Renewable Energy Policies of Germany and China

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Analytical Framework for Renewable Energy

1. Institutional Change
   - Alterations in science, technology and educational policies.
     - Investment in knowledge formation
     - Firms compete to gain influence over institutional framework.

2. Generate Markets
   - Formation of standards
   - Exploring niche markets
   - Protected space for the new technology to serve as nursing market.
   - Nursing market generate space for a new industry to evolve in.
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3. Formation of constituencies
   - Advocacy coalitions
     - Range of actors, sharing a set of beliefs, compete in influencing policies.
   - Technology specific coalitions
   - Formation of political networks

4. Entry of new firms
   - Bring knowledge, capital and other resources
   - Raise the returns for subsequent entrants
   - Strengthen the political power technology specific coalition
   - Provide an enlarged opportunity to influence the institutional set up
   - Resolve underlying technical and market uncertainties
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- Take off period
  - Investments have generated a large enough and complete enough system for it to change gear and begin to develop in self sustaining way.
  - Larger markets are formed
    - Underlying wave of technological and market opportunities
Germany: Leading the way in RE technologies

- Early 1970s energy crises
  - Focus on hard Coal and Nuclear Technology
- Mid 1970s
  - Opposition to nuclear Power
- 1980s
  - Efficiency and renewables as first priority
  - R&D for renewable energy raised (DM 300 m in 1982)
Germany: Leading the way in RE technologies

1980s

- Political-Economic Electricity supply structure hostile to RE
- Institutional Changes to support RE
  - Formation of government funded R&D programmes for RE
    - Universities, Firms and Research Institutes.
Chernobyl Accident 1986

- Rise of Green
- 100 MW wind programme for demonstration and market formation
  - Guaranteed payment for electricity produced
Feed In Law 1990

- Required utilities to connect generators of electricity from renewable energy technology to the grid and to buy electricity (from wind and solar cells) at a rate amounted to 90% of the average tariff for end customers.
  - Took account of external costs of conventional power generation.
Effect of Feed-In Law

- Unimaginable market expansion
  - 20 MW in 1989-490 MW in 1995
- Emergence of learning networks
  - Wind turbine suppliers-local component suppliers
  - Benefits spilled over to new entrants
- Growth in the “political” strength of the industry
Opposition to Feed In Law

- Guaranteed rates declined
- Market Stagnation
Renewable Energy Source Act 2000

- To support Strong Wind turbine industry
- Rates were guaranteed to investors for 20 years
- Utilities were not excluded from the benefits of law
China

- Promotion Law for Renewable Energy Development and Utilization
  - Encourage the development of RE technologies and provide market opportunities for RE companies so that local governments, energy enterprises and the public can themselves promote and utilize RE.
China

- RE Policy: Financial Incentives
  - Subsidies
    - Overheads
    - Research and development
      - Commercialization of new technologies
      - Demonstration Projects
    - Low interest rate loans
      - Industrial development of renewable energy
        - Hydro power development
    - Western Province Project Subsidy
      - Township Electrification Program
China

- **RE Policy: Financial Incentives**
  - **Tax Incentives**
    - Only for biogas and wind (by central government)
      - Not much support for promotion of RE energy
  - **Custom Duties**
    - No special incentive for RE products (officially)
    - Enjoy favorable custom duty rates (Practically)
      - Wind turbines, Photovoltaic Modules
  - **Pricing**
    - No standard price-setting mechanisms or system exist for renewable energy products
    - Price is set on a case to case basis
      - Grid firms to purchase wind energy even if the price is above the grid average.
Conclusion

- Pakistan is at the first phase stage of RE development.
- Substantial funding for R&D in RE is not allocated.
- Government itself is not actively involved.
- Private entrepreneurs are reluctant to take risk due to high political and economic uncertainty. (Unlike India)
Recommendations

- Strong role of government is required to create market for RE by investing in demonstration projects
- Awareness in media, political parties, intelligentsia and industrialists about potential of RE technology
  - Development of coalition
- New entrants encouraged by long term Feed in Law like Germany’s
- Sindh be taken as a model for developing Wind Energy.