



**AUROMIRA
ENERGY**

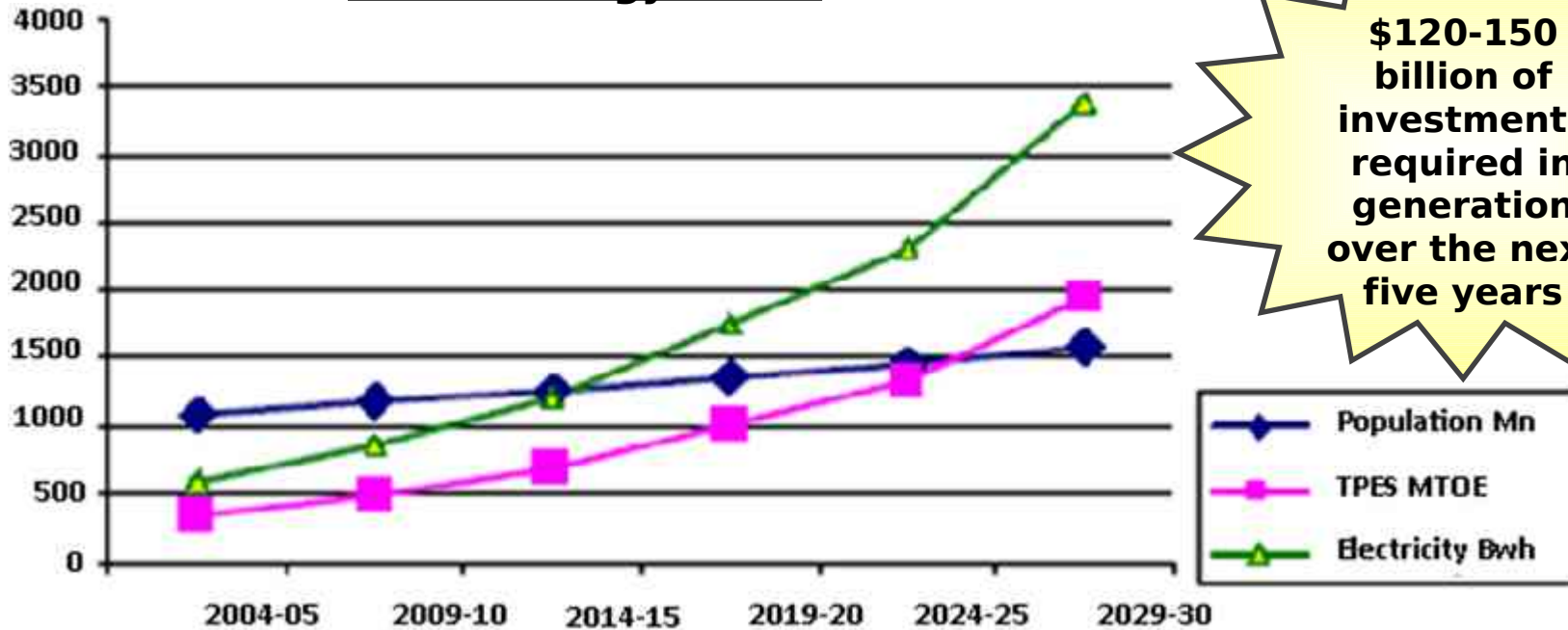
[Introduction to Auro Mira Biomass Energy](#)

**N. Srinivasan
Founder & CEO**

**CLEANTECH FORUM
10th July 2008**

India will need to add 500 MW of power capacity every week for the next 20 years

India - Energy Needs



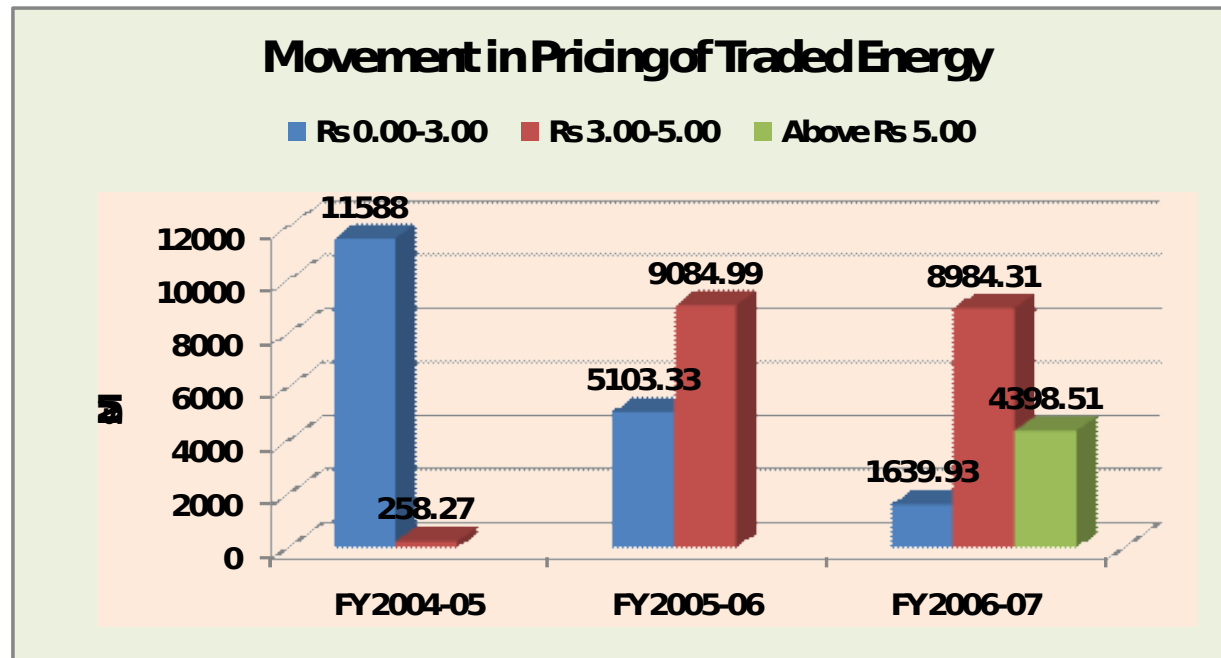
\$120-150 billion of investments required in generation over the next five years

- 1. Overall growth likely to increase energy demand by more than 6-7 times in the next 2 decades**
- 2. To alleviate current peak power deficit of ~18%, India needs to substantially increase power generation capacity**

Note: TPES = Total Primary Energy Supply, BWh = Billion Watt Hours

Source: World Energy Investment Outlook, 2004, KPMG Report

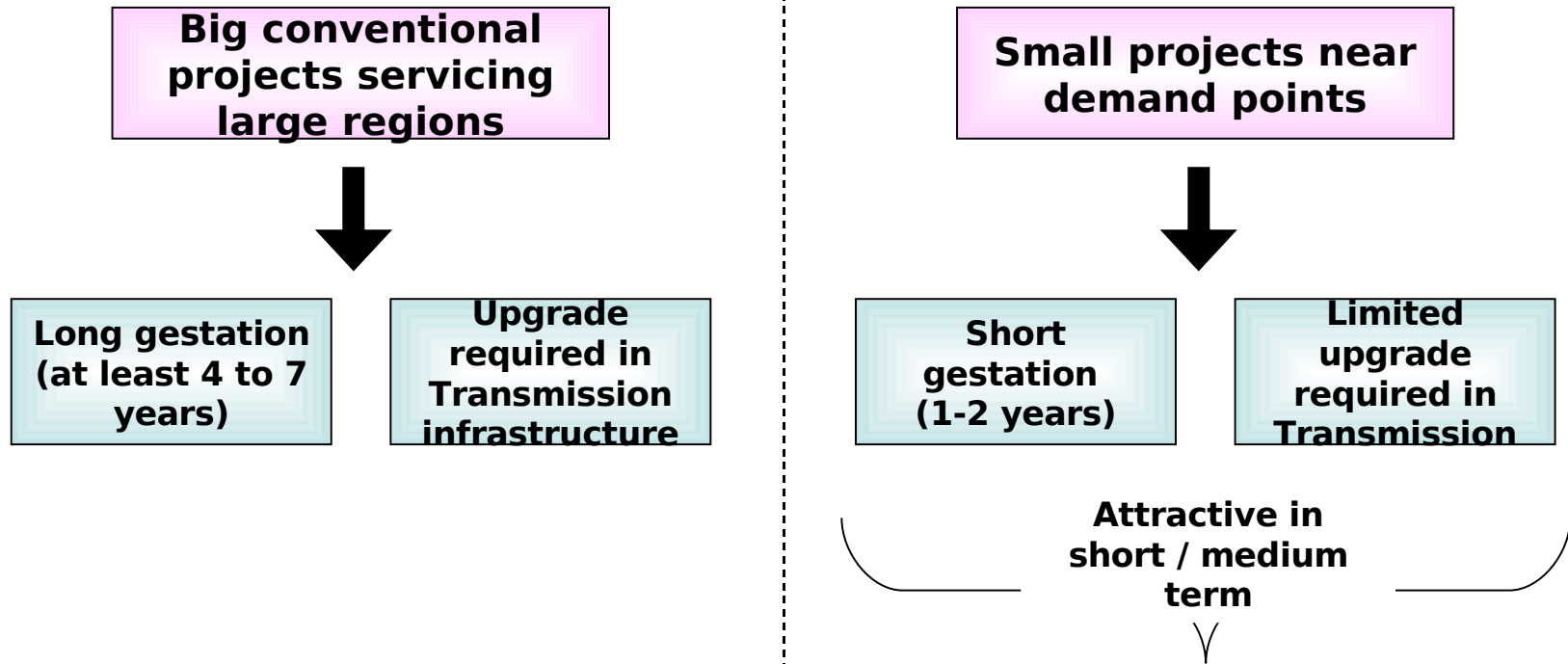
The peak power deficit of ~18% has resulted in increased power prices in the last 3 years ...



The price of traded power is continuously increasing – resulting in loss of competitive advantage in many manufacturing sectors.

Conventional projects with long gestation periods of 4-7 years unlikely to alleviate power situation in the medium term

India needs energy ideas in the short run to tide over medium term power supply constraints



- **Small, distributed and short gestation projects are the need of the hour in the energy sector for the next 5-10 years**
- **Low gestation periods with quick return aid renewable energy projects**
- **Further fillip from MNRE* mandate that 10% of all generation should be from renewable energy projects**

* Ministry of New and Renewable Energy

Biomass is the largest, most diverse, cost effective and readily exploitable renewable energy resource

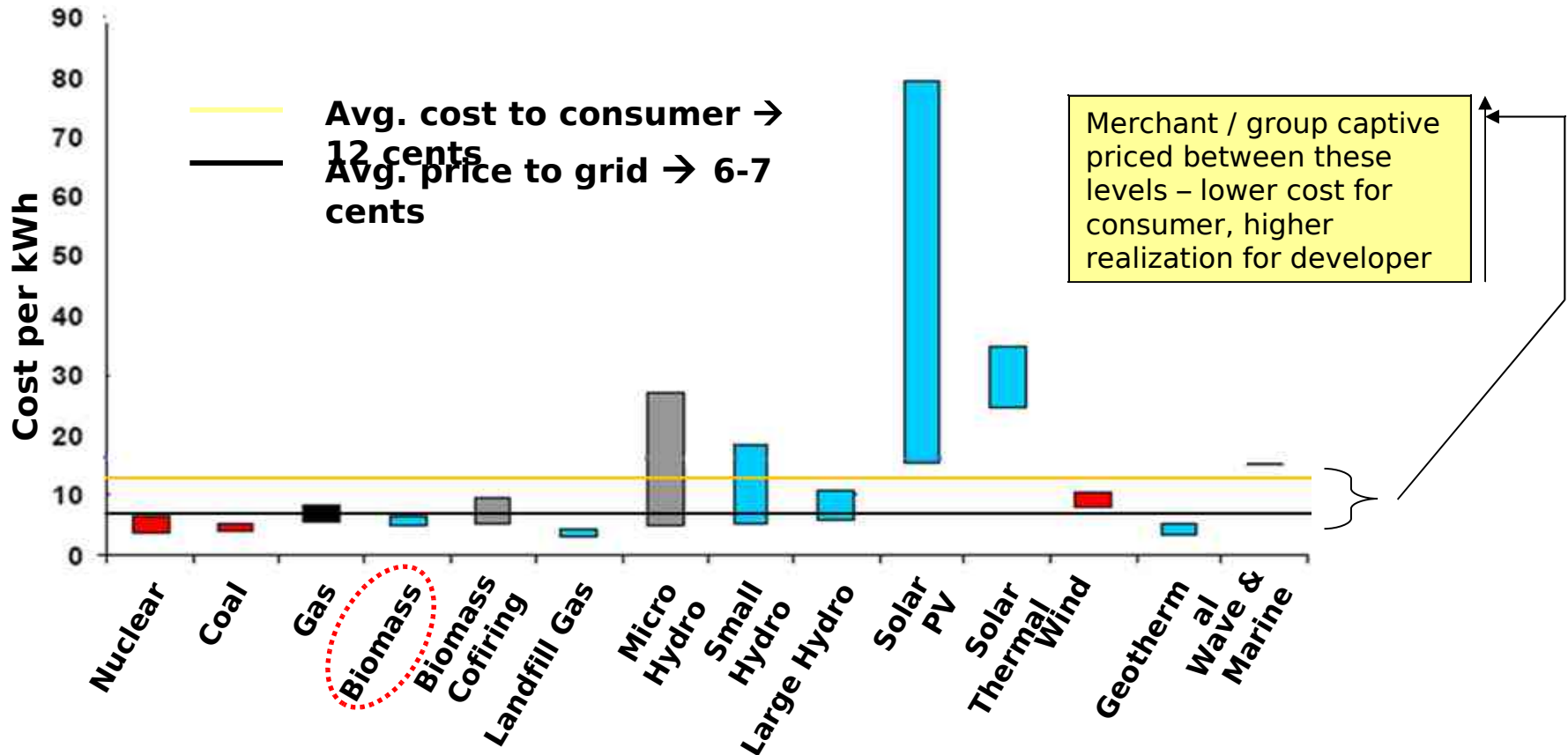
Biomass Power Generation - Characteristics

- India has tremendous potential for energy generation through biomass and its residues (estimated **potential of 19,000+ MW**)
- Uses crop residue and DOES NOT exploit land otherwise used for food
- Low **gestation period of 12 to 20 months**, high **PLF of 85%+**, sites all over India. Size varies from 6 MW to 20 MW
- Capex costs of \$ 1.25 Mn/MW. Cost competitive with conventional energy generation
- **Decentralized power generation** and ability to function close to demand sources. Therefore, reduction in power transmission loss and limited transmission infrastructure up gradation required
- Carbon neutral, accredited for **carbon credits** & a viable solution for rural electrification
- Provides **rural employment**, decreases foreign exchange out go, reduces environmental degradation

Biomass renewable energy projects have the ability to function close to demand sources and can be put up in 12 to 24 months in small lot sizes

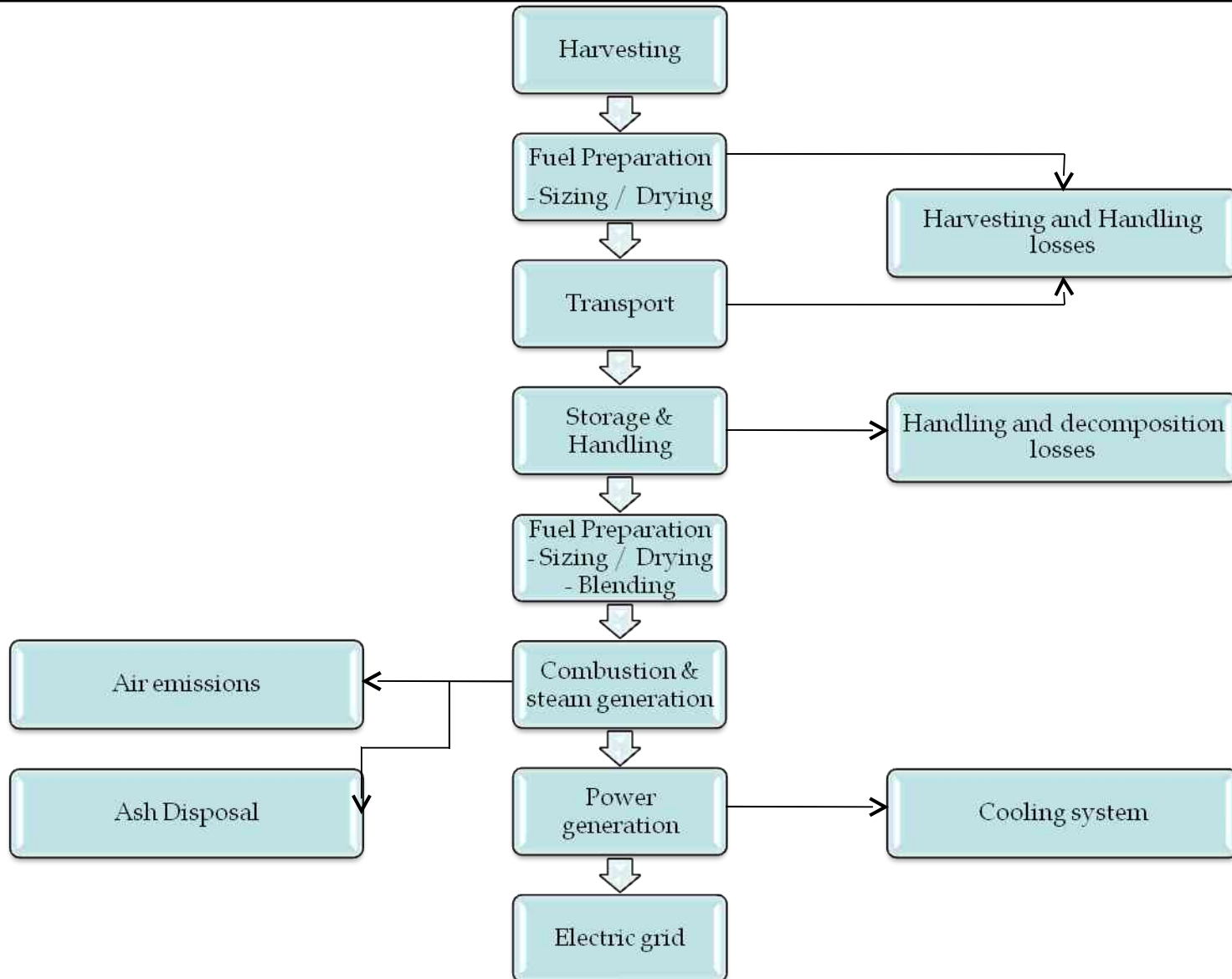
Moreover, biomass renewable energy in the merchant / group-captive mode has excellent economics

Relative Costs of Energy Generation Technologies

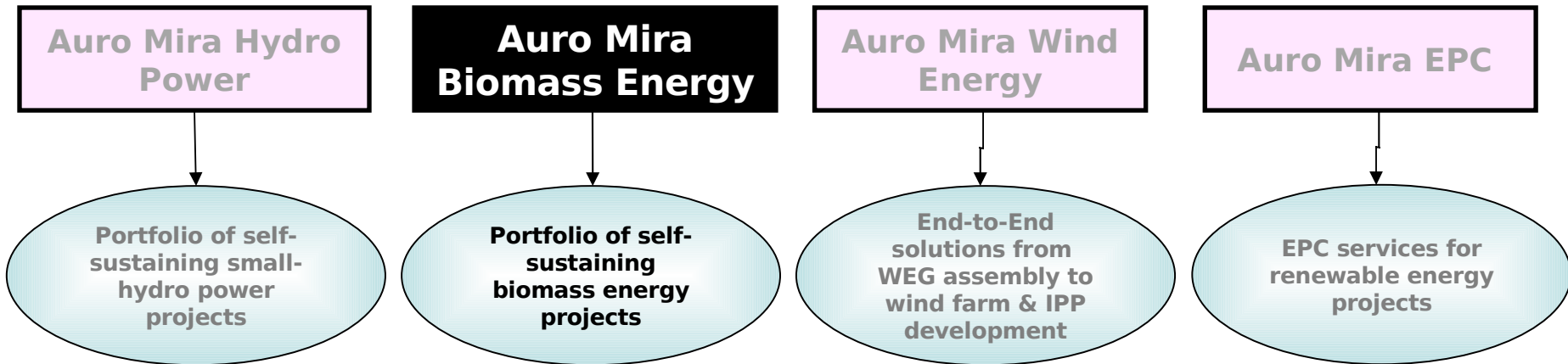


Aggregating a portfolio of biomass energy projects operating on merchant / group-captive basis is a clear win-win situation!

Biomass Power Generation Process Flow



Auro Mira group was founded in Dec 2005 with a vision to be a leader in the renewable energy industry



Since inception, Auro Mira has grown from a 5 member team to a 100+ people organisation, with professionals selected from leading Indian companies

Auro Mira is executing a six-point strategy in biomass power generation ..

- **Close to demand points**
- **Regional clusters**
- **Green & sustainable**
- **Operating as merchant power plants / group captive power plants**
- **Timely execution and at competitive prices**
- **Run at high PLF and high efficiencies**

Strategy built on strong macro drivers – green energy, power deficit & distributed generation ..

To kick-start operations, Auro Mira acquired a non-operational plant in February 2007

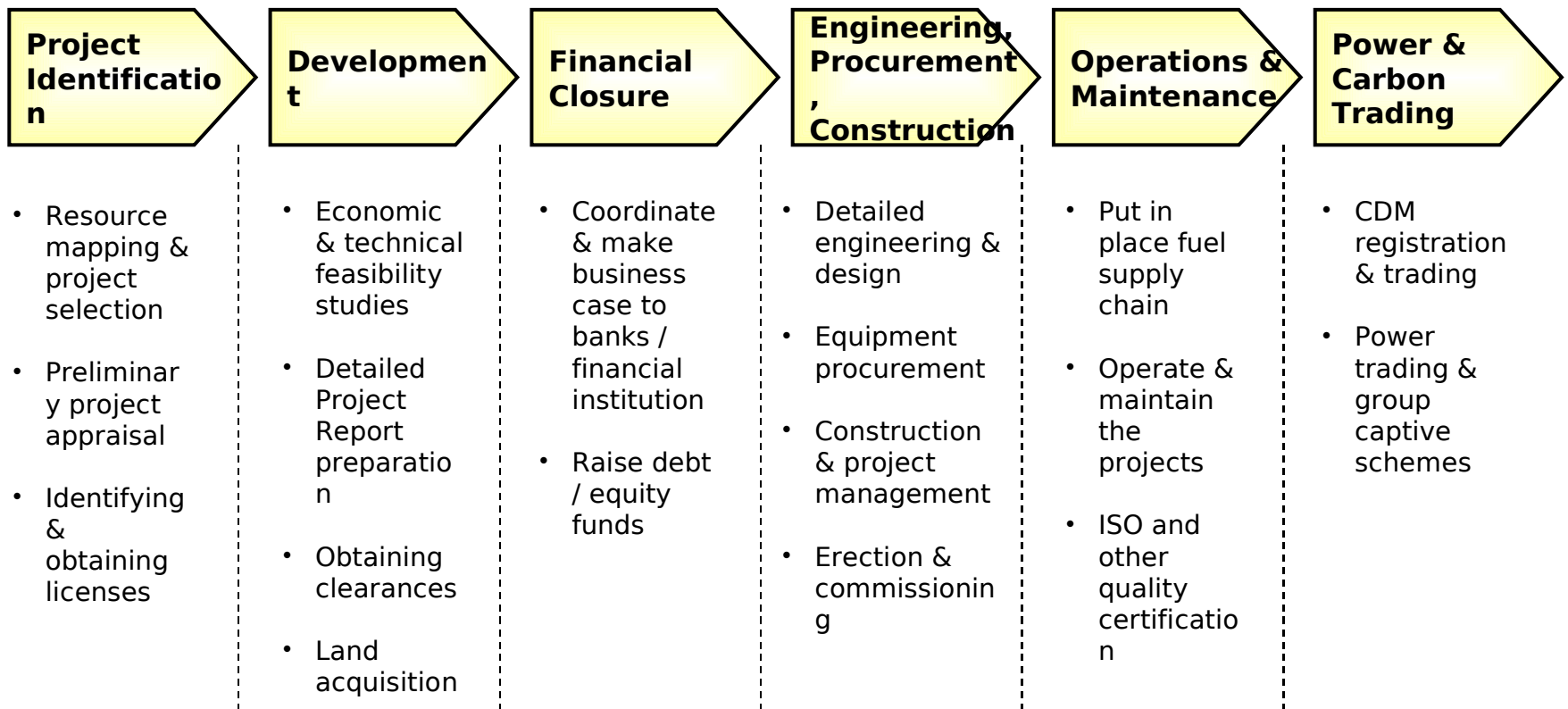
Key achievements since takeover of Plant 1:Pudukottai

- 1. Fuel supply chain in place**
- 2. Seasonal procurement plan based on catchment area crop pattern**
- 3. Boiler modification to process multiple fuels and improve efficiency**
- 4. Carbon credits accreditation**
- 5. Sound HR practices implemented at plant site**

First biomass plant in India to receive ISO 9001-2000 certification

Auro Mira has incorporated learning from Plant 1 by using innovative turbine and boiler design for its upcoming Plant 2

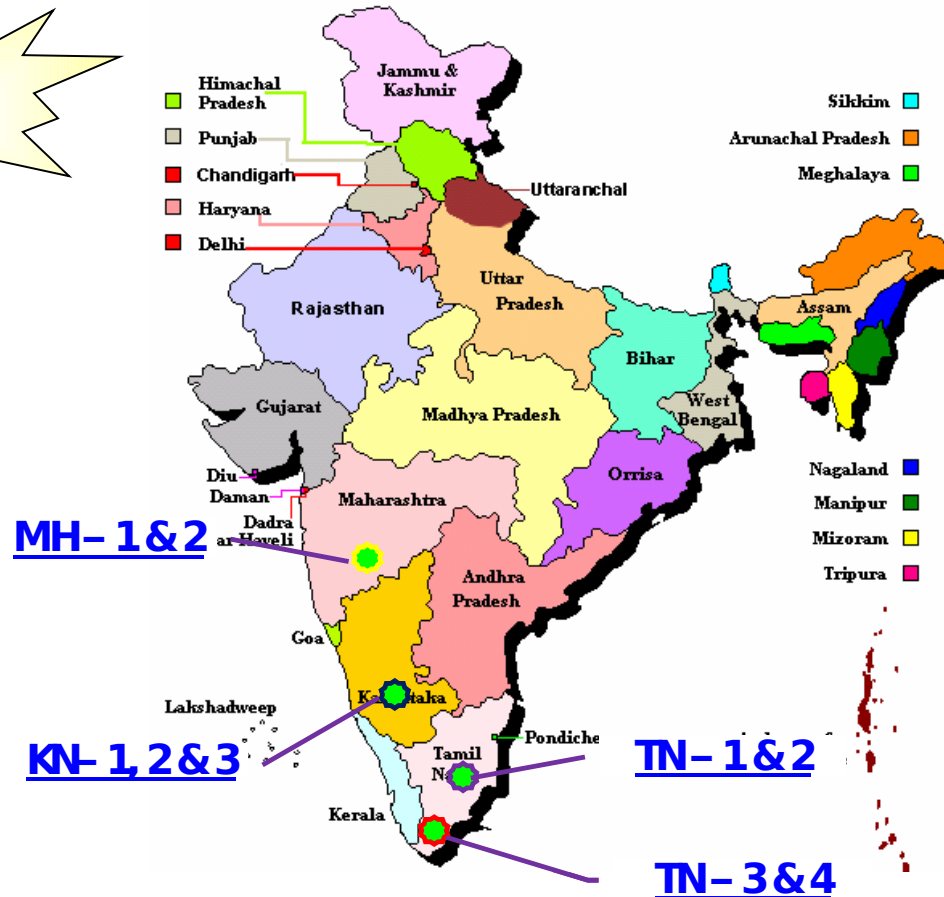
Today, Auro Mira has capabilities to execute projects across all key renewable energy sectors



The company has end-to-end capabilities from development to execution & operations to execute all projects

Auro Mira will operate in four clusters across different states for its new projects in phase 1..

Phase-1 cluster plan



In phase 2, Auro Mira will look to develop projects in clusters in Gujarat, Rajasthan and Madhya Pradesh

To summarize..

<u>Biomass</u>	FY 09	FY 10	FY 11	FY 12
Cumulative (MW)	17.5	47.5	97.5	172.5

- **Auro Mira Biomass Energy** - aggregating a **portfolio of green energy projects** operating in the merchant / group captive mode
- **The company is in the cusp of three major macro drivers** –
 - green energy
 - power demand in India
 - distributed generation
- **Auro Mira has a demonstrated business model & has assembled an excellent management team to execute projects**

Thank you!