Global Challenges in Energy: Comparison between UK and India







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1. Common Issues

• Energy

• Increase in energy demand

- Lack of energy security
- Rising energy prices
- Ageing fossil fuel power plants (>20 years)

Environment

- Stricter environmental regulations.
- o Increasing emissions (ie. causing global warming)
- Environmental damage

1. Common Issues

Development

Energy transmission infrastructure to rural areas
Energy inefficient buildings

Technological Gap

- o Clean fossil energy technology innovations
- o Lack of technology transfer
- o Efficiency improvement opportunities
- Need to improve renewable & nuclear technologies

1. Common Issues

Public Acceptance

- General lack of public awareness
- Resistance to change
- Lack of communication between government, industry, academia, and the public.



2.1 Issues specific to UK

- Energy inefficient homes compared to the rest of Europe
- Energy intensive per capita
- Unrealistic environmental targets due to political pressure
- Over reliance on imported natural gas
- Slow implementation of renewable energy





2.2 Solutions for UK

- Implementation of Smart Grid system.
- Replacing old nuclear power plants with new ones.
- A common national recycling scheme.
- Bike hire scheme in cities
- Investment in different types of low carbon power to diversify energy sources.
- Diversify gas supply into the country.
- Increasing public awareness about the energy issue.
- Improving the power transmission connection between UK and France (and to the rest of Europe)

2.3 Policies for UK

- Scheme where large energy users are paid to use lesser amount of electricity.
- Investing in anaerobic digestors.
- Encouraging CHP integration to provide heating.
- Immediate funding for CCS projects (also including the steel industries)
- Regional targets for low carbon technologies.
- Public awareness programmes. (i.e. TV adverts)

2.4 Regional Proposal for UK

Scotland

- Large mountainous regions and large potential for tidal power.
- About to lose 30% of its electricity generating capacity within 10 years.
- Current government is very anti-nuclear



3.1 Issues Specific to India

- Large population whilst retaining high economic growth
- Only 57% of households having access to electricity
- Heavy reliance of coal ~ 60%, possible shortfall of 250MT by 2020
- Low transmission efficiencies
- Fifth largest CO2 emitter in the world (1300 MT per year)
- Effluent treatment and disposal
- Inefficient use of fossil fuel in rural areas for domestic use.
- Communication gap between academic research and industry
- Lack of incentives to industries from the government
- Almost zero utilisation of crop waste as biomass feedstock
- Increasing use of motor vehicles

3.2 Solutions for India

- Retrofitting of older steam turbines.
- Utilizing biomass waste more effectively
- Explore "micro-generation" options
- Effective coal-blending (selecting the right set of coal is key)
- Effluent recycling to reduce discharge.
- Diversify the different sources of energy.
- Further study on CO₂ storage
- Increasing exploration for natural gas and oil
- New geothermal, wind sites can be used
- Efficient green houses
- Reduce waste at coal handling and coal crushing zones.

3.3 Policies for India

- Introducing carbon credits.
- Subsidies for small-scale power generation (i.e. at village level).
- Stricter monitoring to ensure that industries comply to regulations.
- Building de-centralised biomass power generation plants.
- Energy awareness program in the education system
- Encourage collaboration between industry and academia through funding joint projects.
- Compulsory waste heat utilization systems.
- Ethanol blending for petrol vehicles.

3.4 Regional Proposal for India

Region: Chhattisgarh and Vidarbha.

- Blessed with coal
- Mostly coal based thermal power stations
- Industries are getting turbines from dismantled ships for their captive power production.
- Sponge iron plants are using lots of coal.
- Development of intra-city and intercity transport network.

Conclusions

- Both countries face rising energy demand with tight emission control
- Concerns over energy security
- Closer collaboration between academia and industry with government support
- Increase public awareness and involvement
- International collaboration between India and UK to improve knowledge transfer
- Diversifying the grid by investing in a variety of low carbon technologies

Thank you for listening!

