

New energy policy for the UK and India

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Introduction

- India Energy Policy
- Scotland Energy Policy
- Biomass Case Study India
- Comparison of Problems and Solutions
- Conclusion

ENERGY OPTIONS

- Improve existing fossil-based technologies
- Renewable energy
- Energy from the waste
- Simple lifestyle
- Energy efficient buildings
- Encourage indigenous innovations.

Improvement of existing fossil fuel technologies

- ✓ Combined cycle power plants with cogeneration
- ✓ Localised generation
- ✓ Clean coal combustion technologies
- ✓ Retrofitting of power plants
- ✓ Development of coal liquefaction process
- ✓ Improvement in coal blending technology



Pedal driven Washing machine



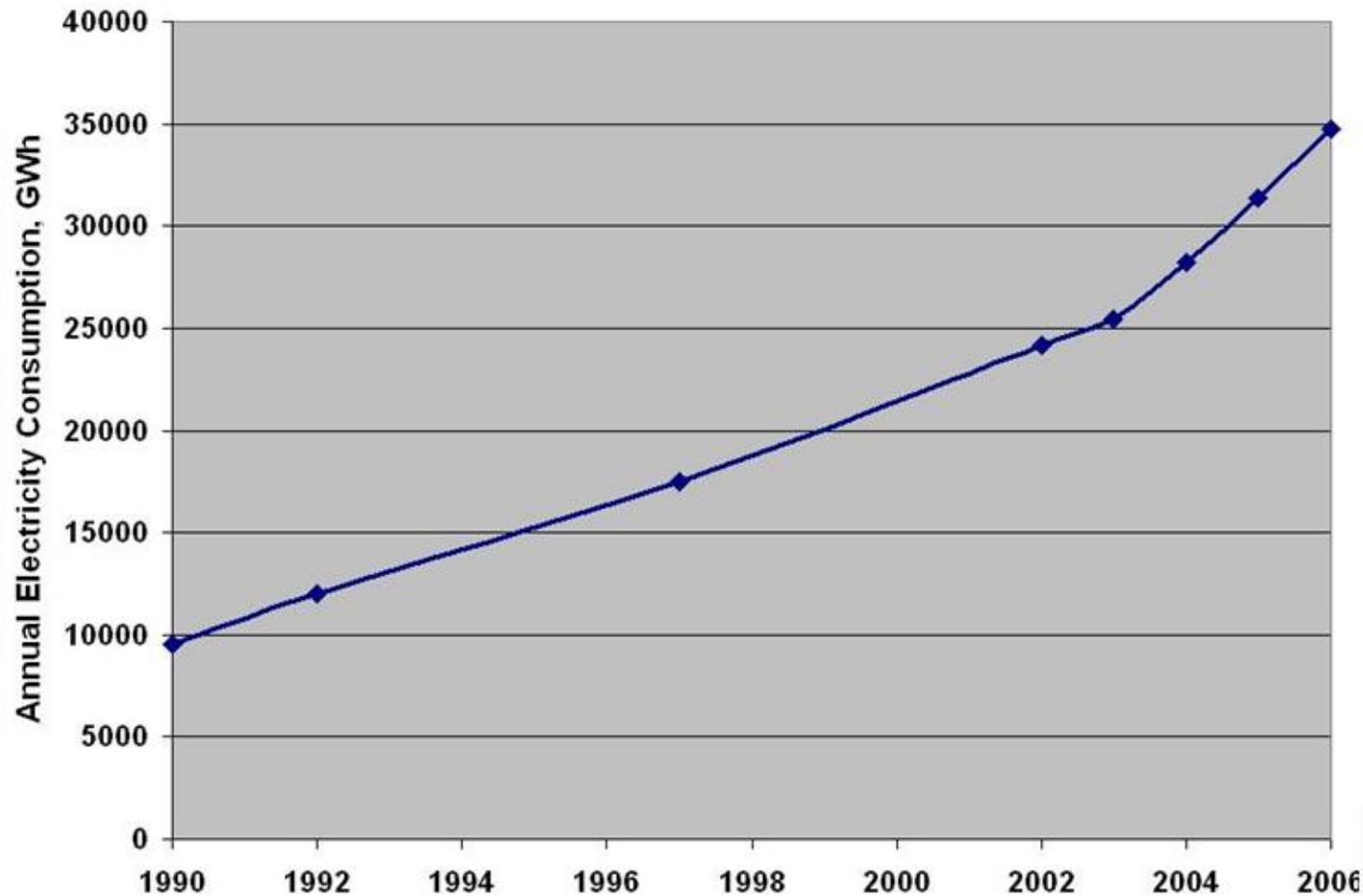
Testing of paddle operated pump



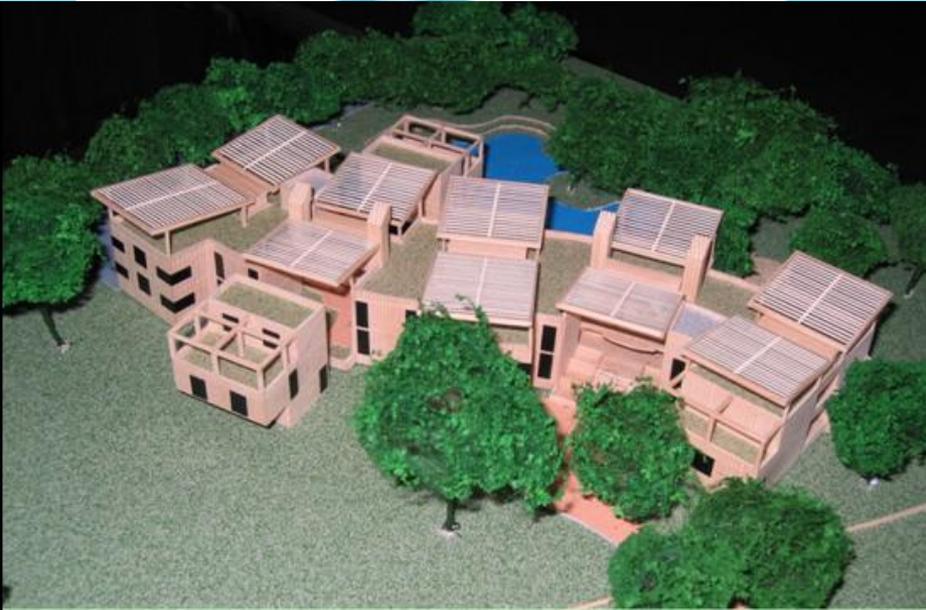
Sono 3-Kolshi Filter

Electricity Use in Commercial Sector

Average Energy consumption
HVAC 55 %
Lighting 14 %
Electronics 27%
Others 4%



Solar/Green buildings



Environment & Earth Science Building , IIT Kanpur



TCI Building, Haryana



Hitkarini college, Jabalpur

- Saves 64% energy
- Saves 82% water
- Produces zero waste
- Initial cost increases by 12%
- 10% saving in total cost



A Solar Housing Complex at Kolkata

Energy Policy objectives

- Wherever possible, energy markets should be competitive.
- Pricing and resource allocations that are determined by market forces under an effective and credible regulatory oversight.
- Transparent and targeted subsidies.
- Improved efficiencies across the energy chain.
- Policies that rely on incentives/disincentives to regulate market and consumer behavior.
- Policies that are implementable.
- Management reforms that create accountability and incentives for efficiency.

Scotland



- 1999 – Devolved Government
- Responsible for all matter not explicitly reserved to UK Parliament
- Including rural affairs, economic development and transport
- Annual Budget of over £30bn

- Population of 5 million
- Estimated 5000 live off grid



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Scotland

- 2011 – Scottish National Party (SNP) win overwhelming majority
- 2003 – 40% of electricity from renewable sources by 2020
- 2011 – 100% of electricity from renewable sources by 2020
- No to nuclear

But...

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70% generated for domestic demand

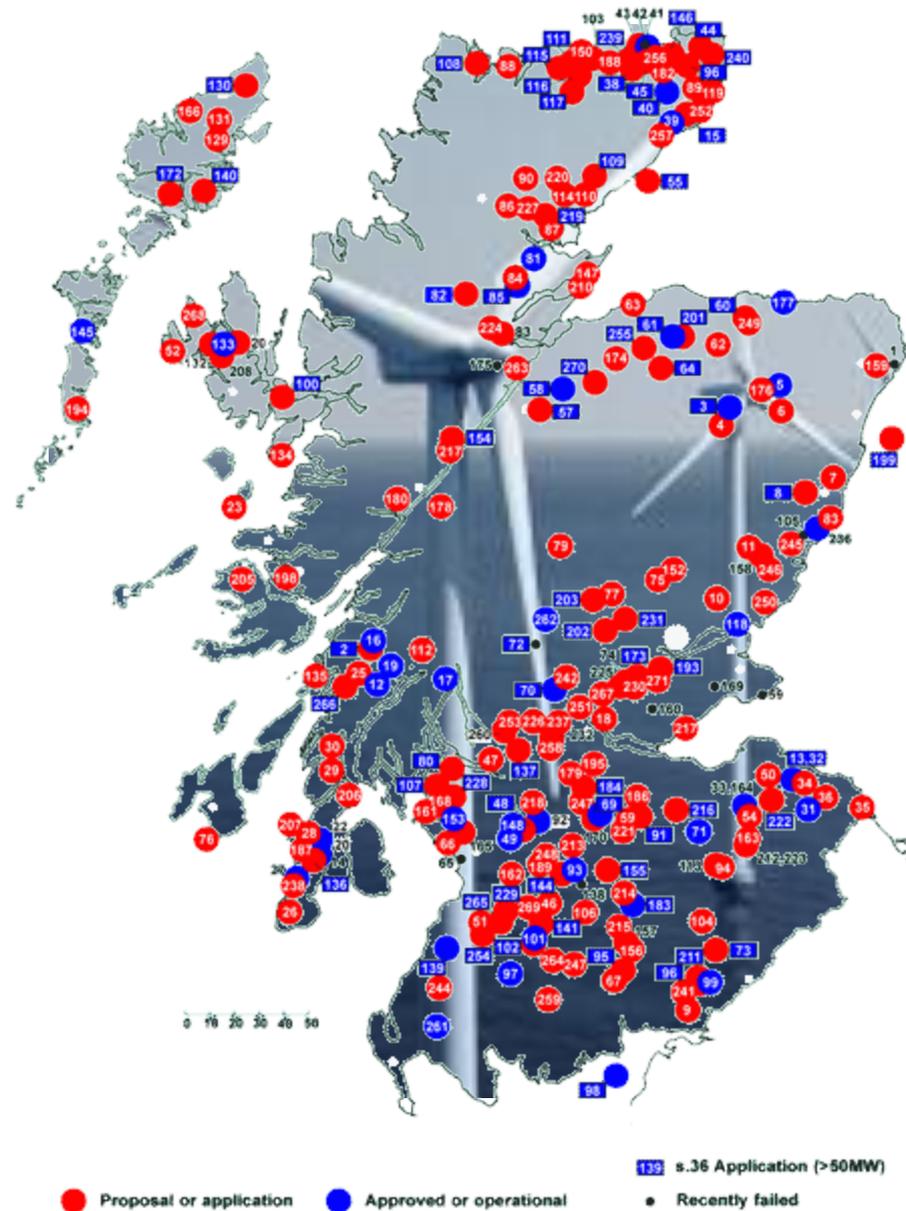
18% exported

12% transmission losses

So although 100% renewable electricity Scotland will still rely on fossil energy and in the future CCS and will generate an excess to be exported.

Energy Policy

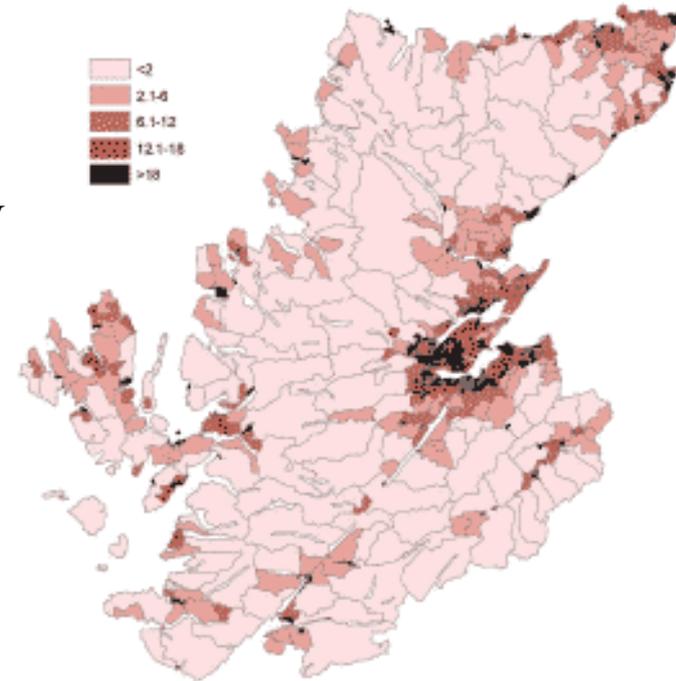
- 100% renewable electricity
- 30% renewable energy
- £70m renewable infrastructure fund
- Potential of Forestry Commission and Scottish Water
- Offshore wind and marine
- Small Scale Hydro



Energy Policy

Distributed Renewables and Community Based Schemes

- Aim to promote and maximise benefits to community
- Developing Good Practice
- Low Carbon Energy Review - Annual
- First UK Smart Grid – Scottish and Southern Energy (SSE) Orkney
- Estimated 5000 people live off grid
- Large rural areas of rural population



Energy Policy

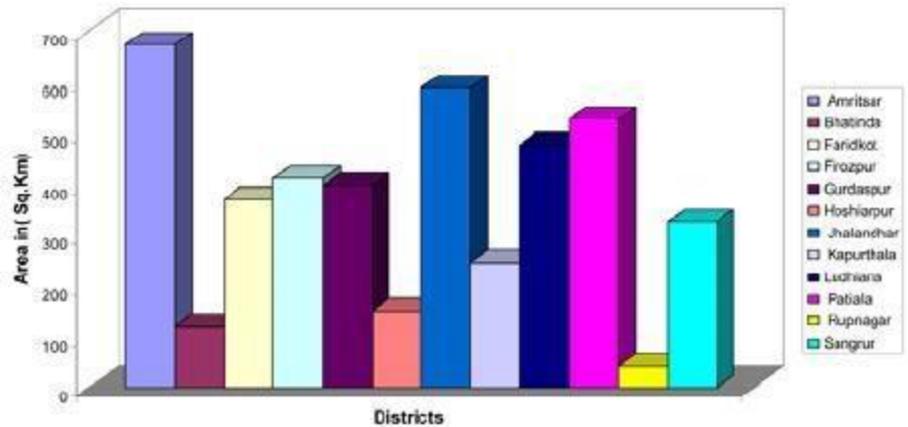
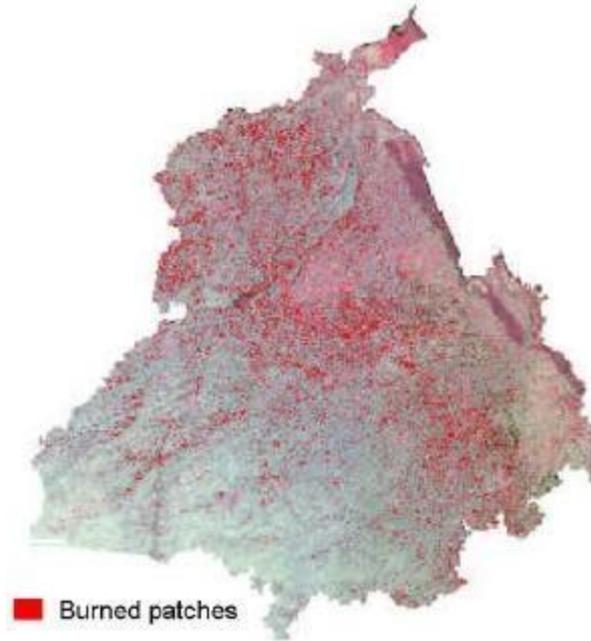
Support for CCS

First UK demonstration Longannet
Pipeline likely to incorporate future gas
demonstration plant at Peterhead
Huge storage potential in North Sea

- International - North Sea Supergrid
- Aim to site UK Green Investment Bank in Edinburgh
- Fuel Poverty – Energy Assistance Package, insulation, boiler replacement schemes



Burning Punjab



District-wise burned areas over the region using AWiFS data of 15 May 2005.

Biomass Potential

Approximately 2.6 million hectares of paddy in this single state yield roughly 100 million tones of rice straw per year, of which three-fourth is burned.

Some 70 to 80 million tones of residues are therefore available as fuel for modern biomass power plants. This is roughly the equivalent of 35 to 40 million tones of coal. And all this is from a single crop, in a single state in India, in a single year.



Environmental impact

- Setting fire to millions of tones of crop residues releases vast amounts of greenhouse and trace gases (CH₄, CO, N₂O, NO_x), which heavily contribute to global warming and result in perturbations to regional atmospheric chemistry.
- The resulting air pollution is an important health hazard for Punjab's population.
- Weather patterns can change because of the aerosols that enter the atmosphere as a result of the burning.
- Damage important ingredients, including useful insects and worms, and also harms fertility of soil.

Reasons why most farmers burn off the straw

The lack of a market for the resource.

Currently, rice straw has no commercial value.

Its disposal rather constitutes an extra cost.

Ploughing it into soils is time and energy consuming, and the residues take a long time to decompose.

Burning the straw on the field is the most economic and easiest way to get rid of it.

Have to grow green fodder to save their animals from hunger



Possible Solutions

- Enforcement of more stringent measures by the administration to check the burning of paddy fields.
- To support and enlarge activities such as awareness creation, publicity measures, seminars/workshops/ business meets/ training programme etc.
- By focusing on better straw management, so that the farmers can cut down their input costs, save water, fuel, use organic matter, make additional money while nurturing the environment at the same time
- To deploy biomass gasifier systems for meeting unmet demand of electricity in villages.
- To take up demonstration projects for 100% producer gas engine, coupled with gasifier for off grid and grid power operation.

Energy Policy Problems

Scotlands

- Public Engagement – 100% renewables
- Renewable Generation – NIMBY-ISM
- Capacity Limit – are we pushing it too tight
- Finance – Who supplies the funding for R&D, implementation

India

- Corruption
- Knowledge Transfer – from foreign companies/from universities
- Grid Standardisation
- Finance – liberalisation/encouraging private investment
- Biomass – rice combustion
- Captive Power/Decentralisation – companies produce own power but is it a distraction

Energy Policy Solutions

Scotlands

- Public Engagement/Decentralisation

100% renewable = political gain

Goal but where's the plan?

Encourages Stability

Expert vs. Political phases

SCDI – Low Carbon Annual Review

India's 5 year plans – but suffer from implementation problems

India

- Captive Power/Decentralisation

Encouraged to do it

Need to keep up end of bargain

Distraction from core business

Scotland successfully encouraging similar initiative but with communities.

Conclusion

- India - Increasing capacity
- Scotland – aspiring to lead renewable energy
- Both have policy deficiencies
- India – implementation
- Scotland – setting achievable goals
- Availability of information and knowledge transfer can help to address this