

# Substantial comments on Draft National Energy Policy, 2017

Prayas (Energy Group)

The draft National Energy Policy (DNEP) published by NITI Aayog for public comments tries to present a policy roadmap for the country up to 2040. This is a voluminous and difficult task and NITI Aayog must be commended for undertaking the same. It is also very good that NITI Aayog is seeking public comments on the policy before finalizing it.

A policy document such as this has the potential to shape the energy sector – and hence the country's development – in a significant way for the future. Moreover, given the rapid changes being witnessed in the energy sector with changing technologies, economics and business models, and the unique challenges faced by India (such as the need to rapidly provide reliable access to modern forms of energy to its citizens, dealing with rising imports and the challenges of local and global environment), such a policy framework becomes all the more critical. Our substantial comments and inputs on the policy document are being given in this spirit – of informing a critical policy document that would be relevant for the next two decades or so. We have separately sent a set of specific paragraph-wise comments.

## Overarching comments

1. **Policy finalization:** It is good that NITI Aayog has called for comments on the NEP and would finalize the policy based on the received comments. It should also publish a summary of all the comments received (perhaps after anonymising) and NITI Aayog's response to each of them along with reasons. Such a process is routinely followed by institutions such as the CERC and this will further enhance the credibility of the process and strengthen the consultative effort initiated by NITI Aayog.
2. **Living policy document:** The finalized NEP document should not be a static document but should instead be a 'living document' that is revisited and updated every (say) three to five years. This is particularly so, since the energy sector is currently going through rapid transformations in terms of technology and economics, and it is impossible to predict the future with any degree of certainty. Hence, the only recourse is to be very nimble and agile about policy making.
3. **Timeline and process for comments:** The draft NEP document is complex, extensive and covers a lot of ground. We are glad that NITI Aayog has taken cognisance of various requests and extended the time line available for comments, though another week (i.e. until 31<sup>st</sup> July) would perhaps have been desirable. It would also have been good if NITI Aayog had conducted proactive consultations at different locations in the country to collect inputs on the policy, as it would have enabled greater participation from citizens and provided richer inputs.
4. **Policy objectives:** The DNEP lists four objectives for itself: access at affordable prices, improved security and independence, greater sustainability and economic growth. While these objectives are good, it is not clear that the DNEP makes significant progress in achieving them.
  - a. Even in the ambitious scenario, energy import dependence in 2040 at 46% is higher than in 2012 (44%). Oil import dependence increases from 75% in 2012 to 85% in the

ambitious scenario in 2040, which is in conflict with the stated government goal of reducing oil imports by 10% in the near future.

- b. The share of renewable energy (without large hydro and nuclear energy) in the primary energy supply, even in the ambitious scenario, is just over 10% even in 2040. Similarly, the share of fossil fuels in the primary energy supply falls by just 3% (from 81% to 78%) from 2012 to 2040. These do not seem to be consistent with the goal of greater sustainability.
- c. The DNEP states that 30% of rural India (about 16% of Indians) would still be using solid biomass fuels in 2040. This is inconsistent with the goal to provide access to modern, clean fuels to all.
- d. The policy also states (Section 1.5) that India should aim to match the energy consumption parameters of developed countries in the long run. Given the thrust on energy efficiency in the policy, this is also debatable.

In general, it appears that there is insufficient coherence across sectors which should be working harmoniously towards some common goals. Therefore, it would be good to revisit these numbers to make them consistent with each other and the stated vision and objectives.

5. **Analysis methodology:** Many of the above stated anomalies probably arise from the methodology used for the policy document. The IESS tool has been used to develop the various supply and demand projections for the horizon years of 2022 and 2040. However, using IESS for such policy development is inappropriate as it is only a scenario building tool and not a modelling tool that can reconcile supply and demand figures, thus leading to misleading results. Some examples of such misleading results are given below.
  - a. It appears that in the ambitious scenario, the losses in the electricity sector (AT&C losses) actually increase sharply from 2012 (25%) to 2022 (40%) and then come down to 28% by 2040, but still higher than in 2012.
  - b. Similarly, the overall energy conversion and transport losses, i.e. the difference between the primary energy supply and final energy demand continually increase from 15% in 2012 to 21% in 2022 and further to 25% in 2040. This also does not seem correct.
  - c. The electricity demand growth rate of the transport sector increases faster from 2012 to 2022 (5.4% in the ambitious scenario) than from 2022 to 2040 (4.1% in the ambitious scenario) which is contradictory to the government drive to electrify transport. This is also reflected in the shares of oil in the energy basket which hardly changes over 28 years (27.2% in 2012 and 25.3% in 2040 in the ambitious scenario).

Therefore, it is perhaps best if the policy document did not focus on numbers but focused on providing clear policy and institutional directions to move towards the goals. If it does need to provide numbers, then it should use a sophisticated model to do the same, so that supply and demand figures can be reconciled to each other and the rest of the economy.

6. **Specific targets:** It would be good if the final policy document includes a set of desirable quantitative targets for the intermediate horizon year and final horizon year. These could include targets related to energy access, quality of service, affordability, energy efficiency, renewables penetration, energy intensity, T&D losses, import dependence etc. This will provide

specific goals to individual ministries and help better track and monitor progress towards achieving them. These can also guide future revisions of the policy if required.

7. **Policy period:** The intermediate horizon year of 2022 seems to be somewhat arbitrary as it is not the mid-point to 2040 and too close to seriously influence policy. For a national policy aimed to shape the country's energy sector, perhaps a medium time horizon of 2025 or 2030 and a long term horizon of 2040 or 2047 would have been more appropriate.

## Sectoral comments

1. **Energy efficiency:** The attention given to energy efficiency in the DNEP is welcome, though not enough attention seems to have been given to efficiencies of sectors outside electricity. While the DNEP acknowledges that past efforts at efficiency have not yielded the desired benefits, an analysis of why they did not succeed and what alternatives are likely to work in the Indian scenario would have been very useful.

The suggestion that BEE should undertake a cross-sectoral study to review the current status of energy efficiency and potential for future savings is welcome. The results of such a study should set quantitative targets for NMEEE and also facilitate the over-arching energy efficiency strategy. This exercise should be undertaken as a consultative process involving industry, academics, civil society organizations etc. rather than being done within BEE or an out-sourced agency.

Within electricity, it is not clear if mass procurement is the best way to improve the efficiency of ACs, particularly for the residential sector, as it could have significant rebound effect leading to higher penetration and use resulting in increased energy consumption. Instead, stronger building codes with enforcement, stronger standards and labelling and enforcement, and associated market signals will perhaps be a better way to achieve the target. More generally, the bulk procurement model which succeeded for LED bulbs is not necessarily the appropriate model for all appliances and technologies.

DNEP mentions that 50% of the purchases under DELP like programme should be super-efficient, which is welcome. The same stipulation should also apply to all the public procurement of appliances, with the other 50% being 5-star appliances.

The DNEP rightly points about increasing the sources of funding to the BEE. It can also talk about possible sources of funding. One such source can be the National Clean Environment Fund (NCEF).

2. **Splitting CIL and introducing commercial mining:** The coal sector definitely needs structural reforms to become more efficient and to this extent, splitting CIL and introducing competition is welcome. However, to realise the benefits of true competition and attract serious players, the sector needs regulatory and governance reform to establish its commitment to transparency, forbids affiliate transactions, creates a level playing field for all participants, and so on. Such reforms are preconditions to expecting genuine competition.

In addition, realising the benefits of such a move would require amendments to other existing policies such as SHAKTI that skew the balance in favour of CIL, and the revised competitive

bidding guidelines in the power sector where coal costs are a pass-through thus eliminating the need to minimise fuel cost. In short, introducing competition at the coal end will only succeed if there is competition all the way down the value chain up to the consumer, backed by robust regulatory institutions.

3. **Separating carriage and content in distribution:** The need to further competition in the distribution sector while tackling weak distribution networks, poor supply quality and enormous issues of metering accuracy, is a challenge. The current trends in renewable energy prices and open access indicate that the existing model of managing and operating the distribution sector will soon be under serious threat. However, the past experience of unbundling and the subsequent transfer scheme post E-Act 2003 shows that massive structural changes introduced in a short time frame may be a non-starter for many states, leading to delays and potential non-achievement of objectives of the reform. Therefore, in order to ensure carriage and content separation, competition needs to be introduced in a phase-wise manner starting with the existing structures, and causing least hardship to small consumers. Details of the proposed phase-wise approach are available in a separate paper being submitted by Prayas (Energy Group) to NITI Aayog. The process of increasing retail competition should also go hand-in-hand with deepening the markets where small operators can also participate in offering services of generation, storage, balancing etc.
4. **Direct Benefit Transfer for electricity consumers:** The DNEP proposes using the Direct Benefit Transfer (DBT) mechanism to provide subsidy on electricity tariff to needy consumers, while opening up the coal and power sectors. While this is perhaps sound in theory, it must be ensured that it also works in practice since this will effectively transfer all the risks of price variation on to consumers. Thus, if DBT does not work effectively for vulnerable consumers, through either exclusion errors or technology access challenges, the risks would be transferred from coal companies and power companies to vulnerable consumers.
5. **Renewable energy:** As renewables get more and more “mainstream”, it is appropriate that special concessions to them such as waiving off inter-state transmission charges or cross-subsidy charges and must-run status should be reviewed.

However, it is important to acknowledge that wind and solar have single part tariffs and near zero marginal costs, and hence they are at a big disadvantage in the absence of must run status due to loss of off-take due to any reason. This is different for coal and other power plants which have two-part tariffs and get their fixed cost paid as per schedule and availability, thereby taking care of their debt payments unlike the case for wind/solar power. Hence while reviewing the must run status for renewables, it is important to have mechanisms in place to compensate for loss of off-take on account of any reason. Removing must run status without providing a compensation mechanism would result in increasing costs of solar/wind power to the extent of the risk associated with backing down. The NEP could suggest the exploration of a two-part tariff for renewables to overcome this issue.

The DNEP (Section 6.10) suggests exploring integrating renewables with gas based power plants or storage to counter intermittency. However, creating balancing capacity or applying balancing costs at an individual plant level may be suboptimal because balancing is a system-level

requirement and is better dealt with at that level. It would be better to focus on stringent forecasting, scheduling and deviation penalty mechanisms for wind and solar plants to begin with. Also the question of balancing is not restricted to renewables but also to conventional generation and the demand side, i.e. load. While stranded gas based power plants may provide good balancing support, it would be best to separate the program to revive stranded gas assets from the grid integration aspects of renewables. The proposed NITI Aayog platform (Section 6.11) would be very helpful in building consensus among states on the issue of grid integration. A recent India specific renewable integration study by NREL and LBNL clearly concludes that existing flexibility in the Indian coal fleet, along with national and regional coordination of scheduling and dispatch would be enough to manage intermittency. It concludes that power system balancing with 100 GW solar and 60 GW wind is achievable at 15-minute operational timescales with minimal RE curtailment by using the inherent flexibility in India's current coal-dominated power system to accommodate the variability associated with the targeted RE capacities and new, fast-ramping infrastructure (such as natural gas turbines) is not necessary to maintain balance.

The DNEP covers the issues surrounding large hydro in the chapter on renewables. Given the totally different nature of large hydro and small hydro, and the social, environmental and economic issues associated with large hydro, we feel large hydro should not be included under the chapter on renewables.

- 6. Large hydro and nuclear energy:** Costs of power from new large hydro projects are quite high, owing to huge time and cost overruns. For example, the capital cost of the Teesta III 1200 MW Hydroelectric Power Project has nearly tripled, resulting in its tariff which was originally envisaged to be Rs. 1.92 per unit shooting up to about Rs. 6 per kWh<sup>1</sup> at which price discoms have refused to buy this power and PTC is selling it at a loss<sup>2</sup>. Given the many social and ecological risks with the large hydro sector, such cost and time overruns would seem to be inevitable.

Similarly, the increasing capital cost and time overruns associated with nuclear power plants, in addition to the difficulties with siting them, also make them an option that is unlikely to be economical if the entire cost to the economy is considered. The increasing costs of large hydro and nuclear energy (in addition to their associated social challenges), when juxtaposed with the rapidly falling prices of renewables and likelihood of similar trajectories for storage, necessitates a relook at the likely role and competitiveness of these sources in the future energy mix. Capacity addition in these technologies should be subject to such competitive cost-benefit analysis rather than based on targets.

- 7. Cooking:** Household air pollution is recognised as the second largest cause of mortality and morbidity in the country<sup>3</sup>, with use of solid fuels for cooking being the primary cause of such pollution and attendant health impacts. In addition, the severe gender impacts of the use of

---

<sup>1</sup> <http://www.cercind.gov.in/2017/orders/249.pdf>

<sup>2</sup> <http://economictimes.indiatimes.com/industry/energy/power/teesta-iii-a-failed-ppp-project-alleges-aipf/articleshow/59308055.cms>

<sup>3</sup> [http://mohfw.nic.in/sites/default/files/5412023661450432724\\_0.pdf](http://mohfw.nic.in/sites/default/files/5412023661450432724_0.pdf)

solid fuels are also well understood. Moreover, India is also a signatory to SDGs, according to which all citizens should have access to clean, modern energy by 2030. Therefore, it is welcome that the DNEP addresses the cooking fuel access challenge and proposes a national mission for the same. However, attempts to produce 'clean burning' biomass stoves have not succeeded despite efforts by the government for more than 30 years. Recent research suggests that even a small deterioration in field performance of 'clean burning' biomass stoves – due to entirely plausible reasons such as poor maintenance, different quality of fuel etc. – can have a large health impact. Finally, there are well-understood mature technologies and business models for other modern fuels. For all these reasons, rather than continuing to emphasise the improvement of biomass based stoves, the policy could have been more ambitious about totally eliminating the use of solid fuels at least by 2040 if not earlier, by using a combination of gaseous fuels (LPG, PNG, biogas) and electricity as the cleaner options. The DNEP could also have initiated research to help develop renewables based technologies for cooking such as solar cooking, biogas from biomass digestion and so on.

8. **Regulatory institutions:** The draft NEP correctly talks about strengthening regulators and setting up independent regulators for upstream oil-and-gas as well as coal. However, it would be worthwhile to think about the structure, powers, independence and role of these regulators carefully and designing them to be accountable as well as independent. This includes the issues of persistent vacancies in these institutions and the appointment processes of regulators. The example of PNGRB clearly shows that merely setting up a regulator cannot achieve the desired goals of enhancing competition, ensuring fairness, resolving disputes and so on if it is not designed to do so. However, the DNEP proposes that PNGRB be entrusted with regulating upstream oil and gas operations without addressing these issues. Therefore, the policy should focus on building a credible regulatory regime with a clear and strong mandate in the coal and oil and gas sectors, and the steps necessary to move towards such a goal, including legislative amendments as required.
9. **Industry structure:** The DNEP talks about possible amalgamation and (forward and backward) integration of companies in the energy sector. However, it is not clear if this is a desirable direction as it could lead to oligopolies in the energy sector. It is also directly contrary to the idea of unbundling that was explicitly introduced in the electricity sector.
10. **Neglected aspects:** Some aspects have not received the attention they deserve in the DNEP, particularly considering that its time horizon extends up to 2040, by when significant changes can be expected in the sector. These include the following:
  - a. **Storage:** Electricity storage (beyond electric vehicles) is likely to be a critical part of the energy system by the mid-2020s, leave alone 2040. This can have very significant ramifications for the entire sector as it can then eliminate the problems associated with renewables' variability. In particular, this will have big implications for new coal-fired capacity that would be required and balancing costs of renewables. Hence, it would have been good to discuss the effects of introducing storage and its impacts on the sector.
  - b. **Utility structure/nature:** With increasing penetration and fall in prices of renewables (and storage), promotion of markets and separation of carriage and content, the nature

of utilities is likely to undergo a fundamental change. In turn, this can have a ripple effect on the entire sector. Therefore, this issue deserves more attention in the DNEP. The dynamic nature of these aspects and the resultant uncertainties make periodic reviews of NEP very important.

- c. **Biogas:** Conversion of various kinds of waste (animal, human, crop etc.) into methane through digestive processes can be a potentially rich and useful source of energy, particularly for rural areas. In particular, this can help address a significant part of the cooking energy access problem in rural areas through a clean, renewable fuel apart from providing other co-benefits such as sludge that can be used as fertilizer and providing local employment. Therefore, this technology could have found greater discussion in the DNEP.
- d. **Data and modelling:** Timely and easy availability of energy data is a crucial component to promote better energy policy research and investment decisions in the energy sector. Similarly, having a rich eco-system of energy modelling can help provide useful information to policy makers about trade-offs between different choices. NITI Aayog has already initiated some work on both these fronts and the DNEP could have included some discussion on the way forward regarding these important items crucial to the future of the sector.
- e. **Impact on environment and livelihoods:** It is good that DNEP touches upon concerns related to climate change, environmental issues and air quality. But considering the significant impact that the energy sector has on climate, air, water, soil, rivers, forests and livelihoods, there is a need to ensure a synchronisation of NEP with the National Environment Policy, and better coordination among the relevant agencies so that there is smoother management of all these inter-connected issues in a frictionless and just manner. The NEP may consider providing policy directions and institutional mechanisms for this.

### **Welcome features in the DNEP**

The DNEP contains many elements that are welcome and progressive. These include:

1. A focus on many areas that are usually not given much attention to, such as energy efficiency, capacity and powers of institutions such as regulators, BEE and SNAs, and the problem of access to modern forms of cooking energy.
2. Setting up a new technical institute or research body for energy efficiency on the lines of NISE and NIWE.
3. Mandating the disclosure of their energy use by large consumers
4. Setting a target that 50% of new appliances purchased should be super-efficient.
5. An acknowledgement that focusing only on BPL households for connections will not help to address the electricity access challenge, and that productive loads need to be supported.
6. Recognition of the technical challenges that need to be addressed to handle large scale renewables integration.
7. Making even proprietary oil/gas exploration data public after the passage of some time.
8. Giving attention to issues of air quality.

-x-x-x-