivocal commitment to provide a sustainable replacement water source. This commitment is also reflected in the RAP, CSR initiatives and in individual MoUs THDC signed with the villages of the project area.</p> <p>OP/BP 4.01 sets out the need to identify and anticipate impacts and to prepare mitigation plans for them. The EA did not identify any impacts on the 66 existing water sources in the project-affected villages (generally small settlements with limited number of families); however the baseline of these sources was sufficiently documented in the EA to prepare a specific mitigation action plan if these sources were to be affected in future. Arrangements are in place to detect changes in the flow from the 66 existing sources.</p> <p>Based on the mitigation systems in place, Management is confident that THDC will be able to honor its commitment and provide an alternative water source to a village should the need arise. THDC has a solid track record in addressing water supply issues in the two relocation villages (Daswana and El Dana) for the inhabitants of Haat, where it took appropriate steps in a timely fashion to provide piped water supply to these two villages by identifying an alternative source.</p>

			<p>Within the same framework, Management will continue to work with THDC to conduct regular monitoring of the use of existing water sources throughout the life of the Bank project and prepare and implement action plans to supply alternative water, supply based on consultation with the project-affected communities, should any of the current sources dry up.</p>
<p>3.</p>	<p>3: Local Impacts – Risk relating to structures, landslides and earthquakes.</p> <p>Given that conventional blasting has occurred, and is still planned near residential areas, it is essential to ensure that proper steps are taken to avoid, minimize and/or compensate for any harm that may arise. Regarding the possible generation of “slurry” as opposed to “muck” by the use of the TBM, the Panel could not find any mention of this issue in the PAD, EA, or EMP and has not been able to find sufficient information to satisfy itself that the Project will be able to appropriately dispose of such slurry, since the existing muck disposal plan and corresponding documents do not cover slurry disposal. The Panel notes the importance of Management clarifying the issue of slurry disposal. The Panel notes the steps taken to use TBM technology to reduce harms from vibrations. The Panel also notes the provision in the Project of an insurance scheme to cover potential losses for structures falling within a 500m corridor along the tunnels. The Panel finds that these measures comply with Bank Policy OP/BP 4.01 as a step to reduce or mitigate potential harm. The Panel finds that, in compliance with OP/BP 4.37, Management took adequate measures to ensure the preparation of relevant studies by THDC during Project design, appraisal and implementation stages to mitigate the risks raised in the Request related to earthquakes, landslides and extreme weather events. The Panel notes the importance of taking into account and addressing the potential risks raised in the Request in the studies to be prepared during Project implementation.</p>	<p>4.01 4.37</p>	<p>Management welcomes the Panel's assessment of the Bank's compliance with the provisions of OP/BP 4.01 and 4.37. Management agrees that the disposal of tunnel excavation by-products should be done in a way that prevents any contamination of the river and in an adaptive management mode. The VPHEP anticipates that the excavated spoil from the TBM operation will be transported from the tunnel face via conveyor belt to an intermediate location (temporary construction site for drying and desanding) from which it will be transferred to the spoil transport system, which may be by rail or diesel trucks The spoil in this case will predominantly consist of rock pieces, and will not be mixed with slurry or chemicals.</p> <p>The experience to date of many project developers indicates that the Himalaya rock is not likely to contain heavy metals such as chromium, lead or cadmium, nor has there been any report of release of heavy metals when the rock surface is exposed to air and water. However, the environmental monitoring plan contained in the environmental management plan (EMP) includes monitoring to detect release of heavy metals.</p> <p>Under the adaptive management approach adopted by VPHEP, the selected civil works contractor has agreed to establish a systematic protocol, under the supervision of THDC and independent Third Party Monitoring Consultants, to regularly test slurry samples in the project laboratory facilities during the TBM operation to identify any heavy metal or hazardous substances and to treat the slurry as needed before disposal.</p> <p>It is expected that the slurry will be dewatered and sun-dried at the intermediate site before being transported to designated spoil disposal sites. Management agrees that dewatering of slurry at the site should be done in way that the sediment level of the discharged water remains within permissible parameters. The purpose of the retaining structure at the tunnel mouth is to ensure that sediments are not discharged with the slurry water, and that the discharge remains</p>

		<p>similar to the natural water that flows from the slopes, particularly during the rainy season.</p> <p>THDC should monitor, with the assistance of independent Third-Party Monitoring Consultants, the quality of the filtered slurry-discharge water along with the river water.</p> <p>It is also planned that the spoil disposal sites will be regenerated using bio-engineering techniques.</p> <p>Going forward, Management will ensure that THDC and the civil works contractor, with collective oversight from the environmental Panel of Experts and the Bank, analyze the composition of the slurry and take appropriate measures, as needed, to remove any harmful particles or substances before disposal, as provided for in the contractual documents. As discussed during the March 2014 implementation support visit and the May 2014 technical visit, the contractor will use, as needed, phased disposal and other methods to prevent overflow at the slurry disposal site so that no slurry from the TBM operation flows into the river.</p>
<p>4.</p>	<p>Local Impacts – Risk to aquatic life and ecology from altered flow and sediment release. The Panel notes and commends Management for advising Project authorities of the need to specifically study the issue of bedload soon after the Bank’s engagement in the Project, but found that the analysis is lacking. The Panel’s expert believes it may be necessary to study this to ensure such bedload movement could be safely passed downstream without damage to the Project and the surrounding areas. The Panel finds that in light of the proposed increased e-flow figure of 15.65 cumecs, the Project is not expected to have an adverse impact on aquatic life and fish populations in the 18 km stretch of the river where the water is diverted into tunnels by the Project. The Panel finds the Project to be in compliance with OP/BP 4.01 with respect to the Requesters’ claim about the Project’s impacts on fish and aquatic fauna.</p>	<p>4.01 Management welcomes the Panel’s assessment of the Bank’s compliance with the provisions of OP/BP 4.01.</p> <p>Regarding bedload movement, THDC has conducted silt management studies through mathematical as well as physical modelling, using silt data for the last 16 years, and has designed an effective silt management system that can handle sediment of size 0.2 mm and above with a 90% efficiency.</p> <p>In addition, a real time flood forecasting system to plan flood routing is planned to be installed in the catchment area of VPHEP, which will provide advance information for operation/ preparations required at the dam site. Finally, a CAT plan will be implemented (through the State Forests Department) over the next 5 years in the catchment of the river up to the project area, with the objective of preventing sediment generation. The CAT plan also identifies sites vulnerable to landslide and erosion that will be treated simultaneously during implementation, thus reducing one source of silt deposition in the river.</p> <p>In the event of major bedload movement, several measures are in place to limit its impact at the VPHEP level.</p> <p>First of all, more than two projects, one on the</p>

		<p>Alaknanda River and two HEPs under construction on the Dhauli Ganga River (a major tributary of the Alaknanda) are situated upstream of VPHEP. When completed, they will offer a physical damping effect, by considerably reducing the bedload of the river before reaching VPHEP in case of flash flood or any other event.</p> <p>At Full Reservoir Level (FRL), the reservoir starts around 2.9 km upstream of the diversion structure. The average bed slope of the river upstream of the diversion structure is very mild, i.e., 1.5%. In case of flood, any large boulders will accumulate at the tip of the reservoir, and THDC does not anticipate that they would reach the dam, nearly 3 km downstream.</p> <p>Smaller boulders and debris reaching the diversion structure will be flushed out by means of the following:</p> <ul style="list-style-type: none"> (i) One (1) 12 m diameter spillway tunnel at riverbed level (RL) 1228.00 on the left bank, just upstream of the diversion structure; (ii) Four (4) sluices, each 7.2 m (w) x 15 m (h) in size, located at 233 m, 8 m above the riverbed in the dam. (iii) One (1) ogee type spillway at 1260 m to pass any floating debris. <p>The invert level of the sluices at 1233 m is 9.5 m below the invert level of the Power Intakes (at 1242.5 m). This arrangement will eliminate the possibility of any debris/silt deposition in front of the Power Intakes.</p> <p>Apart from the above measures, during plant operation THDC plans to carry out reservoir flushing about four times each year, so that at any given time the reservoir has sufficient storage capacity.</p> <p>Management is currently recruiting an independent expert to conduct a Remote Sensing review of the upper catchment of the Alaknanda River in Uttarakhand State, for evidence of Glacial Lake Outburst Floods (GLOFs). GLOFs are thought to be associated with the devastating floods of June 2013. Once completed, the study will further inform the assessment of VPHEP preparedness for such extreme events as well as the preparation of the dam and plant operations manual.</p>
5.	<p>Local Impacts – Resettlement and livelihoods restoration (Haat & Hatsari). The Panel notes the substantial steps taken under the Project to identify and address the resettlement needs of</p>	<p>4.12 The implementation of livelihood restoration for displaced families of Haat includes measures as provided for in the RAP as well as under CSR policy. Key activities include: (i) provision of</p>

<p>displaced families from Haat village under the THDC R&R Policy. At the same time, the resettlement approach for Haat village implies, for most households, reduced land holdings and a need to develop new sources of income and food. This suggests a risk that vulnerable households may not succeed in restoring their pre-Project livelihoods. The Panel understands that livelihood restoration efforts are being carried out by THDC and supported by Management. The Panel notes the importance of the need to closely monitor and examine, as part of RAP implementation and supervision, the impact of these efforts which are aimed at improving the socio-economic status of the affected population. The Panel understands that resettlement and rehabilitation efforts are underway and almost half of the eligible families have already received their R&R assistance. With respect to Hatsari, however, which had 13 families residing, the Panel finds that the Project RAP did not adequately assess the Hatsari situation in non-compliance with OP/BP 4.12 on Involuntary Resettlement. The Panel notes that 2 families from Hatsari have accepted the Haat package and 2 nonresident families have agreed to sell their land to THDC. Negotiations are still continuing with the remaining 6 Hatsari families that reside in the village.</p>	<p>Petty Contracts to Cooperative societies; (ii) provision of direct and indirect employment; (iii) allotment of shops in THDC colony; (iv) training for self-employment such as dairy development, animal husbandry, vegetable production, knitting and poultry; and (v) support to project-affected people for vocational training including skill enhancement in trades required in hydro power plants so that trainees can be absorbed in THDC or any other hydro power company.</p> <p>In addition to these programs, the project will dovetail with various government schemes and ensure their accessibility and benefits to the project-affected people found eligible, particularly vulnerable groups. In addition, the identified vulnerable groups affected, due to either loss of private land or acquisition of van panchayat land, will also be provided with income restoration training in the trade of their choice.</p> <p>Management appreciates the Panel's views on the RAP. Management wishes to stress that the RAP is an evolving document that reflects the continuous design optimization process of the project facilities and the outcomes of the consultative process with the project-affected people. Hence, while the Hatsari situation was initially analyzed during the social impact assessment as part of the Haat village (Hatsari is one of the three hamlets of Haat village, the other two being Dhobighat and Haat), THDC offered to the Hatsari families a customized R&R package that went beyond the package they initially rejected. THDC respects the right of the families to remain in place. It put forward several enhanced relocation and compensation options, but all 12 Hatsari families preferred not to accept these options. As a consequence, THDC changed the location of a switchyard and the alignment of the tail race tunnel and approach road to the surge shaft so that Hatsari land would not be required for the project. Because the construction period is likely to have temporary impacts on the community, THDC is offering options for temporary or permanent relocation to the villagers.</p> <p>Whether the villagers accept these options or not, , THDC and the civil works contractor will implement measures in accordance with the environmental management plan (EMP) to mitigate potential indirect construction-related dust, noise and traffic safety impacts.</p> <p>Management believes that THDC has demonstrated professionalism and commitment</p>
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		<p>to improving the well-being of the project-affected people by offering them a range of options including permanent and temporary relocation during the construction phase. As the Panel noted, two households have accepted the R&R package and have moved out to the Mayapur village, while two non-residents have indicated their willingness to sell their land. If the remaining families still elect to stay in Hatsari, THDC will respect their choice.</p> <p>THDC is continuing discussions with the Hatsari families in an effort to eliminate their exposure to these limited construction impacts. THDC remains willing to provide temporary relocation to the affected families all through the construction phase, giving the families the option of reassessing their choice not to relocate as the actual impact of the construction becomes clear.</p> <p>From the above, Management is of the view that the project’s approach to resettlement and impact mitigation with respect to Hatsari is in compliance with OP/BP 4.12.</p> <p>Management is monitoring the Hatsari issue on a regular basis and has also participated in several meetings chaired by the district administration to resolve the issue. .</p> <p>Going forward, THDC will continue the dialogue with the Hatsari community and the district administration of the state to arrive at a mutually agreed settlement.</p> <p>THDC will be assisted in its dialogue with the Hatsari community by the NGO hired for the implementation of the RAP and the Public Relations Officer of the civil works contractor.</p>
<p>6.</p>	<p>Local Impacts - Gender-related livelihood and security issues. The Panel finds that the THDC R&R Policy covering access to livelihood sources, i.e. fuel and fodder, complies with the requirements of OP/BP 4.01 and OP/BP 4.12. Going forward, the Panel notes the need for monitoring/supervision and public consultation/information to ensure that Bank policy requirements with respect to livelihood restoration are being met, and that women are not disproportionately impacted by any possible changes to their <i>van panchayat</i> during Project implementation, in light of the heavy burden that women will face if access to forest and forage resources is made more difficult. However, the Panel finds that insufficient attention has been given to the issue of women’s security as fences around the labor camps alone cannot be seen as an adequate mitigation measure. A</p>	<p>Management welcomes the Panel’s assessment of the Bank’s compliance with the requirements of OP/BP 4.01 and OP/BP 4.12.</p> <p>With respect to loss of van panchayat land, THDC will provide access roads to the residual van panchayat and/or grazing land. In addition, each affected household will be paid 100 days of MAW per year for a period of 5 years. The amount will be paid as a grant toward the replacement of lost fuel and fodder. These provisions are over and above the livelihood restoration plan currently being implemented under the project.</p> <p>In order to reduce drudgery and stress among women in collecting fodder from nearby forests, activities were introduced to promote plantation of fodder such as napier grass.</p>

	<p>key issue in the future will be systematic and regular monitoring of the conditions of the labor camps, and to ensure that any breaches of agreements and standards with respect to women's security are picked up early and not allowed to fester into serious conflict between the labor and villagers. The Panel notes the importance of continued attention to monitoring gender-differentiated impacts of the Project and the need to remedy potential negative impacts through regular supervision missions that should include gender expertise.</p>	<p>With regard to women's security, the civil works contractor is contractually obligated to undertake measures aimed at securing the safety of women living in villages around the labor camps. The labor force that will work on the construction site will be housed in two fenced camps (one near the dam site and the other close to the power house) to minimize its impact on local resources and communities. The contract contains very specific clauses to ensure that these camps have facilities for water supply, liquefied petroleum gas for cooking, toilets, and solid and liquid waste management. The labor force will not be allowed to access community forests so as to ensure the safety of local women collecting fuel and fodder there.</p> <p>The following actions have already been agreed by the civil works contractor and will be monitored (gender-differentiated monitoring) during project implementation:</p> <ul style="list-style-type: none"> • Contractor will hire women staff as security officers and guards. • Contractor and THDC will conduct regular awareness campaigns in the labor camps about women's safety and to reinforce project boundaries, with penalties for violation of the same (to be borne by contractors and workers alike) and availability of criminal prosecution. <p>Besides, THDC will deploy women social mobilizers in each of the affected villages throughout the construction period.</p> <p>Further, the well-functioning GRM will be made gender-sensitive by inducting women members from the affected villages so that complaints about abuse of women can be properly and speedily logged and addressed. At least a third of the members will be women. GRM members will receive training on gender related issues from the social staff of THDC.</p> <p>At the appropriate time, a specific campaign will be conducted to let women know that there are dedicated conduits to file complaints about workers' behaviors and other possible threats.</p>
<p>7.</p>	<p>Local Benefit Sharing and inadequate handling of grievances. The Panel finds that important efforts are being made by Management to restore livelihoods of displaced people in accordance with the provisions of OP/BP 4.12 on Involuntary Resettlement. The Panel notes the importance of close monitoring to ensure that these initiatives have a sustained positive impact in the local area. The Panel notes the need for clarity on the use of the 12% royalty payment to</p>	<p>4.12 Management welcomes the Panel's assessment of the Bank's compliance with the provisions of OP/BP 4.12.</p> <p>The developer provides 12 percent free power as royalty to the host state, and the revenue generated from this power will be used as a source of revenue for host state development.</p> <p>An additional 1 percent of revenue collected as per the National Hydro Policy will go directly to</p>

<p>the State and of the 1% revenue generated under the National Hydropower Policy so that Project affected villages and others that are impacted will benefit from these initiatives that are aimed at financing developmental needs. With respect to the issue of access to services and common resources in host communities, and the possibility of conflicts arising due to resource sharing, the Panel notes, to the extent that some villages, such as Gadora, are indirectly “hosting” resettled families by sharing their public services and natural resources with them, that as Project implementation makes progress, Management is responsive to the letter and spirit of OP 4.12, para 13 (b) which requires that infrastructure and public services are provided as necessary to new resettlement sites and host communities to improve, restore, or 101 maintain accessibility and levels of service for the displaced persons and host communities. The Panel further notes the importance of assessing the impact of the Project on host communities at the end of RAP implementation. The Panel also notes that there is a functioning grievance redress mechanism under the Project to which issues are being taken for resolution. Based on the foregoing, the Panel finds that the requirement of OP/BP 4.12 on Involuntary Resettlement that an appropriate and accessible grievance mechanism be established has been met. The Panel notes the importance of the Project GRC being made accessible to host communities so that their concerns can be heard and resolved whenever appropriate.</p>	<p>the project area, following the guidelines for management of LADF issued by the Ministry of Power in October 2013. These revenues will be utilized to meet the infrastructure and development needs of the local population. As per the guidelines of Ministry of Power, the money will be directly deposited by the developer in the LADF and a 1 percent matching grant will be provided by the state government. The State of Uttarakhand will determine the details of the mechanism that will govern the use of these funds.</p> <p>Currently THDC is carrying out development activities with funding from two sources, namely: (i) CSR funds (from 1 percent of THDC's profit) in the district; and (ii) INR 96.44 million as part of the RAP budget for community and area development in the affected villages.</p> <p>The following activities have been carried out by THDC to maintain infrastructure and public services in the resettlement villages:</p> <ul style="list-style-type: none"> • A drinking water facility with two 5000-liter tanks has been installed for the El Dana resettlement site. In Daswana, two tanks of 6000 liters each have been installed to supply drinking water. • THDC has installed a separate three-phase transformer for power supply to the resettlement villages but it is currently being operated as a single-phase transformer. THDC is in the process of adding two more phases to cater for the increased electricity demand. • THDC has planned to link Daswana village to NH 58 through Garhi village, for which the tendering is currently in process. This is an existing PWD road that passes through some private plots which will need to be acquired. THDC has also built internal footpaths to connect the two major settlement sites to an existing all-weather road. • THDC has relocated the government-run primary school of Haat to the new site (the money for constructing the new building has already been deposited with the state government in the form of compensation) in a rented accommodation. THDC plans to construct a school building in the allocated site, which can be used for common purposes by the community once the education department constructs its own building.
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