IESS 2047
Cooking energy demand
Renewable energy supply

Ashok Sreenivas

Prayas (Energy Group), Pune

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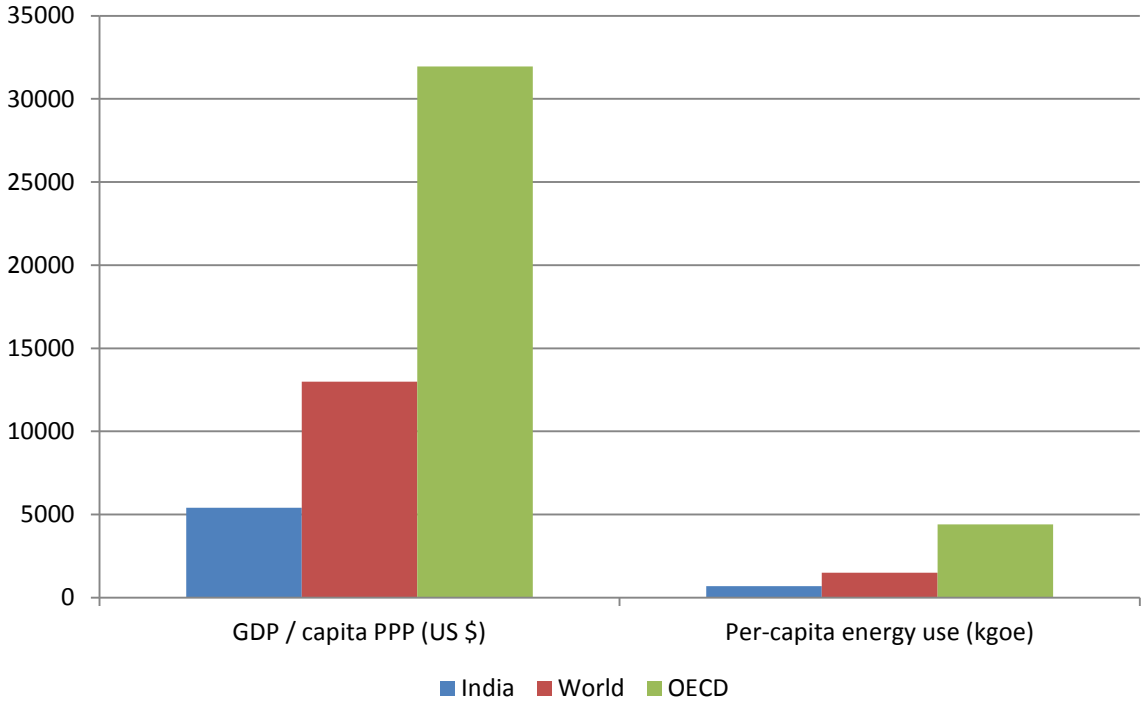
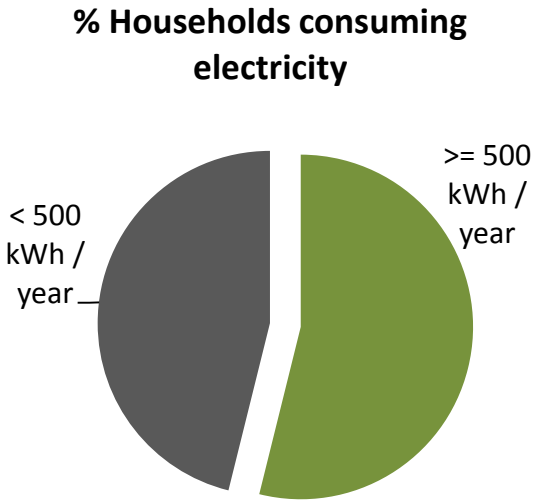
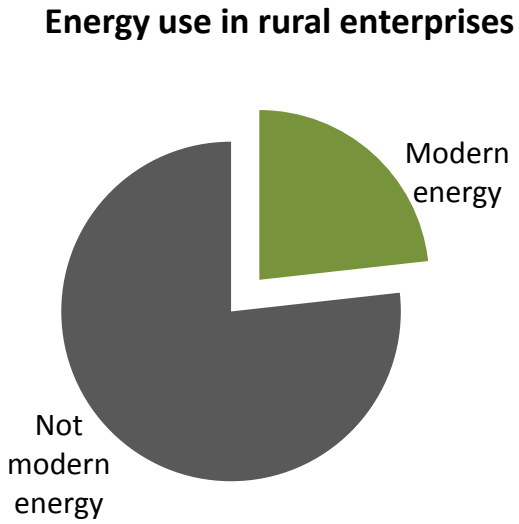
International conference on 2050 calculator

The peculiar case of India







- India's per-capita energy consumption will grow … possibly significantly
- Multiply that by 1.2+ billion and we get an idea of the scale of the problem!

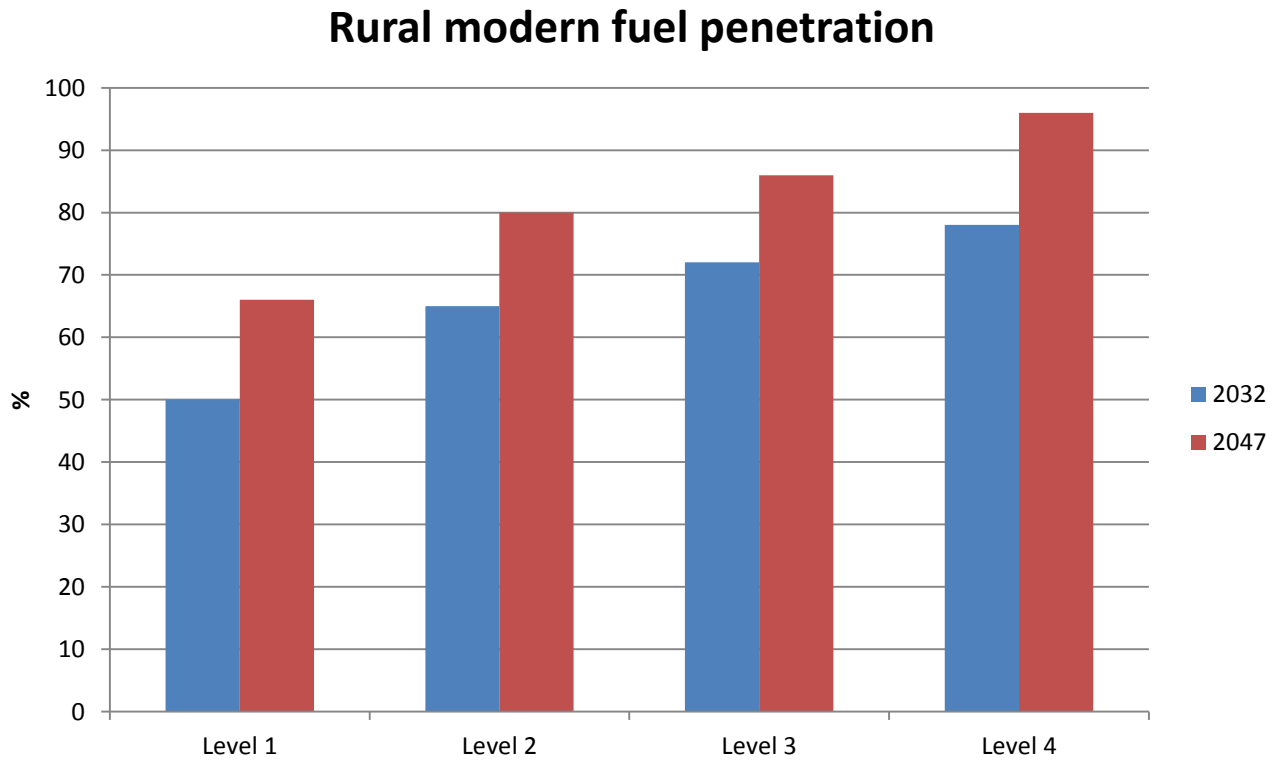
HOUSEHOLD COOKING DEMAND

Background

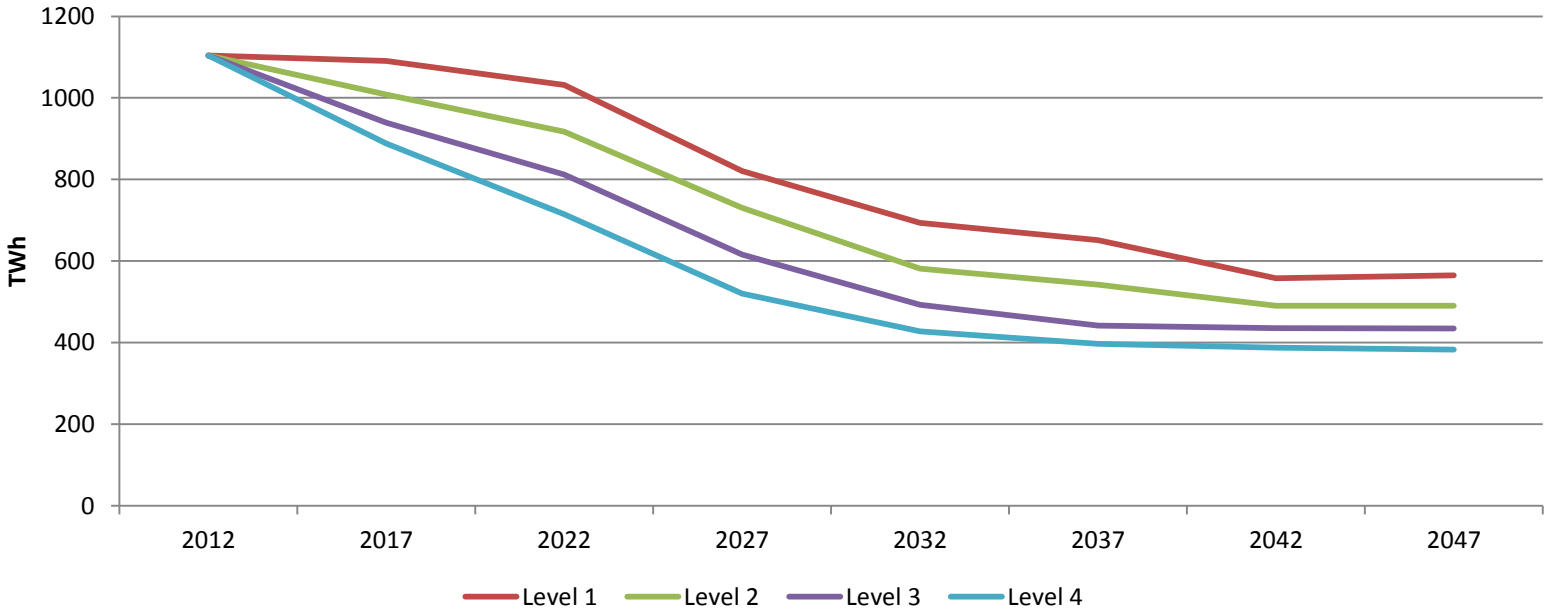
- Important sector for India
  - ~70% households depend on solid fuels (mainly biomass) for cooking
  - Severe health, gender impacts
  - Also a significant portion of energy consumed (~20%) though most of it is 'non-commercial'
- Shift to modern fuels needed
  - Need to assess impact on energy imports, emissions etc.
- Trajectories present different rates of transitioning to modern fuels
  - A mix of LPG, electricity, PNG (urban) and biogas (rural)
  - Improving efficiency assumptions for various stoves
  - In all trajectories, by 2032, even if solid fuels used, they are used in "clean cook-stoves"

Modern fuel penetration trajectories

- Urban penetration of modern fuels reaches 100% by 2047 in all trajectories (from 70% currently)
  - Reaches 100% by 2032 in levels 3 and 4
- Greater role for electricity in rural areas due to distribution infrastructure



Trajectories and Implications



- Only sector with *falling* demand over time across levels
  - Better efficiencies of modern fuels / stoves
- Impact on imports and emissions due to switching to modern fuels is minimal
  - Cooking HC demand only ~4-6% of total HC demand in 2047

RENEWABLE ENERGY SUPPLY

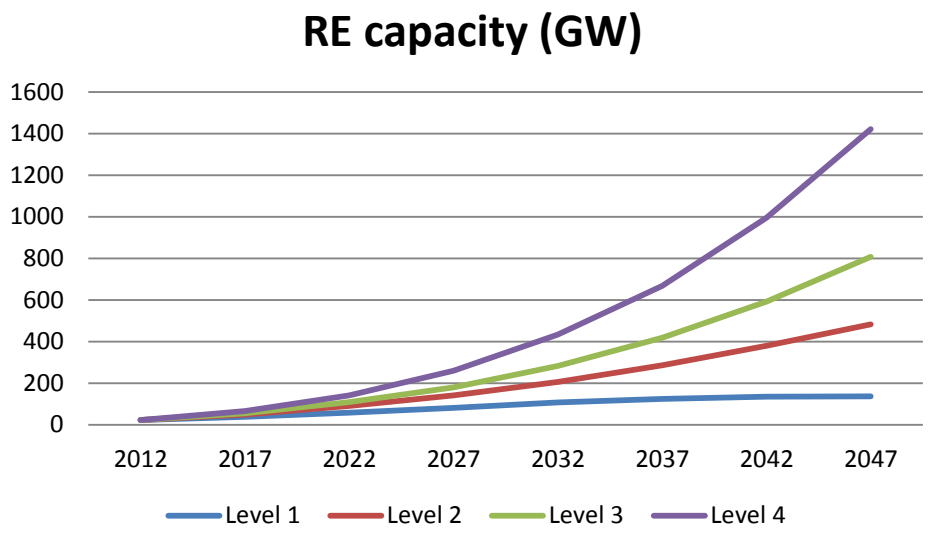
Context

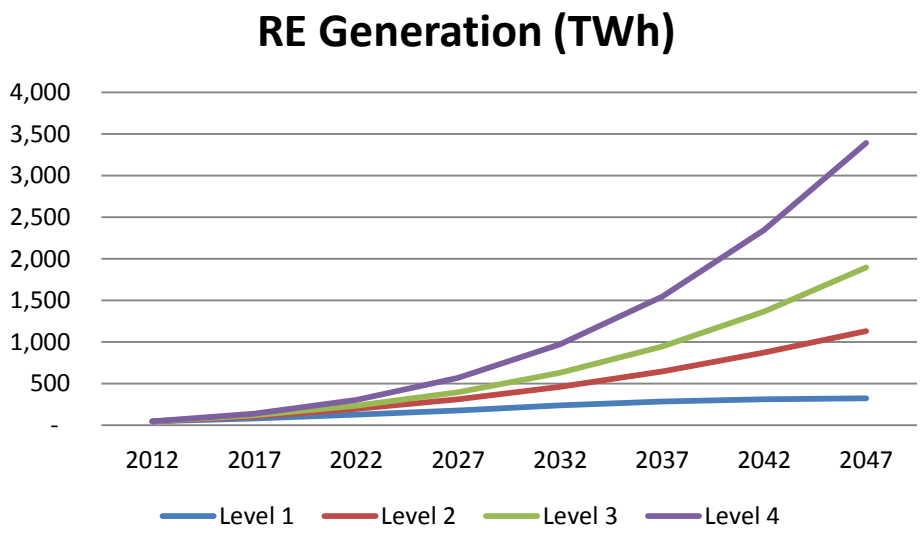
- Sectors
  - Solar (PV, thermal and distributed PV)
  - Wind (Onshore and offshore)
  - Small hydro
  - Solar water heating
- RE critical for India for non-climate reasons also
  - Energy imports / security
  - Local environment
  - Water (solar PV and wind)

Potential and trajectories

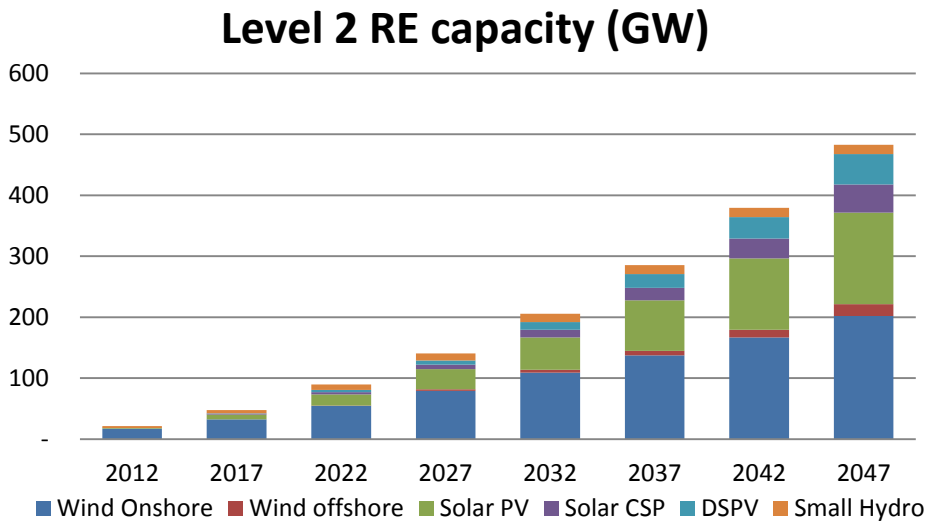
- Huge potential
  - Solar potential limited only by land availability
  - Onshore wind potential estimates 100 - 1000 GW
- Trajectories
  - Trajectories defined with respect to various Government programs such as JNNSM, NAPCC, plan documents etc.
  - Typically ambitious trajectories for level 4
  - CUFs gradually improve over time (faster in higher levels)
  - Constrained by resource potential and constraints such as land availability

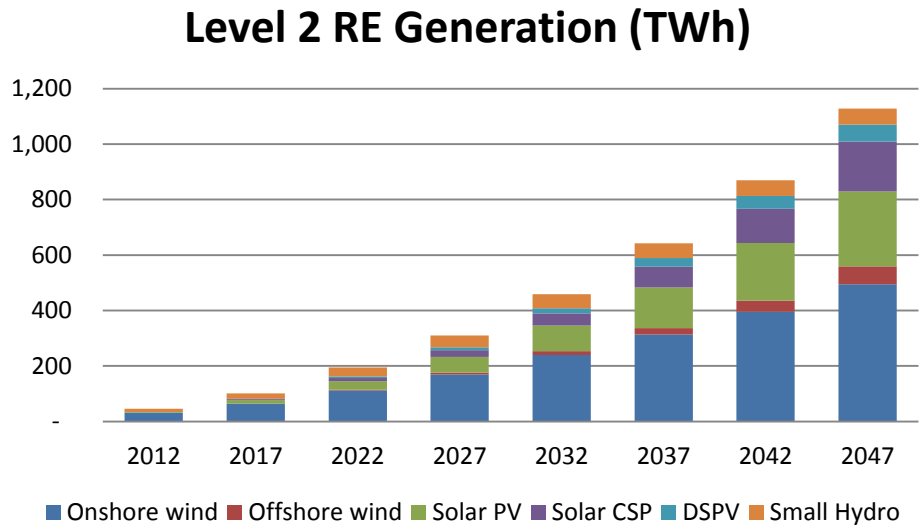
Total RE trajectories



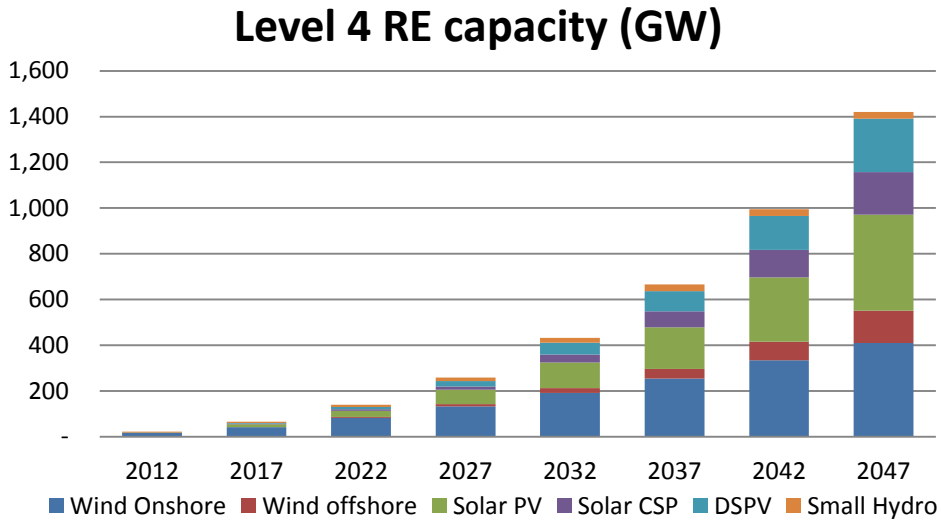


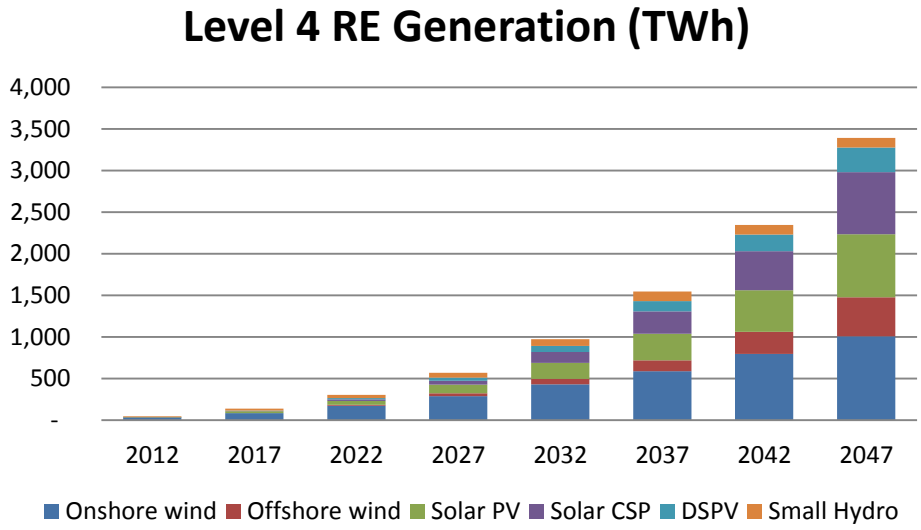
Level 2 technology break-up





Level 4 technology break-up



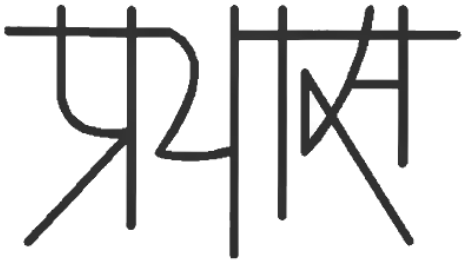


Challenges

- Reliable data
  - Particularly related to projections, costs etc.
  - Intelligent guesstimates necessary
  - Land requirements
  - Stakeholder consultation to the extent possible
- Methodological issues
  - Particularly related to costs
- Communicating the tool's intent / purpose
  - Perception in the 'eye of the beholder'!

THANK YOU

ashok [at] prayaspune [dot] org



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