

Economics of investing in wind energy



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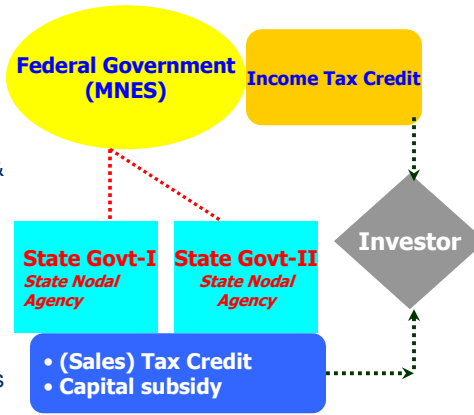


Economic cardinals of wind energy

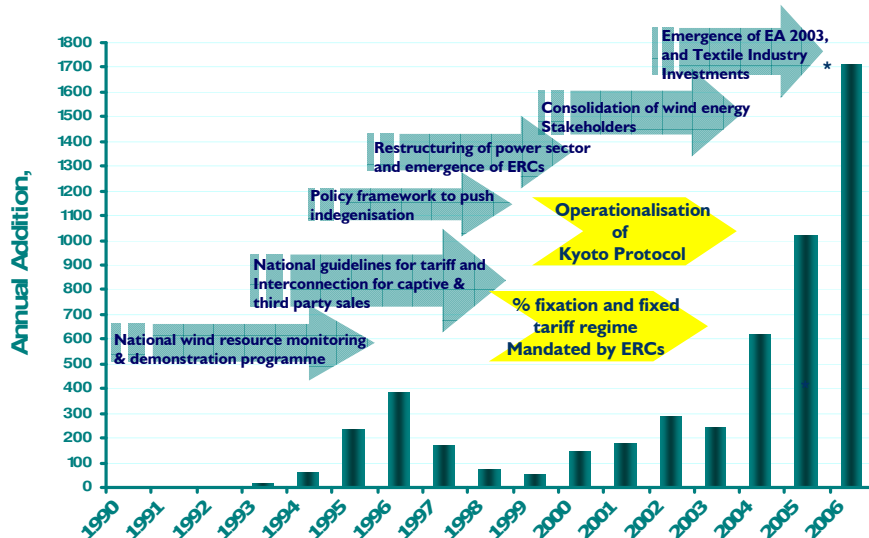
- Fixed parameters
 - Resource availability (WPD)
 - Technology (size & type of technology)
 - Fiscal framework (taxation)
- Variable parameters
 - Plant availability
 - Grid availability
 - Bankability/Health of Distribution Licensee
 - “Open access’ related charges

First Hump – 1994 to 1996 !!

- Formulation of executive agency at state level
 - State Nodal Agencies
- Federal Government
 - Tax Credits on investment
 - Guidelines on operational & procedural matters
- State Government (combination of below)
 - Sales tax benefit
 - Capital subsidy
 - Attractive buy-back rates, wheeling & banking policies
 - Allowance of third party sales



Wind Energy Development in India



Economics of wind energy in initial years (early '90s)

No	Item	Particulars
1	Cost of wind mill	Rs 100
2	Corporate tax (including surcharge)	57.5%
3	Allowable depreciation	100%
4	Benefit due to tax shelter (1*2*3)	Rs 48.3 ^[1]
5	Sales tax benefit (50% of capital cost)	Rs 42 ^[2]
6	Effective return on day-one on an investment of Rs 100	Rs 90.30
7	Investment to recovered	Rs 09.70

^[1] Discounted at the then prevailing cost of capital at 16%

^[2] Discounted at the then prevailing cost of capital at 16%

Subtle change : Mid-90's

- Slow down of Indian economy
- Income tax rate lowered
- Introduction of MAT
- Withdrawal/change of nature of sales tax benefits in different states
- State utilities started questioning the sanctity of MNES guidelines

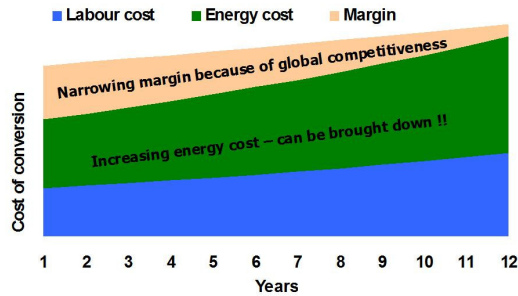
Economics of wind energy in initial years (mid '90s)

No	Item	Particulars
1	Cost of wind mill	Rs 100
2	Corporate tax (including surcharge)	40%
3	Allowable depreciation	100%
4	Benefit due to tax shelter (1*2*3) excluding MAT	Rs 33.6 ^[1]
5	MAT rate (33% of Corporate Tax rate)	13%
6	MAT to be paid	10.92 ^[2]
7	Effective Tax shelter (including MAT)	Rs 22.68
8	Investment to recovered	Rs 77.32

^[1] Discounted at the then prevailing cost of capital at 16%
^[2] Discounted at the then prevailing cost of capital at 16%

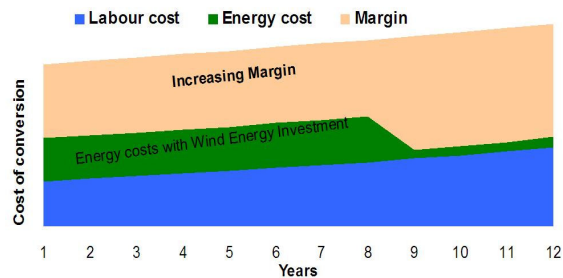


Tax driven to energy driven models : Captive



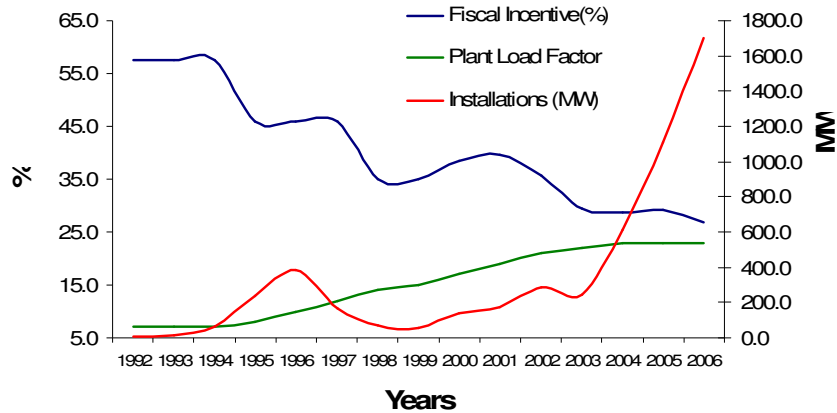
Managing energy costs is key to global competitiveness of energy-intensive industries

Energy Costs are "frozen" with wind energy investment



Impact of fiscal benefits

- There is a gradual move from “tax driven” market to “energy driven” market in India



Analysis of market models in the changing regulatory scenario

- **Pre-EA 2003**
 - Industries been overcharged by SEBs
 - Wheeling & Banking at nominal rates pushed ‘captive market model’, and ‘third party sales model’ in wind energy
 - Viz. TN, Gujarat
- **Post- EA 2003**
 - Section 86(i)e favors “sell to DISCOM” model
 - Various SERC have fixed percentage & ‘procurement tariff’
 - Liberalization of ‘captive’, ‘open access’, ‘transparency’, and rationalisation of ‘tariff’, will reduce the rates of Industrial segment, coupled with complexity of the system

What may happen ?

- Regulatory framework
 - Favours IPP projects
 - Large scale projects to have the right economies of scale
- Market framework
 - “IPP” seems more risky
 - Most DISCOMs financial health is a major issue

Move towards “project financing” is a must

- “Project financing”, will be possible only with
 - Right change in the fiscal framework
 - TCC
 - Right change in the regulatory framework
 - REC trading
 - Creation of new regulatory frameworks
 - Pan India RPS portfolio
- New revenue stream : carbon credits

Wind and CDM

- SG has a portfolio of more than 68 projects
 - Wind, biomass, small hydro etc.
 - 4 projects already registered
 - First wind project in Maharashtra (MEDA) was registered by SG
- Becoming very tough to prove 'additionality' in India
- Current market trends puts the rate of carbon credits :
US\$ 7 to US\$ 14 (in futures)
 - 22 paise per kWh to 40 paise/kWh (net basis)
 - Increases the DSCR by about 10-20%

Finally...

- There seems to be political will for pushing TCC (viz. Integrated Energy Policy)
- Activities for implementing RPS targets have started
 - 11 SERCs have finalised regulations/orders
- Carbon credits have started becoming a reality

Thank you
