

**An analysis of the alternatives to the proposed 400 kV D/C transmission line  
between Mysore and Kozikode by PGCIL**

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The proposed transmission line project (400 kV D/C line between Mysore and Kozikode by PGCIL) has met with popular opposition by the stakeholders in the region. In a scenario where the felling of a large number of trees in the ecologically sensitive Western Ghats is against the overall interest of the global environment, the basic approach of the project proponent (PGCIL or PowerGrid) should have been to explore how the exploitation of the forest resources could be avoided. It had a societal responsibility to consider the entire associated social, environmental and economic issues in an objective manner keeping in view the high societal impact because of the proposed project.

PGCIL's argument is that the proposed double circuit transmission line through the thick ecologically very sensitive forests of the Western Ghats in Karnataka and Kerala is critical for meeting North Kerala's electricity requirements, and for facilitating the free flow of electricity between Karnataka and Kerala. It is incumbent on a public sector enterprise to demonstrate to all the stake holders that the final project brings more benefits to the society as compared to the costs incurred.

PowerGrid has not been able to convince the stake holders as to how the sacrifice of thousands of ecologically high value trees (some credible estimates indicate that it can be as high as 50,000 trees) in a ecologically sensitive area is worthy of the benefits from the very proposal of a new transmission line through the forests of Western Ghats which are considered as hottest among global bio-diversity hotspots. PowerGrid's mandate should have been to focus on avoiding the felling of so many trees and the consequent impact on the environment of Western Ghats.

It should be recognised that the forests in the path of the proposed line are part of the World Heritage Western Ghats, and that it is critical to conserve the rich ecology of the

district for the overall water security of the peninsular India. This point has been highlighted by many concerned groups including the state's farmers' body (Karnataka Rajya Raita Sangha). Powergrid also has to acknowledge the need to comply with the accepted National Forest Policy target of 33 % forest and tree cover.

When we consider the total forest area in the Western Ghats already diverted to the transmission lines associated with (i) Sharavathy river valley projects, (ii) Kali river valley projects, (iii) Kaiga atomic power project, (iv) Nandikur power Project the impact on our forest ecology becomes evident. There are proposals to expand the power plant capacity at Kaiga atomic power project, and to set up a large size hydel power plant in Hassan district. The forest lands to be diverted for the transmission schemes of these projects when considered along with the diversion for other projects such as the proposed railway lines between (a) Hubli – Ankola, (b) Talaguppa – Honnavara, (c) Mysore- Kushala Nagara, and many road broadening projects and water diversion projects in Western Ghats, a complete the picture of the annihilation of this ecological wealth of global importance can emerge.

**How much more forests will be sacrificed for the sake of the power sector which is profusely leaking with innumerable number of holes such as gross inefficiency and financial mismanagement?**

It is critical that a responsible public sector entity to objectively apply the Precautionary Principle as adopted by the UN Convention on Biological Diversity (1992). The Precautionary Principle is an approach to uncertainty, and provides for action to avoid serious or irreversible environmental harm in advance of scientific certainty of such harm. According to this principle, those activities which are likely to pose significant risk to nature shall be preceded by an exhaustive examination; their proponents shall demonstrate that the expected benefits outweigh potential damage to nature, and where potential adverse effects are not fully understood, the activities should not proceed. Sadly no mention of costs and benefits analysis of the proposed PGCIL project is available in the public domain, especially in view of the considerable ecological damage to the Western Ghats.

Whereas the recommendations of the Western Ghats Ecology Expert Panel (WGEEP) headed by Dr. Madhav Gadgil had asked for the declaration of the entire Western

Ghats as ecologically sensitive area, even the much diluted recommendations of Dr. Kasturirangan Committee has advised much more precaution while diverting the forest lands than we can notice in the conceptualization of the proposed transmission line project.

The society needs clarifications from the concerned state and central government authorities on the following issues.

- How much more forests from the Western Ghats are expendable?
- Is the threat of water security in those parts of Karnataka and Tamil Nadu served by Cauvery river due to forest destruction in the catchment area of Cauvery river a non-issue to our authorities?
- What commitment do our governments at the state and the centre have as far as our obligations to protect the ecologically rich tropical forests of Western Ghats, with an UN heritage tag, are concerned? How serious are we, as a society, about the mitigation of global warming phenomenon?

It is in this larger context of the overall welfare of the society that credible alternative to realize the overall objective of the proposed project needs to be deliberated on.

### **Are there better options?**

Due diligence in 'Options Analysis' and 'Costs and Benefits Analysis' can throw up many much benign options.

1. The overall objective of the proposed line as notified in a press notification from PGCIL is to facilitate the transfer of share of Kerala in the output of Units 3 & 4 of Kaiga Atomic Power Plant. Assuming maximum power output from these two units, the share of Kerala will be less than 40 MW. Even the total share of Kerala from all the four units at Kaiga Atomic Power Plant will be less than 80 MW as per the Ministry of Power. It is known noted that power to an extent of 190 MW is already flowing to Kerala on the existing 220 kV line between Kadakola (Karnataka) and Kaniampetta (Kerala). Since Karnataka has no other central sector power plant other

than the one at Kaiga, it can be easily surmised that more than Kerala's share is already being transferred to Kerala through the existing line.

2(a). Kerala's total share from the maximum output of all the central sector power plants in Southern Region is about 1,280 MW as per the allocation by the Union Ministry of Power.

[Reference: (1): <http://www.srpc.kar.nic.in/website/2013/commercial/apkknpp.pdf>

Reference: (2): <http://www.srpc.kar.nic.in/website/2012/commercial/revall-un-16-06-12.pdf>]

Since no power plant generates electricity at 100 % at all times, and station auxiliary consumption in each power plant consume about 12% of generated power, Kerala's total share in Southern Region may be less than 1,000 MW on an average.

2(b). Kerala is already connected to Tamil Nadu and Karnataka through the following transmission lines.

(i) 400 kV Udumalpet-Palakkad-Trichur D/C

(ii) 400 kV Tirunelveli-Trivandrum D/C

(iii) 400 kV Tirunelveli -Edamon line D/C

(iv) 220 kV Udumalpet - Idukki

(v) 220 kV Theni – Mooziyar

(vi) 220 kV Mysore – Kaniaympetta

(vii) 110 kV Mangalore –Manjeshwara (Kasargod)

(Ref: Annual Report 2013-14, Annexure XI, Southern Regional Power Committee)

2(c). The total power carrying capacity of all these lines can be as much as 3,000 MW. This is approximately 3 times Kerala's share in the southern region. So, for all practical purposes there is already enough transmission line capacity existing in the Southern Region not only to cater to Kerala's existing share of power but also for any increase in its share in the foreseeable future.

2(d). Whereas for the year 2013-14 Kerala's entitlement from the southern regional grid was 9,350 Million Units (MU), and it was scheduled to draw 10, 879 MU from the grid, it has actually drawn 11,374 MU as per Southern Regional Power Committee. This indicates that Kerala is not

facing any problem in drawing its full entitlements from the central sector share.

(Ref: Annual Report 2013-14, Annexure XII, Southern Regional Power Committee).

2(e). Kaiga units 3 and 4 were commissioned by 2011, and it is understood that Kerala has been drawing its full share of central sector power all these years without serious problems.

2(f). It is also learnt that Kerala has not been facing any problem in drawing its share of power under long term power purchase contracts, but may be facing minor problems occasionally in drawing all the power it has contracted under short term contracts.

In the light of these facts it becomes amply clear that Kerala has not only been drawing all its entitlements from the southern regional grid through the existing transmission lines, but also has much more surplus transmission capacity to cater to any additional entitlements in the foreseeable future. The concerned authorities must take all the techno-economically feasible measures to make full utilisation of the existing transmission infrastructure instead of wasting our precious national resources to build another transmission line and felling large number of trees in a bio-diversity hotspot.

Powergrid authorities seem to be taking the recourse to make a distinction between the capacity of a transmission line and capability of that transmission line to substantiate their decision to build the proposed 400 kV D/C. If the capability of one or more transmission lines in the region is less than the designed capacity for one or more reasons, all possible measures must be deployed to remove such constraints expeditiously through measures such as the replacement of conductors, installing higher capacity interconnecting transformers, and the deployment of series capacitors or FACTS. It goes without saying that such enhancement / efficiency improvement measures may cost next to nothing as

compared to the overall societal cost of additional transmission line such as the proposed line through thick forests of Western Ghats.

It can be construed as a criminal waste of national resources to make huge investment in a new transmission line or a new generating plant without first utilizing fully the designed capacity of the existing transmission infrastructure or a generating plant. Gross inefficiency and criminal wastage of national resources in all segments of the power sector in the country has been the bane of our society. This aspect of our power sector needs the highest priority before investment is even considered in creating additional assets. PowerGrid should not be associated with the failure to follow this fundamental principle.

Hence, it becomes amply evident that no additional transmission line through the Western Ghats can be considered essential to enable Kerala getting its share of power in central sector power stations of the southern region.

It appears that the inadequate transmission infrastructure in Kerala is forcing the conceptualization of the proposed project. It is learnt that for the past many years the 220 kV Bus at Kozikode substation is split to enable north Kerala to meet its electricity demand on a radial mode from Karnataka system.

It may transpire that a considerable percentage of the transmission capacity of the existing interstate lines are being utilized by Kerala to buy power from the merchant power plants in other states. If a state takes a conscious policy decision to depend so much on the merchant power plants situated in other states to meet its unabated growth of electricity demand, it becomes uneconomical and unsustainable.

3. This brings us to the larger issue of the meeting Kerala's growing electricity demand on the longer term.

It is reported that entire northern Kerala load is met by the two lines with Karnataka and its own 220 kV lines. It is not considered a pragmatic

approach for a state to depend so much on imports to meet its electricity demand.

The issue of reliability of supply to northern Kerala because of a single 220 kV line passing through Western Ghats needs to be examined. A number of issues need to be clarified in this regard.

- a. Why cannot Kerala invest adequately to strengthen its own transmission network to cater to the needs of north Kerala?
- b. Why central assistance cannot be sought to set up a gas based power plant in North Kerala to meet the local demand and to overcome the low voltage problem ?
- c. If Kerala were to continue to increase its import of merchant power in other states, and depend on interstate lines to transfer the same how long it will be before more transmission lines are needed to be constructed through Western Ghats of Karnataka?
- d. In view of the fact that Kerala has geographical constraints to construct any conventional power plants such as coal based power plants, and since its hydro potential is almost exhausted, what alternatives are left for it to meet its growing electricity demand?
- e. When the existing 220 kV Mysore – Kaniyampetta line was constructed in early 1980s, it was meant to provide adequate voltage support and power support to north Kerala, and to properly utilize the generation capacity of Idukki power plant. Since then the electricity demand in north Kerala has increased substantially necessitating both additional voltage support and power support from Karnataka. In a business as usual scenario even the proposed 400 kV D/C line may not be adequate in few years' time, and a 765 kV line may appear necessary. Will a 765 kV line be constructed through Western Ghats of Karnataka?
- f. In view of such a distinct possibility is it not prudent to consider alternate power demand/supply models to north Kerala now itself, instead of destroying the already fragile ecosystem of Western Ghats?

4. It appears that it is because of inadequate development of transmission line infrastructure to north Kerala, the proposed 400 kV D/C line is being deemed as essential. In view of all these constraints within the geographical boundary of Kerala, and the fact that any additional transmission line to connect Kerala with Karnataka has to pass through ecologically sensitive Western Ghats, there is an urgent need to holistically consider the future electricity needs of Kerala. The forests of Western Ghats cannot be continued to be compromised due to the unplanned growth in demand in north Kerala.
5. While north Kerala seem to be operating in a radial mode on to Karnataka's system for years, the concerned authorities should have foreseen the present scenario long back, and taken appropriate actions to remove this serious constraint.
6. All these constraints can be addressed satisfactorily by encouraging and assisting Kerala to go for massive investment in distributed renewable energy sources such as roof top solar power panels. To start with adequate number of such solar panels should be installed in north Kerala to reduce the voltage problem and to reduce the dependence on the interstate link with Karnataka.
7. Keeping in view Kerala's limitations in expanding its conventional power production capacity, it will be in its own medium and long term interest to move early to a regime of renewable energy sources in a distributed mode. The deployment of distributed renewable energy sources will also address the issue of the transmission line constraints.
8. The report mentions that the existing 220 kV Mysore – Kaniyampetta line has few spans where the sag is much more than the safe levels and is resulting in low ground clearance, impacting the movement of elephants. The issue of such a sag should be urgently addressed by the known techniques employed by KPTCL between Shimoga and Arsikere. The shut

down of the line required for this work should also be made use of to increase the power carrying capacity by one of the measures such as series capacitor and SVC.

9. While discussing the option of upgrading the existing 220 kV Mysore – Kaniyampetta line through measures such as series compensation or SVC, there seem to be an argument that such a measure without changing the conductor will not enable power exchange of more than 500 MW. But what determines this level of power exchange? Kerala's share in Kaiga will never be to that extent. So upgrading the existing 220 kV Mysore – Kaniyampetta line without changing the conductor should be a credible option.
10. In view of the serious issues of forest degradation due to this line and issues such as fragmentation of forest, man – elephant conflicts, disturbance to elephant corridor etc. if it is found to be techno-economically not viable to undertake the improvement measures mentioned in items 8 and 9 above, serious consideration should be given to completely dismantle the existing line and return the ROW to the forests.
11. It should be unacceptable that because of the over dependence of north Kerala on this line, there can never be improvement works on the existing 220 kV line. Kerala should be assisted and adequately compensated, if necessary, to improve its renewable energy capacity in the region so that in the long run it need not depend on the 220 kV line through Coorg district.
12. There is no clarity from the concerned authorities as to why the existing 110 kV line from Mangalore to Manjeshwara cannot be upgraded. Since such a route will pass through the coastal corridor the number of trees to be felled may be much less for the additional right of way. This option may be much less controversial than the proposed 400 KV D/C line through Coorg forests. The 1,200 MW power plant of Udupi Power Corporation and the proposed expansion of generating capacity at Kaiga atomic power plant may lead to adequate despatch of power to north Kerala. This option

should be seriously considered not only to drop the plan to build the proposed 400 kV D/C line through Western Ghats but also to enable dismantling of the existing 220 kV line. A detailed study and effective consultation with all the stake holders will reveal the true costs and benefits of this option. Since PGCIL is reported to have the plan to build 400 kV line through the coast of Karnataka and Kerala, the same should be expedited and built instead the proposed line through Western Ghats, if the overall cost to the society is much less. The material procured for the proposed 400 kV D/C line through Western Ghats should be considered for use in this line.

### Conclusions

- Keeping in view the poor status of our forests and environment, security of water supply from Cauvery river to peninsular India, and the global warming implications, the mandate for Powergrid should have been to take a holistic approach to all the associated issues, and to decide on an option other than the proposed one through Western Ghats to enable Kerala getting its share of power from central sector stations. Felling of a large number of trees should be the very last option to be considered.
- The total power transmission capacity of the existing lines connecting Kerala to Tamil Nadu and Karnataka is about 3,000 MW, whereas total share of Kerala from central sector stations is less than 1,000 MW. Hence there is already adequate transmission capacity existing.
- For the year 2013-14 Kerala has received more than its entitlement from the southern regional grid as per Southern Regional Power Committee, which indicates that Kerala is not facing any problem in receiving its share of power from the existing transmission infrastructure.
- Keeping in view all these points, it becomes evident that the proposed 400 kV D/C line from Mysore to Kozikode is not essential, and hence should be discontinued.
- Keeping in view the geographical constraints of Kerala either to set up its own additional conventional power plants OR to construct additional

transmission lines, all possible efforts should be made to encourage addition of large number of distributed renewable energy sources, such as roof top solar power plants in order to reduce Kerala's dependence on neighboring states.

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