The RE landscape Vs Post Glasgow

- Reality of commitments
- **Three main and four inter related economy – energy considerations**
- Important geo political & climate considerations
- **Some important RE programmes**
- By 2070, India will be ‘net-zero’. 2050: US, UK, Japan, EU; ....& India expects climate finance of $1 trillion
- Updated classification of policies for transitions Maximize socio – economic gains

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NTPC School of Business.
Friday 18 November 2021
Reality of commitments

- **UNEP 2021 Emissions Gap Report : The Heat is On**
  - Updated NDCs = 7.5% off predicted 2030 emission = 2.7°C
  - Net zero commitments = 0.5°C / 55% needed to meet the 1.5°C Paris goal

- **COP26 Energy Transition Council (ETC)**
  - Globally, nearly 6,900 TWh of electricity generated from RE sources in 2019 –
    - 5.5% more compared to RE generation in 2018.

- **WE NEED 4X more over next ten years to avoid the harmful effects of climate change.**
Three main and four inter related economy - energy considerations

- https://rise.esmap.org/
- https://rise.esmap.org/reports
- https://www.esmap.org/

World economy - 2030 = 40% larger than today & Will use 7% less energy.

1. EE is critical = @ > 3X energy intensity improvements
2. Emissions reductions not limited to CO₂: + 75% fall in CH4 from fossil fuel supply fall
3. Annual additions of
   a) 630 GW of solar photovoltaics (PV) = install world’s current largest solar park roughly every day.
   b) 390 GW of wind = 4X record levels set in 2020.
   c) Hydropower and nuclear, essential foundation for transitions.
   d) Evs = 5% global car sales to more than 60% by 2030.
1. Biden administration asked OPEC to step up oil production.
2. Germany’s Angela Merkel to import more gas from Russia through Nordstrom 2
3. Slowing down of wind speeds in the North Sea coupled &
4. An upward trend in gas prices
   ➢ Sharp increase in electricity prices in Europe.
   ➢ Coal prices affect power generation in China / India
Some important RE programmes

https://ukcop26.org/focus-of-energy-transition-council-etc/


1. Climate Investment Funds: Coal Transition & RE Integration programmes
2. World Bank Energy Sector Management and Assistance Programme (ESMAP)
3. Sustainable Renewables Risk Mitigation Initiative (SRMI)
4. African Development Bank’s Green Base-load Facility
5. South-East Asia Energy Transition Partnership
6. IEA’s Clean Energy Transition Programme.
• **American Clean Power Association**
  • $1 trillion of capital investment for a majority - renewable electric grid by 2030
  • Reduce carbon emissions by over 60 percent
  


At least €1 tn (£852bn) over 10 years

- €503bn, should come from the EU budget,
- €114bn from national governments
- €279bn would come mostly from the private sector & Pledges + Phase out fossil fuels projects.

Brussels promised a €100bn “just transition” mechanism to retrain workers
• UK’s Clean Green Initiative £3 billion - infrastructure and alternative technologies in developing countries
• The Regulatory Energy Transition Accelerator (RETA) of IEA was launched by International Energy Agency (IEA), Ofgem, International Renewable Energy Agency (IRENA) and World Bank.
• 23 countries, including the world’s top 20 coal-fired power generating countries have made pledges to phase out coal power
• Intermittency of RE & Balancing role dynamics - an enduring problem

<table>
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<tr>
<th>2020</th>
<th>UK</th>
<th>Germany</th>
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<tr>
<td>Wind</td>
<td>24%</td>
<td>23.7%</td>
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<tr>
<td>Gas</td>
<td>35.7%</td>
<td>16.1%</td>
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• Slowing down of wind speed triggers rise in electricity prices.
  ➢ Average market price at Pound 107.50 per MWhr, September up from 96 per MWhr
  ➢ Average wholesale electricity prices in Germany = Euro 128.3 per MWh = 55% increase over the previous month.

• Renewables need to be backed by a ‘balancing’ power when sun is not shining and the wind is not blowing.
  ➢ This is provided by gas in Europe.
  ➢ Generating assets providing balancing power have to be kept idle or operated at sub-optimal capacity when renewables are available.
    ➢ China is planning 150 new nuclear reactors online over the next 15 years.
    ➢ In India’s case, nuclear power accounts for less than 2 % of the generation currently.
By 2070, India will be ‘net-zero’.

2050: US, UK, Japan, EU;

2060: Saudi Arabia, China, Russia

04 imperatives & India expects climate finance of $1 trillion

• INDIA’S SHORTER-TERM TARGETS FOR 2030

➢ India will

  1. Reduce carbon intensity of economy by 45% from 2005 levels, go beyond power sector - drive clean industrial processes
     1) Up from previous commitment of 33-35%.
     2) India emitted 2.62 billion tonnes of CO2 in 2019
     3) Projected to reach 4.5 billion tonnes in 2030.
     4) Cut net projected carbon emission by 1 billion tonnes till 2030
  2. Ensure 500GW of RE by 2030
     1) Viable storage technologies required
     2) Supply chains, manufacturing and project development
  3. India relies on coal for 70% of electricity needs
  4. Nuclear power < 2% of the energy capacity.
Other related considerations

➢ Agriculture accounts for 01 / 3.5 billion tonnes of carbon in India
➢ Draft hydrogen policy
   ➢ By 2023 mandate 10% use of green, renewable-based, hydrogen in refineries and petrochemical plants. Up to 25% by 2026.
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<th>Updated classification of policies for transitions</th>
<th>Maximize socio – economic gains</th>
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<td><strong>Towards 2070</strong></td>
<td>Deployment (installation and generation) of RE in general</td>
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<td><strong>Direct policies</strong></td>
<td>Targets, Quotas, Codes</td>
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<td><strong>Push &amp; Pull dynamics</strong></td>
<td>Pricing, Certificates, Voluntary programmes</td>
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<td>Tax incentives, subsidies, grants, Tax incentives, accelerated depreciation, Concessional financing, Support for financial intermediaries</td>
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<tr>
<td><strong>Integrating policies</strong></td>
<td>Enhance system flexibility (R) storage, dispatchable supply, load shaping</td>
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<td>Ensure transmission and distribution networks, electric vehicles charging stations, district heating infrastructure, road access</td>
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<td>Decarbonisation objectives into national energy plans</td>
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<td><strong>Enabling policies</strong></td>
<td>Level the playing field; fossil fuel subsidy reforms, carbon pricing</td>
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<td>Design of energy markets (flexible short-term trading, long term price signal) &amp; Reliability</td>
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<td>National RE policy Labour policies (e.g., labour-market policies, training and retraining programmes)</td>
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<td>Land-use policies R &amp; D Innovation &amp; Public health policies</td>
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<td><strong>Enabling &amp; Integrating</strong></td>
<td>Supportive governance and institutional architecture (e.g., streamlined permitting procedures, dedicated institutions for renewables)</td>
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