

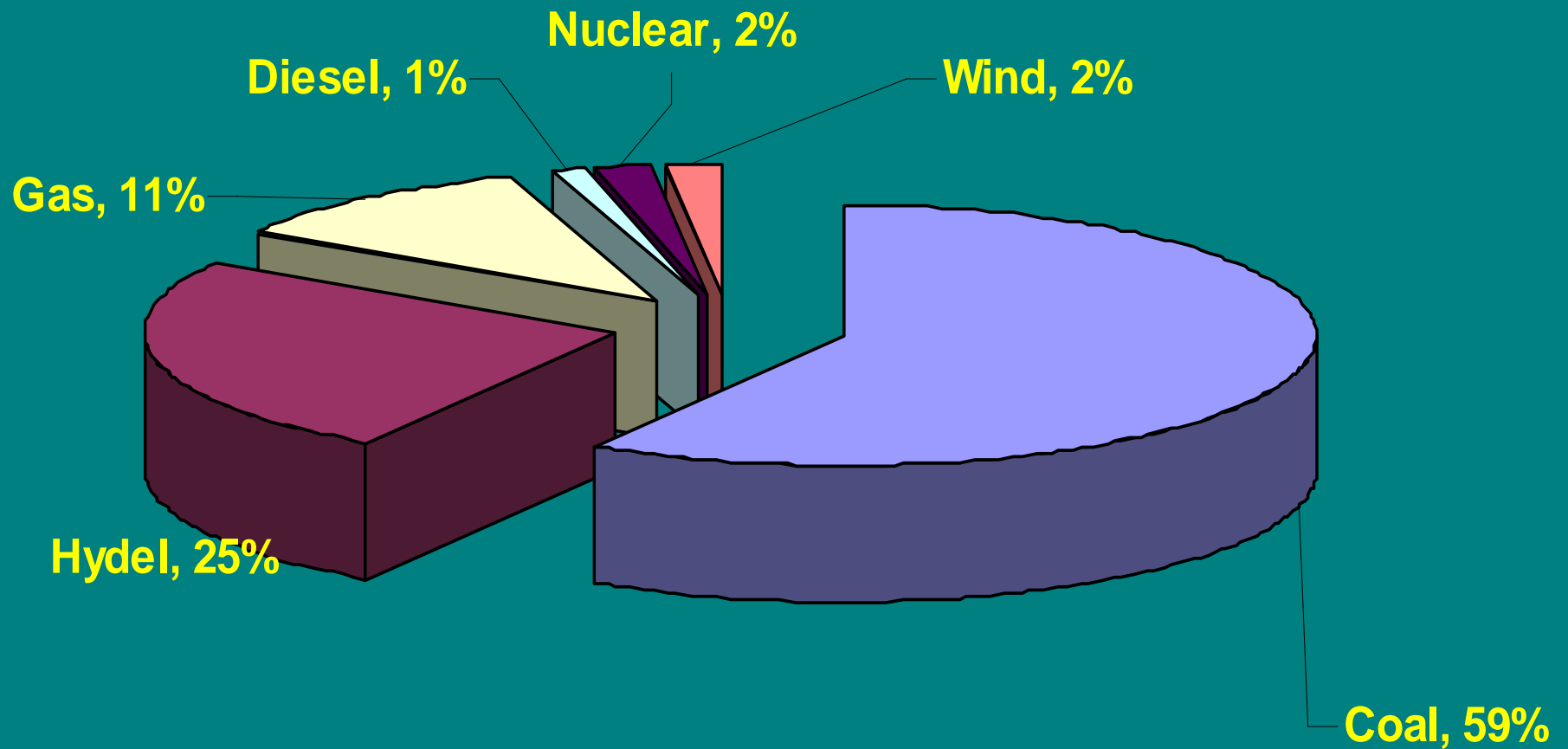
# **COAL MINING IN INDIA : AN OVERVIEW**

**2<sup>nd</sup> INDO-US COAL  
WORKING GROUP MEETING  
WASHINGTON  
NOVEMBER 2005**

# Coal : Prime Source of Energy in India

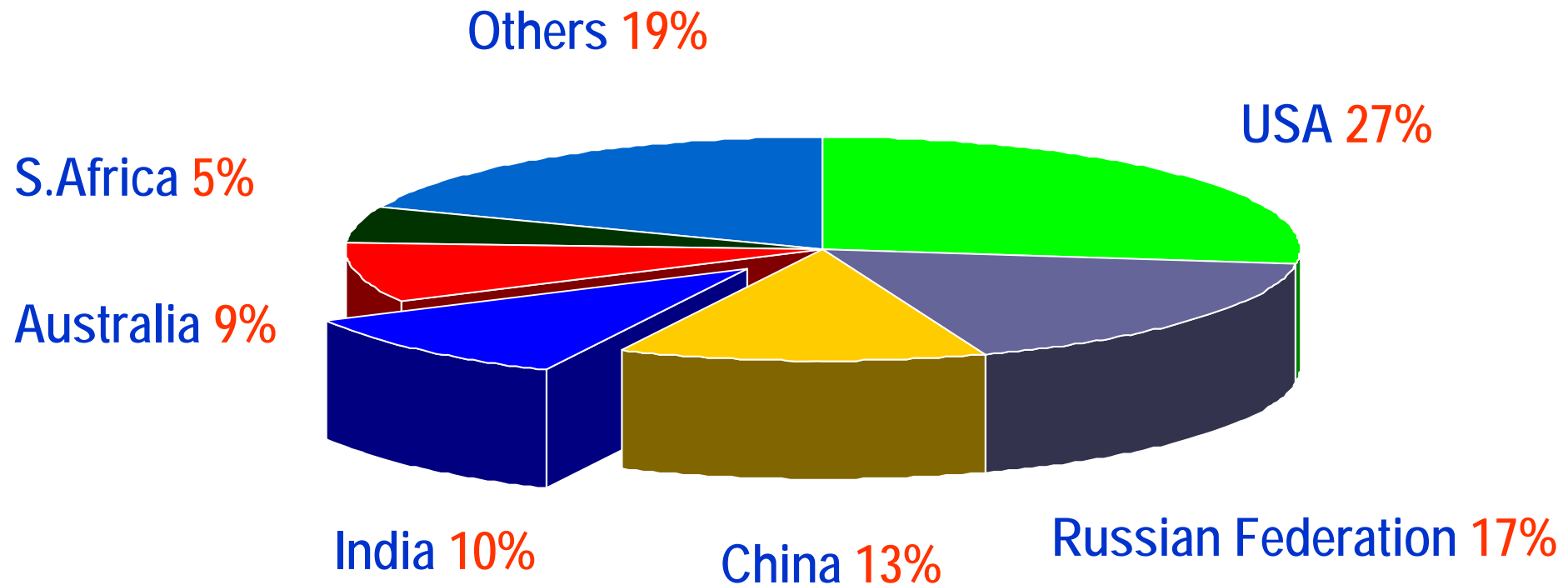
- Coal is the most abundant fossil fuel resources in India
- Coal is the key contributor to the Indian energy scenario.
- 55% of the current total commercial energy needs is met by coal.
- By 2024-25, the share of coal would come down marginally to about 50% of the total energy needs.

# Fuel wise Electricity Generation Share



# World Coal Resources

PROVED COAL RESOURCES OF THE WORLD (Coal & Lignite)



Total Proved Resources (Coal & Lignite) - 909 BT

# Key Players in Indian Coal Sector

| <i>Coal Producing Companies</i>   | <i>Production (Mtes)</i>   |
|---|----------------------------|
| <b>Coal India Ltd (CIL)</b><br><i>(A Govt. of India Enterprise)</i>                                   | <b>324</b><br><b>(85%)</b> |
| <b>Singareni Collieries Co. Ltd. (SCCL)</b><br><i>(AP St. Govt. &amp; Govt. of India Jt. Venture)</i> | <b>36</b><br><b>(9%)</b>   |
| <b>Captive Producers</b><br><b>(Steel &amp; Power)</b>  | <b>22</b><br><b>(6%)</b>   |
| <b>Total (During 2004-05)</b>   | <b>382</b>                 |

\* Coking Coal mines in India were Nationalised in 1971 & Non Coking Mines in 1973

# COAL AND LIGNITE RESOURCES IN INDIA



## CIL :COAL PRODUCING SUBSIDIARIES

- (1) EASTERN COALFIELDS LTD.
- (2) BHARAT COKING COAL LTD.
- (3) CENTRAL COALFIELDS LTD.
- (4) NORTHERN COALFIELDS LTD.
- (5) WESTERN COALFIELDS LTD.
- (6) SOUTH EASTERN COALFIELDS LTD.
- (7) MAHANADI COALFIELDS LTD.
- (8) NORTH EASTERN COALFIELDS.  
( A UNIT UNDER CIL(HQ) )

SINGARENI COLLIERIES CO. LTD . (9)

NEYVELI LIGNITE CORPORATION (10)

# CHARACTERISTICS OF INDIAN COAL DEPOSITS

1. Limited Reserves of Coking Coal
2. High ash and low calorific value Thermal Coal.
3. Low sulphur (less than 0.5%), Low phosphorous content (less than 0.2%).
4. High Ash fusion temperature.
5. Less trace elements
6. Inertinite & Liptinite rich Combustion friendly Coal.

# COAL RESERVES IN INDIA

(Billion Tones)

| <i>Type of Coal</i>               | <i>Proved</i> | <i>Indicated</i> | <i>Inferred</i> | <i>Total</i> |
|-----------------------------------|---------------|------------------|-----------------|--------------|
| <b>Prime Coking</b>               | <b>4.6</b>    | <b>0.7</b>       | <b>0.00</b>     | <b>5.3</b>   |
| <b>Medium Coking Coal</b>         | <b>11.4</b>   | <b>11.8</b>      | <b>1.9</b>      | <b>25.1</b>  |
| <b>Blendable/<br/>Semi Coking</b> | <b>0.5</b>    | <b>1.00</b>      | <b>0.2</b>      | <b>1.7</b>   |
| <b>Non coking</b>                 | <b>76.4</b>   | <b>103.6</b>     | <b>35.7</b>     | <b>215.7</b> |
| <b>Total</b>                      | <b>92.9</b>   | <b>117.1</b>     | <b>37.8</b>     | <b>247.8</b> |
| <b>Lignite</b>                    | <b>4.3</b>    | <b>12.7</b>      | <b>20.1</b>     | <b>37.1</b>  |



# Coal Mining Technology

- **Most of coal production comes from open-pit mines, contributing over 84%**
- **Technology in-place in Open-pit mining: shovel-dumper, dragline, in-pit crushing & conveying, surface miners. Bucket-wheel excavators in Lignite mining.**
- **Technology in-place in Underground mining : Conventional & Mechanised Bord & Pillar with SDL, LHD; Powered support Longwall, Continuous miner.**

# **SAFETY STATISTICS in COAL MINING SECTOR (CIL)**

|                                      | <b>2000</b> | <b>2001</b> | <b>2002</b> | <b>2003</b> | <b>2004</b> | <b>2005<br/>Upto<br/>AugUST</b> |
|--------------------------------------|-------------|-------------|-------------|-------------|-------------|---------------------------------|
| <b>Fatality<br/>Rate<br/>Per Mt</b>  | <b>0.37</b> | <b>0.38</b> | <b>0.24</b> | <b>0.21</b> | <b>0.22</b> | <b>0.28</b>                     |
| <b>Serious<br/>Injury<br/>Per Mt</b> | <b>1.64</b> | <b>2.05</b> | <b>1.74</b> | <b>1.52</b> | <b>1.29</b> | <b>1.09</b>                     |

# PRODUCTIVITY IN COAL SECTOR (CIL & SCCL)

Tonnes per man shift

| Co./Year | 2000-01  | 01-02 | 02-03 | 03-04 | 04-05 |      |
|----------|----------|-------|-------|-------|-------|------|
| CIL      | UG       | 0.63  | 0.64  | 0.69  | 0.68  | 0.69 |
|          | OC       | 5.92  | 6.08  | 6.30  | 6.67  | 7.34 |
|          | OVER ALL | 2.30  | 2.45  | 2.67  | 2.82  | 3.07 |
| SCCL     | UG       | 0.79  | 0.85  | 0.86  | 0.86  | 0.85 |
|          | OC       | 5.94  | 6.74  | 7.67  | 7.67  | 8.88 |
|          | OVER ALL | 1.50  | 1.67  | 1.89  | 1.81  | 1.99 |

\* Indian Productivity is about 1/8<sup>th</sup> of US Productivity.

# COAL PRODUCTION in INDIA

(Million Tones)

| Year       | 2000-01 | 01-02 | 02-03 | 03-04 | 04-05 |
|------------|---------|-------|-------|-------|-------|
| Production | 314     | 328   | 341   | 361   | 382   |

- Around 94% of the Production is from Govt. companies.
- Production is obtained from manual, semi mechanised & fully mechanised operations.
- Total Manpower in coal mining is about 550 thousands.

# Coal Demand Projections

## *Sector-wise Projected Raw Coal Demand in 2024-25*

|  | <i>Power<br/>(Utility)</i> | <i>Power<br/>(Captive)</i> | <i>Steel</i> | <i>Cement</i> | <i>BRK<br/>&amp;<br/>Others</i> | <i>Total<br/>Demand</i> |
|--|----------------------------|----------------------------|--------------|---------------|---------------------------------|-------------------------|
| <i>Demand (Mt)</i><br><i>7% GDP Growth</i> | <i>719</i>                 | <i>102</i>                 | <i>97</i>    | <i>113</i>    | <i>116</i>                      | <i>1147</i>             |
| <i>Share of<br/>Total (%)</i>              | <i>62.69</i>               | <i>8.89</i>                | <i>8.46</i>  | <i>9.85</i>   | <i>10.11</i>                    | <i>100</i>              |
| <i>Demand (Mt)</i><br><i>8% GDP Growth</i> | <i>804</i>                 | <i>112</i>                 | <i>105</i>   | <i>123</i>    | <i>123</i>                      | <i>1267</i>             |
| <i>Share of<br/>Total (%)</i>              | <i>63.46</i>               | <i>8.84</i>                | <i>8.28</i>  | <i>9.71</i>   | <i>9.71</i>                     | <i>100</i>              |

# REGULATORY FRAMEWORK

Coal Industry in India is regulated largely by the provisions of :

- **The Coal Mines (Nationalisation) Act, 1973**
  - **To nationalise the Coal Sector.**
- **Mines & Minerals (Development & Regulation) Act, 1957**
  - **To regulate Exploration & Exploitation of Minerals.**
- **The Coal Bearing Areas (Acquisition & Development) Act, 1957**
  - **To facilitate acquisition of coal bearing land.**
- **Environmental Protection Act, 1986**
  - **To conduct mining operation in an environmental friendly manner.**

# Liberalisation of Policy Regime

- The main thrust of policy is to liberalise the statutory and regulatory regime in order to promote investment in the coal sector.
- The recent policy initiatives have been in the following direction :
  - ✓ Captive mining by Power, Steel & Cement industry allowed.
  - ✓ Foreign Direct Investment – 100 % for Power Sector, 74% for Steel, Cement & Coal washing.
  - ✓ Created a competitive market for sale of coal
  - ✓ Progressive reduction of customs duty on coal & HEMM import
  - ✓ Introduction of Contract Mining.

# Import Tariff Structure on Coal & HEMM

| <b>Particulars</b>                              | <b>Current Status</b> |
|---|-----------------------|
| <b>Non Coking Coal &amp; Metallurgical Coke</b> | <b>5%</b>             |
| <b>Coking Coal with less than 12 % ash</b>      | <b>0%</b>             |
| <b>Coking Coal with more than 12 % ash</b>      | <b>5%</b>             |
| <b>Basic Duty &amp; other duties on HEMM</b>    | <b>22.58%</b>         |



# Investment / Cooperation Opportunity in India

- **Development of UG projects with Longwall / mass production technology.**
- **Extraction of Pillars by Longwall / Shortwall tech.**
- **Manufacturer of spare parts for mining equipment in India**
- **Technology for deep shaft sinking**
- **Clean coal technologies:**
  - **UG Coal gasification**
  - **Coal liquefaction**
  - **Setting up of washery**
- **CBM / CMM / AMM exploration & exploitation.**
- **Quantum jump in production from 400 to 1200 mt in future provides enough opportunities for US investment.**

# Areas of interest for Indian side

- **Coal Bed Methane**
- **Clean Coal Technology (Coal Washing) and Power Generation from Washery Rejects**
- **Coal Liquefaction Project in India**
- **Mine Closure**
- **Coal Mine Safety Issues**
- **US Regulatory framework for development & exploitation on CBM & UCG**
- **Sharing of US Regulatory framework for Environment**
- **Mine Rescue setup, facilities & Operations.**

THANK YOU