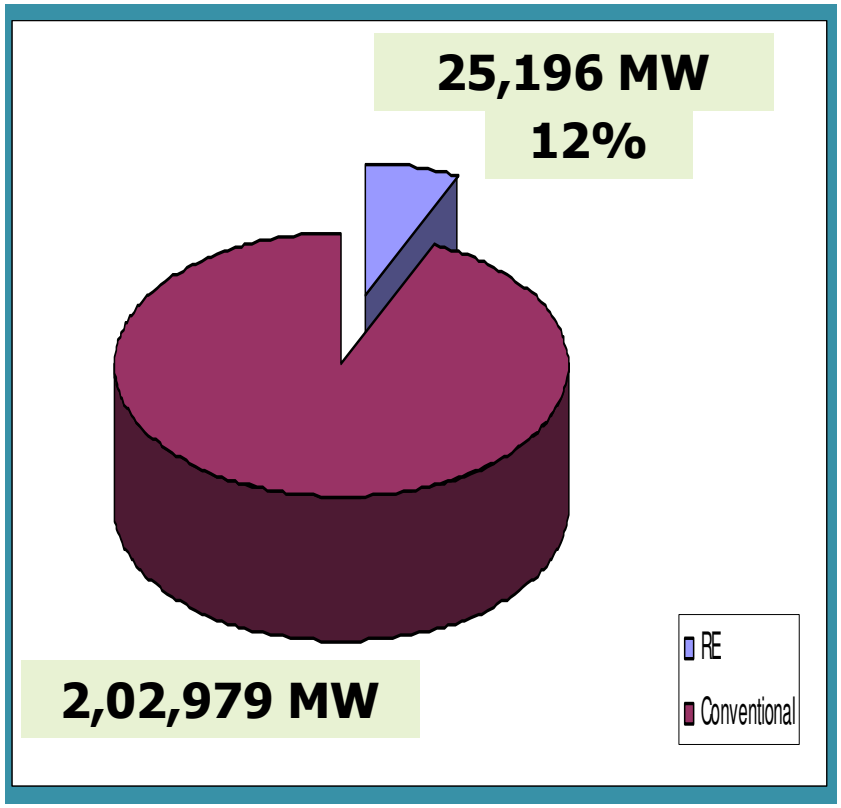
TAMILNADU

WIND POWER SCENARIO

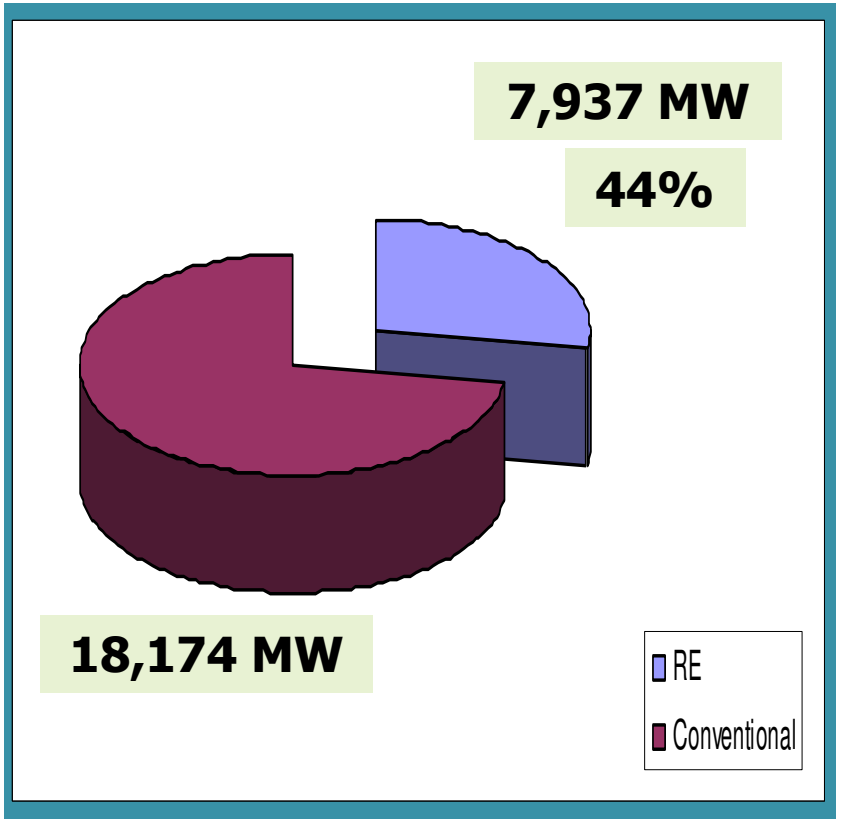
ENERGY DEPARTMENT
GOVT OF TAMILNADU

RENEWABLE ENERGY SCENARIO AS ON 31.05.2012

INDIA



TAMIL NADU



TN has 31% of Country's RE installed capacity

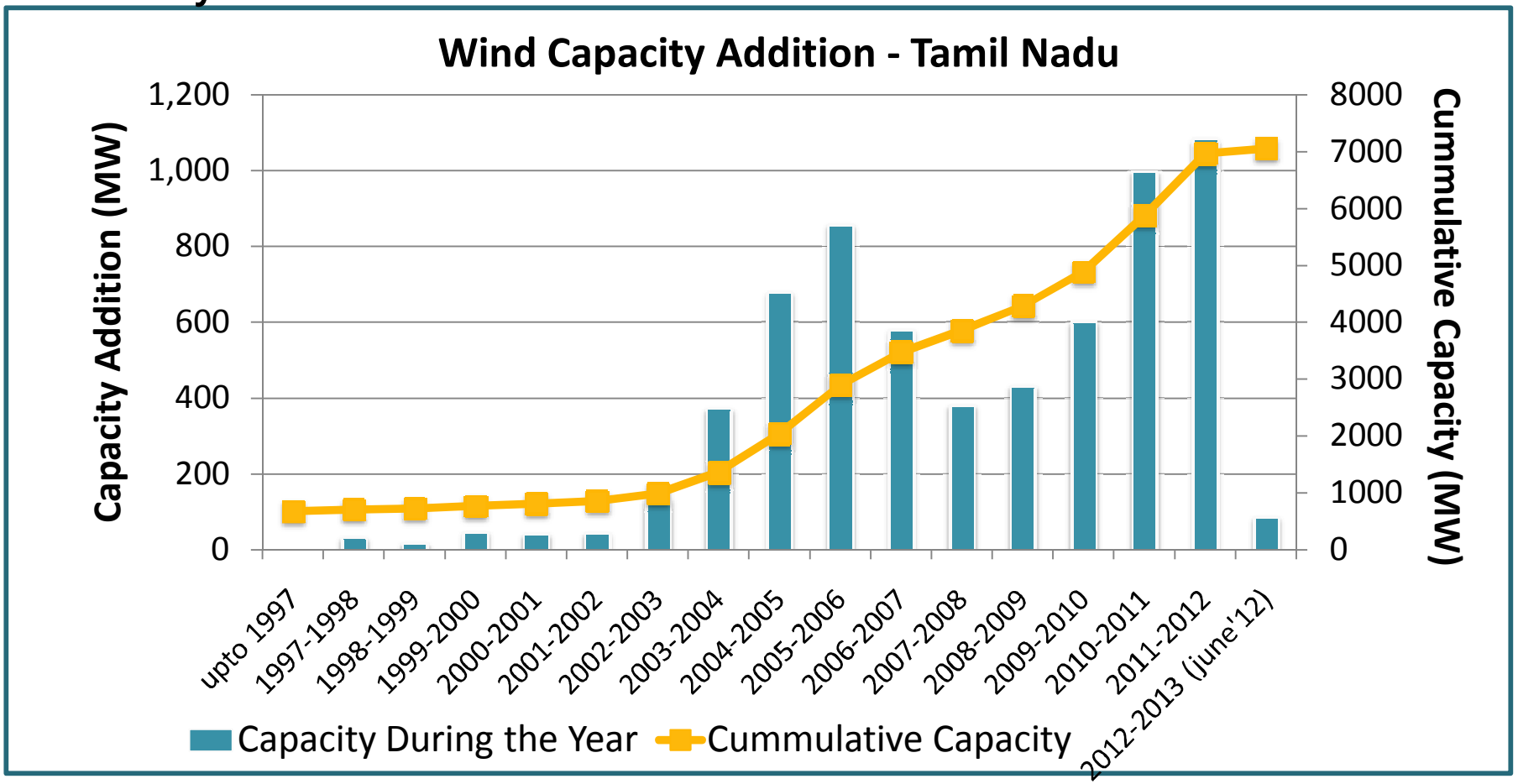
RENEWABLE ENERGY INSTALLATIONS IN TAMILNADU

Sl. No	Source/system	Installed as on June'12 (MW)	Cap addition targeted under 12th five year plan (MW)
1	Wind (40% of India's total wind Capacity)	7055.47	6000
2	Biomass co-gen	637.40	
3	Biomass power	175.00	500
4	Small hydro	90.05	100
5	Solar	17.00	3000
6	Waste to Energy	4.25	250
7	Other RE technologies	-	15
		7979.17	**9865**

TN has 31% of country's RE installed capacity

TAMILNADU LEADS

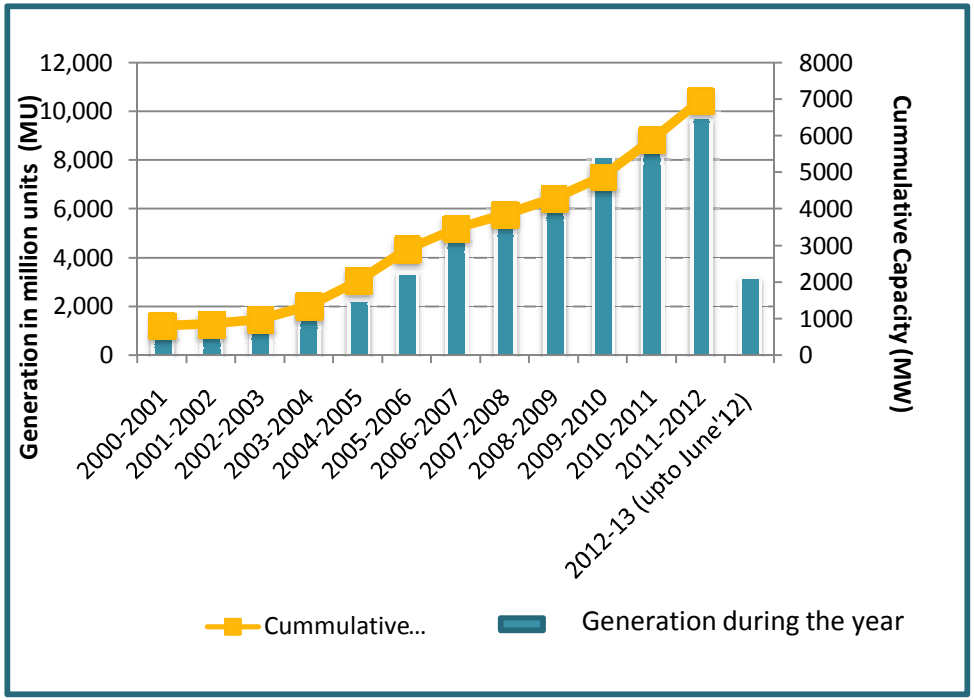
Pioneer in developing the Wind Energy programme in the country.



All time high capacity addition of 1083.460 MW achieved in 2011- 12.

YEAR WISE GENERATION OF WIND ELECTRIC GENERATORS

YEAR	CUM INSTALLED CAP(MW)	GENERATION DURING THE YEAR (MU)
2000-2001	812.630	1094.175
2001-2002	856.665	1257.110
2002-2003	990.265	1305.703
2003-2004	1361.490	1714.475
2004-2005	2040.225	2260.732
2005-2006	2897.780	3444.281
2006-2007	3475.690	5268.982
2007-2008	3856.765	6066.646
2008-2009	4287.740	6655.150
2009-2010	4889.765	8145.507
2010-2011	5887.165	8720.045
2011-2012	6970.625	9763.048
2012-2013 (uptoJune'12)	7055.475	3197.149



During 2011-12, Wind energy alone contributed to 12.6 % of total energy fed into grid .

Total RE fed into grid in 2011-12 – 14.9%

So far , more than 63,000 mu of wind energy has been fed into grid.

WIND ENERGY PRODUCTION IN TAMIL NADU

- The total installed Wind capacity as on 30.06.2012 is 7055.475 MW, contributing to 40% of country's total wind capacity.
- All time high capacity addition of 1083.460 MW in 2011- 12.
- Wind capacity addition to a tune of 1000 MW is expected for 2012-13.
- A capacity addition of 6000 MW of wind energy installations is targeted under the 12th five year plan
- Total Wind Energy fed into the grid:

  2010-11 - 8720.045 MU (11.6 % of total energy fed into grid)
  2011-12 - 9763.048 MU. (12.6 % of total energy fed into grid)

All time high of 3960 MW contributed to grid on 4.7.2012

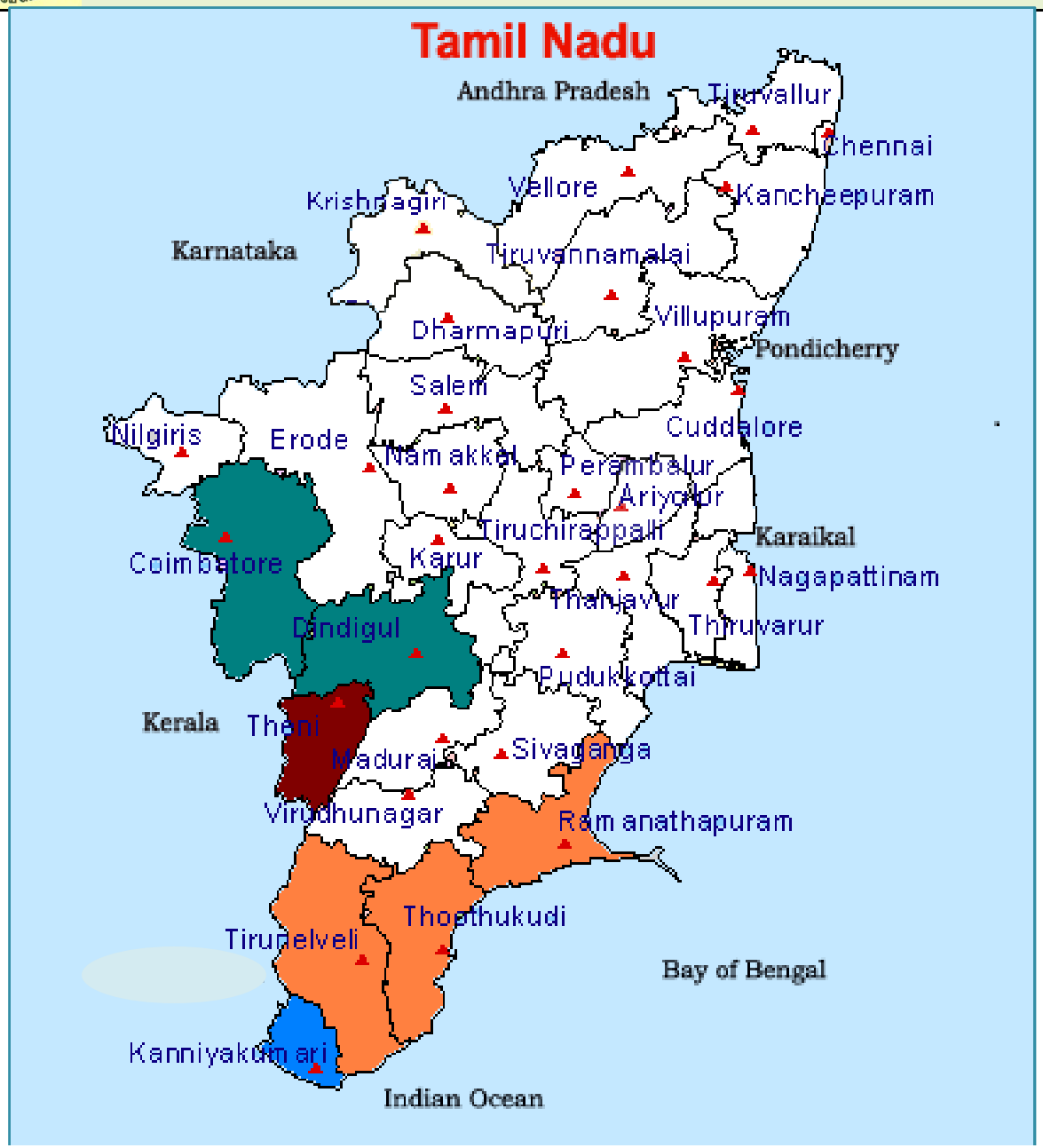
WIND POWER POLICY

1. Single window system
2. Wheeling and Banking Mechanism
3. Open access / Third party sale / REC trading
4. Accelerated Depreciation benefits (till 2011-12)
5. ED exemption, Concessional customs duty
6. Generation Based Incentive (GBI) (to promote foreign investments)
7. Land to be identified by the project developer.

PROPOSED POLICY MEASURES

- TamilNadu will encourage 'Public Private Partnership' (PPP) towards Infrastructure creation namely providing access roads to wind farms & SS /transmission lines for effective transmission of generated power to the Load Centre.
- As per the CERC's order, the Wind energy generators need to schedule their generation.
- The State shall promote Mega Wind farms with spinning reserves of equivalent capacity.
- Repowering will be mandated for all WEGs having very low PLF.
- The Government will provide necessary facilitation services towards off shore wind power development.

WIND PASSES LOCATION



	SHENGOTTAH
Tirunelveli & Tuticorin	
	ARALVOIMOZHI
Kanyakumari, Radhapuram,Muppandal	
	KAMBAM
Theni, Cumbam and Andipatti	
	PALGHAT
Coimbatore, Dindigul	

TAMILNADU – *ASSESSED WIND ENERGY POTENTIAL

Sl. No	Technology	Independent Potential (MW)
1	Wind 80m (waste land, non forest scrubland)	36,344
2	Wind 80m (Non irrigated Farmland)	1,60,510
3	Repowering	1,370
4	Offshore Wind	1,27,428

ACTION PLAN

Technology	Addl capacity by 2012-17	Addl capacity by 2017-20	Total 2012-2020
On shore	6000 MW	7500 MW	13500 MW

* WISE Estimates

PROPOSED RESOURCE DEVELOPMENT

In order to achieve effective land utilisation and high quality generation, the following are being addressed;

- Relaxation of micro-sitting criteria (5Dx7D concept with 3D x 5D concept)
- Support Re-powering on large scale
- Support Inter cropping
- Wind Energy Management Systems for monitoring wind farms integrated with Wind forecasting / remote management capability to administer SLDC effectively.

REPOWERING:

WHY REPOWERING ?

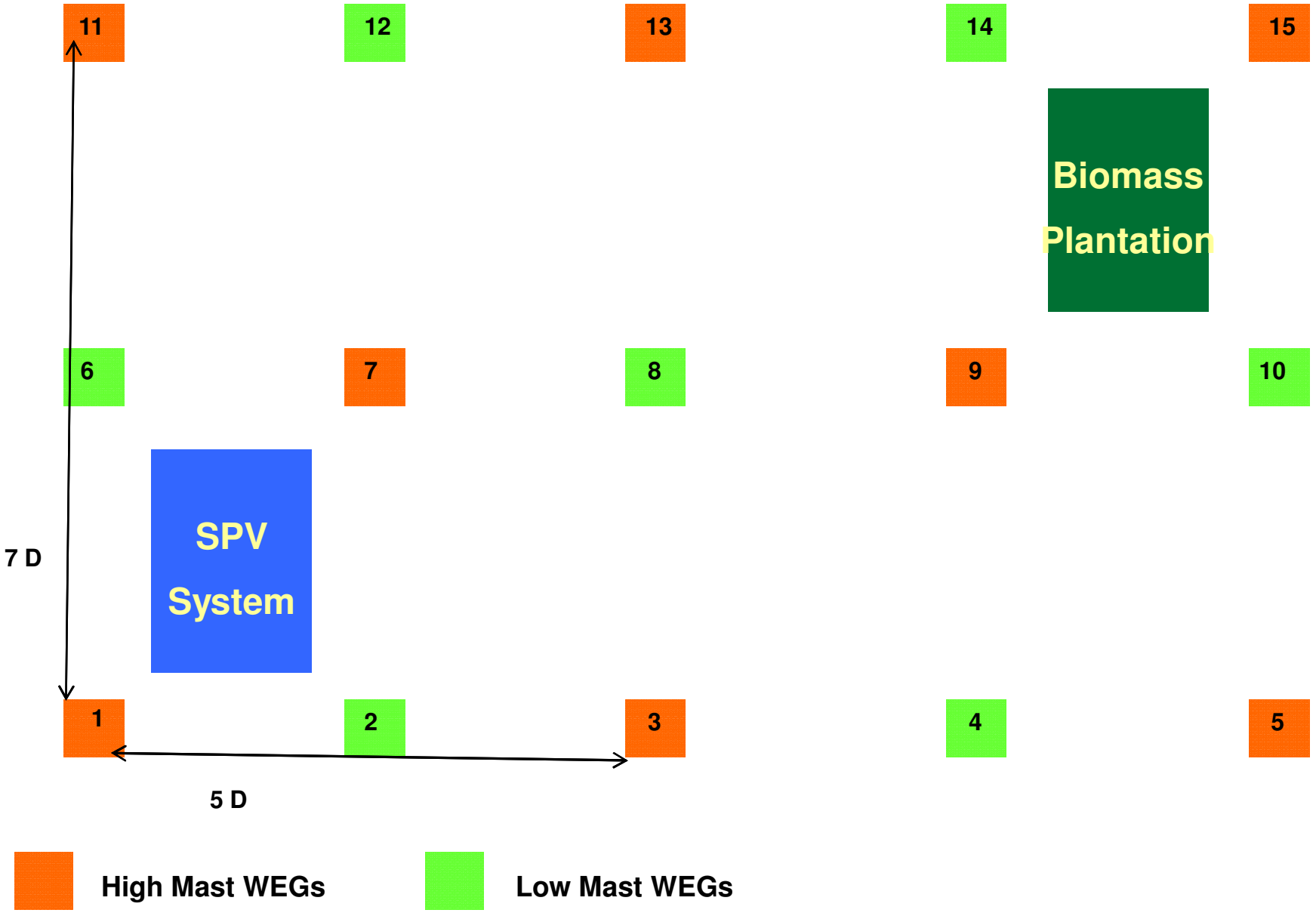
Increased Maintenance cost due to ageing

Decreasing Performance Level

It is proposed to establish Tamil Nadu Renewable Energy Park (TREP) in the state and achieve Repowering combined with intercropping to a tune of 100 MW, vide phase -I, in the Kayathar Wind farm area.

The possibility of installing SPV plants between the wind mills leading to hybrid generation is under study. This would ensure firm RE power , fed into grid.

TAMILNADU RENEWABLE ENERGY PARK (TREP)



OFFSHORE WIND POWER

As per Lawrence Berkeley National Laboratory & WISE reports, the offshore potential is estimated more than 100 GW.

The coast along Tamil Nadu is the best in the country having very high potential areas with net Capacity Utilisation factor (CUF) of over 40% and wind power density of over 700 w/m^2 at many locations.

Tamil Nadu has an advantage of location, where in both the Southwest Monsoon and Northeast monsoon 'tunnel' through the Palk Bay and Gulf of Mannar, contributing to a high wind speed potential zone.

OFFSHORE POTENTIAL ASSESSMENT BY CWET

Studies reveal very high quality potential off Tirunelveli coast and Southern Thoottukodi and Rameshwaram Coast.

CWET is in the process of setting up a 100m wind mast near Dhanushkodi, Rameshwaram to assess offshore resouces in the Rameshwaram coast.

NECESSITY FOR OFFSHORE WIND POWER POLICY

It is evident that offshore wind deployment in TamilNadu could become commercially viable despite high costs.

Four companies have furnished proposals for development of off shore projects in the (range of 500 MW), off the coast of Rameshwaram and Kanyakumari.

The Offshore Wind policy needs to be evolved at the earliest towards development of offshore wind power projects, as these projects include wind resource study for a minimum period of 1 -2 years .

COASTAL WIND ENERGY

The Govt of TN has taken special initiatives towards exploring the feasibility for development of coastal wind power projects along the TamilNadu coast .

TEDA is in the process of entrusting a study to C-WET, towards assessment of wind power density for the entire coast of TamilNadu .

The project period would be 60 days.

WIND RESOURCE ASSESMENT STUDY IN NEW AREAS

During this year, TEDA in co-ordination with CWET has installed and commissioned two nos 80 m wind monitoring mast successfully at the following locations , under the WRA programme funded by the Ministry.

1. Ittarai in Erode District
2. Vellamadam in Tuticorin District.

Aternate location has been identified at Yercaud and the wind mast would be installed shortly.

TEDA in co-ordination with C-WET has finalised 10 locations in various districts, for installation of 100 m wind mast .

Dedicated Wind Farm SS

- 23 dedicated Wind Farm Sub-Stations in Tirunelveli area.
- 16 dedicated Wind Farm Sub-Stations in Udumalpet area.
- Wind Developers have established 13 Nos. 110 KV SS and 1No. 230 KV SS under section-10 (1) of Electricity Act 2003.

NEED FOR STRENGTHENING EVACUATION INFRASTRUCTURE

The present infrastructure is able to evacuate about 5000 MW of wind power. It is necessary to establish dedicated 765/400 KV & 230 KV Sub-Stations & associated EHT lines in Tirunelveli and Udumalpet areas ,

- to accommodate the capacity addition of 3000 MW in pipe line
- to accommodate 10800 MW under load flow study.
- Proposed to establish Regional Load Despatch Centre exclusively for monitoring & control of wind generation.

Proposed Phase I & Phase II Evacuation schemes

Phase I

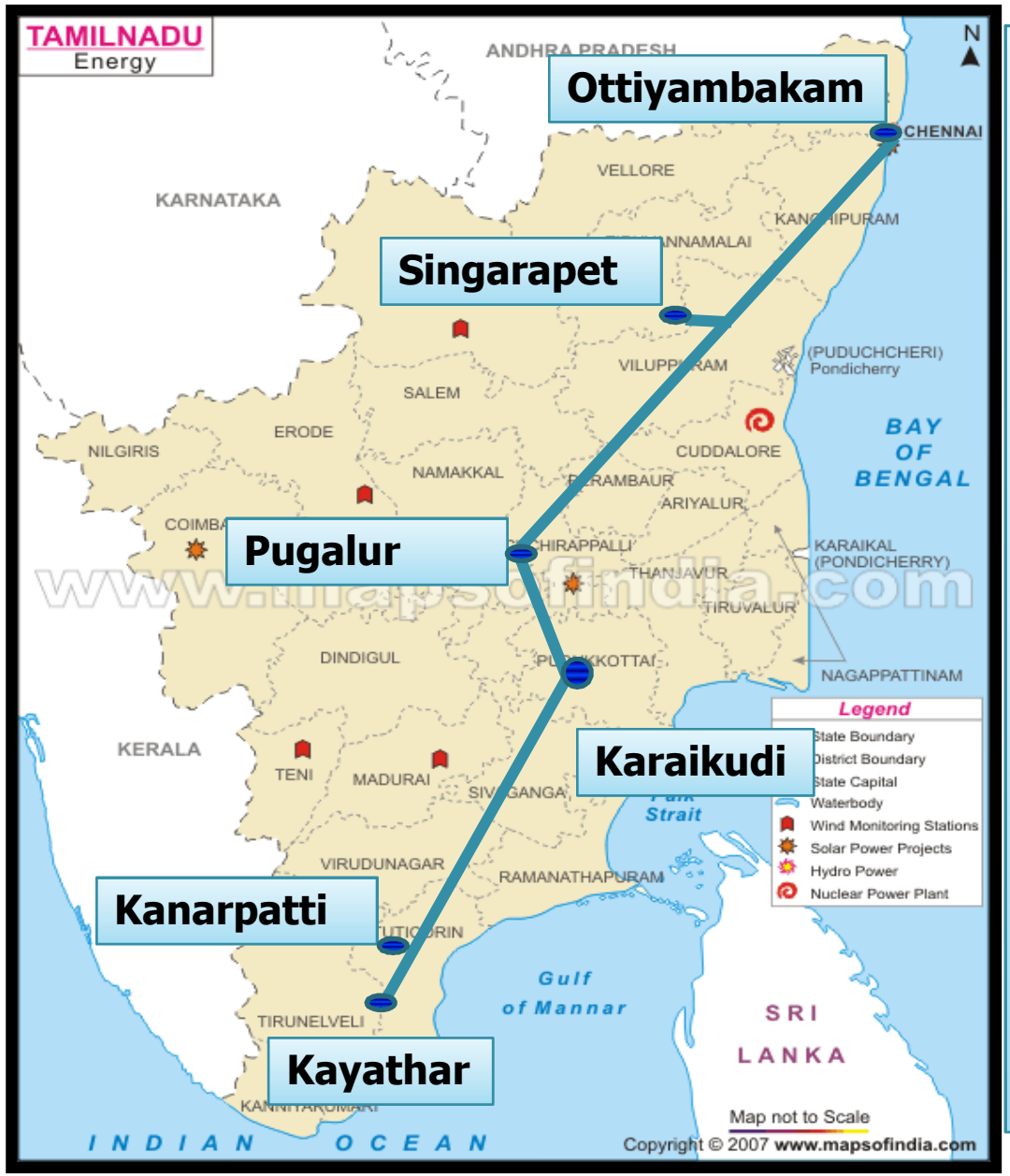
- Establishment of Kanarpatti 400/ 230 KV SS & allied transmission lines.
- Establishment of Kayathar 400 / 230 - 110 KV SS & allied transmission lines
- 400 KV DC line link from Kayathar to Karaikudi
- 400 KV DC line link from Karaikudi to Pugalur
- 400 KV DC line link from Pugalur to Ottiambakkam.

Phase II

- Establishment of 400/110 KV SS at Thappakundu area.
- Establishment of 400/230 - 110 KV SS at Anikadavu area
- Establishment of 400/230 - 110 KV SS at Rasipalayam area
- 4 Nos. 400 KV Bay provision at Salem 765/400 KV SS for Rasipalayam – Salem 400 KV (PGCIL) – Singarapet DC line.

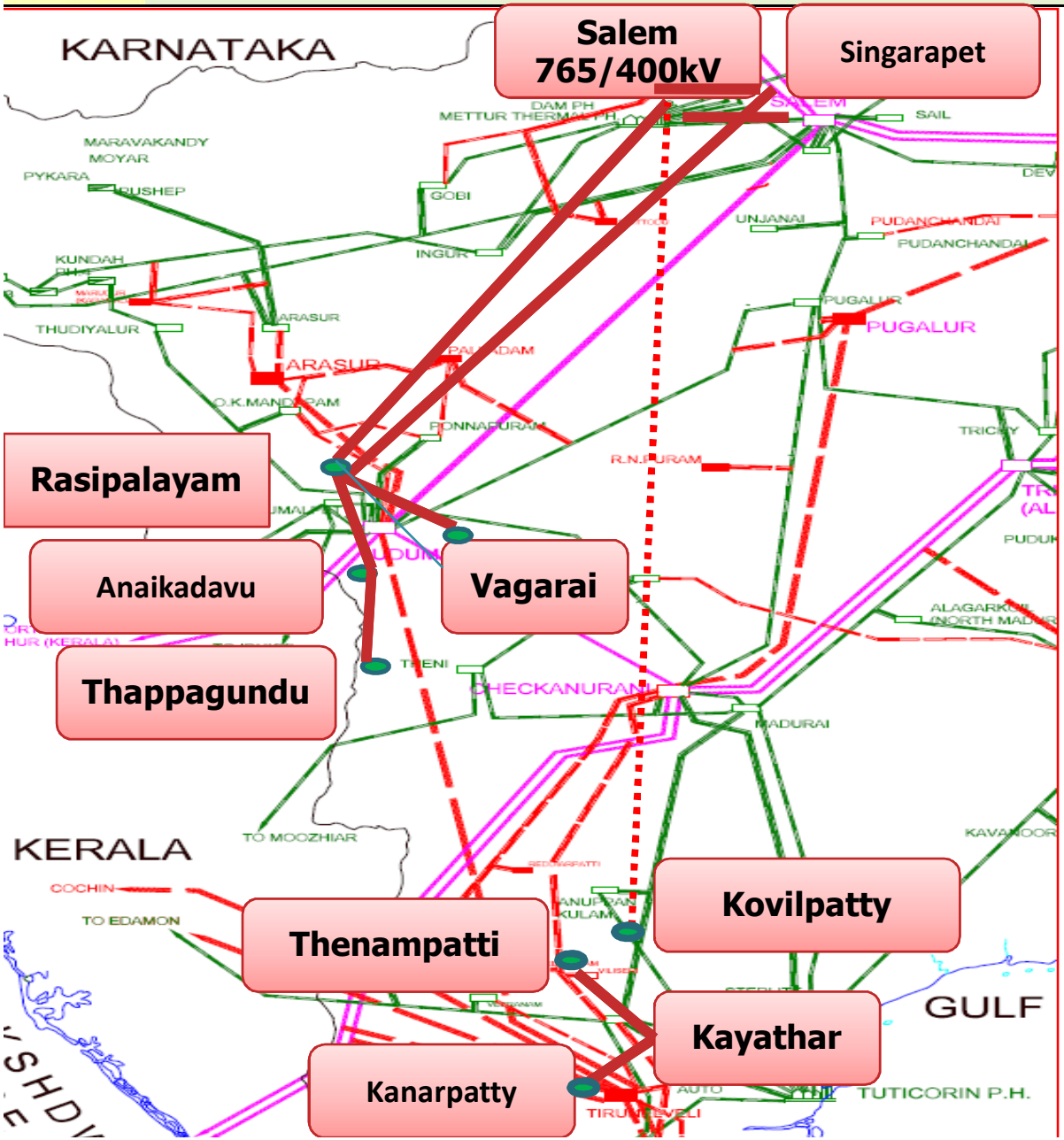
Both the schemes have been cleared by CEA

Phase I Evacuation Schemes



Kayathar (Proposed-Tirunelveli region) – Karaikudi (existing PGCIL SS) – Pugalur (existing PGCIL SS) – **Singarapet** (Ariyalur)(Proposed – Villupuram region) – **Sholinganallur** (Ottiampakkam) (Proposed – Chennai region)

Phase II Evacuation Schemes



- Thappagundu – Anaikadavu – Rasipalayam– Salem 765/400 KV SS of PGCIL - Singarapet
- Vagarai – Rasipalayam
- Thennampatti – Kayathar- Kanarpatty

National Clean Energy Fund

TANGEDCO has requested MNRE to grant Rs.4160 Crores through “Clean Energy Fund”, for completing the above evacuation projects of five 400 KV SS & about 540 KM of associated transmission lines.

CEA has already recommended to MNRE for release of Rs.2752.397 Crores for Phase I & Rs.1407.825 Crores for Phase II scheme totaling to Rs.4160 crores.

TANGEDCO is facing huge financial crises and is unable to carry out the above evacuation works with its own or borrowed resources.

PROPOSED PPP WORKS

- Proposed to implement 400 KV Wind Power Corridor
- Comprises establishment of 3nos. 400KV substations
- 393 Kms of 400KV DC Line.
- Estimated capital cost - Rs.1076.72 Cr.

STATUS OF PROPOSED PPP WORKS

- M/s Pricewaterhouse Cooper engaged as consultant for providing technical, financial and legal services.
- Consultant Submitted reports
- Hon'ble TNERC approached for approval of unitary charge.
- Proposed to approach GOI for Viability Gap Funding (VGF) shortly.

CONCLUSION

MNRE to support TamilNadu for speedy evacuation infrastructure works, by granting the required fund of Rs.4160 crores at the earliest, enabling development of onshore wind power projects in the state.

MNRE to provide exclusive fund for setting up of Wind Energy Management System (WEMs) towards wind forecasting & scheduling (the ultimate need for huge wind farms) for demonstrating the technology to the nation.

India is already one of the global leaders in wind power production. The delay in evacuation infrastructure strengthening will stall the growth of wind power in the state, thereby affecting the growth at the National level.

Tamil Nadu

Let us Harness Maximum Wind

Reduce Co_2 Emission

Thank You