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THE REALITY OF NET HYDEL PROFIT

Azhar Masud Panni

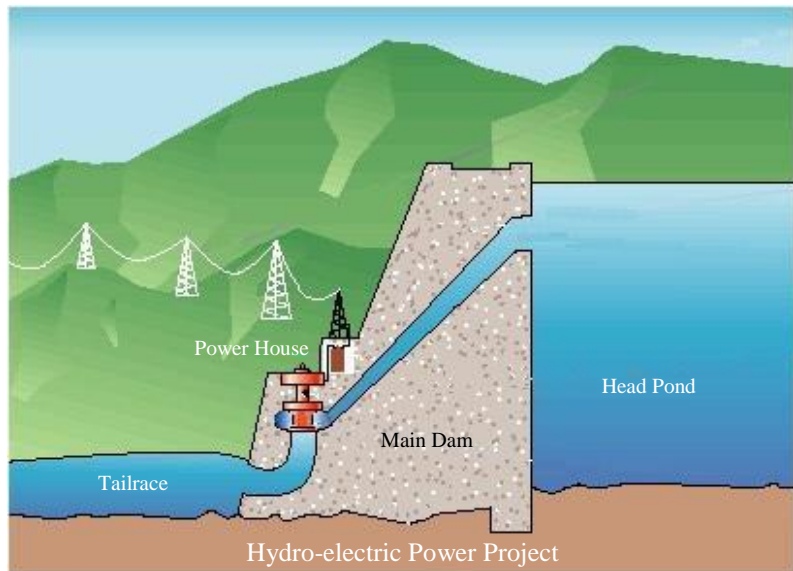
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Allah has blessed Pakistan with large rivers and their tributaries emanating from snow clad mountains and world's largest glaciers in the north. The abundant water flow of these rivers (about 154 MAF annually) is used for agriculture, domestic water supply and sanitation, industry, environment and recreation sectors by people of entire areas from up in the north to down in the south until confluence in the Arabian Sea. As such all the upper and lower riparian have equal rights on the use of water in these rivers.

The water, while flowing in the course of these rivers, has negligible energy potential all by itself unless harnessed by making special arrangements. Since old days such use of hydro-energy at small scale is being made in grinding mills in the mountainous areas. The present day bulk use of hydro energy is by generation of electricity, which can be transmitted to far off places where ever it is required. The hydropower

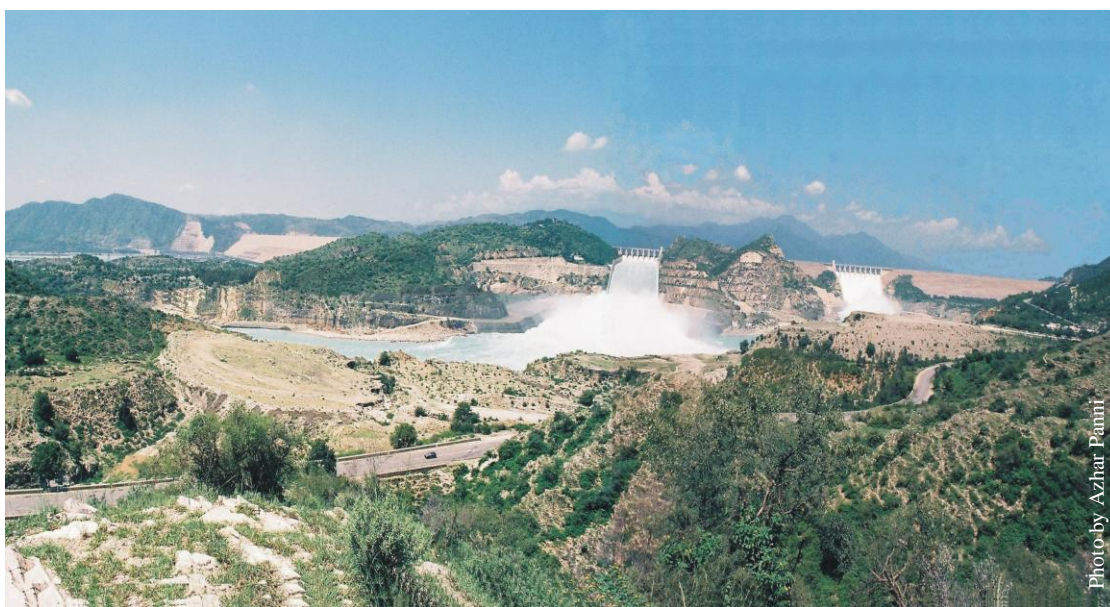


generation is only possible at specific suitable sites where sufficient water head can be created to convert its potential energy in mechanical power for generating electrical power. The hydropower projects can be classified into various groups of small to large heads created by barrages to large dams with storage reservoirs for multipurpose functions or run of the river projects. Without construction of such projects, the water flowing at these sites has no potential to generate this energy by itself. Therefore the hydroelectricity cannot be considered as a natural resource like other fossil and mineral resources.

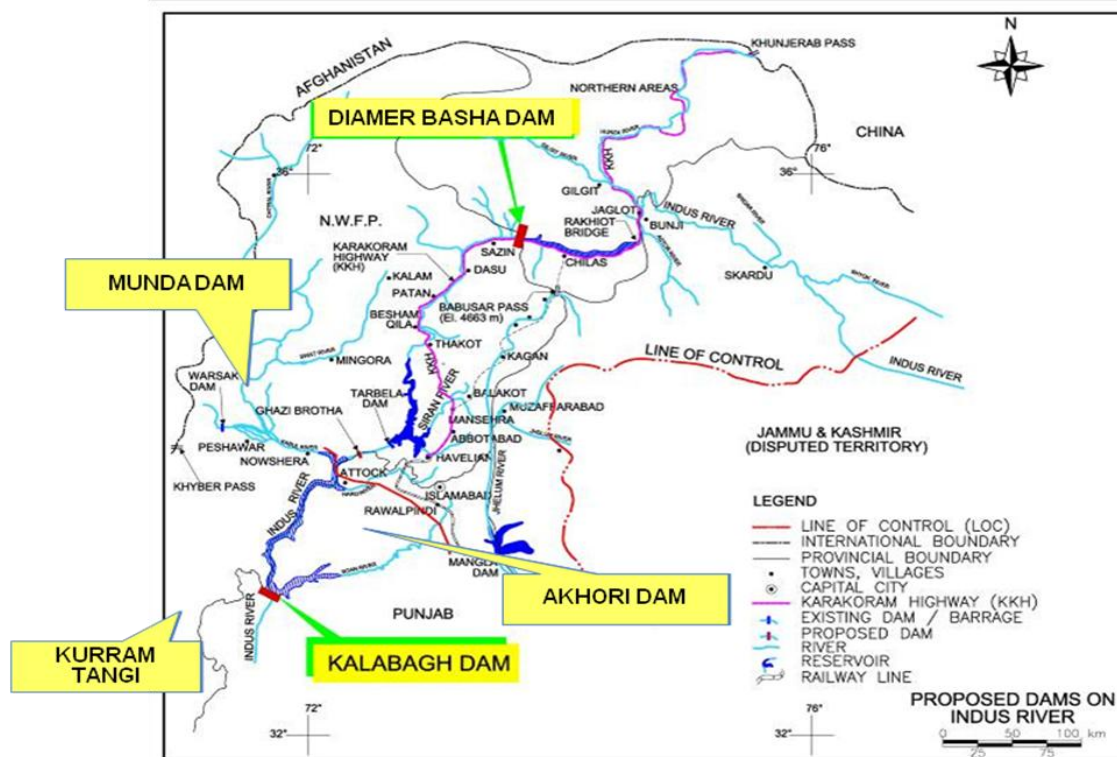
In Pakistan hydroelectric power is being produced since 1925 when Sir Ganga Ram built a small power station of 1.1 MW on Lower Bari Doab Canal (LBDC) near Renala Khurd. The electricity so produced was utilized to drive pumps to uplift water from LBDC to irrigate the adjoining lands at a level higher than the

canal. Since then the use of water flowing in the canals and rivers has been made to generate more than 6500 MW by constructing small and large hydroelectric power projects, the major ones being at Warsak (243 MW), Mangla (1000 MW), Tarbela (3478 MW), Chashma (184 MW) and Ghazi Barotha (1450 MW) by Water And Power Development Authority (WAPDA) of Pakistan and Malakand-III (81 MW) by Sarhad Hydel Development Organization (SHYDO) of Khyber Pakhtoonkhwa.

Presently the share of hydropower is about 1/3rd in total electricity generation of the country. The real challenge for the nation is to reverse the present Hydel-Thermal share from 1:2 to 2:1 for reducing electricity tariff which is imperative for sustainable economic growth of Pakistan. According to various studies carried out for harnessing the hydro-potential of these rivers, the northern and central regions of Pakistan are capable of producing more than 54,000 MW of electricity. WAPDA has already started a Vision 2025 Program under which feasibility studies, detailed engineering and construction of some projects has been started. The construction of hydropower projects of more than 1500 MW is under progress by WAPDA while another fourteen projects of about 23,000 MW are in the pipe line including five mega projects of Diamer Basha Dam, Kalabagh, Kurram Tangi, Akhori and Munda dams totaling to 9500 MW. Six hydropower project of about 1400 MW are also under implementation by private sector under the “Policy for Power Generation Projects, 2000” of the Govt. of Pakistan.



Tarbela Dam Project



Vision 2025 Mega Hydropower Projects on Indus River

Net Hydel Profit vs. Water Use Charge

A reasonable profit earned on production of hydroelectricity is ensured through Article 161(2) of the Constitution of Pakistan, 1973 which provides that,

“The net profits earned by the Federal Government or any undertaking established or administered by the Federal Government for the bulk generation of power at a hydro electric station shall be paid to the province in which the hydro electric station is situated.”

For the purpose of this clause it is further explained in the Article that,

“Net Profit” shall be computed by deducting from the revenues accruing from the bulk supply of power from the bus-bars of a hydro electric station at a rate to be determined by the Council of Common Interests (CCI), the operating expenses of the station which shall include any sums payable as taxes, duties, interest or return on investment and depreciations and element of obsolescence, and overheads and provision for reserves.”

This explanation simply means that the rate of net profit for supply of bulk power at bus-bar of hydro electric power station shall be a pre-determined amount fixed by the Govt. of Pakistan with the approval of CCI. Since establishment of National Electric Power Regulatory Authority (NEPRA) in 1997, it has the exclusive mandate to determine the tariff for bulk supply of power at bus-bar of hydel power stations in accordance with the provisions of the constitution. As such the Net Hydel Profit (NHP) has to be generated through a cost plus formula which shall become a part of the hydel tariff to be determined by NEPRA.

In line with the constitutional provisions, the Govt. of Pakistan has determined a pre-fixed amount of this net profit as “Water Use Charge” in Para-76 of the “Policy for Power Generation Projects, 2002” as under;

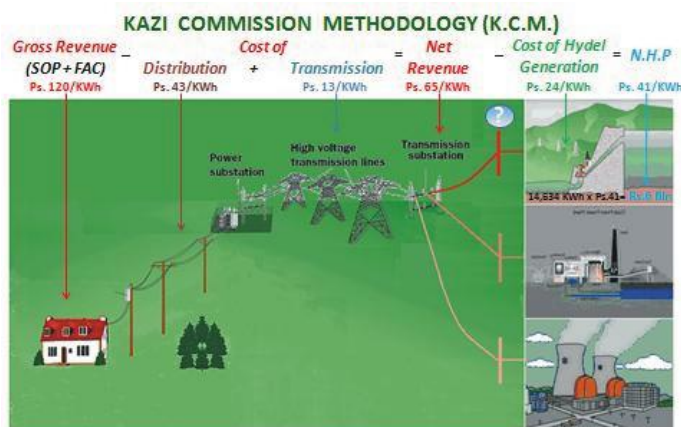
“The Water Use Charge will be paid by the generation company to the Provincial / AJK Government for use of water by the power project to generate electricity. The Water Use Charges shall be fixed at the rate of Rs. 0.15/KWh.”

The term of “Water Use Charge” (WUC) is the most appropriate because water flowing at a power project site is used to generate electricity after making substantial expenditure by the generation company on construction of the project prior to which water flowing at that site was not capable of producing any energy. It is absolutely in line with Article 161(2) of the constitution which also speaks of a fixed pre-determined rate of the net hydel profit. The rate of WUC need to be re-fixed and approved by CCI as stipulated in the Constitution of Pakistan. While doing so, the CCI has to ensure that both the ends meet, i.e., interest of the beneficiary of NHP (provinces) and endurance of the end consumers by keeping the tariff within affordable limits, as it is going to be imbedded in the electricity tariff, ultimately having a direct influence on the national economy.

The Govt. of AJK is already being paid Rs. 0.15/KWh by way of Water Use Charge on net electrical output of Mangla hydel power station on these lines. SHYDO has also included WUC at the rate of Rs. 0.15/KWh and got it approved from NEPRA in the tariff for generation from its hydel power station at Malakand-III in the Khyber Pakhtunkhwa. The first two hydel projects of New Bong Escape (84 MW) in AJK and Suki Kinari (840 MW) in Kaghan, Hazara being implemented in the private sector have also been awarded a power tariff by NEPRA on the basis of WUC of Rs. 0.15/KWh.

Determination of Net Hydel Profit

A committee for computation of net hydel profit was constituted in 1986 under the chairmanship of Mr. A.G.N. Kazi. The methodology devised by Kazi Committee was based on computing NHP backwards from average selling price per unit at consumer end and then deducting the per unit expenses on transmission and distribution system to reach revenue at the bus-bars of entire generation system including hydel



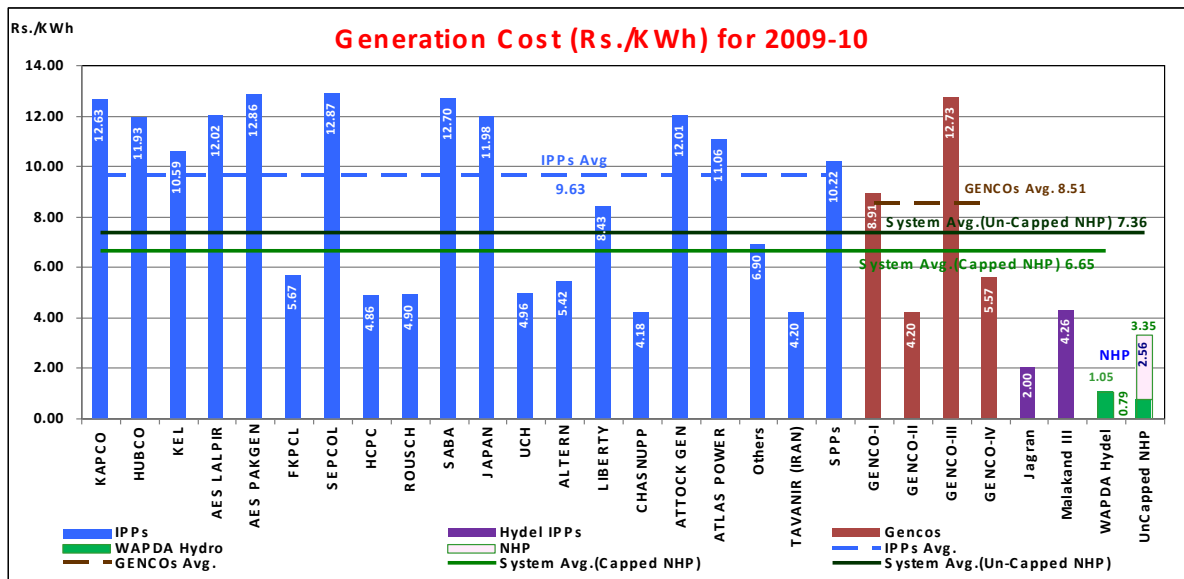
as well as thermal power stations in both public and private sectors. This average generation revenue was then used to work out NHP after deducting the operating expenses of the hydel power station resulting in inflated figure of NHP bringing cheap hydel energy equal to that of total system generation cost.

This methodology is clearly in contradiction to essence of the constitution making it unworkable and disputable due to following flaws:

- i) Kazi Committee adopted total revenue generated through retail distribution of power to consumers instead of that at bus bar of hydel power station (predetermined fixed net profit plus total expenses) in total departure to the constitutional provision.
- ii) Instead of fixing revenue rate per unit for supply of power at bus bar of hydel power stations, a methodology was devised involving revenue and cost of other electric service providers such as public & private thermal generation, distribution and transmission.
- iii) The Kazi Committee methodology makes the hydel power as expensive as that of average thermal energy generated through more expensive fuels like furnace oil, gas, coal, etc. eliminating the advantage of Hydel-Thermal mix to ultimate tariff.

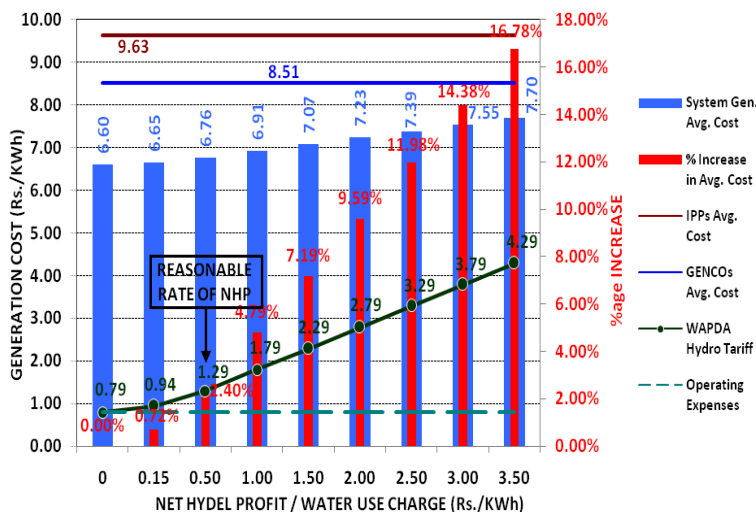
The Arbitral Tribunal formed to resolve dispute between WAPDA and Govt. of KPK has also remarked that the Kazi Committee Methodology (KCM) is unworkable and has become redundant as a lot of changes (administrative and jurisdictional) have taken place in WAPDA since after adoption of the KCM making it not possible to compute the NHP for the disputed period (FY 1991-92 to 2004-05). Not agreeing to the KCM, the Arbitral Tribunal devised its own formula by taking a figure of Rs. 6.9 billion as NHP for FY 1991-92 and compounding it by 10% every year. This has increased the NHP payable to KPK from Rs. 0.41 to 2.56/KWh for FY 2009-10 alone, which is more than 17 time the WUC of Rs. 0.15/KWh. The adhoc amount of Rs. 6 billion per annum capped by the Govt. of Pakistan being paid to Govt. of KPK as NHP also amounts to more than twice the WUC.

Although the decision of Arbitral Tribunal is yet to be made a rule of law, but the Govt. of KPK has raised claim for an arrear of Rs. 110 billion for the period FY 1991-92 to 2004-05 and come up with a figure of Rs. 38.55 billion for FY 2009-10 totaling the whole amount of NHP arrear to Rs. 354 billion from FY 1991-92 to 2009-10. This hefty amount of arrear cannot be transferred directly to the consumers retrospectively. Even when it is agreed to be accepted by the Govt. of Pakistan, it will have to be paid by itself, but still out of the tax payer's money. Govt. of KPK is claiming NHP for FY 2009-10 as Rs. 38.5 billion. Adding to it the NHP admissible to Govt. of Punjab and AJK on the same analogy, total NHP payable in 2009-10 would amount to Rs. 70 billion consequentially increasing hydel tariff more than three times from Rs. 1.03 to Rs. 3.35 per unit, no more keeping hydel generation as a cheap source of energy.



Graphical Representation of NHP w.r.t. WAPDA Hydel Expenses and Thermal Plants Generation Costs

Power sector in Pakistan is already under serious constrains due to mismatch in revenue and cost necessitating a 30-40 % increase in tariff to survive. Any increase in NHP contradictory to constitutional provision will add further strain on electricity tariff which will become unaffordable to the consumers and a blow to the national economy due to costly and uncompetitive price of manufactured products. The effect of different amounts of NHP/WUC on system generation cost is shown in graphical form.



NHP of Rs. 2.56 per unit for FY 2009-10 according to decision of Arbitral Tribunal would increase system generation cost by more than 12 %, proportionately increasing the average consumer end tariff by same percentage. The WUC of Rs. 0.15/KWh under Policy for Power Generation Projects, 2002 has to be escalated by applying Pakistan Wholesale Price Index (WPI) for 'manufacturing' as notified by the GoP's Federal Bureau of Statistics. GoKPK is currently being paid a capped amount of NHP at Rs. 6 billion per annum as per GoP's decision which amounts to nearly Rs. 0.40/KWh on generation from hydel plants in the province. Therefore WUC of Rs. 0.50/KWh after the approval of CCI will be a reasonable rate of NHP to be given uniformly to every province (KPK,

Punjab and AJK) on hydel generation in their respective jurisdictions which will hardly increase system generation cost by 3.4 %.

Table-I shows an example of resources expected to be earned every year from NHP by respective provinces of various hydel projects like Mangla, Tarbela, Ghazi-Barotha, Diamer-Basha and Kalabagh Dam based on a WUC of Rs. 0.50/KWh.

PROVINCE	MANGLA	TARBELA	GHAZI BAROTHA	OTHER HYDEL	TOTAL	DIAMER BASHA	KALABAGH	GRAND TOTAL
Khyber Pakhtunkhwa		7,216	1,583	575	9,375	307	1,833	11,514
PUNJAB	813	34	1,717	500	3,063		5,367	8,430
AJK	1,987				1,987			1,987
Gilgit Baltistan						8,943		8,943
TOTAL	2,800	7,250	3,300	1,075	14,425	9,250	7,200	30,875

OTHER HYDEL **NWFP = Warsak – Dargai – Kuram Garhi – Chitral**
Punjab = Chashma – Rasul – Nandipur – Chichoki Malian – Shadiwal – Renala

Table I: Province-wise Net Hydel Profit in Million Rupees with
WUC @ Rs 0.50/KWh

Utilization of Net Hydel Profit

Another most important aspect of the net profit from hydel power projects is the way it is being utilized. No one can deny the fact that any hydroelectric power project is built after sacrifices given by so many people. The inhabitants of the areas involved have to leave their abode where they were living from generations leaving behind the ancestral heritage and above all their old memories. So far the care of these people has only been limited to their resettlement and that also not to the satisfaction of the affectees.

It is a moral and constitutional responsibility of the Govt. of Pakistan and the respective province to take care of the affected communities even after completion of the resettlement process through uplifting their livelihood by investing in health, education, communications, infrastructure, etc. The very purpose of making a provision in the constitution for giving net profit on hydel energy to the province is to provide better facilities and improve the living standard of the people affected by the hydropower project. No extra budget is required for this purpose except to rightly use a portion of the net profits a hydel project keeps on generating for its life.

There is a strong resentment and resistance being offered by the people of Distt. Diamer of Gilgit-Baltistan against construction of 4500 MW Diamer Basha Dam Project. Had we set an example by developing and uplifting the living standard of areas affected by construction of Tarbela Dam Project by utilizing a portion of the profit earned from the generation of electricity from its power station, the people of the Distt. Diamer would be most happy and welcomed the selection of their highly un-developed area for construction of such a profitable project which would earn them a profit of about Rs.9 billion every year (Table D).

The constitution was written at a time when the hydropower projects in Pakistan were built of the type where the power station is located very close to the main dam impounding the storage reservoir. The present day hydropower project can have its power plant situated kilometers away from the main reservoir and interconnected through a power channel or a power tunnel. Recent examples of such projects are 1450 MW Ghazi-Barotha Project having its diversion barrage at Ghazi in Distt. Haripur (Hazara) and power station at Barotha in Distt. Attock (Punjab) with a 52 km long power channel in between. Another project under construction is 969 MW Neelum Jhelum Hydropower Project in AJK having its diversion headwork on river Neelum at Nouserri with a power tunnel connected to an underground power plant 32 km away discharging into river Jhelum near Chattar Kalas.

Generating capacity of a power plant is always dependent on quantity of water flow and head created by the water level in the reservoir. Production of electricity from a hydel power station is therefore solely indebted to the sacrifices given by affectees of the area involved in whole of the project.

Any constitution not being a sacred cow passes through an evolutionary process for the betterment of its people. Same is the case with Article 161(2) of the constitution of Pakistan which needs to be amended as under.

“The net profits earned by the Federal Government or any undertaking established or administered by the Federal Government for the bulk generation of power at a hydro electric station shall be paid to the province(s) in which the hydro electric project is situated for dissemination to the affected districts in proportion to the areas there-under .”

This way the net profit earned from the bulk generation of power at a hydro-electric station would be paid to the province(s) where whole of the hydro-electric project is located. If the structures of the hydroelectric project (Dam, Reservoir, Power Station, etc.) are situated in more than one province, then the net profits ought to be distributed amongst them according to the ratio of areas acquired for the project. This way the bone of contention between KPK and Punjab on claim of NHP for Ghazi-Barotha and construction of Kalabagh and Akhori dams would also get eliminated.

Likewise further dissemination of the NHP down to the respective districts of affected areas should also be made mandatory on the provincial governments to enable sustainable development of the area whose population has rendered sacrifices in the interest of entire nation. This is the essence of Constitution of

Pakistan which needs to be explicitly stated as proposed in modification of Article 161(2). A formula can be devised in which a proportion (say 60%) of the NHP given to the province is distributed among the affected districts for this purpose. This amount should be over and above the normal budget given to these districts under annual development programs. Such arrangements are in the best interest of all the stake holders, specially the federal and provincial governments to help in converting resistance into a welcome by the people of the areas where large hydropower projects are planned to be constructed in the future. Otherwise to make the dream of exploiting 54,000 MW hydro potential in north of the country will continue to face hurdles in making it come true.

