



Biogas In India

Opportunities
And Support Structures

Overview



- What is the Indian growth machine?
 - Energy needed
 - Policy Frameworks
 - Sources and the role for biogas
- Partnerships
 - **Indo-Swedish partnerships for growth and development (national-regulatory, state-planning, local-technology and implementation)**
 - **Mechanisms for partnership**

Where is India today



28 states; 7 UT; 604
districts; 638 365 villages

Cities: divided into different
classes

28 t1 (> 1 million),
7 t3 (> 4miljoner)



Where is India Today



Avg of 8 per cent growth - 4 years

Per capita income - \$ 960 (2008) \$400 (2000)

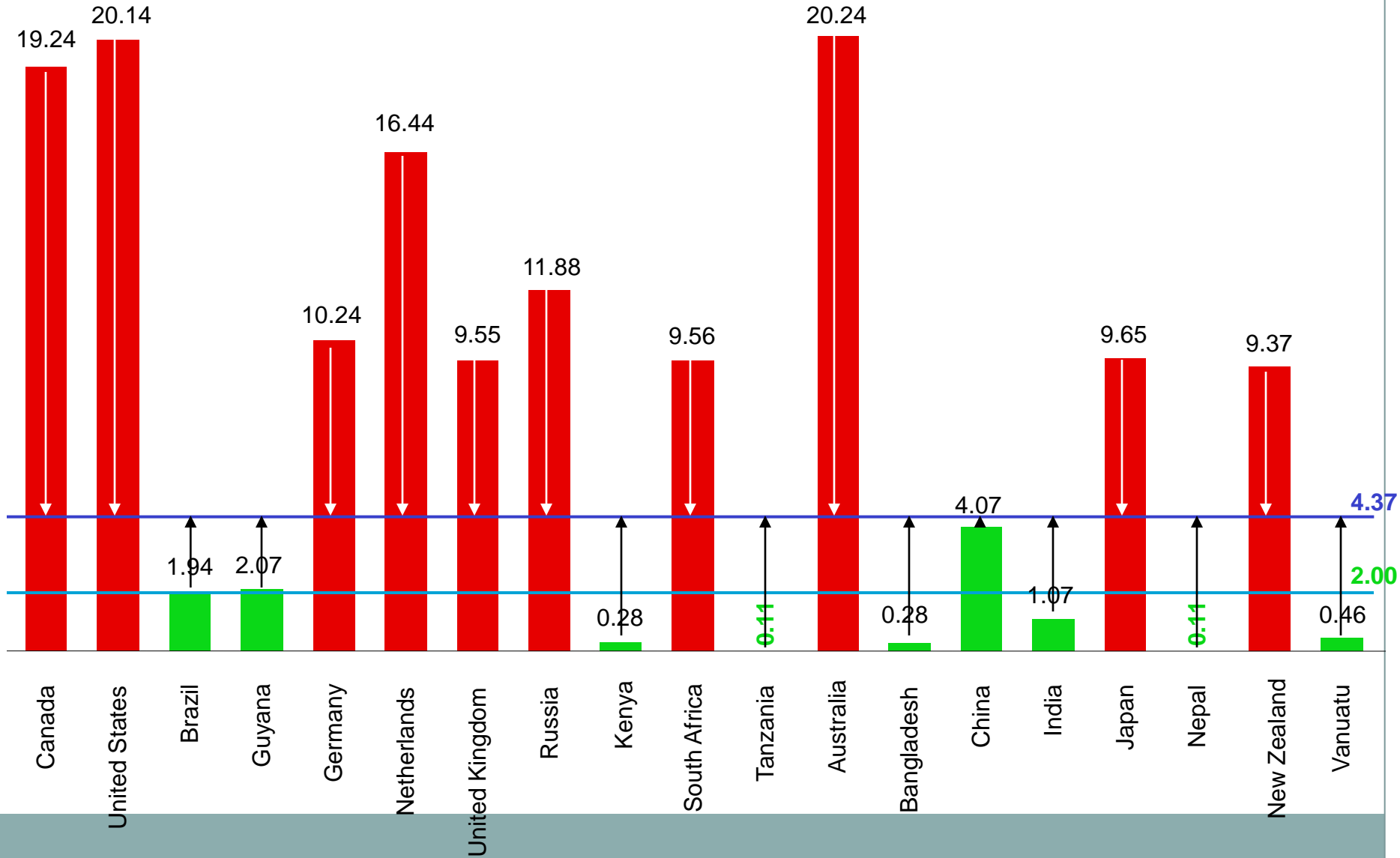
400 million people without access to electricity

70 per cent working in agriculture

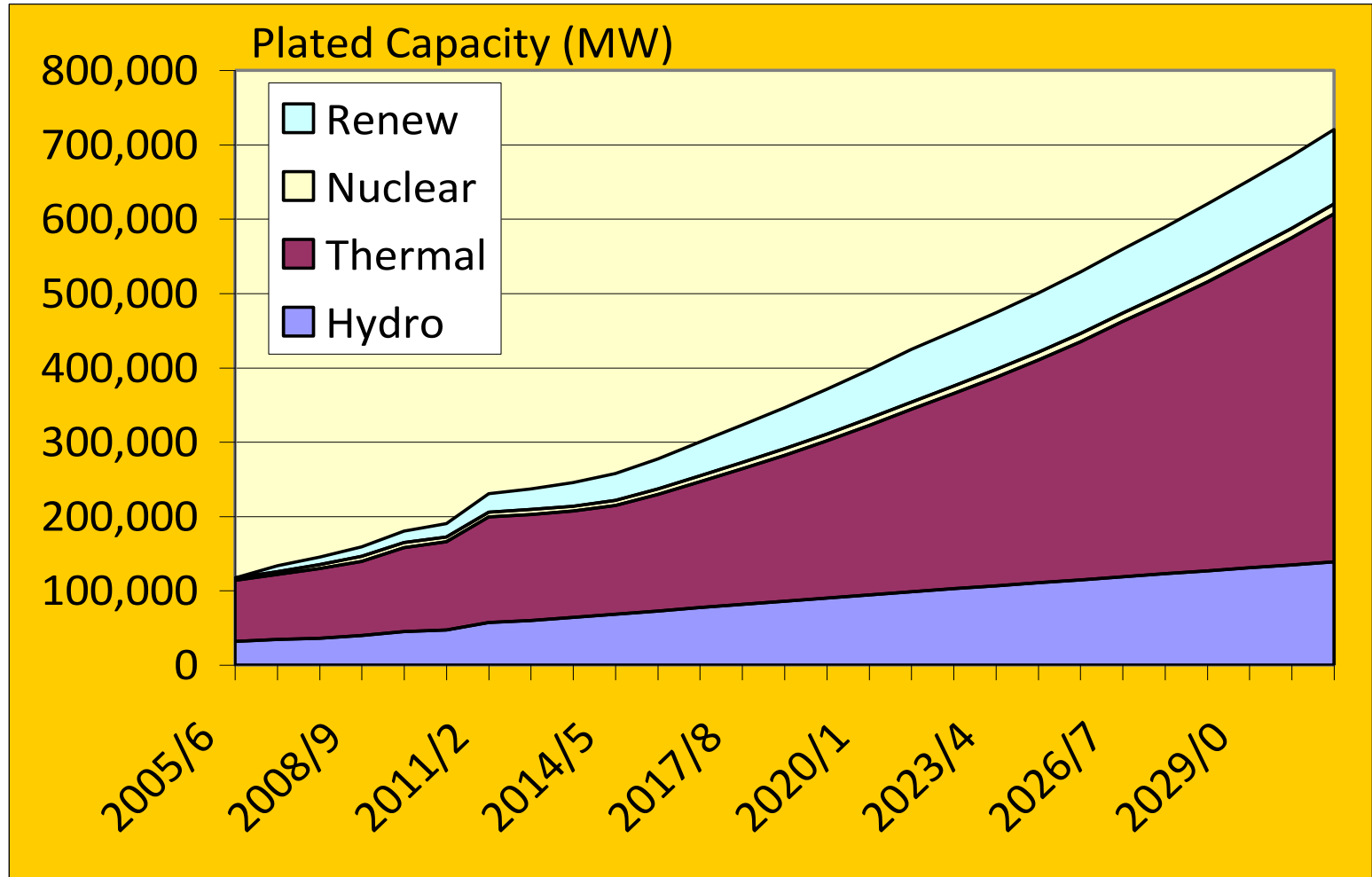
262 million people below \$1/day

Perception; INCREASED HDI = increased energy and electricity consumption

Current State of Play



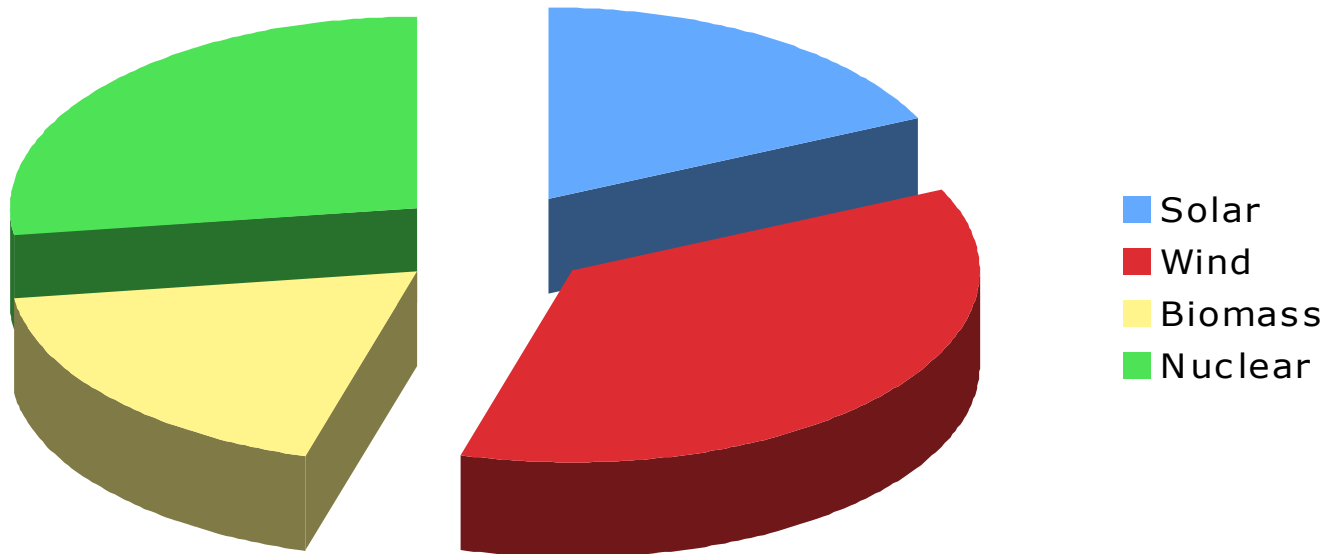
Where does india want to be



Where India wants to be



Clean Energy Sources 2020

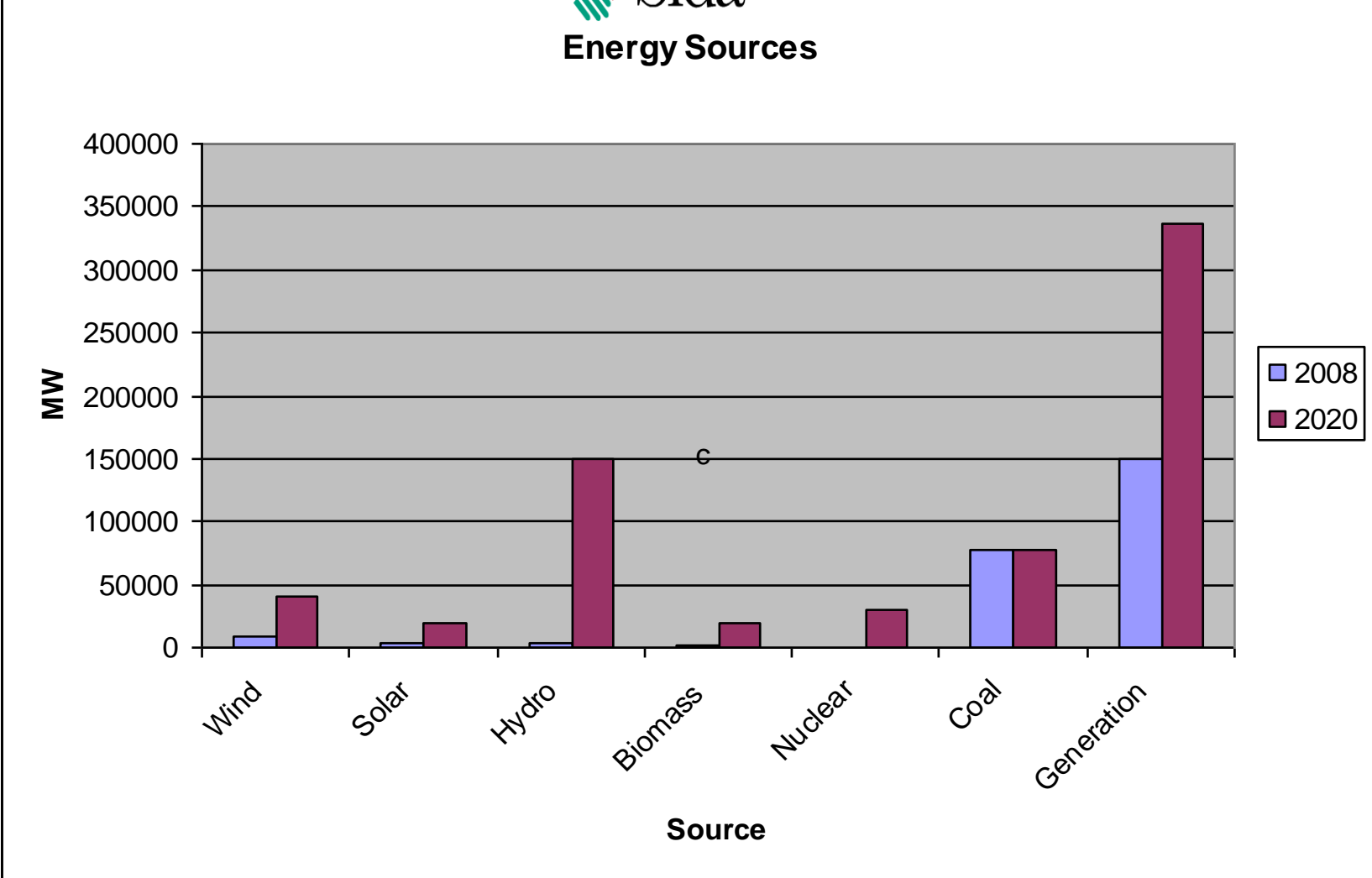


The GAP - 1



Sida

Energy Sources



The GAP - 2



- Challenges of planned green growth
- Moving decision making down - capacity building
- National security concerns for energy production (local supplies)
- Challenges to democracy in pursuing national agenda
 - Land needed
 - Resources and minerals required
- Biogas research and development becomes an easy win-win

Biogas in India



Biogas started in India with 'gobar gas' or cow based energy

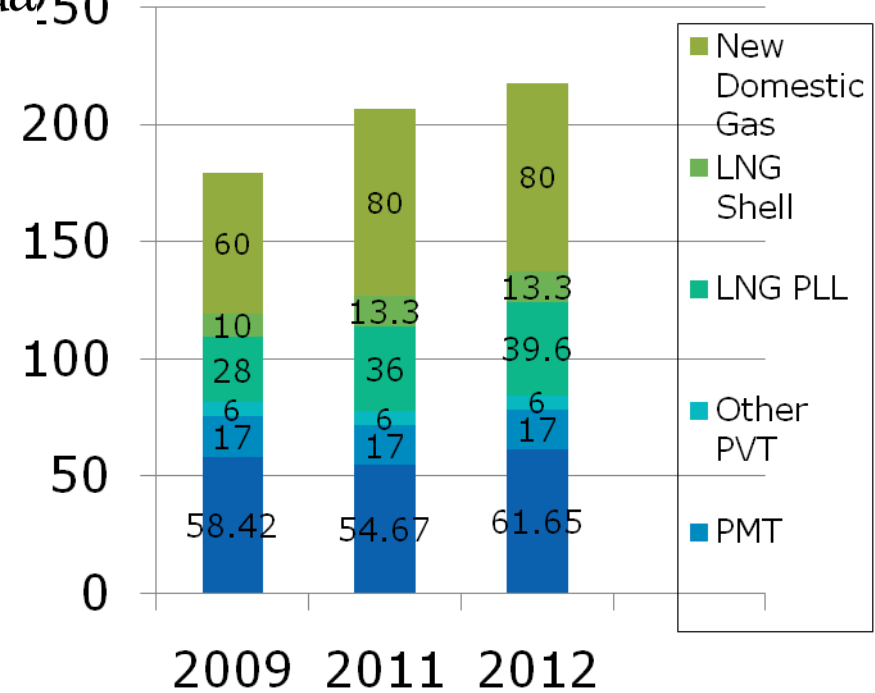
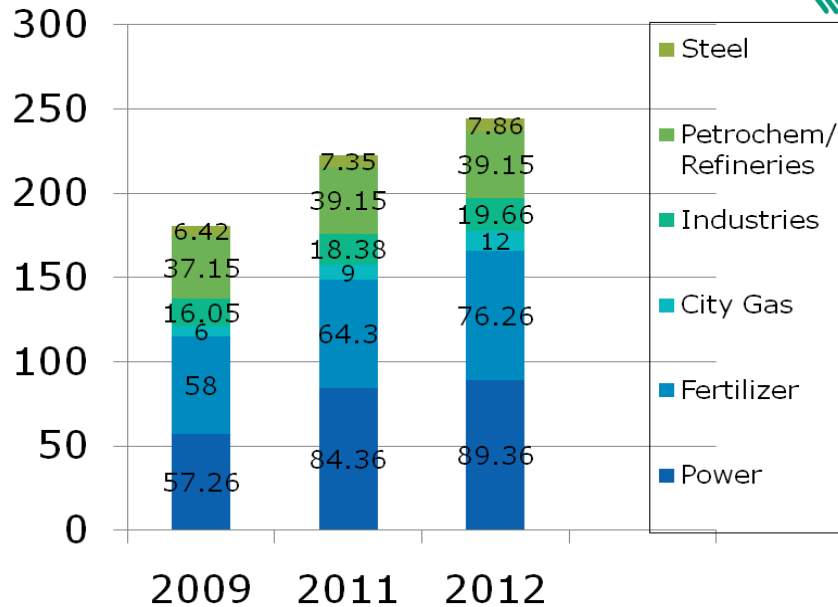
First plant ww - 1859 Leper Colony Pune

However today it has vast potential
As a self sufficient source for
Municipality energy

CNG supply for transport expanding



India's gas demand and supply

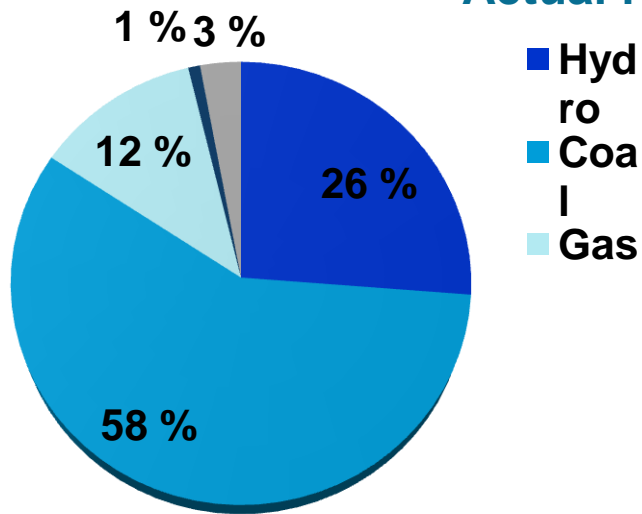


MMSCMD	2009	2011	2012	2025 (At Kearney study)
Demand	181	223	244	349
Supply	179	207	218	286
Gap	2	16	27	63

Biogas in India



Actual Nov. 2009



India ranked 5th in World wide CNG production

2007-08 only 75% of total demand was met

Action Agenda India



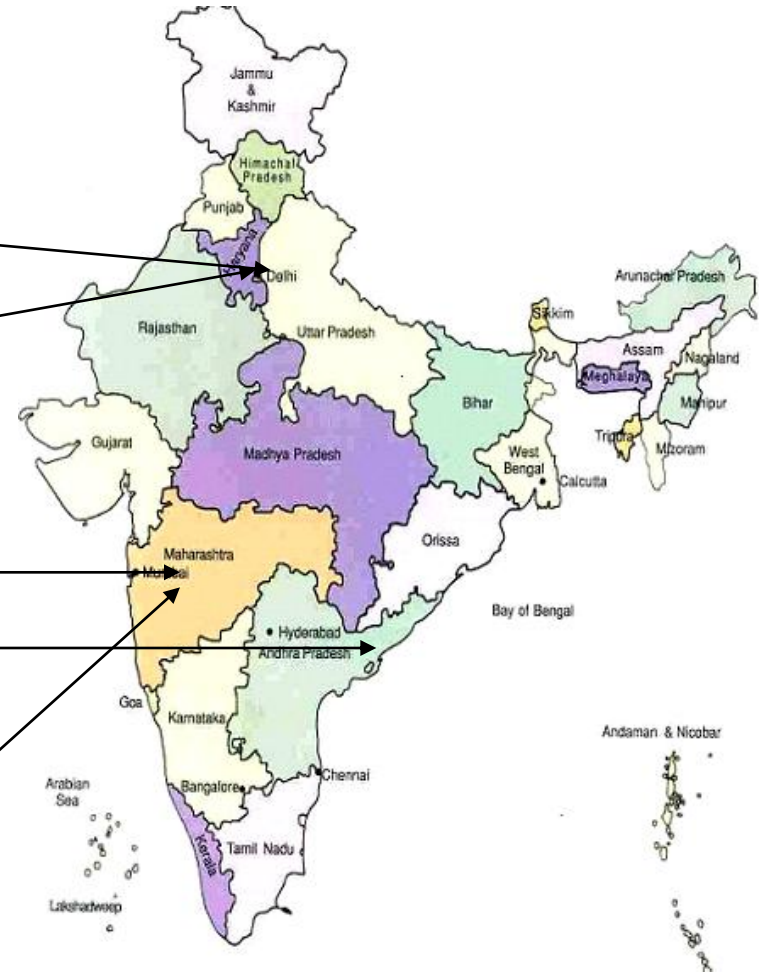
- National Urban Renewal Strategy
 - 63 cities
 - SEK 500 million to upgrade waste facilities and for waste to energy production
 - Infrastructure projects (biogas for public transport)
- Ministry National Waste handling Guidelines
 - To accelerate the promotion of setting up of projects for recovery of energy from urban wastes;
 - To create a conducive conditions and environment, with fiscal and financial regime, to develop, demonstrate and disseminate utilisation of wastes for recovery of energy; and
 - To harness the available potential of MSW-to-energy by the year 2017
- Dec, 2009 – India's commitment to reduce emissions intensity by 20-25 % (2005 levels)

Indo Swedish opportunities

Imagination, innovation, investment



- Regulation – National
 - Pollution Control (Swe EPA and CPCB)
 - Energy Efficiency (Swedish Energy Authority and BEE)
- State
 - Sustainable Cities
 - ✦ Pune (Ramboll and PMC)
 - ✦ Vizag (GVMC and Sipu – 1st phase)
 - Waste to Energy
 - ✦ Pune (Sweco and PMC/ Purac and PMC)

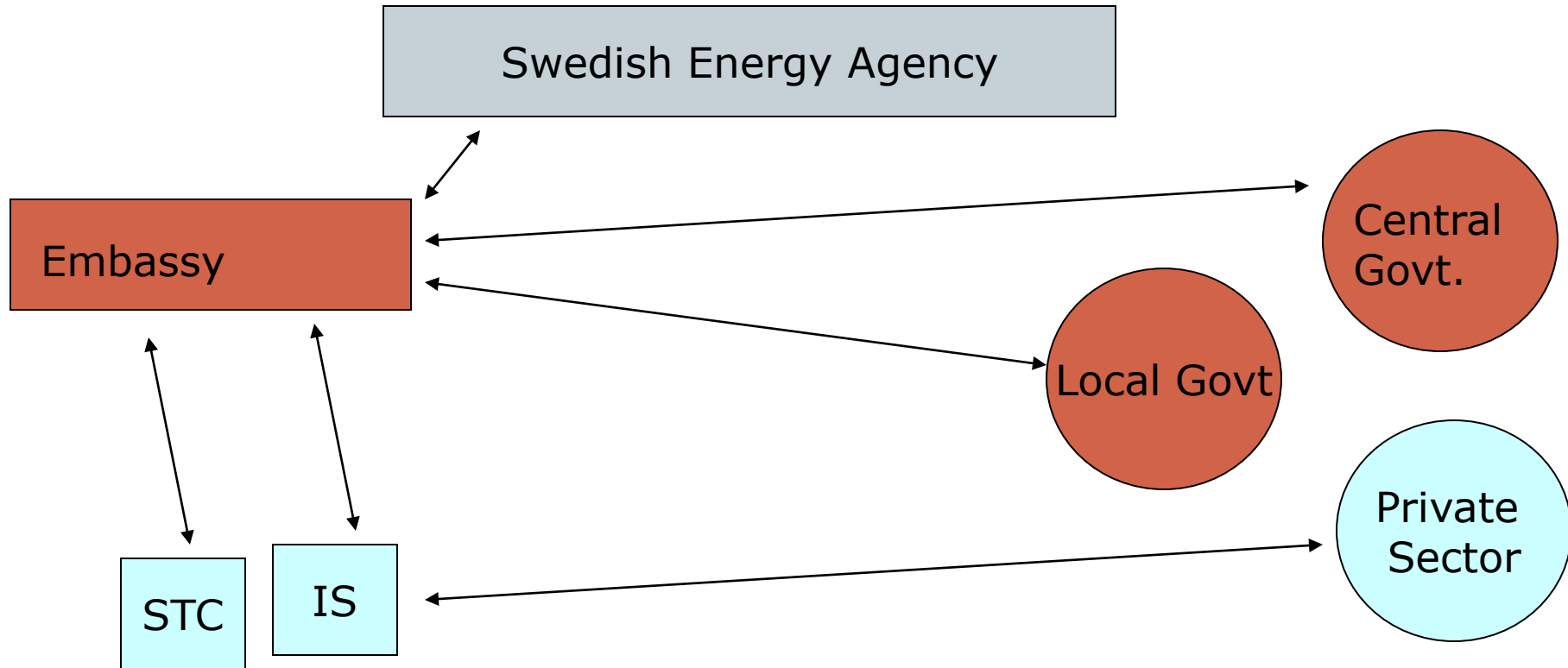


Biogas Lessons Learnt



- Understand demand (transportation to energy)
- Understand existing infrastructure and aim for small changes (STPs upgrading for effective flare)
- Provide integrated delegation (consultants, municipalities, funders, technology providers)
- Flexible mechanism for demand provision (consortium, JVs)

10 Steps for success - Biogas Phase 1



Framework for Cooperation



- **November 5, 2009 MoU Signed**
 - environmental governance in the areas of environmental legislation, regulation, monitoring, enforcement and planning
 - sustainable urban development
 - integrated solid waste management
 - air and water quality management
 - cooperation in new and renewable energy
 - clean production and technology
 - environmental health
 - other areas mutually agreed upon
 - Climate change, including CDM, research and development

Indo Swedish Support

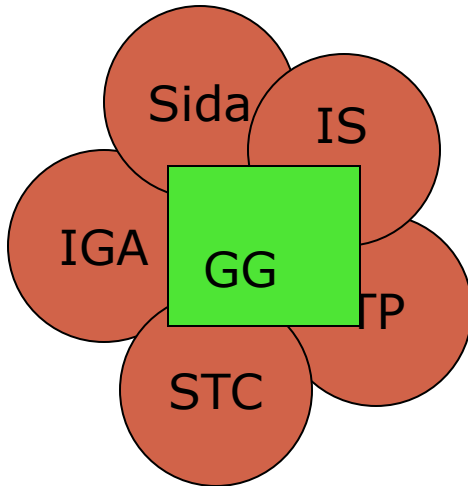


EMBASSY / NEW DELHI

Environment Counsellor

Project Administration

Facilitation with Government of India



Sida Tools - platforms for knowledge



Many SMC's in Sweden, tools buffer risk and catalyse action

- Business for Development (B4D), 50 % contributions (max of 200,000 EUR) 2 calls/year (HQ)
- Loans and Guarantees (HQ)
- DemoEnvironment (hardware) (HQ)
- Indo-Swedish Environment Facility (software, knowledge, adaptation of technology) (Embassy)
 - Planning 75,000 SEK
 - Project 2.5 million SEK