

People Lead; Investors Follow

"It's one thing for Dow Chemical to have problems in Taiwan or Thailand but to be frozen out of India, one of the most dynamic growth markets in the chemical industry, is really unacceptable."

Bennett Freeman, Director, Calvert Investments


Smart People; Stupid Things

Stanford scientists say drought linked to climate change - Mozilla Firefox

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news.stanford.edu/news/2014/sepember/drought-climate-change-092914.html

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Shasta Lake in Northern California on August 25th, 2014, at Bridge Bay Resort and Marina. The lake's water level is so low that all but this last boat launch ramp are no longer useable. (Photo: Kelly M. Grow)

Stanford Report, September 30, 2014

Causes of California drought linked to climate change, Stanford scientists say

The extreme atmospheric conditions associated with California's crippling drought are far more likely to occur under today's global warming conditions than in the climate that existed before humans emitted large amounts of

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RELATED TO THIS STORY

- Video: Stanford scientists explain the state of California's drought
- An overview of California's ongoing and extraordinary drought: A tale of exceptional dryness and record warmth
- Stanford scientists investigate the worst drought in California's history

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Stanford researchers unravel secrets of shape-shifting bacteria

Stanford's Board of Trustees elects two new members

Stanford research shows how people turn ancient ruins in case of

Menu | Stanford scientists say... | Stanford | IEEEFA Cheyyur.pptx - ... | DSC09781.JPG | Click to view month calendar



Green for Investors: Red for People



- | Sambar Lake
- ▣ 4000 MW solar UMPP
- ▣ 23000 acres
- ▣ Lake Watershed
- ▣ Affected communities; workers

Cheyyur 4000 MW UMPP Case Study



UMPP –

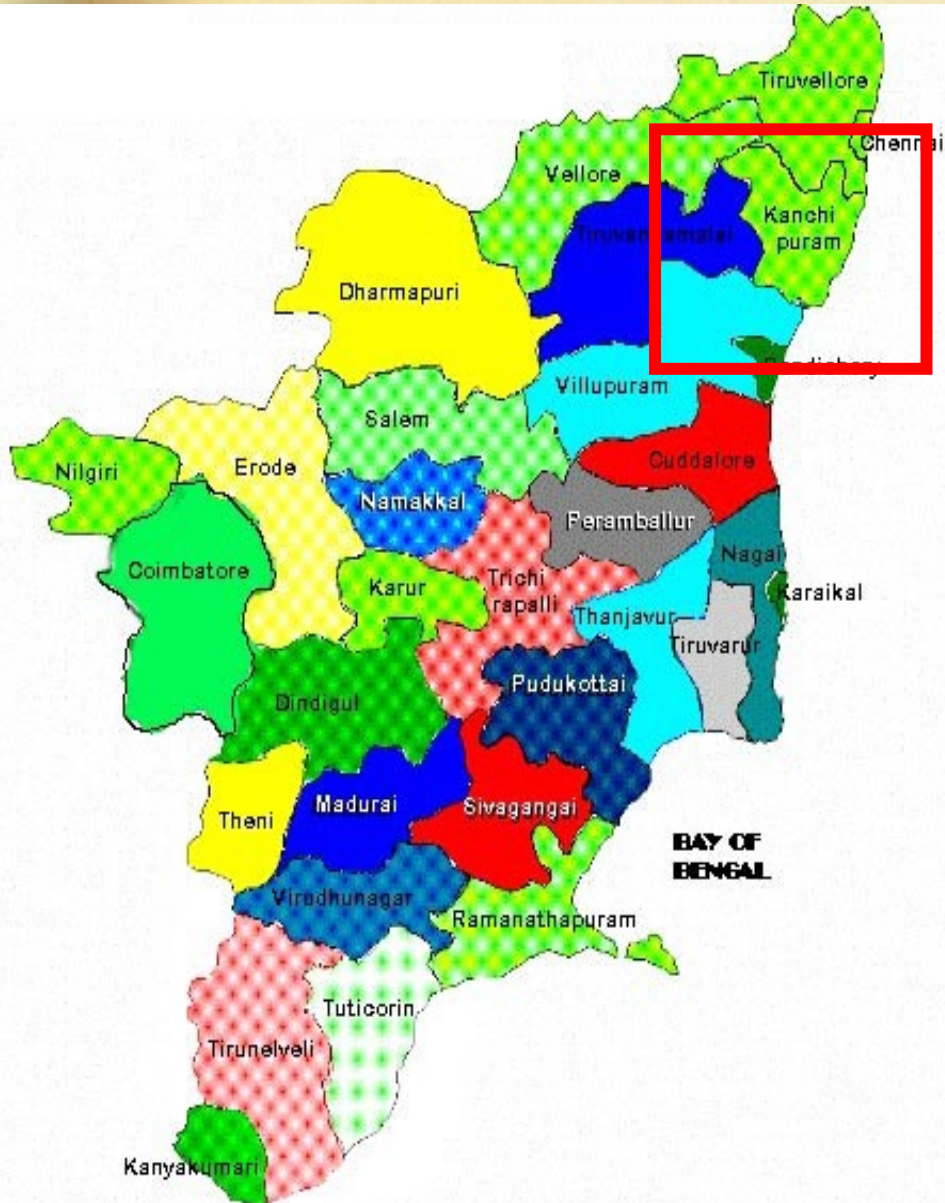
Ultra Mega Power Projects

- ▣ Policy of Govt
- ▣ Make it Attractive for Pvt Investors
- ▣ Economies of Scale
- ▣ Plug-and-Play – All clearances by SPV
- ▣ Bidding – Tariff-based

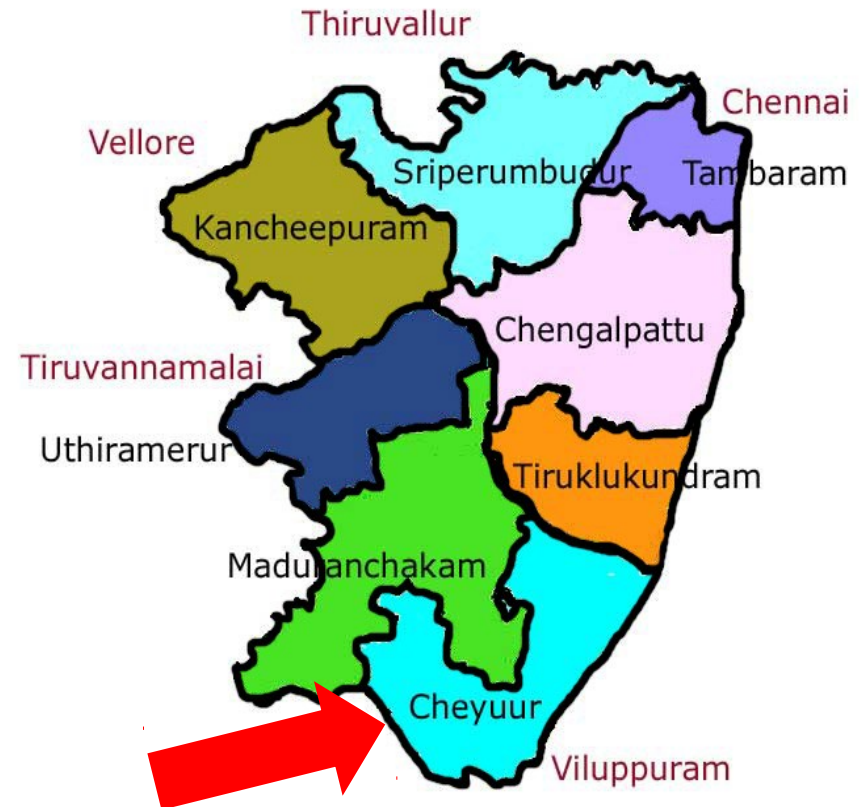
Existing UMPPs

- Tata Power – Mundra, Gujarat (5 x 800)
- Reliance Power – Sasan, MP. (5/6 x 660)
- Reliance Power, Krishnapatnam, AP (No progress)
- Reliance Power, Tilaiya, Jharkhand (Early development)
- 5 new UMPPs – Budget 2015

Location



Kanchipuram District



Cheyur Ultra Mega Power Plant Vital Statistics.

Capacity	4000 MW
Imported Coal	12-14 million tonnes/year 40,000 tonnes per day
Seawater Intake (Cooling/Freshwater)	864 mld
Effluents to Sea	533.5 mld 53,300 lorry loads/day
Total Ash Generated	5400 tpd 1.94 million tonnes/year

Land Requirements

Main Plant	415.45 ha (incl. 342.6 ha agriculture)
Ash Pond	90 ha
Coal Conveyor	22 ha
Rail Corridor	55 ha
Captive Port	84 acres including 650 metres beachfront

Sand dunes; Beaches

- Storm mitigators
- Fresh water reservoirs
- Wind breakers
- Check salinity intrusion
- Agriculture - leeward side



Estuaries

- Mangroves and seagrass beds
- Breeding and feeding grounds for fish and birds
- Maintain hydrological balance and nutrients cycle



Inland Waterbodies

- Harvest rainwater
- Mitigate flooding
- Recharge groundwater
- Support agriculture



**Tropical Dry Evergreen Forests found
along the Buckingham Canal**



Ash Pond



சாம்பல் குழாய்

Power Plant



கனவையர் பெல்ட்

Port



நிலக்கரி கிடங்கு

துறைமுகம்

Claims to Get Clearance

No sensitive areas

No scarce resources (water)

No sand dunes

No migratory species

No mangroves/seagrass

No agriculture

No Forests

82 water bodies

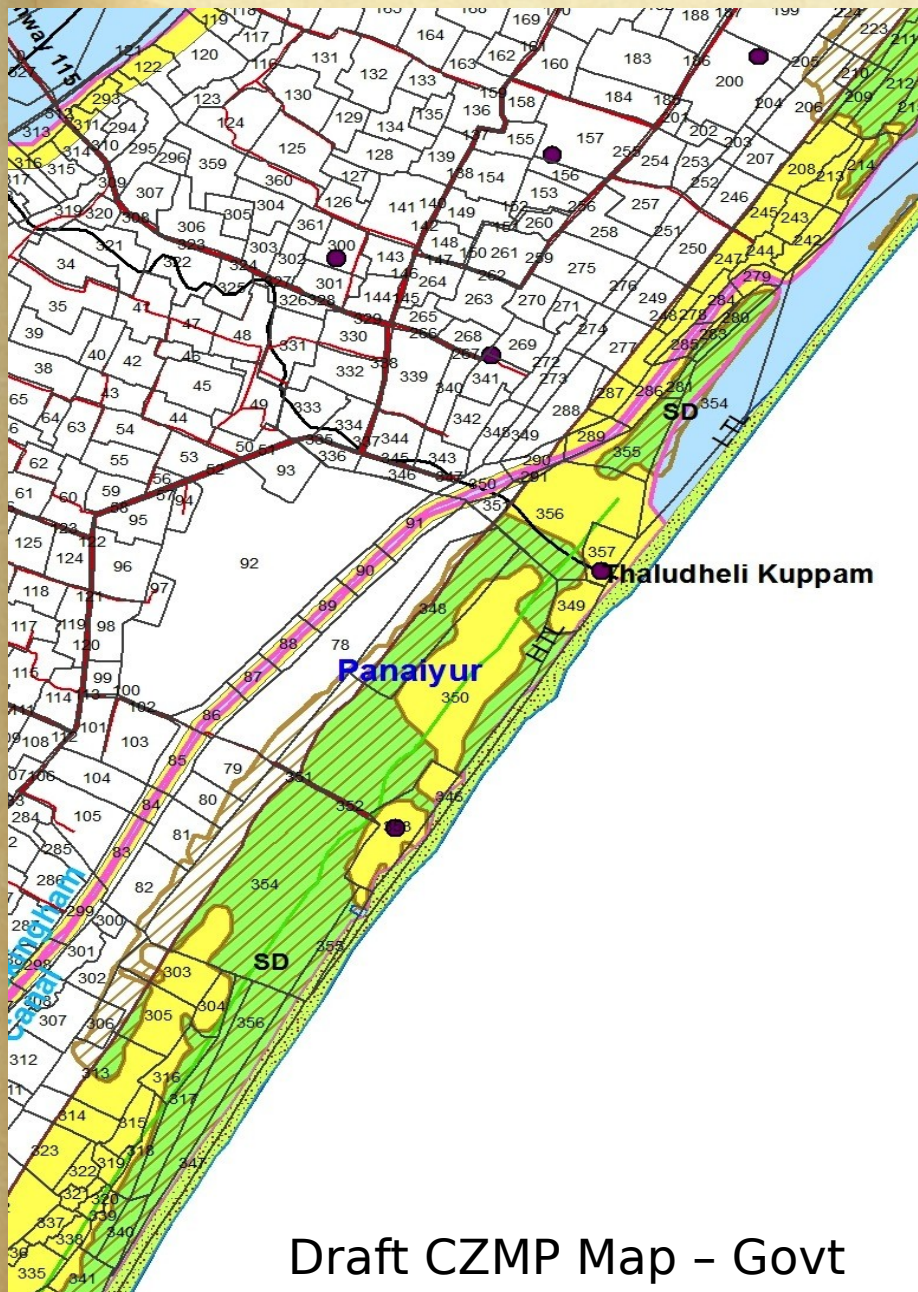


Sand Dunes

“Community Mapping of Sand Dune Ecosystems of the Panaiyur Coast, Kanchipuram District, Tamil Nadu”

Results:

Confirms presence of continuous stretch of well-established dunes
Dune begins at 5-10 m from beach berm, extends 570 metres
Average height: 9.774 m
Stretches for more than 1 km
North and South of Periakuppam
Coal stacking yard to come up atop a large sand dune



Draft CZMP Map - Govt
of TN

False Claim: Barren land; no agricultural land



EAC minutes:
“82 %
agricultural
land in the
project site”



**EVALUATION OF THE WATERBIRDS
OF ODIYUR LAGOON – A WETLAND NEAR THE
PROPOSED CHEYYUR THERMAL POWER PLANT**

**BOMBAY NATURAL HISTORY SOCIETY
RANJIT MANAKADAN**

and MADRAS NATURALISTS SOCIETY

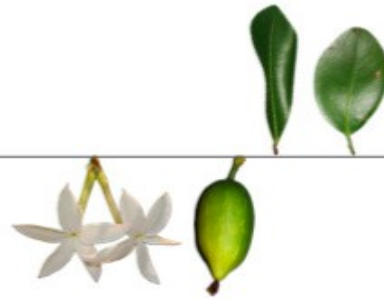
MARCH 2014

Findings:

- 77 species of waterfowl
- 8 out of 42 endangered birds recorded
- Breeding and feeding ground

Recommendation:

- Relocate Cheyyur UMPP Project
- Declare area ecosensitive



PLANT DIVERSITY IN AND AROUND PROPOSED SITE FOR
CHEYYUR 4000MW COAL-FIRED POWER PROJECT, KANCHIPURAM

D. NARASIMHAN
Professor, Centre for Floristic Research,
Department of Botany, Madras Christian College,
Tambaram, Chennai

DEVANATHAN KRISHNAMOORTHY
Research Scholar, Centre for Floristic Research,
Department of Botany, Madras Christian College,
Tambaram, Chennai

Findings-

- Study conducted around the proposed cheyyur power plant site.
- 294 Plant Species found including *Solena Angulata*
- Coastal Vegetation, Sand Dune Vegetation and Tropical Evergreen Vegetation.
- Ecological and Botanical features make it an area of conservation importance.

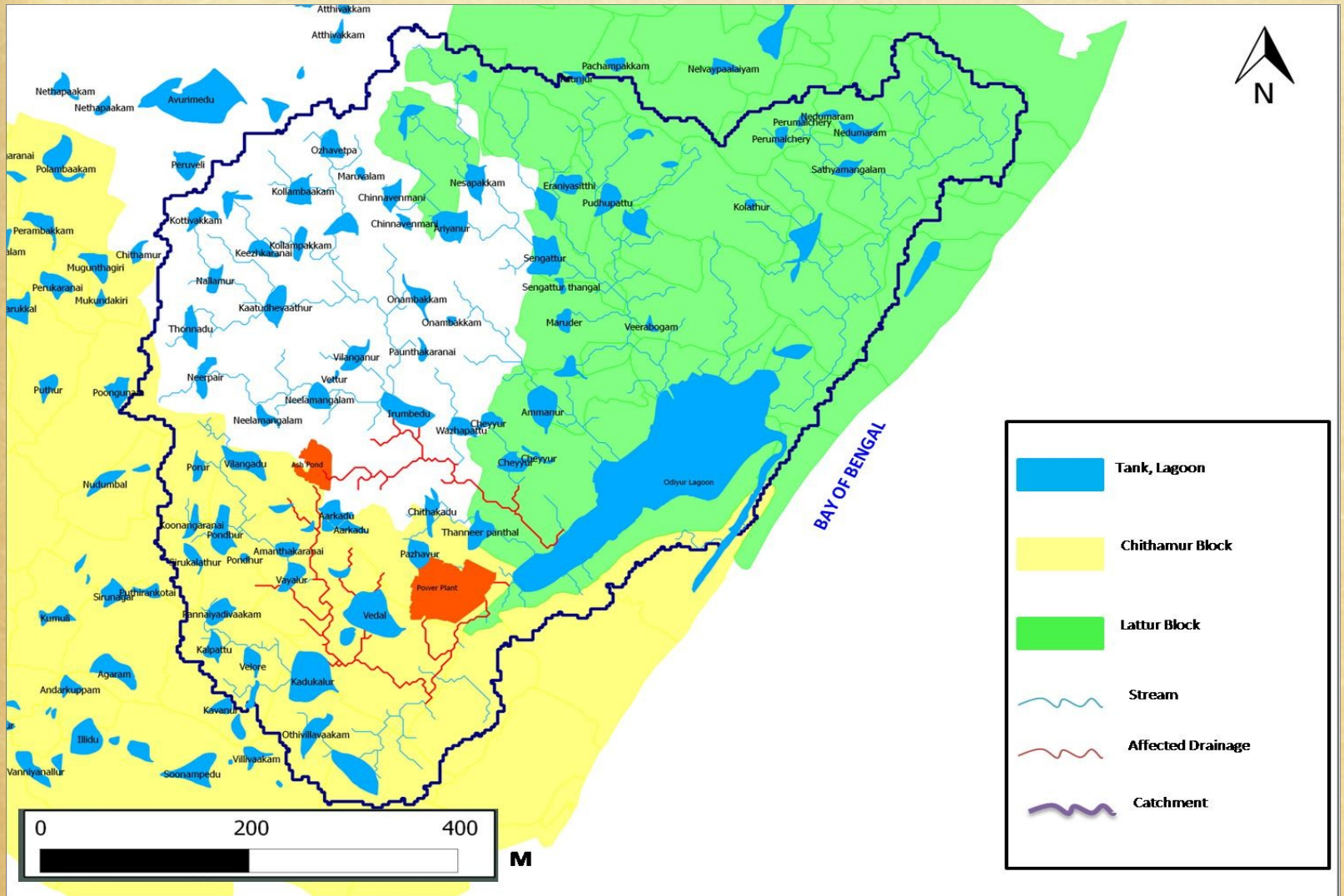
Recommendations –

- Power Plant could be moved to a non ecologically sensitive area

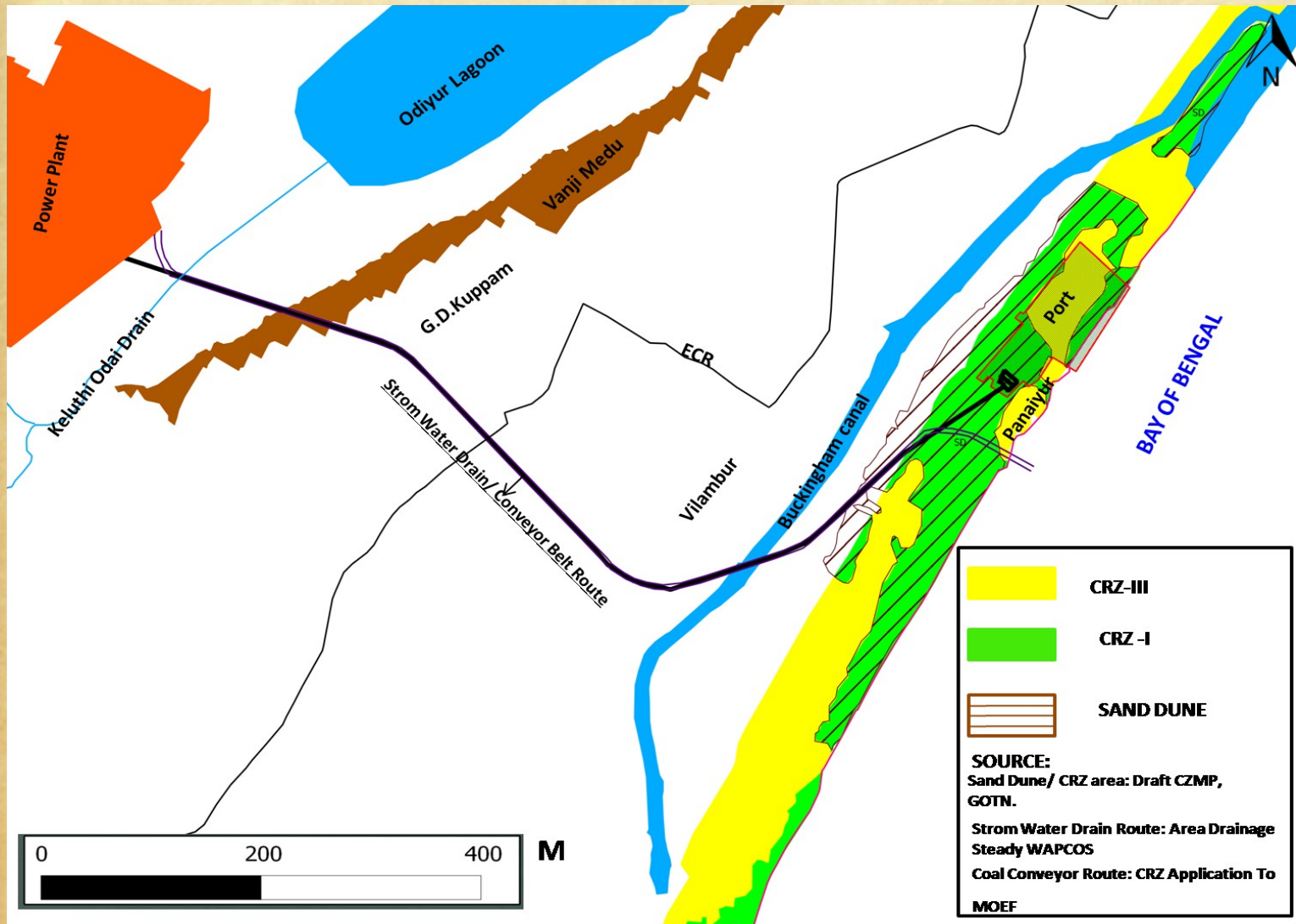
Heavy Metals and Coal

Arsenic	7.6	342	Carcinogen. Affects heart, skin, peripheral nervous system. Accumulates in freshwater plants and bivalves and enters food supply
Cadmium	0.058	2.6	Causes lung and prostate cancer, bone disease, anemia and learning disabilities
Chromium	22	990	Nasal ulcers, respiratory disorders, lung cancer, stomach tumours. Sperm damage reported in lab animals.
Lead	48	2160	No safe level for children. Neurological damage. Learning disabilities, attention disorders and behavioural problems
Antimony	0.7	31.5	Respiratory, cardiovascular and gastroenteric disorders.
Strontium	340	15300	Naturally occurring strontium not harmful. But radioactive isotopes can cause bone cancer.
Uranium	1	45	Reproductive toxin. Can also affect kidney, brain, liver and heart. Uranium decays into radon which is associated with lung cancer.
Mercury	0.22	9.9	Potent neurotoxin. Affects central nervous system. Dental problems. Memory loss. Methyl mercury can affect pregnancy outcomes. Cause serious birth defects.

Hydrological Impacts



Altering Drainage; Endangering People



Protests: Making it Real for Investors

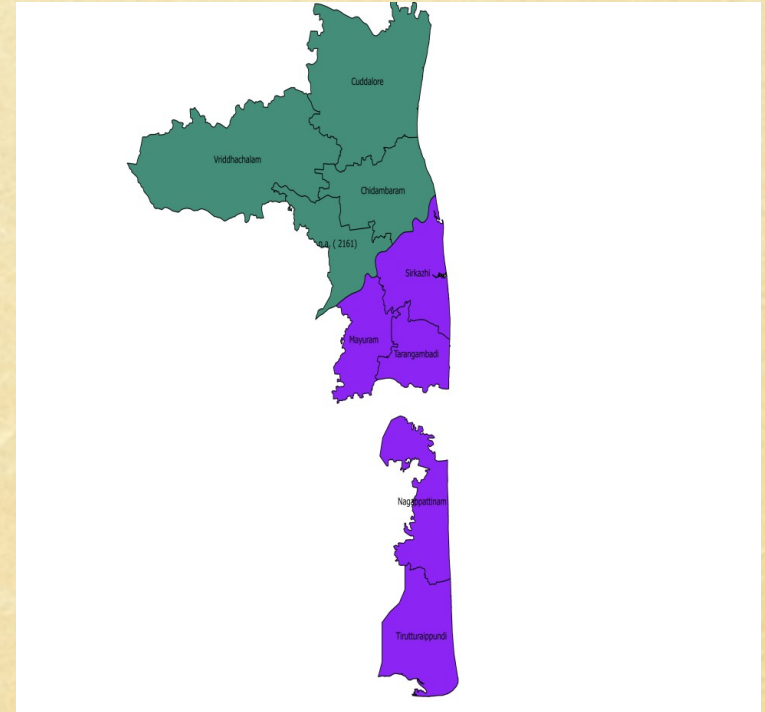


Two UMPPs 6 mi Apart



Coal and More

- SIPCOT Industrial Estate
- SIMA textile park – water intensive
- IL&FS 4000MW
- CPCL 1320 MW
- SRM 1980 MW
- NOCL Refinery – 6 mtpa
- Neyveli – 3000 MW
- 256 sq km PCPIR
- Coal plant clusters in Sirkazhi 4260MW



Wish List

- ▣ Cost to Health (Public; state; proponent)
- ▣ Cost to Environment (Public; state; proponent)
- ▣ Land-use change-induced Vulnerability (World Bank \$250 million project)
- ▣ Coal = Asbestos (Medico-legal/Env Liability)
- ▣ Just Transition – Start Talking

**Pre-Application Conference
for
Odisha and Cheyyur Ultra Mega Power Projects
4000 MW Each**

Tuesday - 15th October, 2013

Bangor Hall, 'The Ashok' Hotel, New Delhi

CHEYYUR POWER PLANT = RISKY & BAD INVESTMENT

Power Finance Corporation Ltd.

Ministry of Power
Government of India

Technical Partner



Central Electricity Authority

