



CURRENT STATUS of TURKISH LIGNITE SECTOR

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CONTENT

- Turkish Energy Sector
 - Turkish Coal Sector
 - Overview of Restructuring of TKI
 - Conclusion
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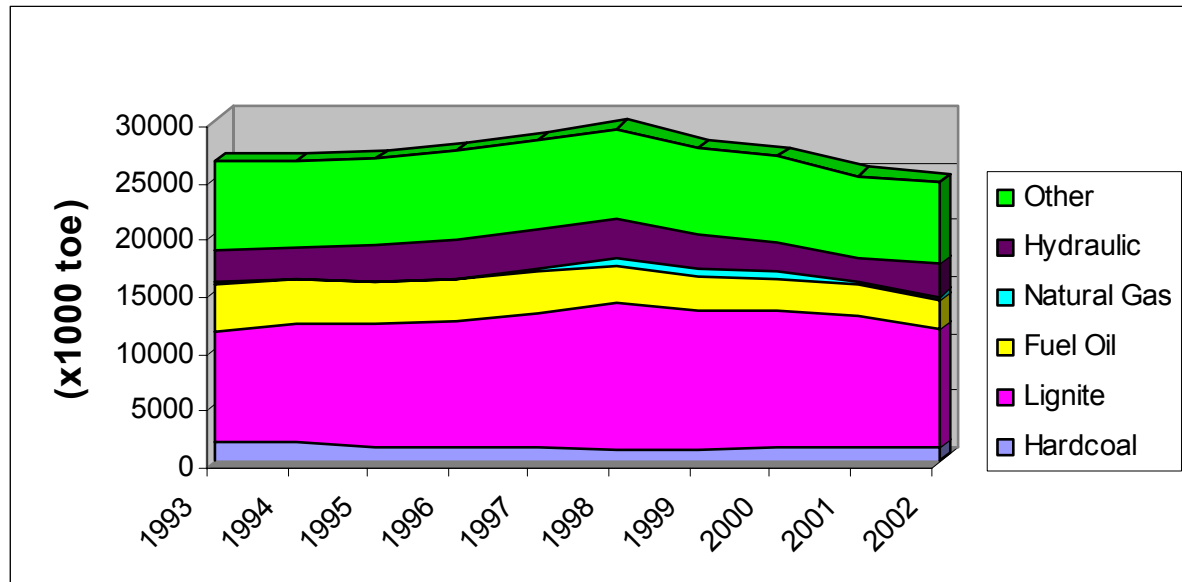
TURKISH ENERGY SECTOR-

Primary Energy Reserves

- **Hardcoal (Bt) : 1.1**
- **Lignite (Bt) : 8.3**
- **Asphaltite (Mt) : 82**
- **Bituminous (Bt) : 1.6**
- **Hydraulic (MW/y) : 35539**
- **Crude Oil (Mt) : 39**
- **Natural Gas (Bm3) : 10.2**
- **Nuclear(t)**
 - **Uranium : 9 129**
 - **Thorium : 380.000**
- **Geothermal (MW/y)**
 - **Electricity : 4500**
 - **Thermal : 31100**
- **Solar (Mtoe)**
 - **Electricity : 8.8**
 - **Heat : 26.4**

Source: WEC/TNC

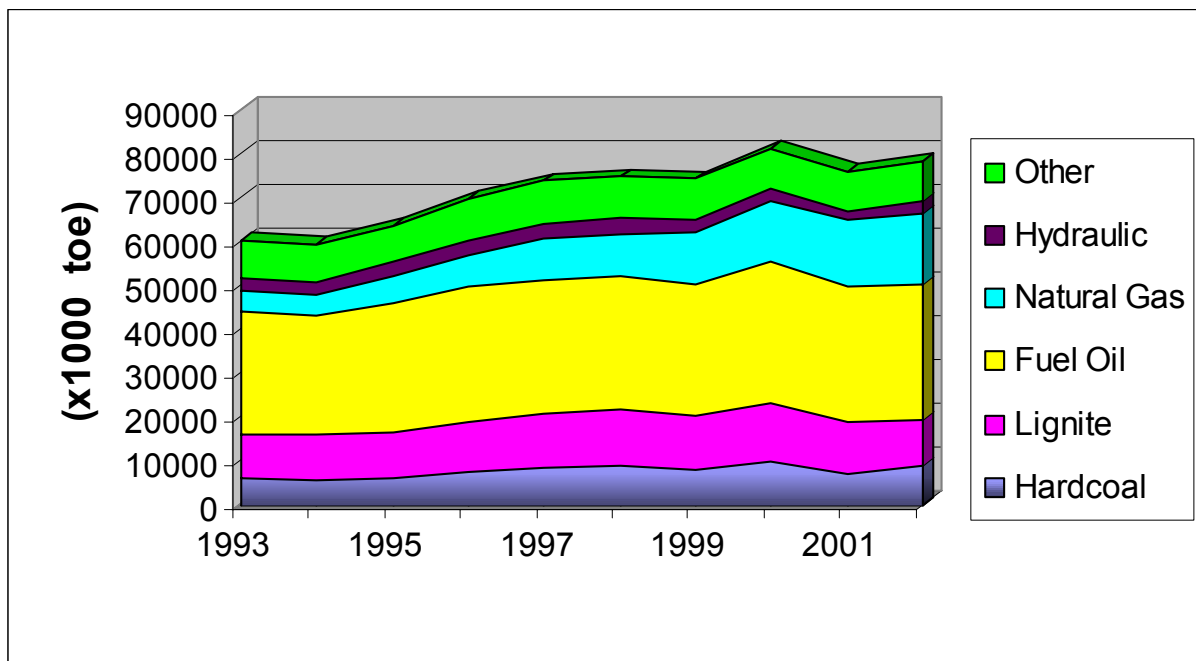
TURKISH ENERGY SECTOR- Primary Energy Production



- Major energy source: **Lignite**
- in 2002
- **47.4% coal**
- **12.2 % hyd & geoth.**
- **11.8% Fuel oil & N.gas**
- **4.3% other renewables**
- **24.3% noncommercial fuels**

Source: WEC/TNC

TURKISH ENERGY SECTOR- Energy Consumption



- **1990-2002**
- Avr.increase rate:3.3%
- Economic crises in 2001

in 2002

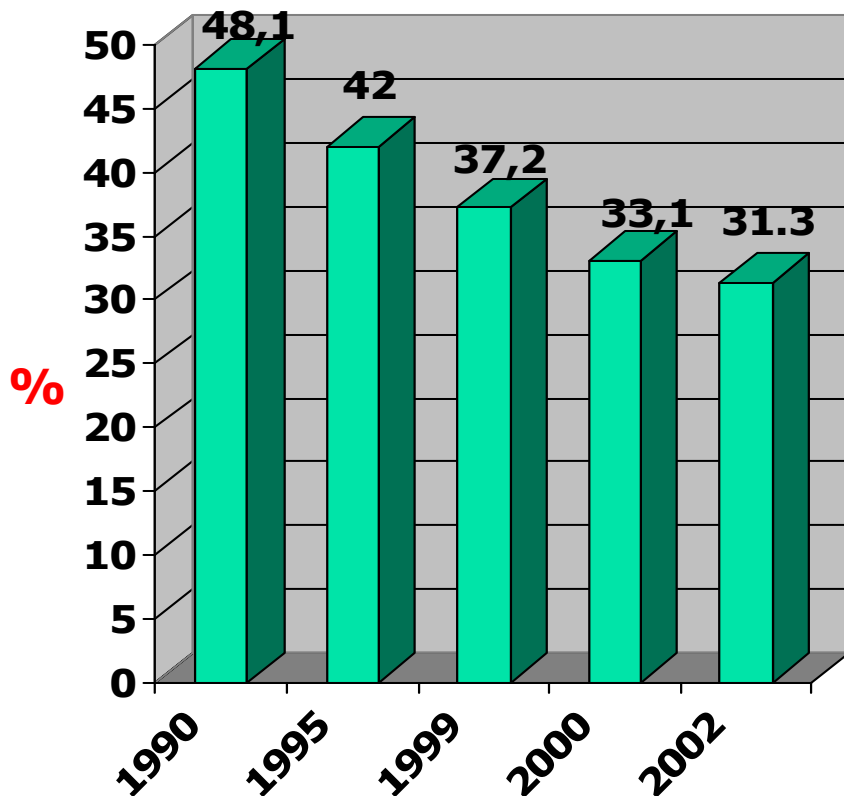
- 39.3% fuel oil
- 20.6% N.gas
- **13.5% lignite**
- **11.3% harcoal** } **24,8**
- 7.6% noncommercial
- 3.7% hydraulic

Source: WEC/TNC

TURKISH ENERGY SECTOR-

Rate of Domestic Supply in Energy Consumption- Import

Rate of Domestic Supply
in Energy Consumption



NET IMPORT:

1990-2002

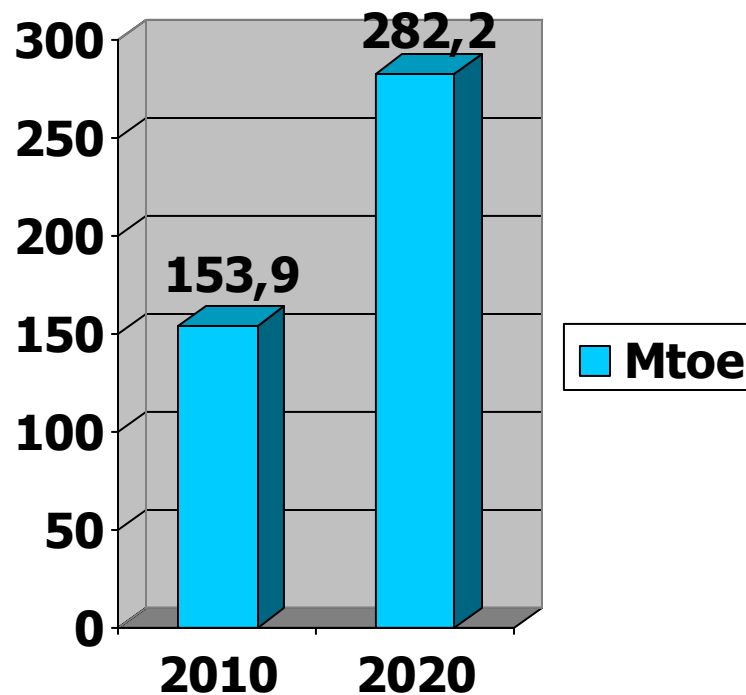
(28.5 Mtoe → 53.9 Mtoe)

in 2002:

- **Hardcoal+coke** : 9.6 Mtoe (16.5 %)
- Crude oil & products : 32.6 Mtoe (56%)
- Natural gas : 15.8 Mtoe (27%)
- Electricity : 0.3 Mtoe (0.5%)

Source: WEC/TNC

TURKISH ENERGY SECTOR- Energy Demand



- Dependency on Imported Energy

- 2010 → 73%
- 2020 → 78%

Source: MENR

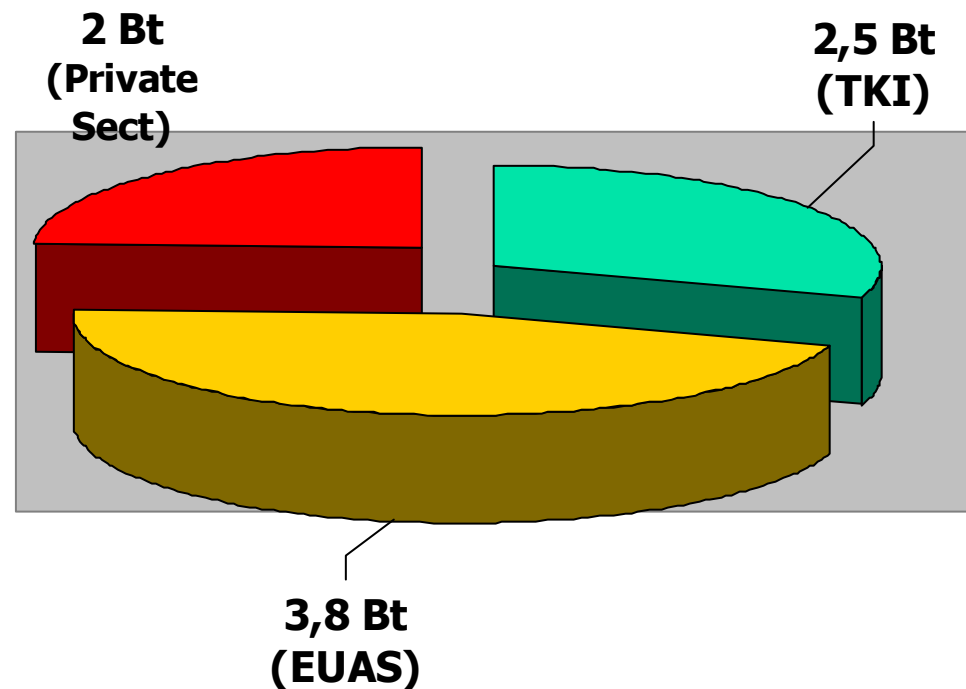
TURKISH COAL SECTOR- Lignite Exploration-Reserve

■ Exploration By Drilling

- 1960-2002: 1,667,673 m
(after 1990: 183,673 m)

■ Lignite reserve:

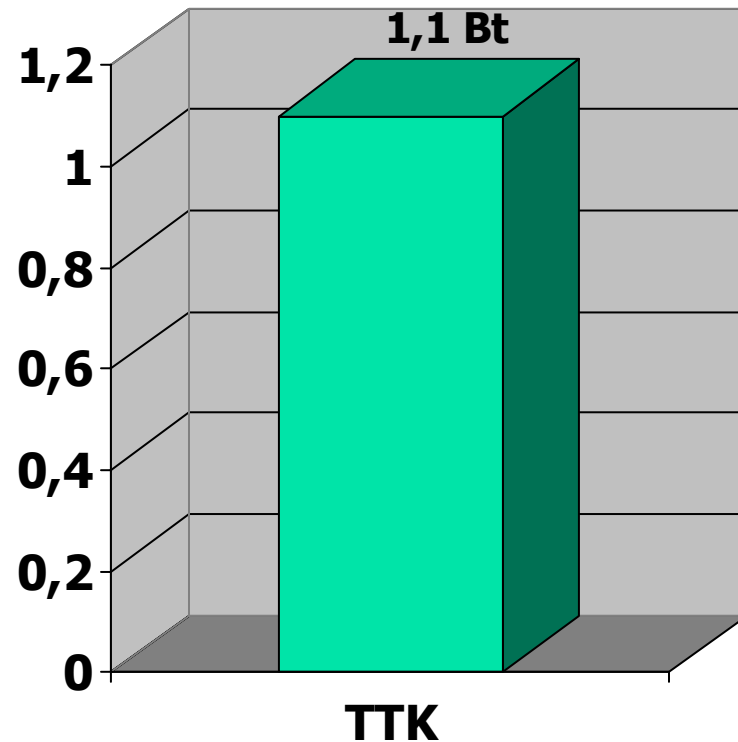
- Determined : 9.3 Bt
- Mined out : 1 Bt
- **Remaining : 8.3 Bt**



*** Most abundant energy resource in Turkey
(spread in 37 cities)**

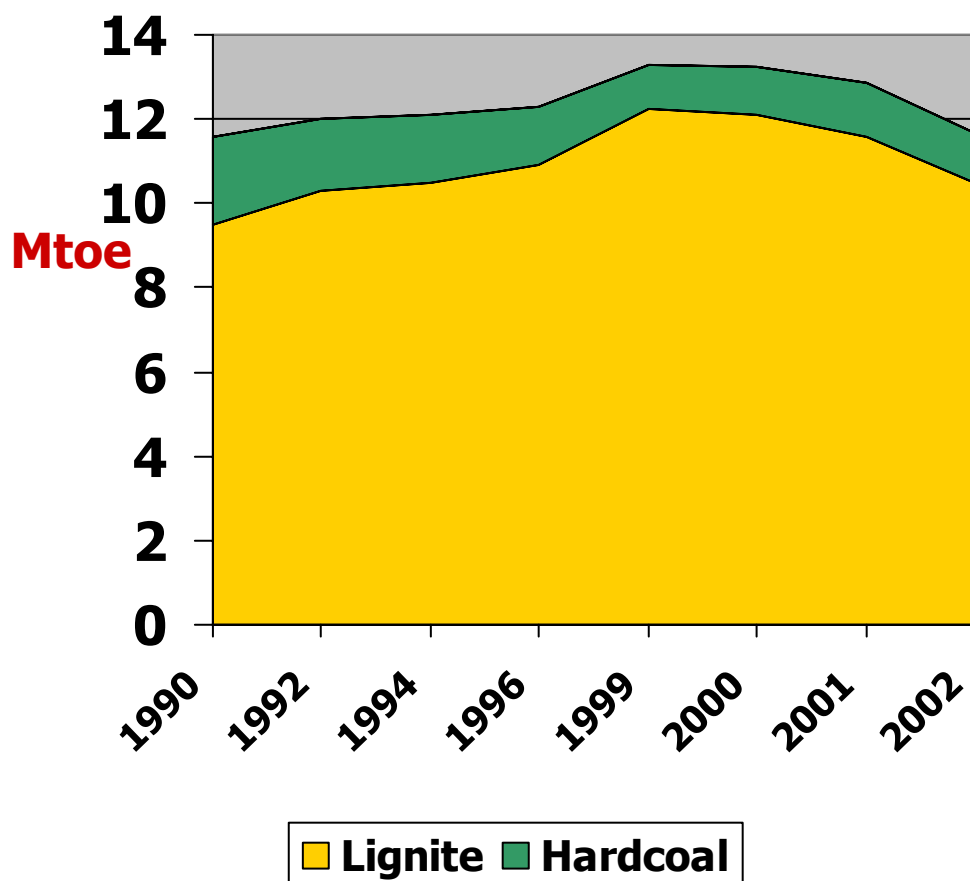
TURKISH COAL SECTOR- Hardcoal Reserve

- Hardcoal reserve: 1.1 Bt
- Owned by Turkish Hardcoal Enterprises (TTK)



- Mainly at Zonguldak Coal Basin

TURKISH COAL SECTOR- Production



- **Hardcoal:** Public Sector (TTK)
- **Lignite :** Public (TKI & EUAS) + Private Sector

in 2002:

Hardcoal: 2,245 Mt

Lignite :51 Mt

Share in total lignite Prod.

60% : TKI

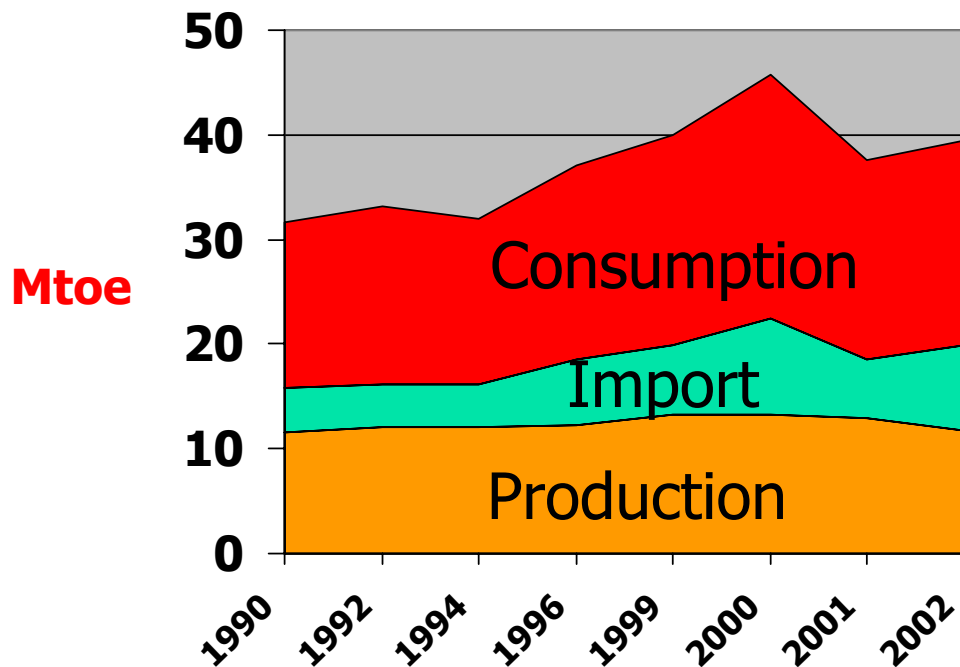
32% : EUAS

8% : Private Sector

Source: WEC/TNC

TURKISH COAL SECTOR- Production-Import-Consumption

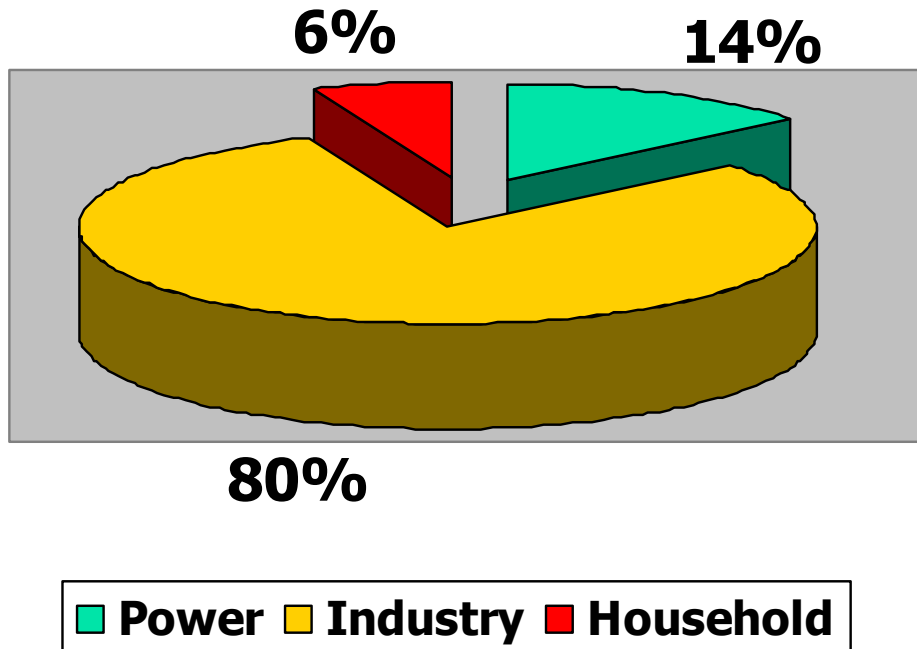
Hardcoal + Lignite



- Imported lignite: Minor amount
- 30% of Imported hardcoal: iron-steel industry

TURKISH COAL SECTOR- Hardcoal Consumption

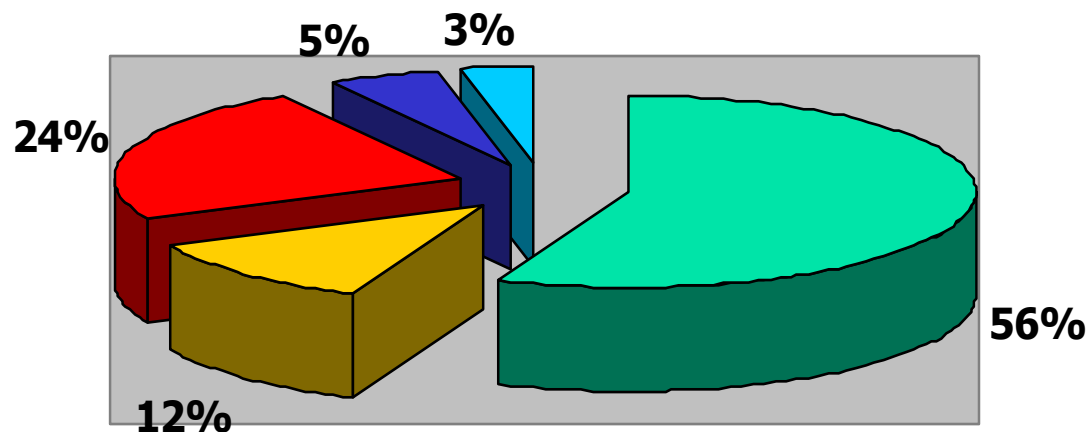
in 2002



***Consumption of
hardcoal mainly for
industry**

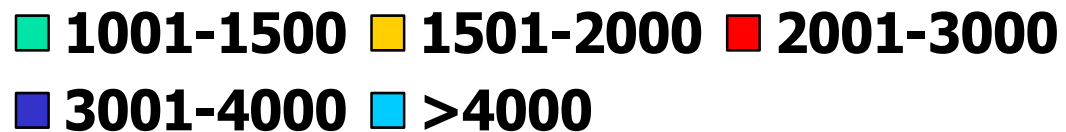
TURKISH COAL SECTOR-

Lignite Quality



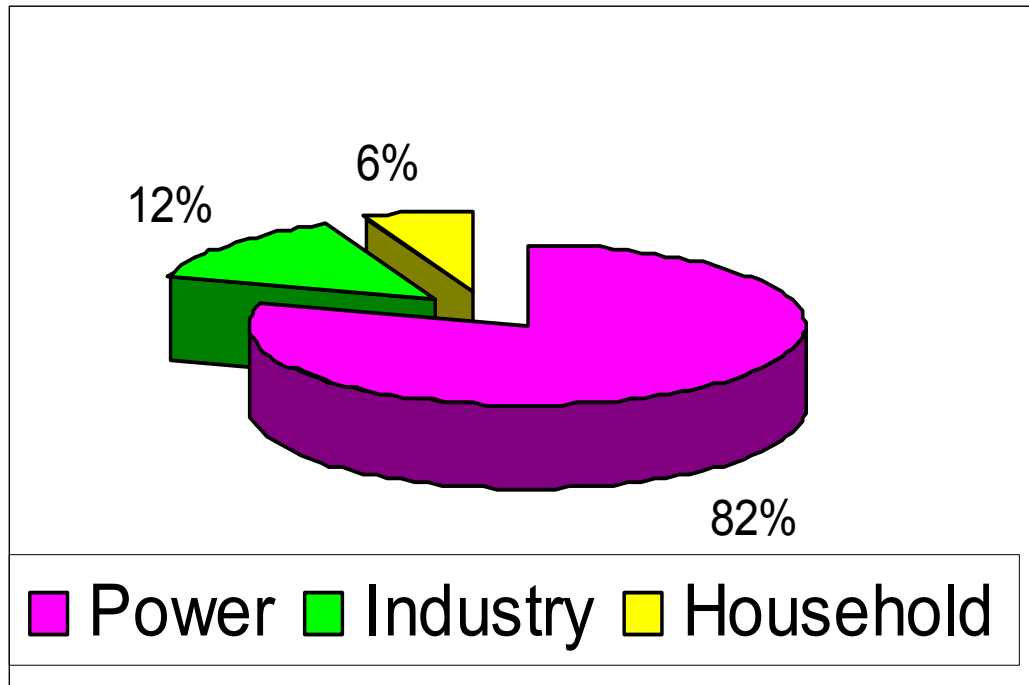
- **68% low quality**

(Elbistan: 3.4 Bt –
1100kcal/kg)



TURKISH COAL SECTOR- Lignite Consumption

in 2002



*Consumption of lignite mainly for **electricity generation**

TURKISH COAL SECTOR-

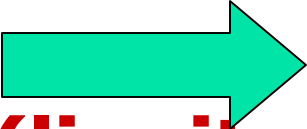
Lignite Projects to Feed Power Plants

Project Name	Consumption Capacity(x1000 t/y)	Installed Capacity (MW)
Afsin-Elbistan	18.000	1.360
Ankara-Cayirhan	4.300	620
Bursa-Orhaneli	1.500	210
Canakkale-Can	1.800	320
Kütahya-Seyitomer	7.100	600
Kutahya- Tuncbilek	2.450	429
Manisa-Soma	8.000	1.034
Mugla-Husamlar	5.000	630
Mugla-Milas-Sekkoy	3.750	420
Mugla-Yatagan	5.350	630
Sivas-Kangal	5.400	450
TOTAL	62.650	6.703



TURKISH COAL SECTOR-

Lignite Projects to Feed Power Plants

- **in 2004**
- Elbistan- B Power Plant having 4x350 MW electricity generation capacity will start to operate
-  **total installed capacity (lignite fired) 8,120 MW**

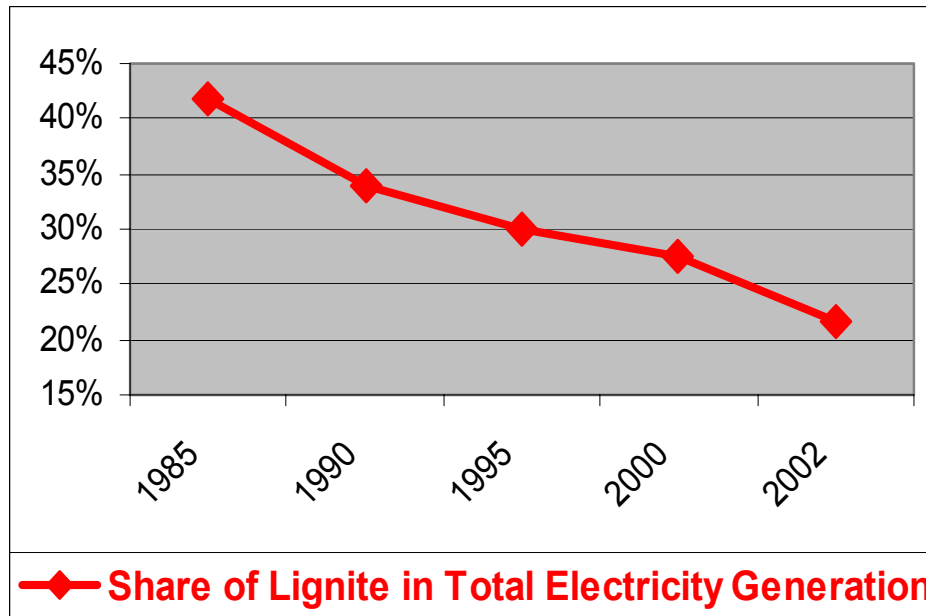


TURKISH COAL SECTOR-

Share of Lignite Fired Power Plants

- Total installed capacity: 31 846 MW
- Total lignite Fired Power Plants Capacity: 6506 MW
- Share of Lignite Fired Power Plants in Total: **20.4%**

TURKISH COAL SECTOR- Lignite Consumption



In total electricity generation

Share of domestic lignite ↓
(23.3 %)

Imported Natural Gas ↑
(34.4 %)

TURKISH COAL SECTOR-

Lignite Fields Suitable for Electricity Generation

Project name	Reserve (1000 tonnes)	Lignite Consumption Capacity (t/y)	Installed Capacity (MW)
TKI			
Adana-Tufanbeyli	214,000	7,200	600
Bingol-Karliova	88,000	1,115	100
Bolu-Goynuk	39,000	1,200	150
Cankiri- Orta	51,000	1,500	100
Tekirdag-Saray	129,000	2,500	300
TOTAL	521,000	13,515	1,250

TURKISH COAL SECTOR-

Lignite Fields Suitable for Electricity Generation -Continue

Project name	Reserve (1000 tonnes)	Lignite Consumption Cap.(1000 t/y)	Installed Capacity (MW)
EUAS			
Cayirhan 5-6	75,000	2,500	320
Elbistan	2,818,000	86,400	6,300
Private Sector			
Konya-Ilgın	152,000	3,100	500
Adıyaman-Gölpazarı	49,000	1,400	125
General TOTAL	3,615,000	106,915	8,495

Restructuring of TKI



- Turkish Coal Enterprises (biggest lignite producer of Turkey)

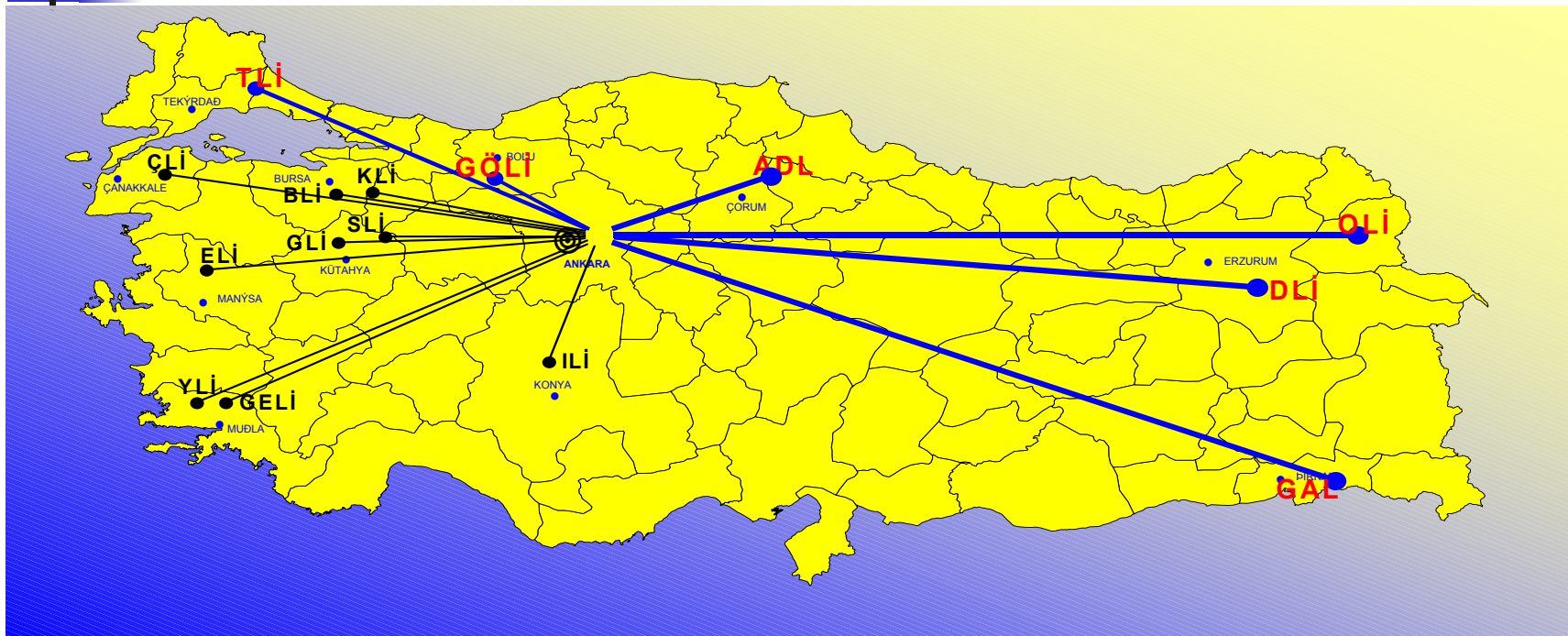
in 2002

- 30% of total lignite reserve
- 60% of total lignite production

Restructuring of TKI

-MINES WHICH STOPPED ACTIVITIES

by July 2002



■ **ADL**- Corum Mine

OLI- Oltu Mine

TLI- Saray Mine

■ **DLI**- Askale Mine

GAL- Silopi Mine

GOLI- Goynuk Mine

Restructuring of TKI

MINES WHICH STOPPED ACTIVITIES by July 2002

- Total Losses since 1988 : **445.7 million \$**
- Avr. OPERATING COST : **46-242 \$/ton**

- **in 2001:**
- Share in total TKI RESERVE: **9.2%**
- Share in total PRODUCTION: **1.79%**
- MARKET: Household + Industry

- # of workforce by May 02: 1669
- **SHARE IN TOTAL WORKFORCE: 11.06%**

Latest Status of Mines which Stopped Activities

Mine	Reserve (1000 ton)	Duration (year)	Production (t/y)	\$/ton	(x1000 \$/year)	Description
Corum	16797	10	300,000	12.027	3608.1	Leased
Askale	162	2	20,000	0.88	17.6	Leased
Oltu	693	10	50,000	5.39	269.5	Leased
Silopi	49313	10	99,000	2.165	214,3	Leased
Goy nuk	(39000)	10	(700,000)	-	-	Not leased
Saray	(129000)	10	(700,000)	-	-	Not leased
Total	235,085				4,109.5	



Latest Status of Mines which Stopped Activities


- 1300 workforce was transferred to other Establishments which located at west part of Turkey (relatively high living standards)
 - Been worked at direct & indirect production
 - Reinforced the existing workforce
 - Result decrease in contractors's jobs



Restructuring of TKI

Near Future Activities

Reorganization

- 8 Establishments  4 Establishments
(decentralization)
- 2 more departments at Headquarter



CONCLUSION

- Coal (lignite) is major energy source of Turkey
- Because energy consumption rate is high, share of domestic supply in energy consumption are decreasing by the years
- Share of imported natural gas in total electricity generation is increasing



CONCLUSION

- There are 3.6 billion tonnes lignite reserves to create additional 8495 MW installed capacity for electricity generation



CURRENT STATUS of TURKISH LIGNITE SECTOR

• *Thank You For Your
Attention*

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