Comments on National Energy Policy

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We very much welcome the initiative taken by NITI Aayog to draft National Energy Policy and particularly appreciate the move to seek public comments before finalizing the policy document. We have listed our major views and comments below, so as to assist the NITI Aayog team in further enhancing the consistency and comprehensiveness of the National Energy Policy.

1. **India Vision 2040**: Although the policy draft outlines various objectives and scenarios for India 2040, the primary vision for the future energy sector is not clear and far-reaching. For instance – more rational approach can be adopted in projecting the future energy demand and associated market mechanisms; high level emphasis needs to be placed on social and environmental aspects of energy sector, the present draft ignores the inter-and multi-disciplinary nature of energy sector; diligent analysis of costs and benefits of all the promising energy technologies in Indian context, including their socio-environmental impacts can be presented; and compliance check with the associated Acts, Rules, other policy mechanisms and international obligations needs to be done, among others.
2. **Methodology to develop future pathways**: The policy draft relies heavily on IESS tool as the projected future energy scenarios are developed via this tool. But, it should be noted that IESS tool is a scenario building tool and does not take into account the practical limitations of achieving the developed scenarios; e.g., matching demand and supply of power generation, environmental constraints and socio-economic aspects of the projected scenarios. Thus, it is apparent that projecting future pathways based on IESS tool solely is highly risky and might lead to serious misconceptions in the coming years.
3. **Concrete Roadmaps:** It would be good if the policy document can develop concrete pathways highlighting the key milestones to be achieved for every 10 years or so. Also, providing ministry specific goals might help in increasing the transparency and tracking the progress.

4. **Energy Demand Concerns**
    a. Whereas the total energy demand between 2012 (as the reference year) and 2040 is projected to grow between 2.7 and 3.2 times, the draft projects that only 17% energy savings is feasible by 2040 between the BAU and ambitious scenario (Table 4 of DNEP). When we consider the gross inefficiency prevailing in our energy transportation/transmission and utilisation in different sectors of our economy, the potential to conserve energy through measures such as efficiency, demand side management and conservation can be seen as huge. Hence the savings feasible between the BAU and ambitious scenario could be much higher; likely to be much more than 25%.
    b. The electricity sector alone is known to have the potential to reduce its demand by as high as 40% through efficiency improvement measures. But sadly, the DNEP has assumed only 6.5% reduction in demand by 2040 (DNEP table 6). Additionally, the share of electricity in total energy demand by 2040 is assumed as only 26% by DNEP (DNEP table 7); whereas the global projections say that by 2050 more than 60% of global energy consumption is likely to be in the form of electricity. Keeping the convenience of using electricity, the zero pollution at the point of usage, and the fact that much of electricity can be obtained by REs, it is highly desirable to have a high percentage of electricity in the energy basket. Similarly, it is expected that demand side management techniques in the sectors, such as, passenger and freight transport, residential and commercial buildings, industry, agriculture, cooking and telecom have huge potential in energy demand reduction. Hence, all possible efforts should be put into reducing the total energy demand by much more than 25% of the BAU scenario in 2040.
    c. Additionally, the unlimited demand growth has huge economic and natural resource implications, such as forest felling, mining related issues; land diversion, enormous costs of transmission systems, air pollution, water scarcity and climate change, among others. Considering all the electricity production technologies in a holistic manner, it has to be said that there are definitive limits to how much the nature can provide to meet our escalating demands. Hence energy demand management should have been a major consideration in NEP, which unfortunately has not been given the due importance.
    d. Keeping in view the continued growth of the huge population base; unmet demand of about 25% of the population; the socio-environmental impacts of vast energy demand; and the Climate Change considerations, the primary approach should be to determine the minimum quantum of energy required by our society to eliminate poverty on a sustainable basis. Hence the objective should not be to meet the unlimited amount of energy demanded by few sections of the society, but to find a manageable limit to the overall energy demand.

5. **Future electric power system**
    a. **Electricity Generation:** The power network of 2040 should have a large number of small size roof top SPVs OR wind turbines OR community based bio-energy/CSP type solar power plants, because of which the need for a stronger/reliable integrated grid will increase, but the nature of the grid will be different. There can be very few conventional technology power plants such as few gas based plants and dam based hydel plants, and pumped storage plants, which are already constructed and which have long life cycles.
    b. **Transmission:** It is credible to forecast that instead of the need for more of EHV and UHV transmission corridors transferring large chunks of power over hundreds/thousands of kilometres, the electricity grid of the future will be required to be strong and reliable at lower voltage levels, and may be basically designed to connect a large number of mini/micro grids. In view of large number of small size roof top SPVs OR wind turbines OR community based bio-energy/CSP type solar power plants, and mini/micro grids expected in future, the distribution system will have to discharge a very critical role in maintaining the stability of the network in connecting power sources and consumers, and in ensuring reliable and quality supply in the most optimal way.
    c. **Distribution:** In order to minimise the distribution losses the distribution companies can be expected to have much higher ratio of 11 kV to LT lines as compared to what it is at present, and much larger number of pole mounted distribution transformers of appropriate size to cater to the requirements of individual consumers. High Voltage Distribution Systems (HVDS), which are already in practice in places like Delhi, to avoid unauthorized use of grid electricity, can become the mainstay of the system. Each mini/micro grid can be expected to become a Smart Grid and equipped with suitable ICT and protection systems to be able to be connected to the integrated grid. In such a scenario the reliability of supply to individual consumers can be expected to be of very high order, because of the essential need to keep a reliable connectivity at all times to individual generators who may supply the excess electricity to the grid.
    d. **GHG emissions reduction pathway:** In order to move towards a very high percentage of REs in the energy sector, including that in electricity sector, the government should come up with a definitive and much more ambitious target of GHG emission reduction by 2040 backed by clear targets at 5 years interval. This will go a long way not only in improving our energy scenario but also in drastically reducing the pollution of our natural resources. Such a policy will help to change the electricity generation capacity scenario in the country by a considerable margin, with coal, gas and nuclear power capacity at very low levels, if not eliminated completely.

6. **Democratisation**: Emphasis should be placed on the Democratisation of the energy sector in the coming future, where policy-making, decisions, management, etc. are in the hands of communities/people along with relevant institutions of the state. Increasing penetration of REs will promote decentralized markets and will fundamentally change the nature of electricity utilities. Thus, this aspect requires further attention in the policy document.
7. **Energy Storage:** The prices of energy storage technologies are falling at an exponential rate and this will have strong impact on the penetration of renewable energy sources by 2040. The role of energy storage in enhancing the penetration of renewables to very high levels has been largely ignored by the policy draft.
8. **Rural Energy Supply:** There is an urgent need to provide efficient fuel/energy sources to the rural communities. The role of micro/mini-grids based on renewables for electricity supply and biogas based technologies for cooking in rural areas can be highlighted with concrete action plans, if possible.
9. **Open document:** It would be good if the national energy policy can be treated as an open document that can be reviewed every 5 years or so. Given the dynamic nature of energy sector and the drastic transformations happening at present (be it renewable/storage technologies or market structures), it might be wiser to make it an open document.

With best wishes,

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P.S: The signatories were part of Bijali Vikalp Sangam process that was conducted in Bodh Gaya during 4th to 6th March 2016. [Link]