



“Energy security policy and resource diplomacy in India”
**“Regional cooperation in Asia for stabilising
energy demand and supply”**

A.M.Uplenchwar

Director(Pipelines), IndianOil Corporation Limited

On Behalf of

GOVERNMENT OF INDIA

25th November 2005, IEEJ, Tokyo, Japan



India: What Global Experts Say

A.T.Kearney FDI Confidence Index (October 2004) –
India rose from sixth to third most likely FDI location.

Stephan Roach, MD, Morgan Stanley (April 2004) –
India has a well-developed banking system, vibrant capital markets and a new generation of indigenous world-class companies.

Far Eastern Economic review (April 2004) –
India's growth model promises more stable, sustainable expansion and bigger returns for investors than China or other adherents of the East Asian development strategy have delivered.

Goldman Sachs report 'India: Realising BRIC's Potential' (April 2004) –
India could become one of the world's three largest economies in less than 30 years



Presentation Covers....

- **Global Energy Mix**
 - ✓ Asia Pacific Energy Mix Shift
- **Indian Scenario**
 - ✓ Macro economic scenario
 - ✓ Energy scenario
 - ✓ Hydrocarbon demand - Resource management
 - ✓ Self Sufficiency Level
- **Energy Security- India**
 - ✓ Key issues
 - ✓ Oil and Gas Security
 - ✓ NELP etc.
 - ✓ Investment opportunities
 - ✓ FDI Policy
- **Looking ahead - Regional cooperation**
 - Regional Cooperation Issues
 - Collaborative efforts



Global Energy Mix



Energy Mix - 2004

(% share)

Energy	North America	Europe & Eurasia	Asia Pacific	Global Average	India
Oil	40	32	34	37	32
Natural Gas	25	34	10	24	8
Coal	22	18	47	27	54
Nuclear	8	10	4	6	1
Hydel	5	6	5	6	5



Oil Consumption Trends

Million bbls/day

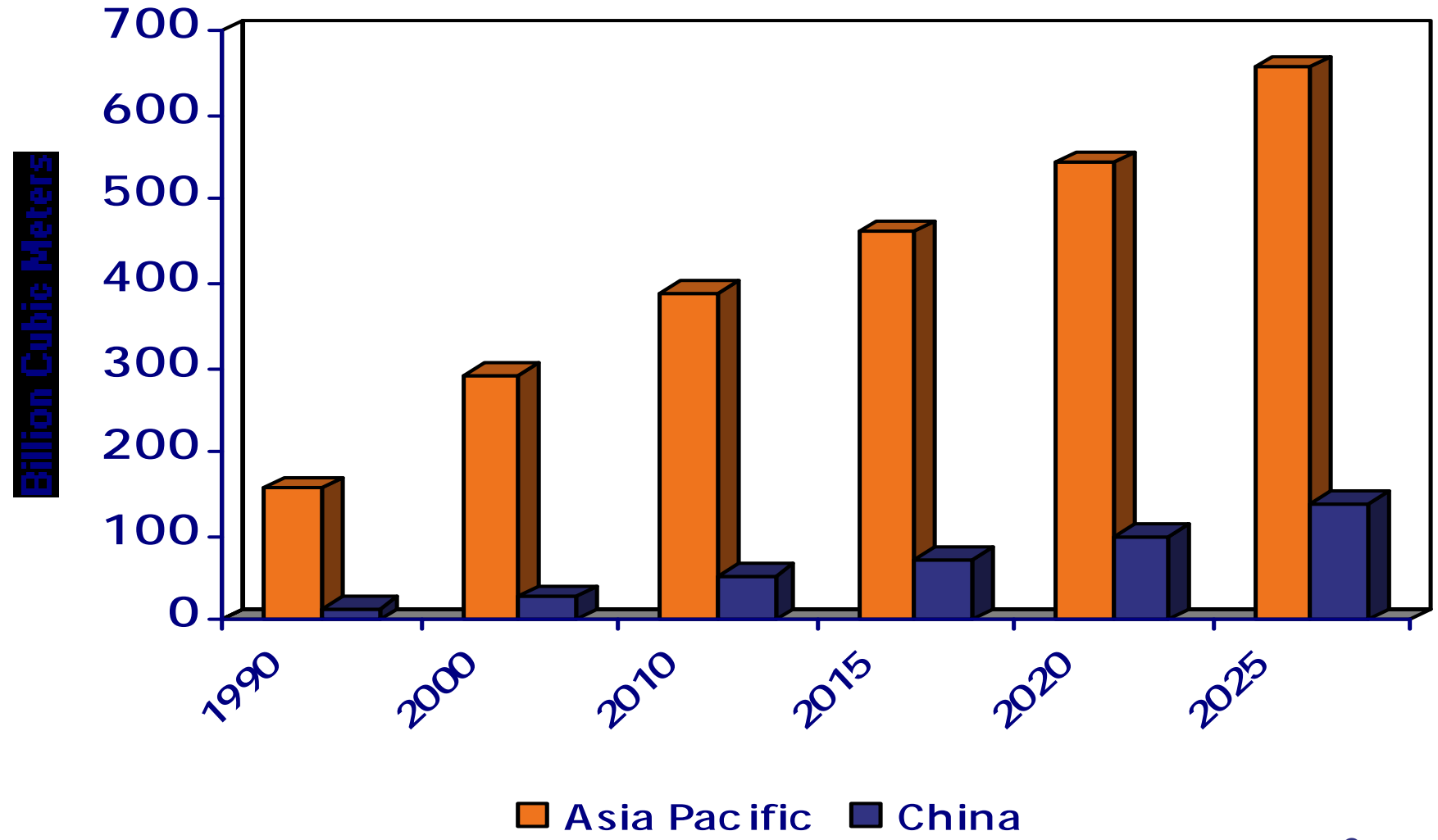
	1990	2000	2005 (Est.)	2010	2015	2020	2025
World	66.1	76.9	84.3	91.4	100.5	110.3	120.9
Asia Pacific	13.6	21.0	24.4	27.2	30.8	34.8	39.1
China	2.3	4.8	6.9	7.6	9.2	11.0	12.8
India	1.2	2.1	2.4	2.8	3.5	4.4	5.3

China and India in the lead !!!

- however concerns on rising import dependence!



Rising Natural Gas Consumption in Asia



Source: EIA



Key issues - Global

- Security of supplies
- Equal access to affordable energy in developing countries
- Challenge of maintaining co-operation between consuming and producing countries
- Regional co-operation for sustainability
- Logistics management and investments in infrastructure
- Environmental impact
- Clean Energy



Indian Scenario



India - an inspiring macro-economic show

- 1028 million population - the largest democracy with established legal & financial disclosure system.
- Among world's fastest growing economies (avg.GDP growth)
 - ✓ 6.9% during 2004-05 - growing @ 7% in 2005-06
 - ✓ Increasing share of Services sector - 41% in 1990 to around 60% in 2004-05.
- Exports
 - ✓ Over 22% growth in 2004-05 (US\$ 79.60 billion (POL-6.3))
 - ✓ Expected growth of over 17.0% during 2005-06
- Imports: US\$ 106.12 billion in 2004-05 (POL-29.08 bn.)
- Foreign exchange reserves
 - ✓ Close to all-time high of around US\$ 143 Billion (7-Oct-05)



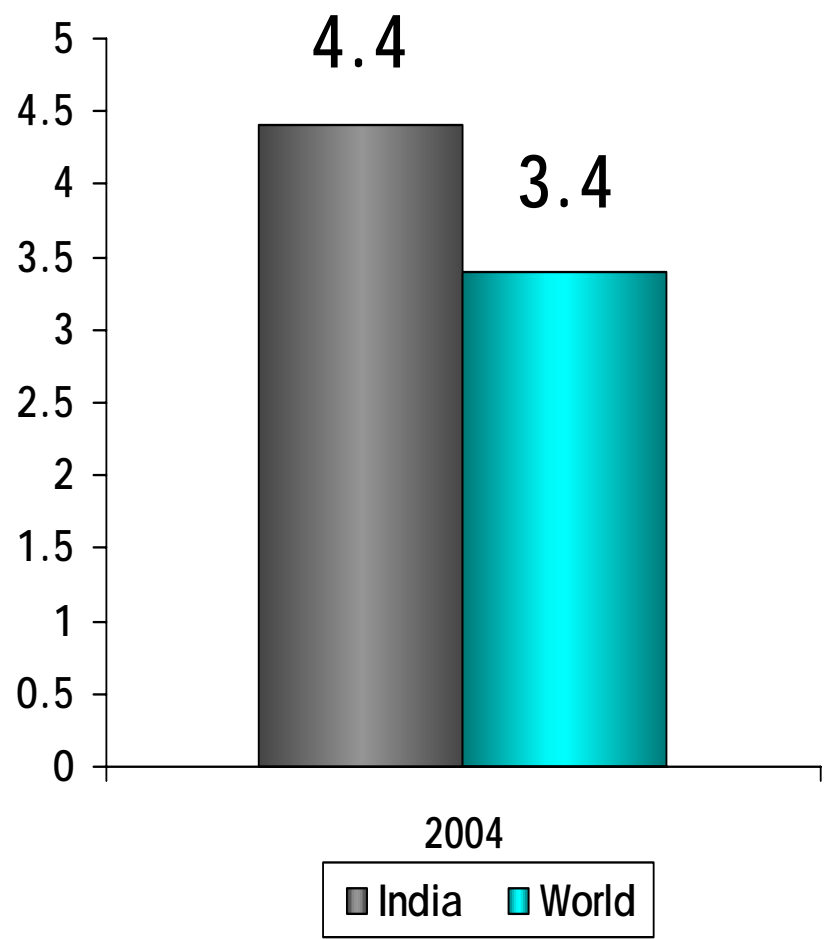
India - Energy scene

- India ranks 5th in the world in terms of Energy consumption
- India currently accounts for about 3.7% of world's commercial energy consumption
- Low per capita Energy consumption at 346 kgoe against 1599 kgoe for world average
- 70% of population dependent on traditional fuels - predominantly biomass
- In commercial energy mix , coal followed by Oil & Gas have major share

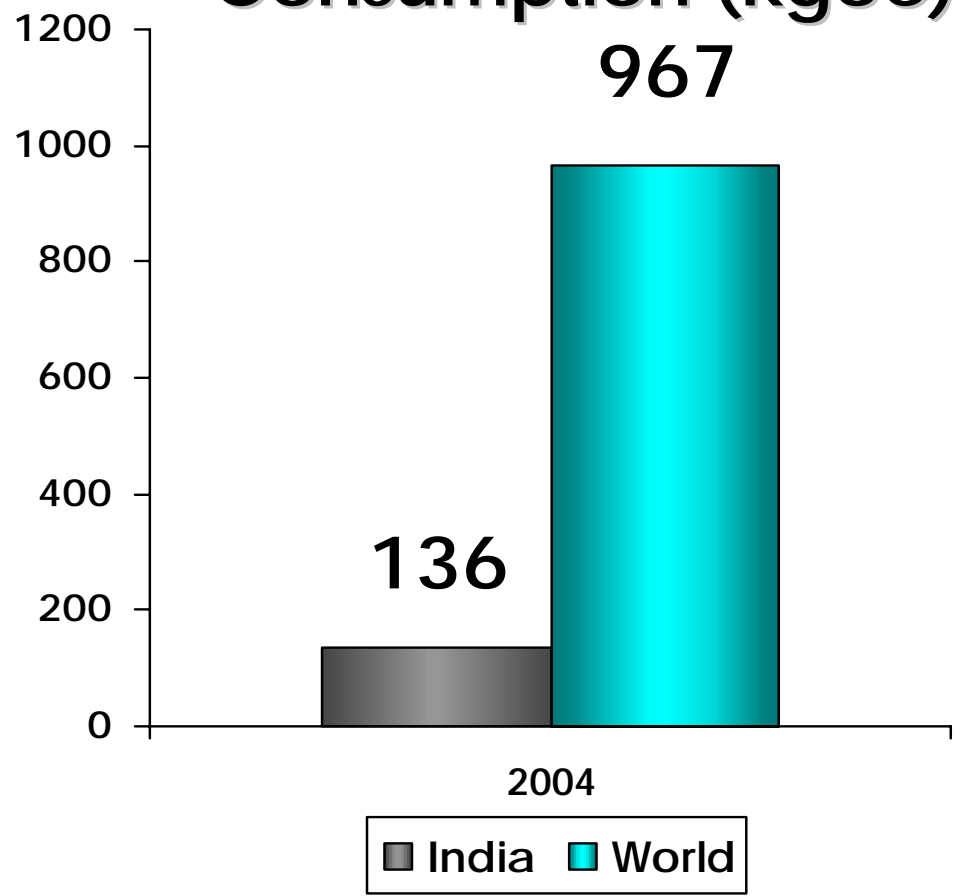


Oil & Gas Growth Picture

Annual Growth(%)



Per Capita Consumption (kgoe)



...High Potential for Growth



Indian Sedimentary Basins

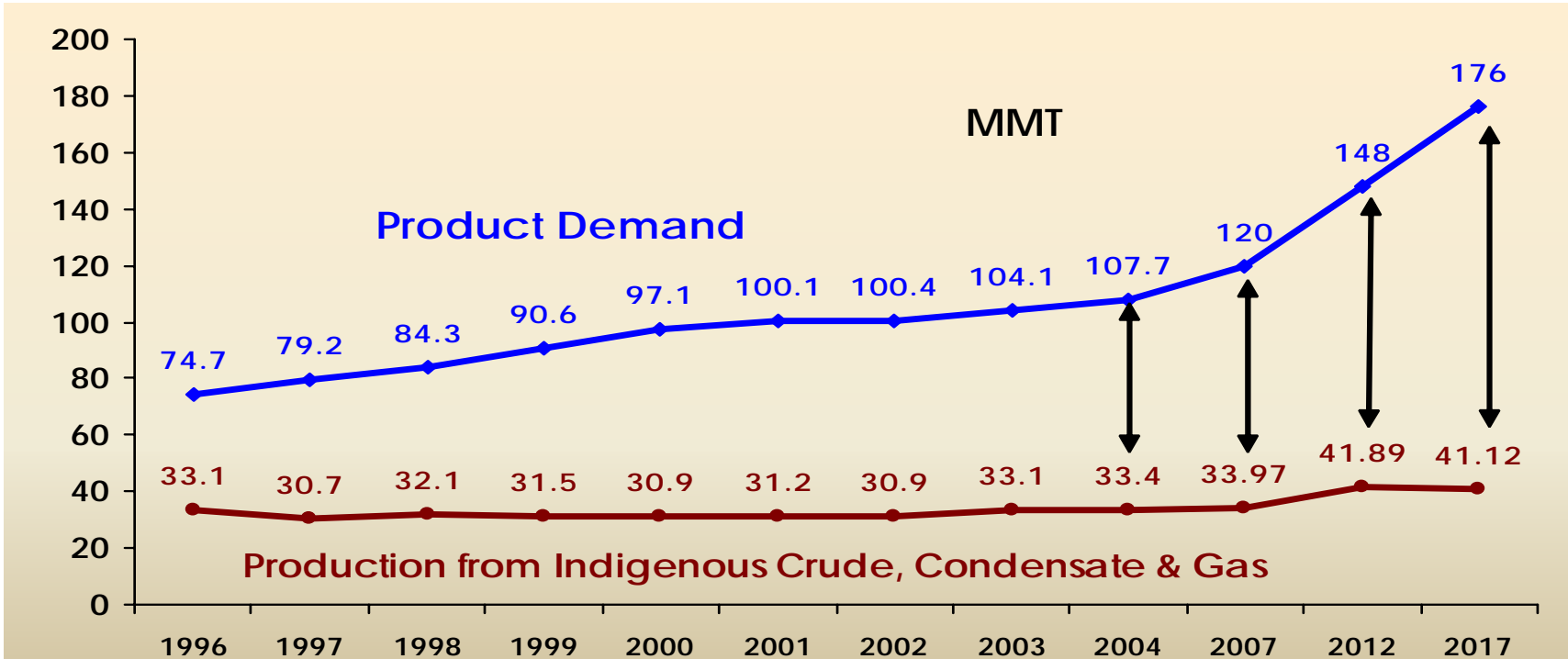
- 26 sedimentary basins: 3.14 million sq. km.
 - Onland area - 1.39 million sq. km.
 - Offshore area - 1.75 million sq. km.
- Hydrocarbon reserves as on 1.4.2005
 - Proven reserves– 1.77 billion tonnes
- About 50% of area unexplored or poorly explored



.....a Scope to Explore Untapped Potential



Widening gap between demand and domestic supply



- Widening gap between demand and production from indigenous sources; Heavy dependence on Imports
- Bridging the gap - Oil Equity abroad and fresh finds under NELP
- Subsequent need for huge investments in refining, pipelines & Marketing infrastructure



Energy Security : India



Key issues - India

■ Hydro

- Well below potential
- Long gestation period
- Implementation constraints - Rehabilitation, Environmental clearances

■ Coal

- High emissions
- Low efficiency
- Low calorific value & high ash content
- Concentration in Eastern and South Eastern Region

■ Nuclear

- Below potential
- Security of supply
- Implementation constraint - Uranium availability, financing



Key issues - India

- **Renewable**
 - Huge potential available
 - Must for rural security
 - R&D efforts needed
- **OIL**
 - Vulnerable to disruptions
 - Security of supply/ Finite
 - High price volatility
 - Rising import bill
 - Impact on GDP
- **Gas**
 - Security of supply
 - Access to Pipeline gas
 - Leverage over LNG suppliers
 - Huge infrastructure needs



Key issues - India

- **Thrust towards integrated Energy Policy**
 - Improve energy efficiency in use of commercial fuels
 - Develop & deploy alternate energy - Biomass, Wind, Solar energy
 - Diversify energy sources for greater supply security
 - Investment in technology and skills
 - Remove infrastructure bottlenecks
 - Promote a culture of energy conservation

*..... for sustainable Growth and continuous availability of
in sufficient quantity at reasonable price with minimum
damage to environment*



Indian Oil and Gas



Oil Supply Security Strategy

- **Three pronged approach**
- **New Exploration & Licensing Policy (NELP)**
 - Intensification of exploration efforts and achievement of 100% coverage of unexplored basins to enhance domestic availability of crude
 - Blocks under NELP I, II, III , IV & V awarded
- **Equity Oil overseas**
 - Secure acreages in identified countries having high attractiveness for ensuring sustainable long-term supplies
- **Strategic Reserves**
 - Establish adequate Strategic storage of crude and Petroleum Products

In addition, exploit untapped potential of alternate fuels in the Hydrocarbon sector



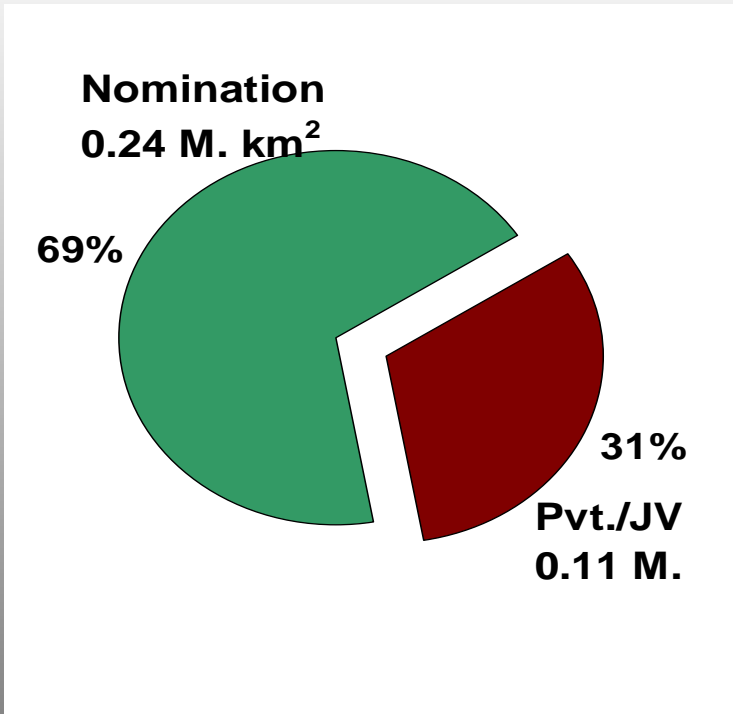
New Exploration Licensing Policy

- ✓ Policy approved in Feb 1997
- ✓ Award of licenses through international competitive bidding
- ✓ Fast track approval mechanism through single window Empowered Committee of Secretaries (ECS)
- ✓ Upto 100% foreign participation
- ✓ No acreages on nomination basis
- ✓ NOCs to compete in the bidding rounds
- ✓ An internationally competitive fiscal regime
- ✓ Model Production Sharing Contract (MPSC) & Petroleum Tax Guide in place



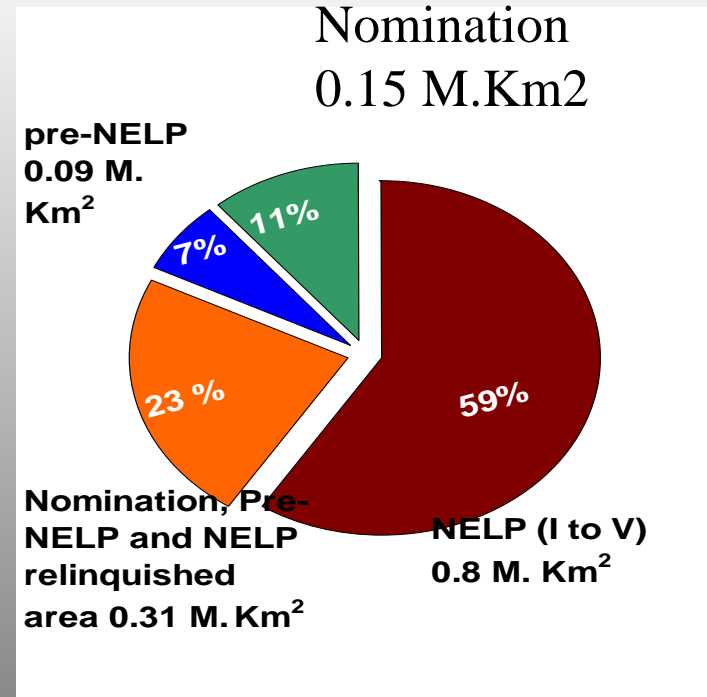
NELP Impact : Exploration Coverage Trebled

Area under License – 0.35 Million Sq. km



2000

Area under License – 1.04 Million Sq. km



2005



Against 203 Petroleum Exploration Licence(PEL) and 163 Mining Lease (ML) before NELP in 1996, today 235 PEL and 294 ML concessions are under operation



Success story of NELP

- NELP has helped large increase in exploration coverage
- 32 discoveries with hydrocarbon in-place reserves of over 600 MMT
- Investment commitment of about US \$ 5 billion in exploration phases under NELP
- Multiple players are adding to geological ideas and technologies in finding oil & gas
- Perception of prospectivity of Indian sedimentary basins positive, reflected in NELP-V response

WHILE ONLY 28 BLOCKS WERE AWARDED IN PRE NELP, 110 BLOCKS HAVE BEEN AWARDED UNDER NELP I to V



Equity Oil and Gas abroad

X Plan Target

Oil : 5.2 MMT

Gas: 4.88 BCM

X Plan likely Achievement

Oil : 16.45 MMT

Gas: 4.41 BCM

In 2004-05, 5.08 MMT of O+OEG production ex Sudan and Vietnam

Planned Target

To produce 20 MMTPA of oil and gas by 2020 from abroad

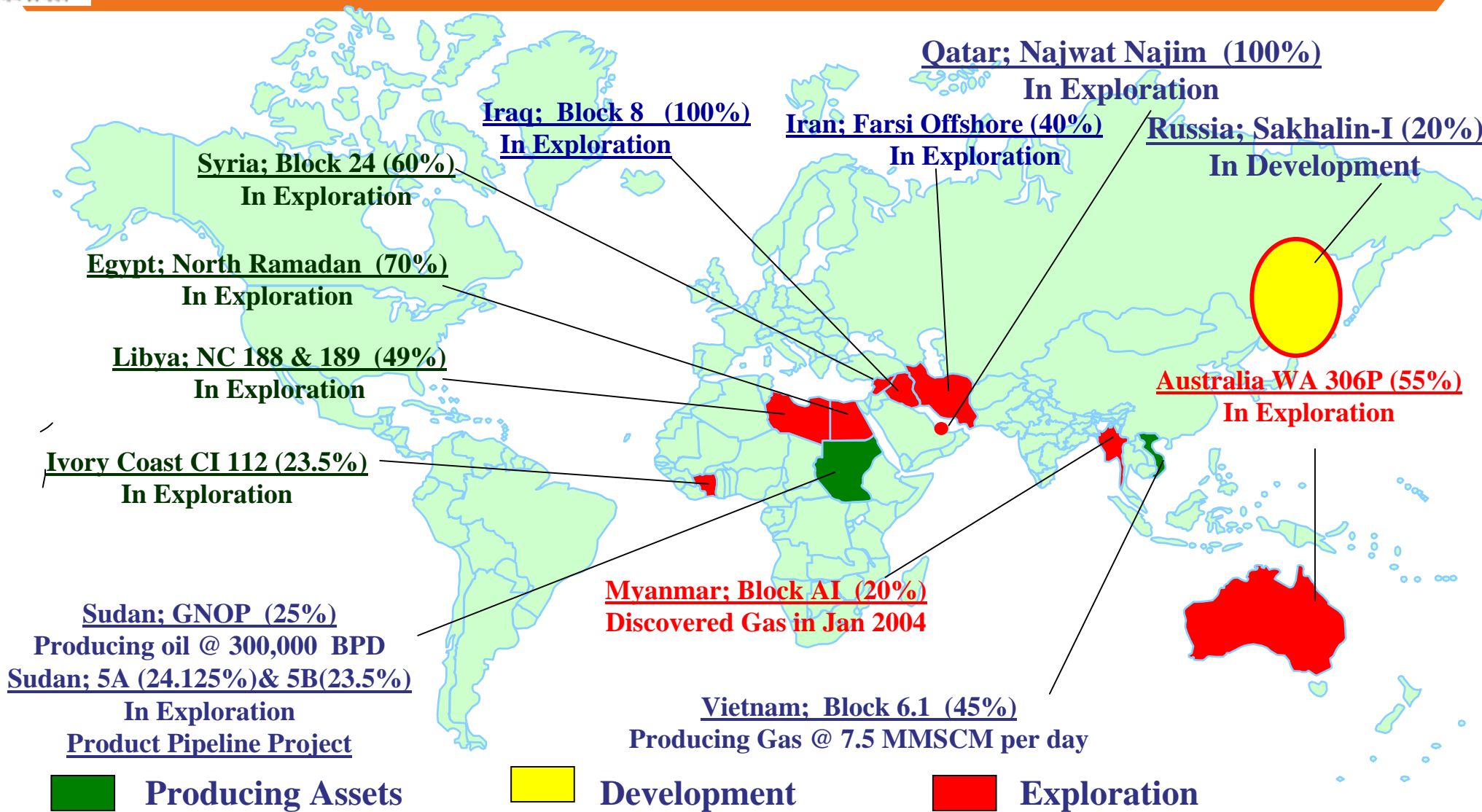
Revised Target

To produce 20 MMTPA by 2010

- OVL's presence in 12 countries- Russia, Sudan, Vietnam, Iran, Libya, Syria, Myanmar, Iraq, Australia, Cote d' Ivoire, Egypt and Qatar
- Estimated investment commitment of over US\$ 5 billion
- OIL, GAIL and IOC also have exploration interest abroad



Augmenting Hydrocarbon Production : Overseas Initiatives

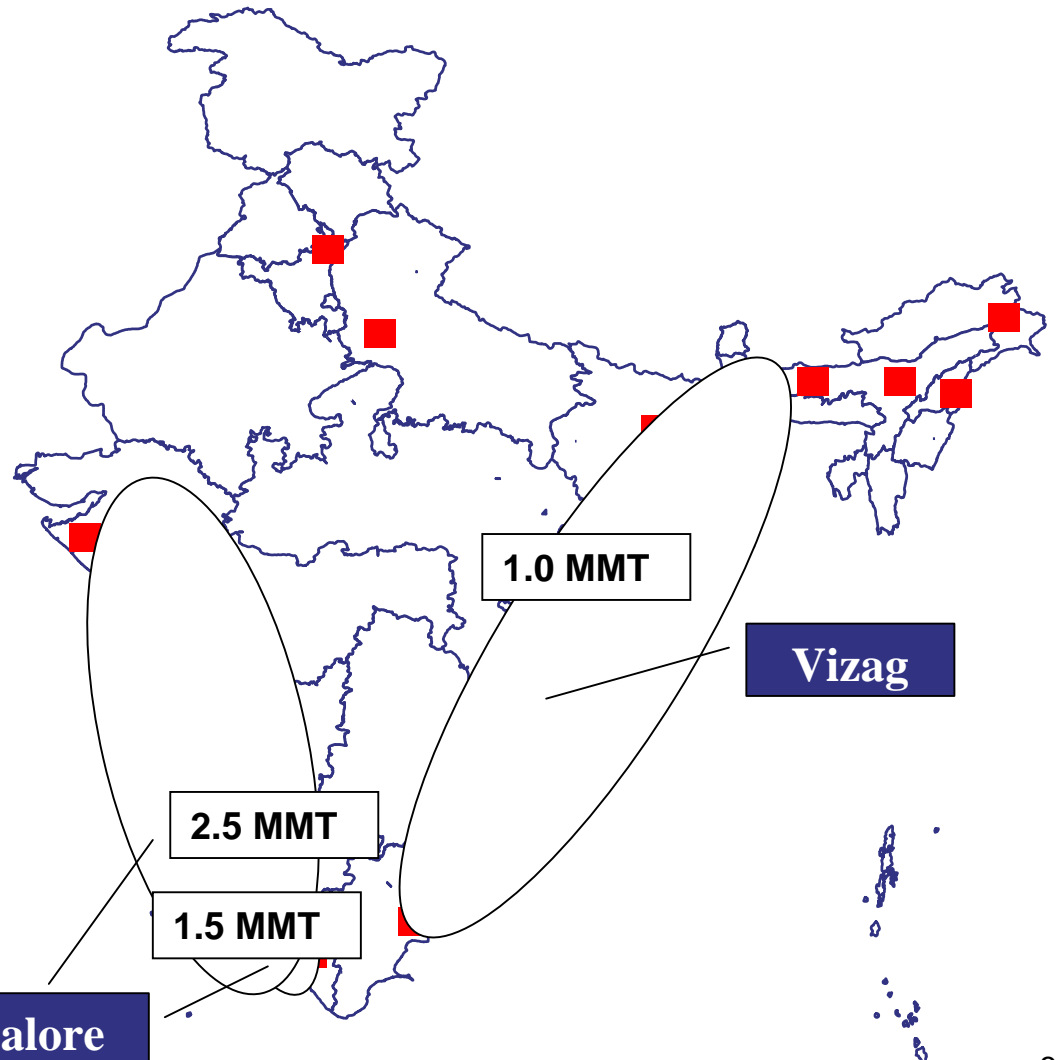


Oil diplomacy to enhance oil security



Strategic Petroleum Storage

- Approved setting up of 5MMT strategic crude oil storage
- Strategic storage to provide 15 days cover of consumption in case of supply disruptions
- Estimated Construction costs: \$ 0.4 billion
- Special Purpose Vehicle created to establish storages





Alternate Fuels

- **Ethanol Blended Fuels**
 - 5% Ethanol blended Petrol
 - Study for Ethanol blending with Diesel in progress
- **Bio-Diesel (B-Urja)**
- **Coal Bed Methane**
 - Untapped Potential - 1000 billion cubic meters
 - 8 blocks awarded under National CBM Policy
- **Gas Hydrates**
 - National Gas Hydrates Program formulated
- **Hydrogen**
 - India - active player in global efforts for Hydrogen as fuel



Conducive Environment for Investment



Petroleum & Natural Gas Regulatory Board Objectives (Proposed)

- To regulate refining, processing, storage, transportation, distribution, marketing and sale of POL and Gas
- To protect interests of Consumers; and concerned Entities
- To promote competitive markets
- Grant marketing rights for notified petroleum products
- Give permission for establishing LNG terminals
- Regulate transportation of petroleum products including gas by pipelines
- Protect consumer interest by monitoring prices and ensuring adequate availability



Upstream Regulatory Frame-work

- **Presently the Government performs regulatory functions of the Upstream**
- **DGH monitors health of reservoirs and safety aspects and represents Government in the monitoring of Production Sharing Contracts (PSCs)**
- **DGH also monitors licenses granted by the Government**
- **DGH also carve out exploration blocks for licensing rounds**
- **DGH acquire data to gather information about unexplored/poorly explored areas**



FDI Policy

- **Under Exploration Policy** : Upto 100% FDI permitted
- **Refining** : Up to 100% FDI as Private Indian Company under automatic route , Up to 26% FDI along with Public Sector Companies
- **Marketing & Trading**
 - 100% wholly owned subsidiary, of a foreign company, for market study, investment & financing
 - FDI up to 100% permitted in petroleum product marketing, subject to introducing 26% minimum Indian equity over 5 years
- **Pipelines**
 - Up to 100% FDI: Under automatic route for product pipelines
- **Natural Gas/LNG Pipelines**
 - Up to 100% FDI: With prior Government approval



Investment



Upstream Sector

- **NELP-VI expected to be launched in early 2006**
- **A large sedimentary area still remain unexplored**
- **Opportunities for farm-in / farm out in existing PSCs**
- **Increasing opportunities for oil and gas supply and service companies**
- **CBM-III expected to be launched in early 2006**
- **Huge appetite to absorb investment in the Indian E&P sector**
- **Strategic alliance for taking E&P opportunities abroad**



Investment Opportunities: Downstream

- **Hugh investments required to service future petroleum and natural gas demand**
- **Particularly in**
 - **LNG terminals : (Several new terminals on east & west coast planned),**
 - **Refineries and their quality upgradation projects (Required to follow Euro III and IV compatible norms),**
 - **Pipelines - gas & petroleum (National and Transnational gas grids planned),**
 - **Storages,**
 - **Retail outlets,**
 - **LPG bottling plants**

.....Over next 15 years it is estimated that investment of about 70 billion US \$ is required in downstream



Looking Ahead : Regional Cooperation



Regional cooperation

- World now a Global village
- Need for cooperation in Asia Pacific
 - Trans-National Gas Pipeline and operation of LNG terminals, Deep sea Gas pipelines & Asian Gas Grid
 - **Joint efforts**
 - Technology development of alternative energy sources
 - Energy conservation & Environment protection.
 - Exchange of information particularly on Hydrogen & Hydrate development
 - **Collaboration between IEEJ and Indian Companies**
 - Study of energy issues pertaining to Asian Markets.
 - Emergency Response Mechanism to tide over temporary oil supply disruptions -Joint /bilateral emergency Stocks



Regional cooperation

- **Collaboration between IEEJ and Indian Companies**
 - **Joint diplomatic initiatives vis-à-vis Gulf Oil producers**
 - **SAFE - Sustainable & Flexible Energy System proposed by Japan- an useful frame work.**
 - **Asian Bank for Energy Development - Iranian Proposal**
 - **Collaborative research on Renewable technologies**

..... **A start has been made - carrying it forward is our Agenda to achieve Stability , Security and Sustainability.**



Thank You

Contact : report@tky.ieej.or.jp