



TOWARDS ACHIEVING INDIA'S ENERGY GOALS

ENSURING AFFORDABLE, RELIABLE,
SUSTAINABLE AND MODERN ENERGY FOR ALL

The Equity Imperative



In collaboration with



Indian Network on
Ethics & Climate Change



Executive Summary

From Sustainable Development Goals (SDG) perspective, the fundamental questions that have been of interest to us are:

Whether the energy required for meeting needs of a decent quality of life for all can be obtained in an equitable and sustainable manner?

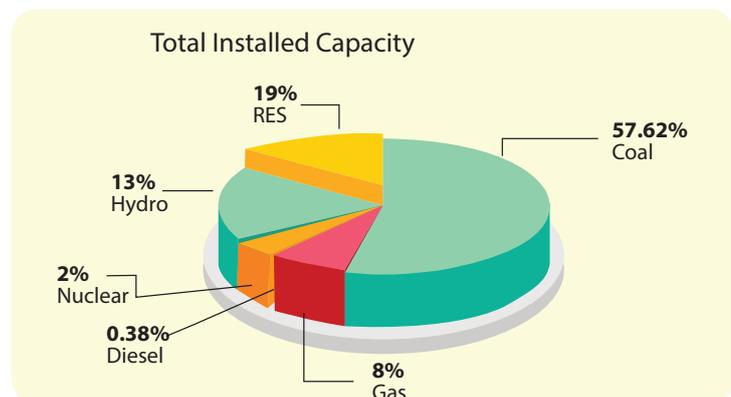
How shall energy be generated, 'for what purpose' 'by whom and for whom'?

SDG 7 seems to have overlooked these fundamental questions. It therefore presents an opportunity for us to relook at the energy landscape within the country in order to bring about the desired wellbeing outcomes. The summarised version of the paper titled "Towards Achieving India's Energy Goal of the SDGs - The Equity Imperative" attempts to highlight the key issues in the Indian energy landscape through the lens of Sustainable Development Goals.

It takes into perspective the current energy dynamics & concerns and offers views on possible approaches that marries energy security for all with emission reduction. It points out the flaws within international & national frameworks and points out approaches already in place. Aligning with the SDG spirit of 'leaving no one behind', it reflects on the question of equity throughout this narrative in exploring energy scenarios for "Ensuring affordable, reliable, sustainable and modern energy for all" in India.

The Indian energy paradigm and the current impasse

The current means of energy production and supply have not only led to inequity in access to energy, but also has had an impact on the environment. Despite several policies, around 800 million Indians still use solid biomass for cooking and 300 million Indians do not have access to basic lighting. The fault lines largely point towards centralised system of production, the GDP-HDI-energy nexus which so far has guided India's energy planning.

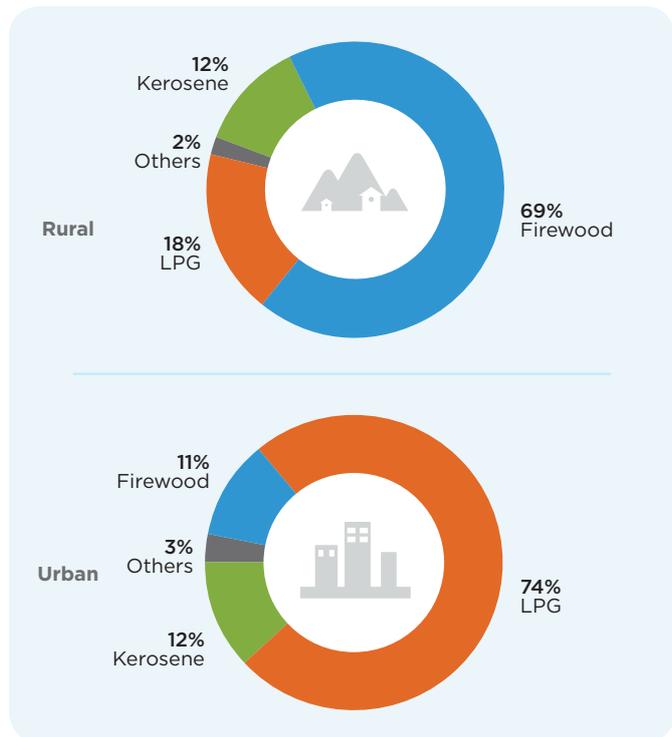


India's Energy Basket, CEA, January 2018

However, there are shifts taking place and the emerging paradigm includes renewable energy, with very high targets set for 2022. The concerns around renewable energy anchor around: large mega sized projects, productive land acquisitions, water footprint and forest clearing.

In the cooking energy scenario, over 891 million people still rely on traditional biomass cookstoves, which has led to serious health risks through high levels of indoor air pollution. In the ever-growing transportation sector, 94.5% of the total transport emission was contributed by road transport sector alone.

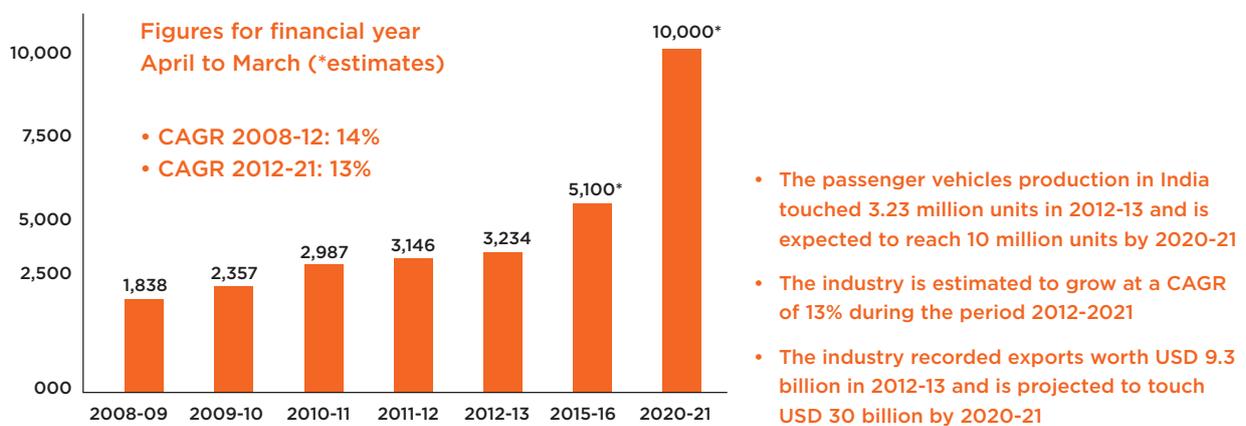
While the reality of energy starved households across states is not unknown, the current strategies will not be able to serve as an adequate response.



*Others include biogas, agro residue, coal/charcoal and cow dung cakes
Source: Census, 2011

In the ever-growing fossil fuel guzzling transportation sector too, 94.5% of the total transport emission was contributed by the road transport sector alone. The trend of Increasing private vehicles and decreasing public vehicles continues without serious regulation.

This has resulted in an increase in vehicle density across most of urban spaces and resulted in reduced pedestrian spaces. The one positive direction that the country has decided to embark upon is having only e-vehicles by 2030. The future heralding clean electric cars sounds promising but lacks an equitable mind set as it has little to offer for the rural poor.



Approaches to energy for all

The view of energy planning with its supply oriented solution has been built around a narrative of chronic and ongoing energy scarcity which assumes constantly rising energy needs and a resulting pursuit of all available energy options, often without a complementary consideration of the uses to which the energy is put, the services it is providing and the costs of procuring that energy. This traditional supply dominated orientation has simply not been enough to fix the pathologies of Indian energy where lack of energy access remains an overarching characteristic along with serious challenges of fuel quality even when there is supply, and where power shortages continue to plague the system in towns and rural areas.

'Energy services' Frameworks offered by the The UN Secretary-General's Advisory Group on Energy and Climate Change, AGECC (2010) and others provides a framework for calculating energy demand which promises decent quality of life for all. These consider 'three incremental levels of access to energy services and the benefits they can provide'. These are **Level 1 - Basic human needs, Level 2 - Productive uses and Level 3 - Modern society needs.**

The other approach to consider is The Poor Peoples Energy Outlook (PPEO). The PPEO details the energy needs of the energy poor and proposes a new set of minimum standards and indicators, called Total Energy Access (TEA). Six key energy services that the people 'need, want and have a right to' are identified. These are, lighting, cooking and water heating, space heating, cooling, access to information and communication technologies, and energy for earning a living. (Practical Action, 2010)

Level 1

Basic Human Needs:

Electricity for lighting, health, education, communication, and community services (50-100 kWh per person per annum). Modern fuels and technologies for cooking and heating (50-100 kg per person per annum).

Level 2

Productive Uses:

Electricity and modern fuels for agricultural activities and commercial activities.

Level 3

Modern Society Needs:

Domestic appliances, increased cooling and heating, private transport. (2000 kWh per person per annum)

The above studies including other studies also indicate that current global energy supply is probably enough to meet the energy needs of everyone on this planet if it is distributed equitably. Thus, there is enough energy as needed by all but it is highly unevenly distributed among and within countries; among and within states; among and between people.

India will need to prepare a blueprint of how the energy supply will be distributed in order for decent living to every Indian citizen by 2030

Table 1: Total energy and electricity needed for India in year 2032 based on various approaches

Sr. No	Approach / Study	Per capita in 2032		Total in 2032	
		Electricity (kWh)	Energy** (W)	Electricity (billion kWh)	Energy (Mtoe)
A	GDP based approach				
1	IEP, India	2643	1369	3880	1514
2	18th EPS, India	2703		3968	
B	Achievement of certain desired outcomes				
1	HDI-Electricity co-relation, HDI=0.7 (UNDP; World Bank, 2016)	2895		4250	
2	Expert Group on Low Carbon Strategies for Inclusive Growth, India				
2.1	Baseline, Inclusive Growth (BIG) scenario	2296		3371	1146
2.2	Low Carbon, Inclusive Growth (LCIG) scenario	2361		3466	1108
C	Bottom-up approach based on normative framework				
1	Amulya Reddy and colleagues	2315	1594	3398	1763
2	Zhu and Pan 2007, China	1195*	2452		2711
3	2000 W Society, Switzerland (Nova Atlantis, 2010)		2000		2211
	Actual for India in 2011-12	884		1056	526

*Per capita electricity considers use only for household sector. Electricity use in other sectors is considered in respective sectors.

**Energy includes primary energy needed for electricity generation.

Source: How much Energy do we Need? Vol. 52, Issue No. 45, EPW, Nov 17



Suggestions and recommendations

In the context of SDG and state priorities, we have the following to suggest “Ensure access to affordable, reliable, sustainable and modern energy for all”.

Redefine village electrification and focus on households

There is an immediate need to shift focus from village electrification to household electrification. The definition of “village electrification needs to be revised from the current 10% of the households covered in a village to 70% for a village to be deemed as electrified. While there are 4000 villages to be electrified, there are 45 million households to be electrified within the country.

Shift focus from electricity to energy service perspective

In India the calculation of energy demand has largely drawn upon the ‘predict and provide’ logic. This logic is rooted in the “source” theory. This line of thinking has not really taken us far, as 300 million people still do not have access to electricity and about 800 million people continue to cook on solid biomass despite massive capacity additions. There is a strong value in a service/utilisation approach to energy demand calculation. This would mean that we first figure out the kind of energy services needed, say by 2030 for a decent quality of life and wellbeing of its entire population. Once we aggregate the service inventory, we then look at those sources/technologies/means by which those services could be met, (giving preference to low carbon technologies) and which is affordable. In the light of energy services, it might be worthwhile to relook at the 900 GW projection that India has made for itself.

Make mini grids/energy hubs affordable to the rural poor to meet livelihood needs and to boost rural economy

Mini grid systems have a prohibitive energy cost which is making it difficult to sustain. Local level energy hubs which could include decentralised water providing system (both drinking and irrigation), milling systems etc., should be promoted.



Ensure affordability and reliability of energy services

According to the International Energy Agency, 147 million Indians will remain without access to electricity even in 2030 as they will find energy unaffordable. This needs to be addressed. Reliability of energy should not be limited to energy access but to the quality of interrupted supply available to meet both survival and productive use.

Climate friendly technologies for agriculture and R&D required urgently

Bringing in efficiencies in agricultural operations, which is the mainstay for the poor and the marginalised (as small and marginal landholders or as wage labourers using machines) cannot be overstated. All small and marginal farmers should be provided access to climate friendly technologies like solar driven/hybrid energy driven agricultural equipments to meet a range of agricultural operations.

Eliminate traditional solid biomass based fuels and kerosene for cooking and build perspective around 'cooking services'

LPG connections as an alternative to traditional fuels is increasingly finding its way to the villages and households. It is feared that this might not serve any meaningful purpose on the ground as most rural people (90%) and the urban poor (20%) do not use LPG because of its prohibitive cost or because of accessibility issues. Further, India's cooking future needs policies that discourages the use of solid biomass fuels and kerosene and encourages building perspective around "cooking services" than on cooking fuels alone.

Focus on MSMEs

Energy efficiency polices have so far concentrated on the big industries but focus now needs also to shift equally to the Small and Medium Enterprises (MSME) sector which plays a key role in India's economy by contributing to around 45% of the country's manufacturing output.

BEE to make energy standards mandatory for all appliances

There appears to be a perceived lack of credibility with respect to data paucity, data on realistic energy savings, information on consumer behaviour etc., on proclaimed energy efficient appliances. It is therefore very important that Bureau of Energy Efficiency (BEE) makes Energy Efficiency standards mandatory and its labelling credible.

Make ECBC mandatory by the end of this year

In the term of buildings we need to prioritise demand management and energy conservation. India is growing and so are its buildings. Energy efficient buildings could result in huge savings. The Bureau of Energy Efficiency make the Energy Conservation Building Code (ECBC) mandatory in India.

Align centre, state-district & block level policies and priorities for coherent SDG outcomes

The achievement of SDG in India will depend on the achievement of the targets on the ground at the community level. This calls upon for first level co-corporation and coordination within the country especially between national and state level district – block coordinating between the multiple ministries concerned with the question of Energy and Climate Change.

We envisage a future energy paradigm which is a renewable energy based decentralised paradigm as opposed to that of a centralised grid - a future scenario where the central grid would be reduced to playing a supplementary role to a decentralised and distributed energy system. The decentralised and distributed system with an increased role for small-scale energy producers which may be households, businesses operating through local, context specific climate friendly energy systems.



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