Climate Investment Funds

CTF/TFC.11/9
April 11, 2013

Meeting of the CTF Trust Fund Committee
Washington D.C.
May 2-3, 2013

Agenda Item 10

PROPOSAL FOR DEVELOPMENT POLICY LOAN TO PROMOTE INCLUSIVE GREEN GROWTH AND SUSTAINABLE DEVELOPMENT IN HIMACHAL PRADESH PROJECT IN INDIA

PROPOSED DECISION

The Trust Fund Committee reviewed document CTF/TFC.11/9, *Proposal for Development Policy Loan to Promote Inclusive Green Growth and Sustainable Development in Himachal Pradesh Project in India*, and takes note of the information provided in the document. Members are invited to submit any written comments on the proposal to the CIF Administrative Unit by May 24 for transmission to the Government of India and IBRD so that the members' views may be taken into account in the further development of the proposal.

DEVELOPMENT POLICY LOAN (DPL) TO PROMOTE INCLUSIVE GREEN GROWTH AND SUSTAINABLE DEVELOPMENT IN HIMACHAL PRADESH

Background Paper on Eligibility to the Clean Technology Fund

THE WORLD BANK

April 2013

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LIST OF ABBREVIATIONS

Abbreviations	
CEA	Central Electricity Authority
CEIA	Cumulative Environment Impact Assessment
CO2	Carbon Dioxide
CTF	Clean Technology Fund
DEST	Department of Environment and Science Technology
DPL	Development Policy Loan
FY	Financial Year
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GOI	Government of India
HPDP	Himachal Pradesh Development Policy
HPDPL	Himachal Pradesh Development Policy Loan
Kwh	Kilo Watt Hour
LADF	Local Area Development fund
Mn Tones	Million tones
MW	Mega Watt
Mwh	Mega Watt Hour
PLF	Plant Load Factor
RE	Renewable Energy
VRE	Variable Renewable Energy

LIST OF CONVERSIONS USED:

1 USD = Rs.54.5 (www.oanda.com accessed on 22nd March 2013)

1GWh = 1000 MWh

CO2 Emission/MWh = 0.78 ton of CO2 (As per CEA's CDM – CO_2 Baseline Database)

1 Lac = 1, 00,000 (One Hundred Thousand)

1 Crore = 10,000,000 (Ten Million)

SUMMARY OF INDICATIVE IMPACTS OF THE DPL SERIES

Key Indicators	DPL Series	Regional Impact (CTF/ World Bank Project – DPL)	National Impact(CTF/World Bank Leveraged Project DPL)	Government's long term program in context of Himachal Pradesh
Hydropower generation capacity (MW)	2867 by 2014	17631 by 2032	51492 by 2032	10000 by 2020
Power generation (GWh/yr)	11300	69501	198186	39420
Avoided CO2 Million (Tons/Year) over lifetime	176.28	662.41	1255	412
Lifetime	Till 2014	20 years (till 2032)	20 Years(till 2032)	8 years (till 2020)
Financing/Leveraging Amount (Mn USD)	4408 Mn USD *(100 Mn CTF, 100 Mn IBRD, 1262 Mn Equity Financing, 2946 Mn Debt Financing)*	26080 Mn USD *(100 Mn CTF, 100 Mn IBRD, 7764 Mn Equity Financing, 18116 Mn Debt Financing)*	75784 Mn USD *(100 Mn CTF, 100 Mn IBRD, 22675 Mn Equity Financing, 52909 Mn Debt Financing)*	10034 Mn USD *(100 Mn CTF, 100 Mn IBRD, 2950 Mn Equity Financing, 6884 Mn Debt Financing)*
CTF Investment Leverage Ratio	1:2.54*(for capacity addition of every 1 GW by 2014)*	1:15.67 *(for capacity addition of every 1 GW by 2032)*	1:43.87*(for capacity addition of every 1 GW by 2032)*	1:8.88*(for capacity addition of every 1 GW by 2020)*
CTF Cost Effectiveness US$ (per ton of CO_2 avoided)	0.567	0.151	0.079	0.242
Environmental co-benefits	- Lower local pollution due to savings in GHG emissions from avoided thermal power generation and increase in variable renewable energy (VRE) generation as hydropower serves as a balancing reserve.			
Improved energy security	- Increased hydro share. - Increase in VRE share: India would have significantly high renewable energy share in the overall generation mix by 2032 as hydropower serves as a balancing reserve thereby promoting the deployment of VRE.			
Co-benefits	- Reduction in coal imports by ~10% considering the current proportion of coal consumption from overtime the lifetime of the project (2032) - Savings of ~1728 Mn USD in terms of coal imports overtime the lifetime of the project (2032) - Savings of ~6878 Mn USD in terms of transportation expenses of domestic coal due to avoided thermal capacity overtime the lifetime of the project (2032) - Revenue for the state in form of sale of free power royalty.			
Other non-quantifiable benefits	- Development of local industry - Increased employment - Cost reduction of electricity (only if the projects commission on time) - Positive impact on women and children by enabling access to modern energy services			

I. INTRODUCTION

1. Himachal Pradesh (HP) has some specific characteristics that set it apart from other Indian states. It faces development challenge arising from its high elevation, topography, resource dependence, and ecological vulnerability—as well as from a changing and more competitive international environment. The Government of India (GoI) has given HP the status of a "special category" state in recognition of these unique constraints, under which the state is the recipient of special central grants and incentives that have been instrumental to its development.

2. Despite its structural disadvantages, HP has performed admirably on many measures of human development. The state has some of the best indicators for development in India and from its inception in 1971, it has had a higher per capita income and better social indicators than much of the country. This has been made possible by supportive government policies, a transparent and accessible administration, an implicit social compact and cohesion, and high levels of investment in human capital. But challenges do remain – notably that of promoting inclusive development for disadvantaged groups in remote areas.

3. However, the past pattern of development in HP raises concerns about the efficiency of natural resource use, and the sustainability of development. Following the development template used in the rest of the country, the hill states have attempted to attract industries that are at times highly polluting and resource intensive (such as cement, chemicals, and pharmaceuticals), through a variety of tax concessions and subsidies. The ability to further diversify the economy is limited by topography and poor market access, which render large scale industrialization costlier and more difficult than elsewhere in India. The economic benefits of the current growth strategy – one that is dependent on public spending, financed by borrowing and central assistance – may have reached its limits.

4. The sustainability of HP's success for the future will depend on addressing three major transitions. The first is to shift the growth strategy in HP from one that is still far too heavily dependent on public expenditure, to an increasing focus on the broad-based contribution from other sources of growth, for instance, its natural resources and tourism sectors, with an enabling environment for the private sector. The second is to create productive employment opportunities for HP's youth and increasingly educated labor force, so that reliance on the public sector as an employer of last resort goes down. A better growth strategy and improvements in the investment climate will play a crucial role, as will efforts to strengthen the quality and skills base of the state's labor force in order to ensure the outcome of good jobs that the state needs to sustain incomes. The third critical transition that HP will need to make is to better manage its environment and natural resources. This must take several key directions. The potential for hydropower development has to be judiciously and prudently managed to support the desired fiscal outturns and to invest in the future of the state. At the same time, the downside effects of hydropower development on the environment, especially reduced water for downstream uses, will require much improved attention to ensure that society as a whole benefits, and that development is sustainable. Furthermore, a broader environmentally sustainable strategy will be essential, for forestry development, community projects, urban management, and water supply. Failure to take action against environmental degradation in a society dependent on its natural resource base could ultimately threaten future growth prospects. It is critical to address these

challenges before they start to impact on the state's successful socio-economic performance.

5. Within this context, the GoI has requested policy-based budget support to assist the Government of Himachal Pradesh (GoHP) to promote inclusive green growth and sustainable development and undertake a paradigm shift towards the sustainability of the main engines of growth. Himachal Pradesh is richly endowed with natural resources and this program is designed to unleash its comparative advantage of generating growth through improved stewardship of its natural assets. The program will assist GoHP in its efforts towards inclusive green growth, with transformative actions across the key engines of economic growth - energy, watershed management, industry and tourism.

6. GoI has secured US$100 million from International Bank for Reconstruction & Development (IBRD) resources to finance the first in a series of two Development Policy Loans (DPLs), and is seeking an additional US$ 100 million of Clean Technology Fund (CTF) resources for the second DPL in the series. This is consistent with the practice to leverage CTF resources with funds from multilateral agencies. Through this Program, GoHP will promote inclusive green growth and the environmental and social sustainability of hydropower in HP, which is consistent with the objectives of the CTF. The DPL series complements a range of initiatives that the State of Himachal Pradesh has been actively pursuing to support its policy objective of promoting environmentally sustainable growth. Several of these are currently at a stage where they need to be supported by investments on the ground. The overall investment quantum is large. Several alternate funding avenues are being considered in this regard. The initial investments made to support these programs will be critical in catalyzing the respective programs and have transformative impact on the segment that the respective programs seek to achieve.

7. If successfully implemented, with due care for social and environmental impacts, the planned hydropower expansion could alter the baseline trajectory for emissions from the power sector, because it offers the sole economically feasible clean alternative to both base load and peaking fossil-based power generation plants. If this expansion were to fall short, India would most likely be compelled to further expand its coal-based generation capacity, and also forego a large proportion of proposed RE capacity additions for reasons elaborated upon subsequently in this annex.

8. Through this Program, GoHP will promote inclusive green growth and the environmental and social sustainability of hydropower in HP, which is consistent with the objectives of the CTF. This operation will also promote the public disclosure of the State's comprehensive Action Plan on Climate Change and support the introduction of a novel scheme to the benefit sharing policy that would provide an annuity payment to affected households during the lifetime of hydropower projects, as well as other forms of compensation. To address the environmental challenges of hydropower, there is a commitment to adopt a river basin approach to risk assessment and management, address cumulative impacts and establish transparent and publicly verifiable mechanisms to assure adequate ecological (environmental) river flows. At the end of the series, a policy and institutional framework will be in place to contribute to achieving the objective of reducing greenhouse gas (GHG) emissions intensity; to ensure compliance with environmental flow requirements including measures to address any issues of non-compliance; the completion of cumulative impact assessment for at

least one river basin; and the implementation of a benefit sharing mechanism as illustrated by the issuance of cash transfers in one hydropower project and commissioning of works mandated by community based program. Together these represent a far reaching policy transformation in the way in which hydropower projects are implemented in Himachal Pradesh and have potential for broader application and replication.

9. With this Program, HP will be the foremost state in making a tangible contribution to the GoI objective on GHG emissions intensity.

10. The hydropower potential of the state is estimated to be about 27,436 MW i.e. about twenty five percent of the national hydropower potential. The drainage system of Himachal is composed both of rivers and glaciers. The state provides water to both the Indus and Ganges basins. The drainage systems of the region are the Chandra Bhaga or the Chenab, the Ravi, the Beas, the Sutlej and the Yamuna. **Himachal Pradesh is naturally suited for hydropower generation and accounts for over 30% of India's total hydropower potential in the Northern Region.**

11. The state government has been according hydropower the highest priority for its development, since hydropower generation can meet the growing need of power for industry, agriculture and rural electrification. The abundance of perennial rivers enables Himachal to sell hydropower to other states such as Delhi, Punjab and Rajasthan, etc. It is also the largest source of income to the state. **The GoHP has ambitious plans to develop a comprehensive policy and institutional framework that would facilitate the development of 10 GW of hydropower over the next ten years.**

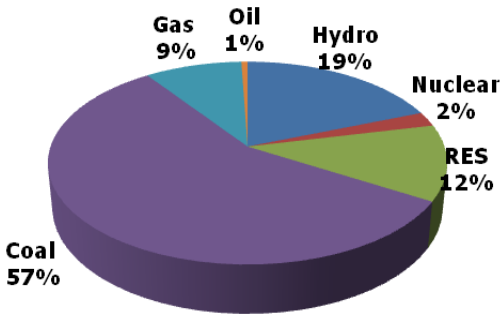
12. The GoHP recognizes the importance of hydropower in bringing prosperity to Himachal Pradesh. The pace of development of hydropower in Himachal Pradesh has been much faster in comparison to other states. Till 1991, generation was only in the hands of central and state agencies. Post liberalization, Himachal Pradesh was the first state to allot a project to the private sector. The 300 MW Baspa-II project in Kinnaur was completed by the Jaypee Group in the year 2003. The Himachal Pradesh Government (since 2006) gave a major fillip to hydropower development by allotting projects to both central public sector undertakings and the private sector through MOUs and competitive bidding route respectively. Today much of the capacity has been allocated and is in implementation stages. It is important that all ongoing hydropower projects in the state are completed in time so that both cost and time overruns are avoided and benefits reaped at the earliest. The state has so far allotted 22,500 MW hydropower potential out of its total potential of 27,436 MW, mostly to the private sector through competitive bidding. It is important to ensure from economic and environmental perspectives that the projects are developed on a timely basis and in a sustainable manner, since the consequences of delays and deviations are enormous.

13. **Himachal Pradesh is emerging as a model in the country and seeks to attain the objective of becoming a power house of the nation aiming to provide adequate, reliable and quality power at competitive rates to consumers with the objective of sustaining the high human development index (HDI) it has achieved and is committed to improving it further.**

14. **Hydropower potential in India is substantial and remains one of the few immediate options to address energy shortages and reduce the emissions intensity of the power sector at scale.** Coal has been the mainstay of India's power generation and continues to be the primary fuel source, **as India lacks sufficient alternate sources of domestic energy. India's current installed generation capacity (~211 GW) out of which about 67% thermal (57% coal, 9% gas and 1% oil) followed by 19% hydropower. Over the years the**

contribution of hydropower to the generation mix - more than 45% in 1980 - has been worsening steadily an unbalanced hydro thermal mix, with serious consequences for the Indian power system.

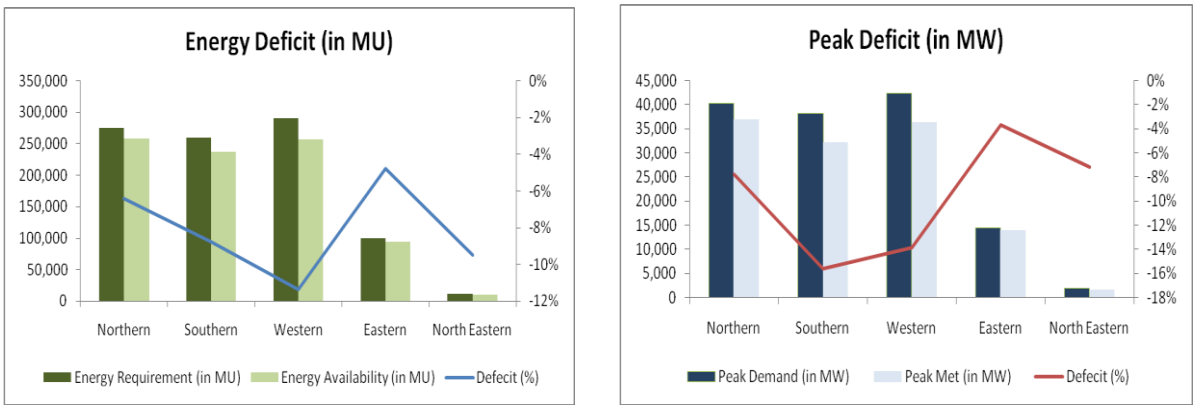
Figure 1: Fuel-mix by Installed Capacity (as of January 2013)



Source: Central Electricity Authority (CEA), 2013

15. With a total potential of 148,700 MW (in terms of installed capacity), hydropower remains one of the critical options to address the energy/peak shortages, limit the carbon intensity of the power sector and achieve the objective of diversification of energy sources and address energy/peak shortages in the country. Ability of hydropower plants to respond quickly to demand fluctuations makes them the ideal electricity source to cope with demand peaks and help stabilize system frequency. Hydro generation also counterbalances the carbon intensity of the power sector and mitigates the risk of global climate change. In FY 2011-12, the country witnessed a peak power shortage of 10.6 percent and an energy deficit of 8.5 percent. Figure 2 indicates the power supply position in FY 2011-12.

Figure 2: Regional Power Supply Position (Energy and Peak), March 2012



Source: CEA Power Supply Position, 2012

16. Apart from serving the peaking power requirements of the country hydropower serves as a balancing reserve for the system. With increased contributions from variable renewable energy sources like wind and solar there is an urgent need for a larger base of system flexible and fast response balancing resources. In addition, hydropower in Himachal Pradesh is located close to the high demand states of Punjab, Haryana and Rajasthan, thus avoiding long distance power transmission and its consequences in terms of system losses and voltage drops. If India has to address its growing energy needs in an environmentally sustainable manner, and has to achieve its intent of

incorporating renewable energy on a large scale as envisaged in policy (30 GW of RE is proposed to be installed in the 11th Five Year Plan between 2012 and 2017, with sharp increases thereafter), corresponding large scale hydropower development is an inescapable reality.

17. **In the backdrop of these local and national advantages, Himachal Pradesh also faces significant barriers to hydropower development.** Specific development challenges arising from its high elevation, topography, resource dependence, and ecological vulnerability need to be addressed. Despite allotting large number of hydropower projects for execution, the pace of their development in Himachal Pradesh has remained sluggish, slipping from agreed schedule due to the following key fundamental issues arising at various stages of development of a project.

    a. **Long processing time for obtaining statutory environment and forest clearances:** Development of a hydro power project requires a large number of consents and clearances right from the initial conceptualization of the project to the plant commissioning, in particular environmental and forest clearances. The lack of a predictable and comprehensive regulatory framework leads to significant delays in attaining such clearances.

    b. **Civil society and stakeholder participation and grievances:** the lack of an enabling policy and legislative framework to build consensus on the State's hydropower policies, to ensure local communities benefit from hydropower development, to address specific grievances at times lead to significant delays, and to address any concerns regarding minimum environmental flows available at all stretches of the rivers and their tributaries.

    c. **Lack of appropriate project identification**: In the past, project identification has suffered due to projects being identified on the basis of topographical sheets in an ad hoc manner without assessing the river basin as a whole and without proper ground level verification. This has resulted in dissatisfaction with sites identified for project location, inadequate attention to environmental concerns about riparian distance and about ecologically sensitive areas and improper assessment of potential. All this has led to disputes and frequent requests for change of project domain.

    d. **Land acquisition and contractual problems**: For instance, Koldam hydroelectric project of NTPC was scheduled for commissioning in 2009, but has been getting delayed due to land acquisition and contractual problems.

    e. **Geological surprises:** Geological surprises such as flash floods, rockslides and landslides often impede the development process of the project.

    f. **Absence of adequate power evacuation and transmission infrastructure:** uncertainty in availability of transmission lines by the time of completion of projects.

    g. **Non availability of centralized and reliable hydrological database:** Non-availability of topo sheets of project area by the government to private developers remains a key issue affecting development

    h. **Lack of access infrastructure:** Development of roads & bridges to have easy access to the project sites is crucial for expediting the execution of projects and needs special attention as a large part of hydro power potential in the country is in Himachal Pradesh where accessibility to project sites is a problem due to difficult terrains and geography of the state.

i. **Cost of Funds:** Investor confidence in hydro projects is fragile on account of the long gestation period, high initial capital costs, and unbalanced risk profile of the projects on account of information gaps, inherent project risks and local development issues.

A significant number of these barriers particularly those related to environmental and social issues will be addressed through the DPL as elaborated below.

II. IMPORTANCE OF THIS DPL

18. The aim of this DPL is to promote environmental and social sustainability of hydropower by addressing the first three barriers identified above, and to permit timely project development with adequate safeguards. Success of hydropower development in HP would bring added benefits and will serve as a template not only for mid-Himalayan states in India, but for other countries in the South Asia region (such as Bhutan and Nepal), since most of the developers in the state are active regionally in these countries and would utilize their experience and expertise globally. The DPL will help in bringing about policy reforms which will eventually lead to several benefits as elaborated below:

19. **Time & Cost Overruns:** One of the expected outcomes of the DPL series is the reduction in the current cost and time-overruns being faced by hydropower projects, which would promote the sustainability of hydropower development. Table 1 shows the time and cost overruns of projects delayed on account of various reasons in the business as usual (BAU)[1] scenario.

Table 1: Time & Cost Overrun of Delayed Plants in the BAU scenario

Name of the Plant	Capacity (MW)	Scheduled year of commissioning	Anticipated year of commissioning	Original Cost (Mn USD)	Anticipated Cost (Mn USD	Cost overrun (Mn USD)	Time Overrun (Years)
Kol Dam	800	2008-2010	2014-15	830.7	1166.8	336.1	5
Parbati-III	520	2010-2011	2012-2014	422.8	498.3	75.6	3
Parbati - II	800	2009-2010	2016-2017	719.2	984.6	265.4	8
Uhl-III	100	2006-2007	2014-15	79.2	172.6	93.4	7
Sawra Kuddu	111	2010-2011	2014-15	102.5	216.9	114.4	4

Source: CEA 2012

20. Various other projects currently under development face significant delays due to the barriers mentioned in the preceding section. A large number of these are private sector projects.

21. **Impact on Revenue for the state**: According to the Hydropower Policy of 2006, the GoHP is entitled to royalty from hydropower projects, in the form of 12 percent of power generated by the project for the first 12 years of project operation, 18 percent of power generated by the project free power for the next 18 years, and 30 percent of power generated by the project free power after 30 years of project operation. Subsequently, after 40 years of operation, the project reverts to the state free of cost. The state has also retained the right to take up equity in the new hydropower projects. In the case of JV projects, in addition to the 12 percent royalty power, GoHP also has an

[1] BAU scenario refers to a scenario without the DPL

entitlement of additional power proportionate to their equity stake at the regulated tariff that it can either use within the state or sell to other states.

22. Revenues from hydropower are a major contributor to the revenue of the state of Himachal Pradesh. As mentioned above, there is significant untapped hydropower potential in HP on account of the state's water supply through five perennial rivers. Judicious exploitation of the unrealized potential in an environmentally sustainable manner and accelerated development of projects under implementation assumes particular significance, not just as a source of "green energy" than can help alleviate the power shortage in the Northern Grid, but also as a critical source of non-tax revenue for the state. As shown in table 1 the delay in commissioning of hydropower projects has resulted in significant loss of revenues for the GoHP. The following table highlights the loss of revenues for GoHP and the project developers. Table 2 below shows the Revenue losses for the GoHP. These losses have been calculated on the basis of the units of generation (free power + LADF[2] = 13% free power) lost due to delay in commissioning of the plant and subsequent delays in returns.

23. **Impact on Revenue for the developer:** Delays in commissioning of the hydropower projects impact the revenue for the developer as well. Indeed, the loss of revenue on the developer will be much higher than government. Long payback periods coupled with unbalanced risk profile skewed towards the developer make hydropower project unattractive for investment. Table 2 below shows the revenue losses for the developer. These losses have been calculated on the basis of the units of generation (apart from the free power given to HP i.e. 12% and 1% as LADF) lost due to delay in commissioning of the plant and subsequent delays in returns.

Table 2: Cumulative Loss of Revenue[3] due to delay in commissioning of hydropower projects in HP

Name of the Plant	Revenue Loss in Mn USD (GoHP.)	Revenue Loss in Mn USD (Developer)	Time Overrun (years)
Kol Dam	86.8	636.5	5
Ram pur	31.5	230.8	4
Parbati-III	27.1	198.6	3
Parbati – II	122.2	896.2	8
Uhl-III	10.8	79.3	7
Sawra Kuddu	8.1	59.1	4
Sainj	5.1	37.3	2
Total	**291.5**	**2137.7**	

Source: AF-Mercados EMI Analysis (Refer Table 1)

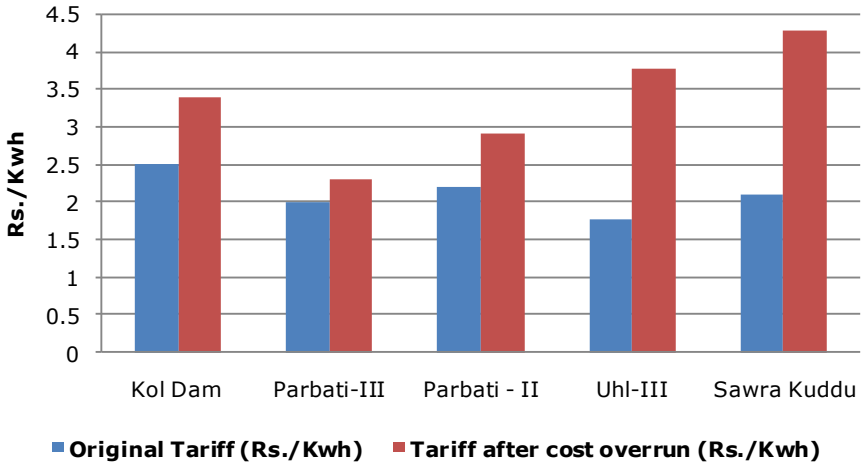
24. Delay in commissioning of hydropower plants also impacts the resultant tariff. Since delays cause increase in the overall cost and loss of revenue from the plant (as shown in the table 1 and 2 above), this leads to an increase in tariff in cases where the regulatory dispensation allows for pass-through of the cost overruns. In case of private

[2] LADF: Local Area Development Fund: The Hydropower Policy was adopted by GoHP in 2006 to improve basic amenities and infrastructure facilities in the project affected villages of hydropower projects. The Policy provides for a contribution by project developers to a LADF based on final construction costs.

[3] The Revenue loss has been calculated by estimating 1st year tariff after considering the cost overruns as shown in table 1.

sector projects where such a dispensation is not available, the project viability is seriously impacted, resulting in financing delays that further affect viability.

Figure 3: Estimated Impact of Delays on Tariff[4]



Source: AF-Mercados EMI Analysis (Refer Table 1)

25. For reasons of ecologically and socially secure development, early monetisation of projects for financial benefits, containment of tariffs to reasonable levels and retaining project viability, there is an urgent need to institute mechanisms and support systems that limit hydro development and construction delays. Establishment of an institutional mechanism for sustainable hydropower development—including integrated basin-wide planning and monitoring and implementation of environment management activities related to hydropower development - will help ensure that the project development activities happen in a timely and environmentally and socially sustainable manner. The DPL will ensure that project development is facilitated adequately by resolving some of the development barriers articulated earlier, while simultaneously ensuring that the environmental and social safeguards are adequately in place.

26. **DPL will also facilitate the following Local benefits/ State benefits:** The specific benefits to the state and its populace include the following:

i. GoHP will be able to promote inclusive green growth and environmental and social sustainability of hydropower in Himachal Pradesh.
ii. Supporting the initiative of developing and distributing Local Area Development Fund, which is a community based benefit sharing program administered by local development authorities, and financed by 1.5 percent of project construction costs paid by project developers
iii. Benefit sharing based on direct cash transfers to beneficiaries: support the introduction of a novel scheme to the benefit sharing policy that would provide an annuity payment to affected households during the lifetime of hydropower projects (annual revenues equivalent to 1 percent of power sales from the

[4] The computations are based upon the difference in tariff as a result of delay in commissioning of hydropower plants.

project are shared during the lifetime of the project) , as well as other forms of compensation thereby contributing in alleviating poverty.

iv. A policy and institutional framework will be in place to contribute to achieving the objective of reducing GHG emissions intensity.

v. Risk assessment and management at river basin level rather than by individual projects, and risk-based assessment of environmental flow requirements.

vi. Local economy benefits – Hydropower development provides additional non-tax revenue for the state and therefore remains fiscally attractive. Calculations suggest that should GoHP be successful in achieving its objective of developing hydropower resources, the revenues from the sale of royalty power together with dividends, could be more than 35 percent of HP's current revenues and could be more than 87 percent of the states non-tax revenues by FY2015-16.

vii. Build investor confidence in the projects and in the state agencies by opening avenues for financial institutions to develop their credit portfolio in the hydropower sector.

III. ASSESSMENT OF THE PROPOSED PROJECT WITH CTF INVESTMENT CRITERIA

A. POTENTIAL FOR GHG EMISSIONS SAVINGS

27. Harnessing of the state's large hydropower potential represents perhaps the only opportunity for HP to promote clean energy at scale, and, in the Government's estimation, is a critical way to contribute to India's growing energy demand, in particular for peak energy demand. Thus there is little doubt hydropower expansion would have to proceed irrespective of the external involvement as this is very much a part of GoHP's own development and fiscal agenda, but this DPL series seeks to ensure that the hydropower development is done in an environmentally and socially sound manner. The DPL would help in fast-tracking the existing hydropower development in HP.

28. The state is likely to add hydropower projects having a total capacity of 17631 MW by 2032. This capacity is assumed to be added through various hydro projects in the under-construction and pre-construction phases across the five rivers in HP. The untapped potential in the state is also expected to be harnessed majorly for the Satluj, Chenab and Beas basins. The baseline emissions as per CEA's Report on "Baseline Carbon Dioxide Emissions From Power Sector – Version 8" released in January 2013 has been considered to be 0.78 tCO2/MWh. In the BAU scenario, the GHG emissions are likely to reach ~1366 Mn Tones of CO_2 equivalent for the power sector by 2032. With the support of the DPL, the emission level is likely to be reduced to ~1306 Mn Tones of CO_2 equivalent resulting into an annual savings of ~60 Mn Tones of CO_2 by 2032 and an average emission reduction of ~34 Mn Tones of CO_2 annually over the lifetime of the project. This will lead to GHG emissions savings of 662.41 Mn Tones [5] of CO_2 eq by 2032 (refer table 3). This has been assessed based on the avoided coal based generation.

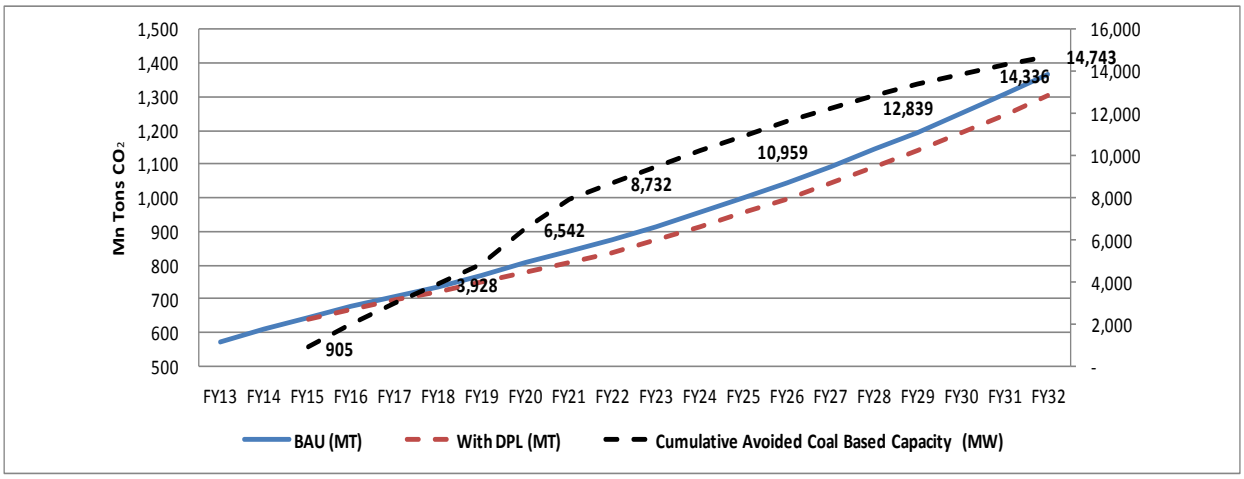
[5] Considering the plant load factor of 45% for hydro power project and a grid emission factor of 0.78 tCO2 Eq/MWh as per CEA.

Table 3: CO2 emissions in BAU Scenario and with DPL

Parameters	FY 13	FY 17	FY 21	FY 25	FY 29	FY 32	Total
BAU (Mn Tones of CO_2 equivalent)	572.59	707.77	842.61	1000.15	1195.46	1366.58	18518.29
With DPL (Mn Tones of CO_2 equivalent)	-	695.58	810.15	955.22	1140.60	1306.14	16673.37
Cumulative Emission Savings as a result of DPL (Mn Tons of CO_2 equivalent)	**-**	**12.19**	**32.46**	**44.93**	**54.86**	**60.44**	**662.41**

Source: AF-Mercados EMI Analysis

Figure 4: Comparison of CO_2 emission levels in the BAU scenario and in the DPL scenario



Source: AF-Mercados EMI Analysis

29. The above table and the graph show the comparison between the emission reduction in Business as Usual (BAU) scenario and DPL scenario. From the above graph it can be inferred that with DPL the emission levels would decrease in comparison to the BAU scenario. This would result in avoidance of thermal based capacity of as high as 14743 MW by 2032, thereby contributing to significant reduction in GHG emissions.

30. Run-of River hydropower plants do not cause net emissions of GHG except the comparatively small amounts of such gases released as a result of manufacturing of equipment and construction work, including transportation. As per the study[6] conducted by The World Bank, the rough estimate indicate that without forest clearance the specific emission of CO_2 would be in the order of 1g/kWh.

[6] Review of Greenhouse Gas Emissions from the Creation of Hydropower Reservoirs in India, Background Paper on "India: Strategies for Low Carbon Growth" dated July 2008.

Technology Development Status

31. Hydropower technology is mature both nationally and internationally. The main impact that the DPL will have is on reducing the delays in commissioning of the hydropower projects rather than having a direct impact on technology.

B. COST-EFFECTIVENESS

32. The impact of the DPL on cost effectiveness would be two-fold: a) direct impact, in the form of contributing to the reduction in time and cost overruns associated with hydropower projects thereby making such projects attractive for investors and b) indirect impact of controlling the import of coal to meet the country's electricity demands to a large extent.

33. **DPL would make hydropower cost effective and attractive for investors**: As mentioned in para 19 above, the DPL will help in accelerating the pace of development for hydropower projects currently under implementation thereby, reducing the cost and the time overruns caused due to delays. This will in turn reduce the payback period for the developer thus reducing the revenue losses on account of delays.

34. The success of this DPL would result in significant amount of capacity addition of hydropower at the regional and national level. **The CTF investment per ton of CO2 reduction would be ~$0.15 at the regional level and ~$0.08 at the national level by 2032**. The above numbers have been computed from the resulting emission reduction on ~662 Mn Tones of CO2 at regional and ~1255 Mn Tones at national level respectively by 2032. Therefore, it can be inferred that the CTF investment in implementation of the DPL would result in a significant support of the State's Action Plan on Climate Change.

35. Hydropower technology is a mature technology and hence there is limited scope for scale effect of technology deployment contributing to a reduction in the cost of hydropower. However, the outcome of the DPL series will be in the form of faster implementation of hydro power projects, thereby resulting in reduced cost of generation, and environmentally benign electricity production. The reduced cost of power and reliability would support the country's objective of faster growth in a sustained manner.

C. DEMONSTRATION POTENTIAL AT SCALE

36. India's energy emissions are expected to reach ~1360 Mn Tones of CO_2 eq by 2032 due to increasing thermal power generation. The changing hydro thermal mix and the increasing share of thermal energy in India's generation basket is likely to continue in the short and medium term. In this particular scenario Variable Renewable Energy (VRE) and Hydro would play an important role in reducing CO_2 emissions. Implementation of the DPL project would result in reduction of the CO_2 emission by ~4.5 % of the total country level emissions by 2032. The table below shows the reduction of CO_2 emission as percentage of total emissions in the country.

Table 4: Future trend of CO_2 Emissions as % of total emissions

Parameters	FY13	FY17	FY21	FY25	FY29	FY32
Reduction of CO2 emission (Mn Tonnes)	-	12.19	32.46	44.93	54.86	60.44
as % of total emissions	-	1.72%	3.85%	4.49%	4.59%	4.42%

Source: AF-Mercados EMI Analysis

37. The aim of this DPL is to promote the environmental and social sustainability of hydropower. The developments in hydropower that get facilitated through the DPL support would encourage other hydro rich states like Uttarakhand, Arunachal Pradesh and Sikkim to replicate and learn from the policy reforms. The DPL would facilitate exploitation of the unallocated potential of hydropower in Himachal Pradesh on rivers like Beas and Yamuna. This development will percolate to other hydro rich states that benefit from these river basins thereby leading to a reduction in the dependence on thermal power.

38. Success of hydropower development in HP would bring added benefits and will serve as a template not only for mid-Himalayan states in India, but for other countries in the South Asia region (such as Bhutan and Nepal), since most of the developers in the state are active regionally in these countries and would utilize their experience and expertise globally.

39. The post project replication strategy/pathway would be:

    a. Accelerate the development of hydropower in Himachal Pradesh and other hydro rich states of the northern region through policy and institutional reforms.
    b. Displace the development of thermal power capacity.
    c. Use hydropower as a balancing reserve for variable renewable energy and meeting peak energy demands both at the regional and the national level.
    d. Promote basin-wide risk assessment and management through Cumulative Environment Impact Assessments to overcome geological and other risks.
    e. Leverage existing studies in other hydro rich states at the national and the regional level.
    f. Leverage the competencies and build institutional capacity.

40. Success factors that are necessary for project results to contribute to transformation:

    a. Commissioning of the hydropower projects as close as possible to schedules.
    b. Accelerated development of projects to cover up the backlog.

Transformation potential

41. The DPL project would alone contribute to development in the state of Himachal Pradesh. The replication potential of this project would be high and would increase the hydropower capacity in other resource rich states like Sikkim, Uttarakhand, Arunachal Pradesh etc. The trajectory of emissions from DPL project alone would result into a CO2 emissions savings of ~660 Mn Tones. The replication of similar DPL in other states in the country would result into higher magnitude of CO2 emission savings. The ratio between trajectory of reduced emissions that would result directly from the DPL alone

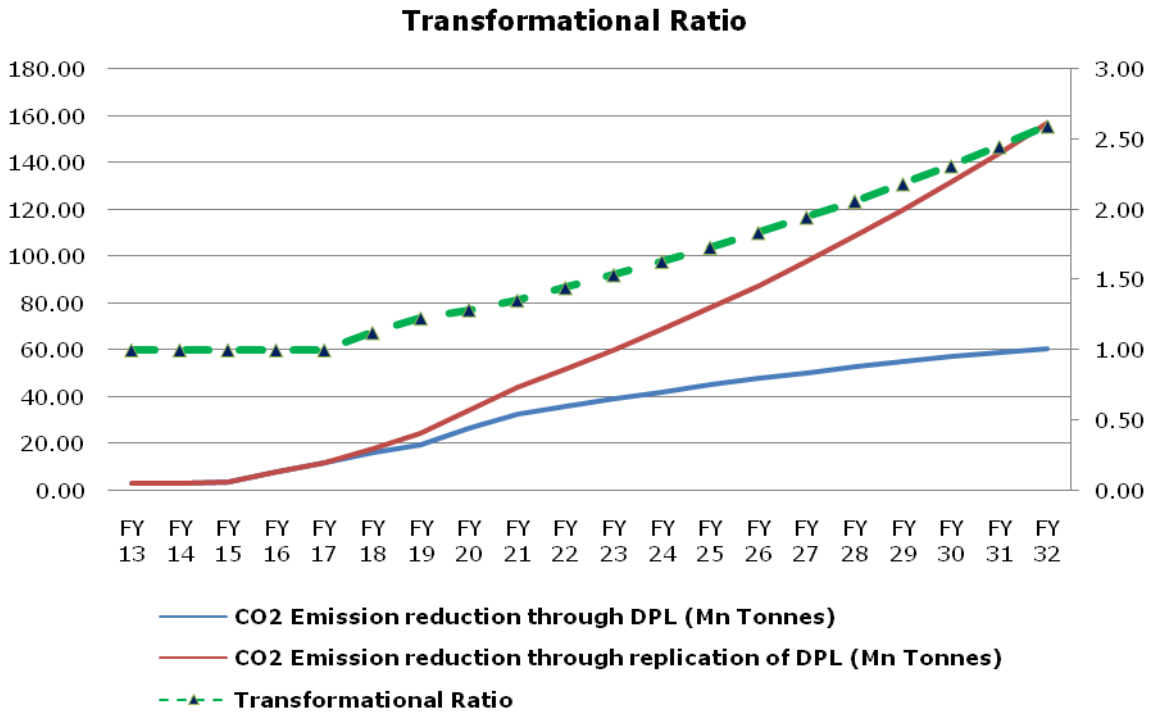
and trajectory of reduced emissions that would result if the DPL project were to be replicated throughout the targeted area, region or sector have been summarized below.

Table 5: Transformational Ratio

Parameters	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29	FY 30	FY 31	FY 32
CO2 Emission reduction through DPL (Mn Tonnes)	3.19	3.37	3.71	8.06	12.19	16.10	19.80	26.82	32.46	35.80	38.99	42.03	44.93	47.66	50.23	52.63	54.86	56.91	58.77	60.44
CO2 Emission reduction through replication of DPL (Mn Tonnes)	3.19	3.37	3.71	8.06	12.19	18.10	24.29	34.51	43.95	51.69	59.90	68.60	77.80	87.51	97.73	108.46	119.73	131.54	143.88	156.79
Transformational Ratio	1.00	1.00	1.00	1.00	1.00	1.12	1.23	1.29	1.35	1.44	1.54	1.63	1.73	1.84	1.95	2.06	2.18	2.31	2.45	2.59

Source: AF-Mercados EMI Analysis

Figure 6: Transformational Ratio



Source: AF-Mercados EMI Analysis

42. As observed from the table above the ratio of the transformational potential is going to be high with the DPL project. The ratio between the reduced emissions of the replication of the DPL project and the DPL project alone is likely to increase throughout the life of the project. The harnessing of this potential would result in an additional capacity of around ~34000 MW of hydro power at national level.

D. DEVELOPMENT IMPACT

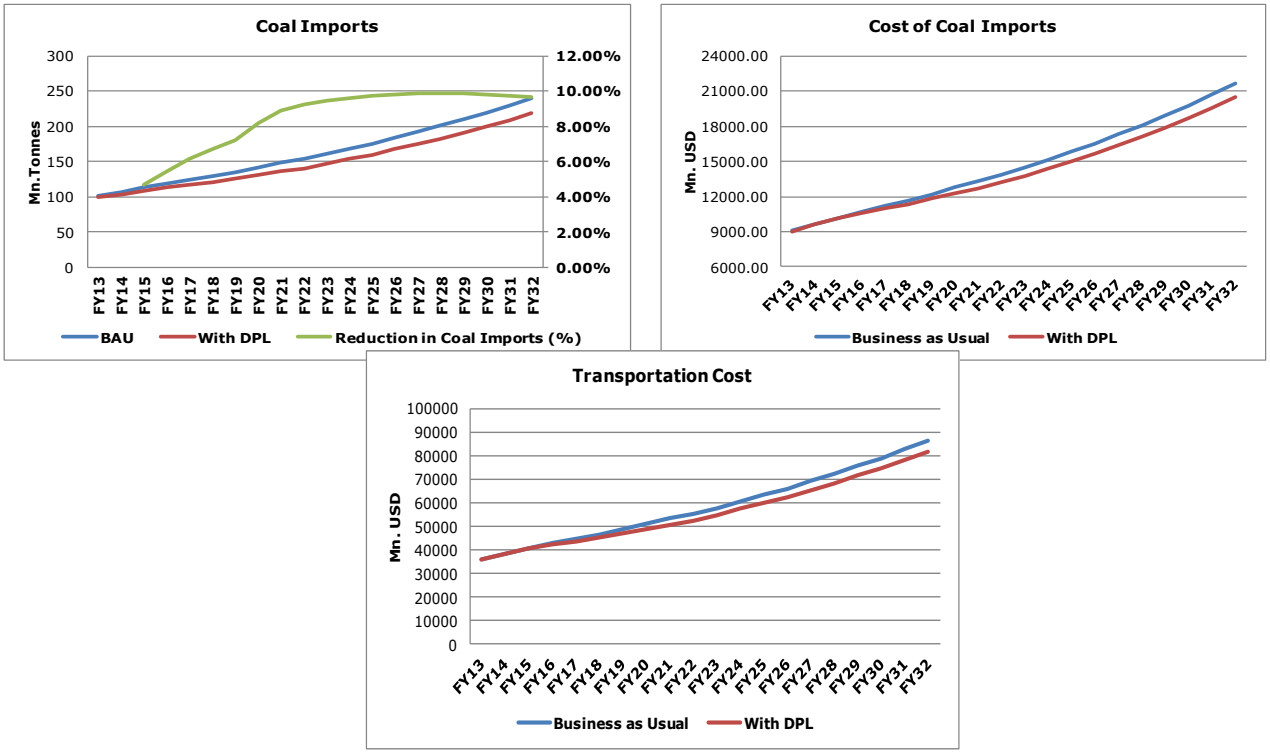
43. The policy-level budget support to GoHP through the DPL will facilitate hydropower development at an accelerated pace. Since this intervention will affect the supply-side of the energy balance of the country, it will not have a direct impact on the reduction of energy intensity of GDP. However, this intervention will have a significant impact on the reduction in the carbon intensity of GDP because of the expected reductions in GHG emissions. The DPL will help GoHP avoid reliance on alternate (polluting) sources of

revenue from industry, which will help promote a sustainable ecology and social development in the mountain state.

44. **DPL would help in reducing coal imports for meeting the country's increasing demand for electricity:** Though the Government is taking measures to reduce supply risk and Indian companies are expanding the number of countries they source fuel supplies from, it is necessary to focus on diversification of the energy sources and also development of hydropower which unlike thermal helps meet the peak demand. Power sector in India is already importing coal**. A further surge in fuel imports is likely to strain public and private finances and foreign exchange reserves and widen fiscal and trade deficits.** The contribution from hydropower and renewable energy generation is the only option available for the country in order to reduce the cost of generation and build reliability to mitigate the peak deficits of the nation.

45. The coal imports have started to hamper the current account deficits of the country which stand at a level of 5.2% of the GDP as per recent update. Therefore, there is need to reduce the imports of fossil fuel and develop alternative sources of energy. The following graphs illustrate the likely impact that the HP DPL can make at the national level. The country is likely to have a coal based capacity of ~285GW by 2032 increasing the cost of power. The cost increase is likely to be due to the price of imported coal and the transportation cost of fuel from pithead and ports to the demand centres.

Figure 5: Benefits of reduction in consumption of coal



Source: AF Mercados EMI Analysis

46. Post implementation of the CTF co-financed project, it is likely that the share of hydropower will increase in the overall generation mix of the country. If built on time, power generated from hydro plants is relatively cheaper than power generated from thermal power plants. Increasing prices of domestic coal and the use of imported coal to overcome the fuel availability constraints in the country will automatically lead to an increase in the price of the power thus generated. Since thermal power plants are used

to serve baseload demand only, hydropower on the contrary has the ability to serve not only the baseload demand but also peak demand additionally it can also act as a spinning/balancing reserve. Harnessing the potential would help relieve the Coal dominated and VRE intensive power system. A reasonable mix of hydro and gas in the system would help in maintaining the grid frequency and in turn ensure power reliability and grid stability.

47. The average cost of power generated by coal fired power stations to serve the base load is around 7 cents/kWh and the peak load is around 13 cents/kWh. The development of hydro power and reducing cost of renewable generation would result in reduction of cost of serving the base load by 1 cent/kWh and 4 cent/kWh during the peak load. As also mentioned earlier, **hydro power would also play a vital role in form of flexible and fast response reserves to maintain the system stability in a power system featuring high proportion variable renewable sources. It would serve as balancing power to absorb the variable nature of wind and solar energy, thereby accelerating the growth of renewable energy across the country. Power reliability is intended to improve significantly with this development.**

48. In addition, the innovative benefit sharing policy is expected to have a direct impact on poverty alleviation for host communities. The Poverty and Social Impact Analysis prepared by the Bank for the DPL series will monitor ex-post the success of these policies.

Environmental and Social co-benefits

49. The environmental and social co-benefits resulting from the HP DPL have been summarized below.

- Significant reduction in CO_2 emissions;
- Promote environmental and social sustainability;
- Implementation of benefit sharing policy as illustrated by issuance of cash transfers in one hydropower project and commissioning of works mandated by community based program;
- Compliance with environmental flow requirements and completion of cumulative environmental impact assessment for one river basin, and support of such assessments in other river basins which will facilitate future capacity;
- Creation of the Department of Environment, Science and Technology (DEST) promoted under the first fiscal DPL (2007), with additional earmarked resources.

50. Hydropower projects consider community development initiatives concerning issues of health, poverty, economic development and gender. Hydropower projects can impose social and economic costs on local populations early in the planning and construction process. These can include loss of land, other assets (such as houses, wells, etc.) and livelihoods due to land acquisition, physical relocation of communities, stress on ecosystems, possible migration of workers and exposure of crops (and people) to construction waste. On the other hand, the benefits from better or cheaper access to hydropower are spread over the long-term and subject to uncertainties stemming from the physical challenges in power distribution in mountainous regions or simultaneous growth in the supply of and the industrial demand for energy.

51. Hydropower projects help in the creation of jobs and a corresponding increase in income of the families. This helps in alleviating poverty and thus raising the standard of the families. Amongst others, the power policy of the state attempts to address aspects like access and availability, affordability and assured employment to people of Himachal.

The employment opportunities so created would provide women with equal opportunities to earn and access to modern energy services thereby reducing their time and effort. Further, the free power available to GoHP will aid on providing continuous, reliable electricity to the citizens of the state with maximum benefits accruing women and children.

E. IMPLEMENTATION POTENTIAL

52. The implementation of any type of policy intervention in the state has a strong relation with the existing policy and institutional framework. Such an enabling policy framework exists both at the national and the state level.

53. The pace of hydropower development in Himachal Pradesh has been faster than any other state in the region/country. This has been due to the conducive central and state level policy support and implementation. Initiatives undertaken by the Government of Himachal Pradesh include formation of DEST, introducing penalty framework for hydropower project developers, attempt to balance the risk profile of the project to attract private sector investment, etc. In order to provide further impetus to hydro power development in the state and to address the issues faced by the states, several amendments have been made ever since it was issued in 2006. The table below covers the key features of central level policy initiatives for hydropower development. Implementation of policy happens in the context of policy and institutional framework that has already been created and such policies exist both at the national and the state level.

54. GoHP's **Hydropower Policy 2006** lays down the regulating framework and provides guidelines to hydropower project developers with regard to bidding for hydropower projects, incentive and penalty framework, etc. The central and the state level policy initiatives mentioned above are further explained in detail in Annexure A. With changing scenarios these policies have been amended from time to time to ensure that they are in line with the requirements of the changing environment.

55. Hydropower development in India received impetus with the introduction of the **Hydropower Policy 1998** at the central level. Basin wise development of hydro potential was envisaged and significant emphasis was accorded to private sector participation. **Further in 2002, CEA carried out preliminary ranking studies** of about 400 schemes in the six river basins of the country. Subsequent to this, in 2003, the Prime Minister's **50,000 MW Hydro Power Initiative was launched in which** PFRs (pre-feasibility reports) of 162 new projects having an aggregate capacity of 47,930 MW were prepared which were spread across 16 states. The Electricity Act that was notified in 2003 which provided a framework for development of new capacity on a competitive basis and placed statutory responsibility on regulators for market development. The Electricity Act 2003 has opened up significant investment opportunities in the generation sector by de-licensing electricity generation. This has enabled setting up power plants at optimum locations and transmitting power to the power deficit states using open access in transmission. In other words, the Act mandates competition and choice, which were non-existent in the pre-Electricity Act 2003 era. Subsequently, the **National Electricity Policy** was notified in **2005** and it encourages hydropower development through private participation and stresses on the need for successful models for Public Private Partnership. In 2006, the **National Tariff Policy was notified; the Integrated Energy Policy** was announced in the same year, followed by the **National Policy on Resettlement and Rehabilitation in 2007. The National Hydro Power Policy** was notified in **2008** which brings the state level

policies in close coordination with central policy and facilitates new project development through price regulated contracts. In 2009, the **National Water Mission was announced under the National Action Plan on Climate Change and the Mega Power Project Policy was announced which further encouraged hydropower development in the country.**

56. The policies at the central and the state level provide an enabling framework for accelerated development of hydropower. Accelerated hydropower development through the DPL would help creating an enabling environment for effective implementation of the policies, and lead to a balance in the risk profile between the project developer and the host entity. This would attract investment/sources of finance from different multilateral and bilateral sources. The HP DPL support will lead to a) cost reduction, b) creation of enabling social infrastructure and c) construction being de-risked and accelerated. With these developments, equity co-financing becomes available. Hence, HP DPL will provide confidence to equity investors and hydropower projects will get access to both debt and equity financing.

Expected Co-Financing

57. The DPL would be supported by co-financing from IBRD for a 100 Mn USD along a CTF funding of 100 Mn USD. With this DPL the state is likely to add ~17600 MW bringing in an investment of ~26000 Mn USD further broken down into ~7800 Mn USD in form of equity financing and ~18200 Mn USD through debt financing. Much of this investment will come from private sector equity investors and commercial banking channels. The CTF investment leverage ratio would be 1:15.97 through implementation of DPL in the targeted area alone and 1:43.87 through its replication at regional and national level for every additional of 1 GW of hydropower capacity. Hence, the HP DPL will crowd-in/ attract adequate quantity of finance and at reasonable costs. This will lead to creation of a virtuous cycle.

58. In addition to the above policies GoHP has undertaken consultations with stakeholders to align this operation of hydropower development with State plans and priorities, in an effort to promote inclusion in policy making. Careful consideration has been given to political economy factors in the design of the policy reforms and sequencing of DPL. Moreover, there is multi-party support among the major parties and a growing consensus that a paradigm shift towards a sustainable economic growth model would be universally beneficial for the State and would enhance the economic self-interest of its population. For reference Letter from Chief Secretary Himachal Pradesh has been attached in Annexure B.

F. ADDITIONAL COSTS/RISK PREMIUM

59. Delays during implementation of hydropower projects on account of clearances, land acquisition, etc affect the project developer especially the private ones. GoHP has set incentives and a penalty framework on achieving/not achieving the development milestones of the project. Delays lead to accumulation of monetary losses on the developers making the returns/project unattractive. The multiple risks associated with hydropower projects affect the developer the most since the risk sharing mechanism between the Government and the project developer is unbalanced. This makes hydropower projects unattractive for investment in the face of large and varied risks. As articulated in preceding sections of this annex, the tariff impact of the delays can be

severe (if cost variations due to development delays and additional cost incidence) if allowed to be passed through. If the costs are to be absorbed by the developer, the delays lead to unviability of the project, lack of finance (or additional costs as risk premium), and in certain cases can lead to abandonment of the project by the developer. The DPL would help in bringing about policy reforms that will reduce the risks and the subsequent delays in the commissioning of the projects.

ANNEXURE A

1. Central Level Policy Initiatives

Policy	Key Features
National Hydro Power Policy 1998	• Basin-wise development of hydro potential was envisaged. The CEA was mandated to undertake several steps in this regard • Additional budgetary support for ongoing and new Hydro Projects under Central PSUs was provided for • Procedures for Transfer of Clearances by CEA were simplified[7]. • Significant emphasis accorded to private sector participation
CEA Ranking Studies 2002	• CEA carried out preliminary ranking studies of about 400 schemes in the six river basins of the country • Schemes totalling 107000 MW were ranked into five categories - A, B, C, D and E from the point of view of attractiveness (in decreasing order) for implementation
50,000 MW Hydro Power Initiative, 2003	• PFRs of 162 new projects having an aggregate capacity of 47,930 MW and spread across 16 states were prepared • Out of these, 73 schemes having first year indicative tariff below Rs. 2.50 per unit have been selected for preparation of DPR including subsequent implementation
Electricity Act 2003	• Provided a framework for development of new capacity on a competitive basis and placed statutory responsibility on regulators for market development. The Electricity Act 2003 has opened up significant investment opportunities in the generation sector by de-licensing electricity generation. This has enabled setting up power plants at optimum locations and transmitting power to the power deficit states using open access in transmission. In other words, the Act mandates competition and choice, which were non-existent in the pre-EA 2003 era.
National Electricity Policy 2005	• Encourages Hydro Power development through Private participation and stresses on the need for successful

[7] The Hydro Power Policy 1998 accorded a greater role to the CPSUs and the private sector in the hydro power development in the country. The policy stated that, *"In order to implement the same immediate requirement would be to transfer the clearances already accorded to non-starting hydro projects in the State Sector in favour of CPSU/IPP/Joint Venture of IPP and CPSU. This involved Government evolving a simple procedure so that the transfer of CEA's techno economic clearance would be facile, as only updation of project estimate would be examined by CEA. In the case of Environment and Forest clearances these could be transferred to CPSU/IPP etc. within a prescribed time limit on acceptance of conditionalties stipulated in the MOEF clearances accorded for execution in the State Sector by the above executing agencies."* Another inhibiting factor discouraging IPPs was the need for notification of the scheme as per Section 29 of Electricity Supply Act in newspaper and Gazette afresh even if this was done earlier for execution by SEBs. The 1998 Policy, provided for doing away with this requirement. It was believed that these simplified procedures would be an encouraging factor for IPP to evince greater interest in hydro development.

Policy	Key Features
	models for Public Private Partnership.
National Tariff Policy 2006	• Deals with various parameters with respect to the fixation of tariffs – providing adequate return on investment to the power generator and supplier and ensuring reasonable user charges for consumers • Setting up of separate capacities for meeting peak demand • Constitution of the Forum of Regulators • Competitive bidding for all private projects • Method for determination of cross subsidy surcharge
Integrated Energy Policy 2006	• Taking into account India's energy security concerns and the environment, the Government of India (the Government) developed the integrated energy policy in 2006. • The policy's goal is to ensure adequate and reliable energy supplies in a technically efficient, economically viable, and environmentally sustainable manner. • Specific measures include (i) optimizing the power supply mix, including greater use of indigenous hydropower resources and renewable energy; (ii) pursuing technologies that maximize energy efficiency, demand-side management, and conservation; and (iii) continuing related power sector reforms, including reducing technical and commercial losses of the state transmission and distribution utilities and other restructuring efforts
National Policy on Resettlement and Rehabilitation 2007	• Minimum requirements identified for R&R of PAFs • Action oriented measures for project developer
National Hydro Power Policy 2008	• Bringing the state level policies in close coordination with central policy • Facilitating new project development through price regulated contracts
National Water Mission (National Action Plan on Climate Change 2009)	• Aims at integrated water resources development and management through strategies promoting conservation, minimizing wastage and equitable distribution • Looks at expediting implementation of water resources projects particularly multipurpose projects with storage. • Coordinating and increasing collaboration among states and research organizations to optimize basin usage in the face of climate change.
Mega Power Project Policy (Revised in 2009)	• Threshold limit to obtain mega power status for hydro project – 500 MW; and 350 MW for projects in Northern Eastern Region including Sikkim and J&K • Mandatory condition of inter-state sale of power removed

Policy	Key Features
	• Revisions made in 2009 removed the mandatory condition of inter-state sale of power and requirement of International Competitive Bidding for procurement of equipment (Not required if requisite quantum of power has been tied up or the project has been awarded through tariff based competitive bidding)

2. State Level Policy Initiatives

The salient features of the HP State Hydropower Policy of 2006 are as follows:

- Projects above 5 MW and up to 100 MW to be allotted through MOU route at a fixed upfront premium of Rs. 1 lac/MW for projects above 50 MW up to 100 MW and the projects above 100 MW shall be allotted through International Competitive bidding route on the basis of highest upfront premium to be quoted over and above the minimum upfront premium of Rs. 10 Lakh/MW

- The projects for implementation in the private sector will be in Build, Own, Operate & Transfer (BOOT) basis

- Government of Himachal Pradesh reserves the right of equity participation up to 49% on selective basis for the projects above 100 MW installed capacity. 100% foreign equity permitted on the automatic approval route provided it does not exceed Rs 1,500 crores.

- Land, whether Private or Government, shall be taken on lease basis at the rates approved by the Government for agreement period

- The Government to constitute a Local Area Development Authority (LADA) for projects being implemented in each river valley. The Deputy Commissioners to be the Chairman of LADA and representatives of the developers, HPSEB/state utility, block development officer, land acquisition officer, and any other concerned department will be the other members of LADA. Concerned SDM to be the Member Secretary, the LADA will be entrusted with the following activities:

  - Oversee the restoration facilities adversely affected due to implementation of project

  - Oversee the implementation of rehabilitation and relief plan

  - Oversee the implementation of Catchment's area treatment (CAT) plan and compensatory afforestation;

  - The activities of LADA during execution to be financed by the project itself and for this purpose the developer will make a provision of 1.5 % of total cost as per the detailed project report other than the funds required for R&R scheme and CAT plan. The LADA activities should be financed from the

1.5% provision proposed in the DPR and not from the power royalty. The State Government will use the free power royalty

- No clearances from CEA for projects selected on competitive bidding route for projects costing up to Rs 2,500 crores (as per the NEP provisions);

- The agreement for the project implementation and execution shall remain in force up to a period of 40 years from the scheduled commercial operation date of the project, thereafter; the project shall be transferred back to State Government free of cost and free from all encumbrances.

- If the hydropower project is a run-of-river project, the developer shall ensure minimum flow of 15% water immediately downstream of the diversion structure of the project all the times including lean seasons from November to March, keeping in mind the serious concerns of the State Government, on account of its fragile ecology and environment and also to address issues concerning riparian rights, aquatic life, silt and even to honour the sensitive religious issues. The developers are at liberty to install mini hydel projects to harness such water for their captive use.

- The project developer shall be required to provide royalty in the form of free power from the project to the Government of Himachal Pradesh in lieu of surrender of potential site @12% of the deliverable energy of the project for the period starting from the date of synchronization of the first generating unit and extending upto 12 years from the date of scheduled commercial operation of the project; @18% of the deliverable energy of the project for the period of next 18 years and @ 30% of the deliverable energy for the balance agreement period beyond 30 years. The developers are free to sell power from the projects, after allowing for the said free power to the state, in any manner they like in accordance with the provisions contained in the electricity act 2003.

- Incentive for early commercial operation of the project: In case the commercial operation of the project is achieved prior to the scheduled commercial operation date, the quantum of free power to the Government shall be as under:

  (a) Commencing from the date of synchronisation of the first unit up to the COD (Commercial Operation date) , 12% of deliverable energy

  (b) From COD of the project and the scheduled COD of the project, such percentage of the deliverable energy as is equal to the following: (i) 12% less two tenth (.2) percentage points for each period of 73 days (or part thereof) falling between the COD of the project and the scheduled COD of the project; (ii) 12% of the deliverable energy for a period of twelve (12) years from the scheduled COD of the project.

- Disincentive for delayed commercial operation of the project: In case the commercial operation of the project is delayed beyond the scheduled commercial operation date, the quantum of free power to the Government shall be as under:

  (a) Commencing from the date of synchronisation of the first unit up to the COD (Commercial Operation date) , 12% of deliverable energy

(b) Commencing from scheduled COD of the project and for such number of days by which the commercial operation of the project is delayed beyond the scheduled COD of the project, such percentage of deliverable energy as is equal to the following: (i) 12% plus two tenth (.2) percentage points for each period of 73 days falling between the scheduled COD of the project and commercial COD of the project; (ii) From COD of the project upto the date falling 12 years from the scheduled COD of the project, 12% of the deliverable energy; and (iii) The developer shall pay the amount of free power component as mentioned in the clauses above, in 10 equal monthly instalments from actual COD of the project, in addition to normal free power due.

ANNEXURE B

Sudripta Roy, IAS
Chief Secretary

Government of Himachal Pradesh Shimla-171002
Tel: (O) 0177-2621022
Fax: 0177-2621813
E-mail: cs-hp@nic.in

DO No. PS/Pr. Secy/2012-Finance
Dated: the 20th July, 2012

Subject: **Himachal Pradesh Development Policy Loan to Promote Inclusive Green Growth and Sustainable Development-reg.**

Dear Sir Gopalan ,

You are aware that the Government of Himachal Pradesh has requested Development Policy Loan of US $ 200 million with the assistance of World Bank. In the above context, several rounds of discussions have been held with the World Bank team, and a list of prior actions for the loan were mutually finalized. The State Government has successfully completed the prior action points which have been identified by the World Bank as 'condition precedent' for the phase-I in the series.

The State Government is seeking this DPL to support the policy reform program of the State and to promote a paradigm shift towards a more sustainable economic development model that would gel with the State's comparative advantage and abundant natural resources. The objective of the proposed Development Policy Loan (DPL) is to support Government of Himachal Pradesh to undertake critical policy actions with monitorable results, particularly with regard to the energy sector, tourism, industrial and rural development. As requested by the Department of Economic Affairs (DEA), the DPL has been designed to able to access the IBRD and the Clean Technology Fund (CTF).

The program of reforms undertaken by the Government of Himachal Pradesh is aimed at generating growth through the improved management of its natural assets across growth engines of the economy and to promote inclusive green growth and sustainable development. It is anticipated that this DPL will further deepen the reform program, and contribute to several outcomes. In the energy sector, the reforms will enable the State to harness hydropower potential in a sustainable and environment friendly manner. Himachal Pradesh will also implement an innovative benefit sharing scheme based on annuity payments to affected communities during the lifetime of each hydropower project.

1/2

The watersheds of the major north Indian rivers sustain life and support the agrarian economy of over 200 million people in Haryana, Punjab, Uttar Pradesh and Rajasthan. As part of the DPL, the GoHP intends to promote micro-water watershed conservation and development approaches that would contribute to alleviating rural poverty and improve water pondage, crop diversification, productivity and water efficiency in at least one Gram Panchayat per Block.

Managing emissions from industry and promoting cleaner forms of economic growth will be essential to meet the inclusive green growth and sustainable development goal of the State. Himachal Pradesh also has considerable unrealized ecotourism potential for developing these cleaner sources of growth. The reforms will also enable the use of economic instruments for pollution control in the State.

There is strong ownership of the proposed reforms across the departments in the State, and teams have been mobilized to implement the same. In addition, the State is committed to monitor the results and adjust the program as may be required from time to time.

Given the above context, we request that the Ministry of Finance to give us full support to pursue our policy reforms through the Development Policy Loan from the World Bank. Considering that the technical discussions have been undertaken with the Department of Economic Affairs, Ministry of Finance, Ministry of Environment & Forests, Government of India and the World Bank team, and all prior actions have been met by the State Government, I would, therefore, request you for early approval and disbursement under this DPL.

With deep regards,

Yours faithfully,

(Sudripta Roy)

Sh. R. Gopalan, IAS
Secretary,
Department of Economic Affairs, Ministry of Finance,
North Block, New Delhi.

Endst. No. As above Date: Shimla-2 the 20th July, 2012

Copy to Mr. N. Roberto Zagha, country Director, India for the World Bank, 70 Lodhi Estate, New Delhi-10003.

Chief Secretary to the
Government of Himachal Pradesh

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