

**ETİ MADEN**

“World Leader in Boron Sector”

TURKEY MINING SUMMIT  
4-7 June 2012  
Hilton Istanbul Hotel, Turkey

# ETİ MADEN AND GLOBAL BORON MARKET



**Orhan YILMAZ, PhD**  
**Chairman and General Manager**

# ETİ MADEN

- **Date of Establishment: 1935**

- 1935 -1998 ETİBANK
- 1998 -2004 ETİ Holding A.Ş.
- 2004 -..... **Eti Mine Works General Management**

- **Main Field of Activity:** The production and sales of boron products.

- **Legal Status:** State owned company

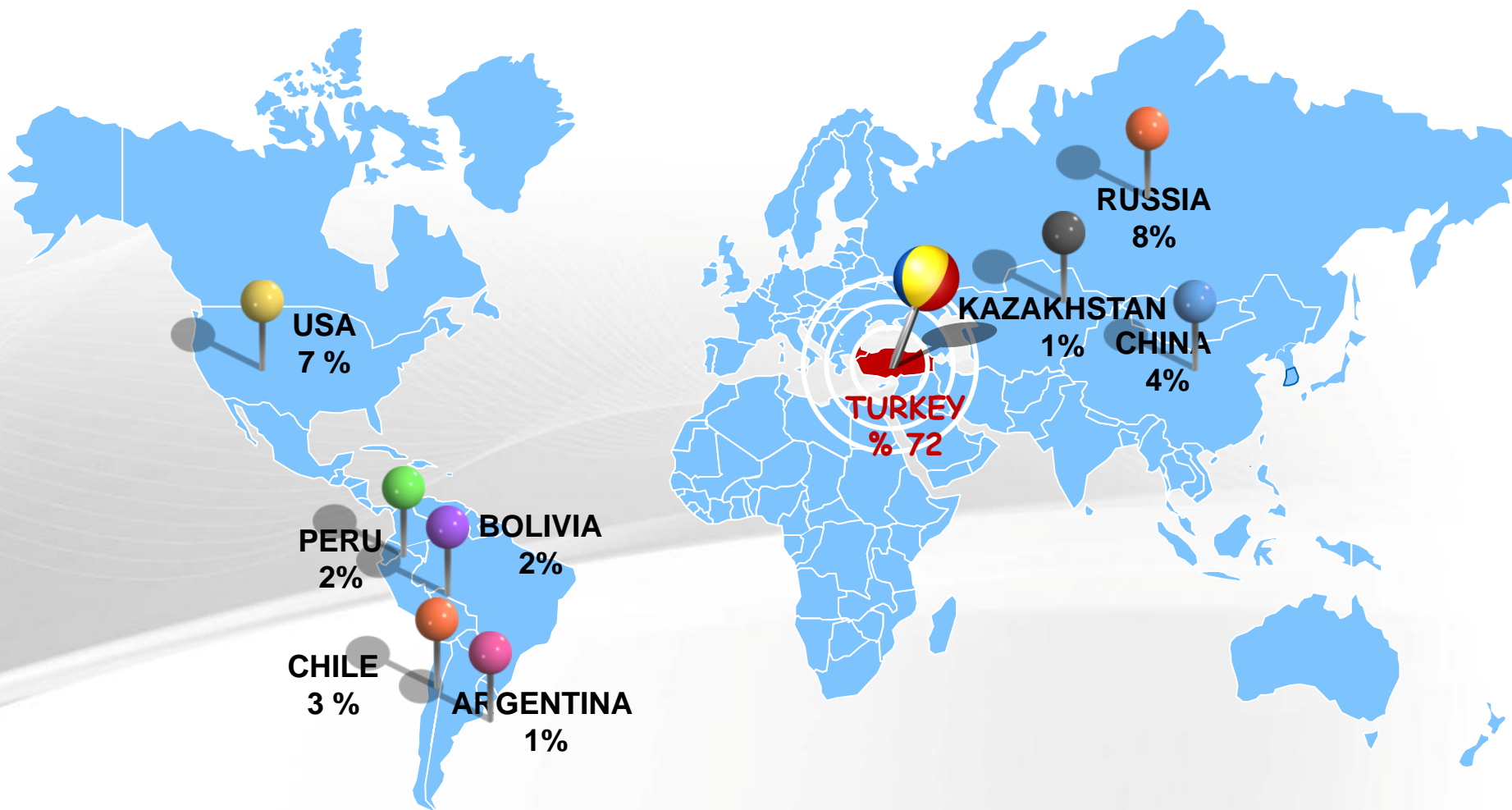
- **Management Systems:**

- **Integrated Management Systems**

- Quality Management System TS-EN-ISO 9001: 2008
- Environmental Management System TS-ISO-EN-14000
- Occupational Health & Safety Management System TS-İSG-OHSAS 18001
- General requirements for competence of test and calibration laboratories TS-EN ISO/IEC 17025



# World Boron Mineral Reserves



# BORON IN USE



GLASS



DETERGENT



AGRICULTURE



CERAMIC



OTHER

## CONCENTRATED BORON PRODUCTS

- Colemanite, tincal and ulexite etc. concentrated ores

## BORON CHEMICALS

- Borax pentahydrate, borax decahydrate, anhydrous borax, boric acid, sodium perborate monohydrate, anhydrous boric acid and etc.

## SPECIALTY BORON PRODUCTS

- Boron carbide, zinc borate, boron nitride, boron hydride, ferrobor & other boron compounds.

## INDUSTRIES DEPENDING ON BORON

- Insulation and textile grade fiberglass, borosilicate glass, ceramic, detergent etc.

# Boron Minerals Produced By Eti Maden; Colemanit, Tincal and Ulexite

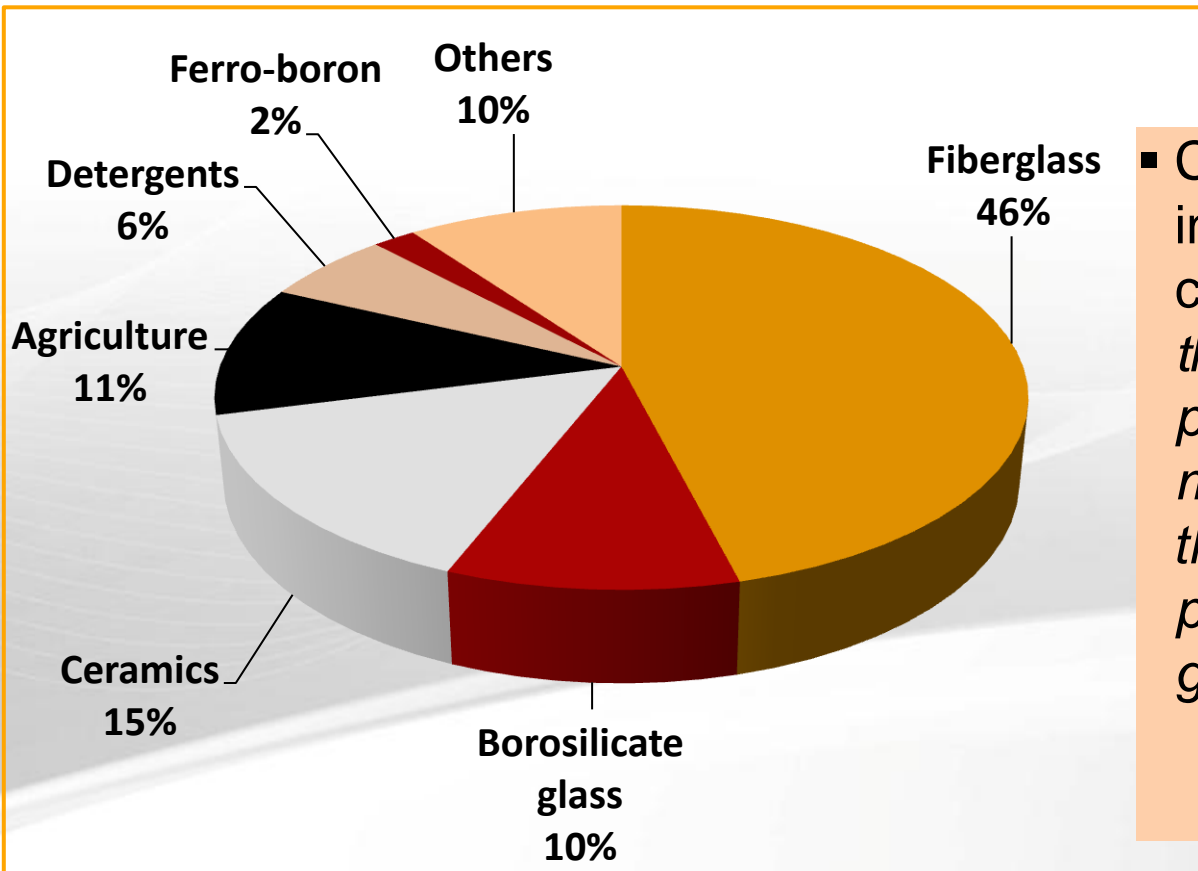
Following four minerals  
comprise around 90 % of  
commercially use.

- **Colemanite** ( $\text{Ca}_2\text{B}_6\text{O}_{11}\cdot 5\text{H}_2\text{O}$ )
- **Tincal** ( $\text{Na}_2\text{B}_4\text{O}_7\cdot 10\text{H}_2\text{O}$ )
- **Ulexite** ( $\text{NaCaB}_5\text{O}_9\cdot 8\text{H}_2\text{O}$ )
- **Kernite** ( $\text{Na}_2\text{B}_4\text{O}_7\cdot 4\text{H}_2\text{O}$ )

■ Colemanite and tincal are the most widely-used boron minerals.

■ Turkey is the world's major source of colemanite.

# World Boron Consumption by End-Use in 2011



■ Consumption of borates in **fiberglass** is concentrated **in China**, the world's largest producer of textile-grade material, and **in the USA**, the world's largest producer of insulation-grade material.

# Boron Products & Production Sites of Eti Maden



## **BANDIRMA BORON WORKS**

- Borax Decahydrate
- Borax Pentahydrate
- Boric Acid
- Boron Oxide
- Etidot-67 (Agri Boron)
- Sodium Perborate



## **EMET BORON WORKS**

- Boric Acid
- Concentrated Colemanite



## **KIRKA BORON WORKS**

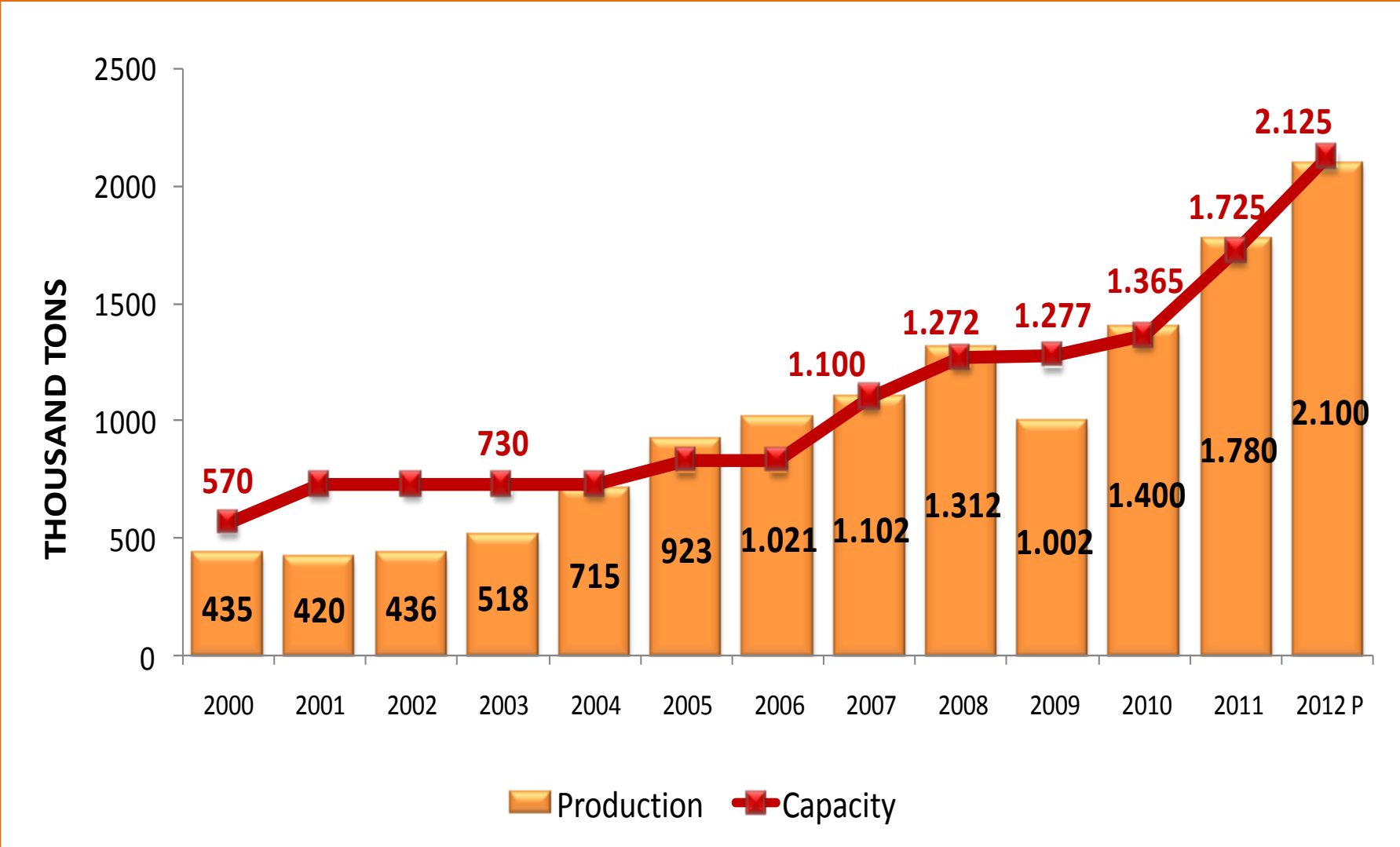
- Etibor-48 (Borax Pentahydrate)
- Etibor-68 (Anhydrous borax)
- Calcined Tincal (Compacted)



## **BİGADIÇ BORON WORKS**

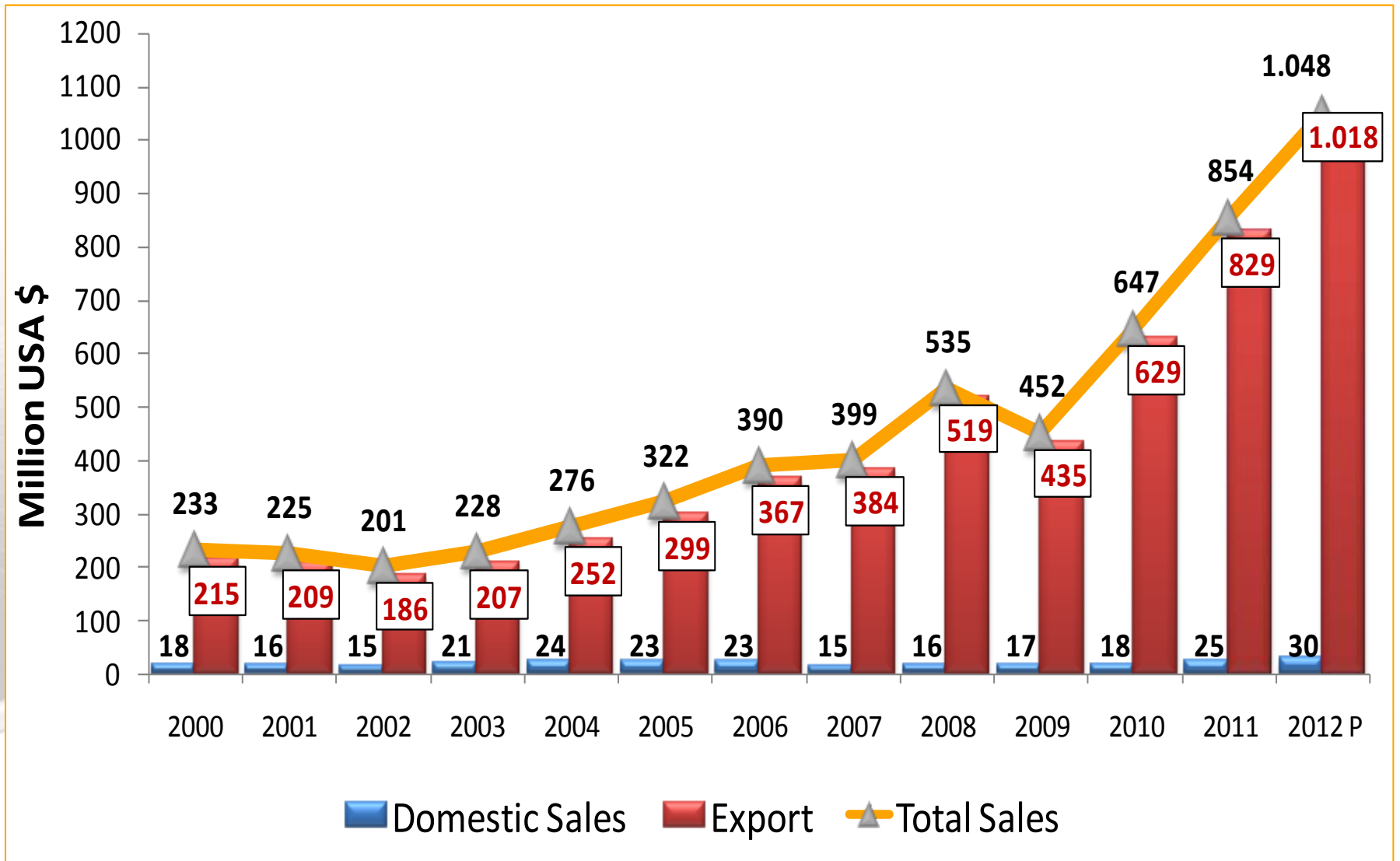
- Ground Colemanite / Ulexite
- Concentrated Colemanite / Ulexite
- Natural Zeolite

# Eti Maden in Figures; Production&Capacity

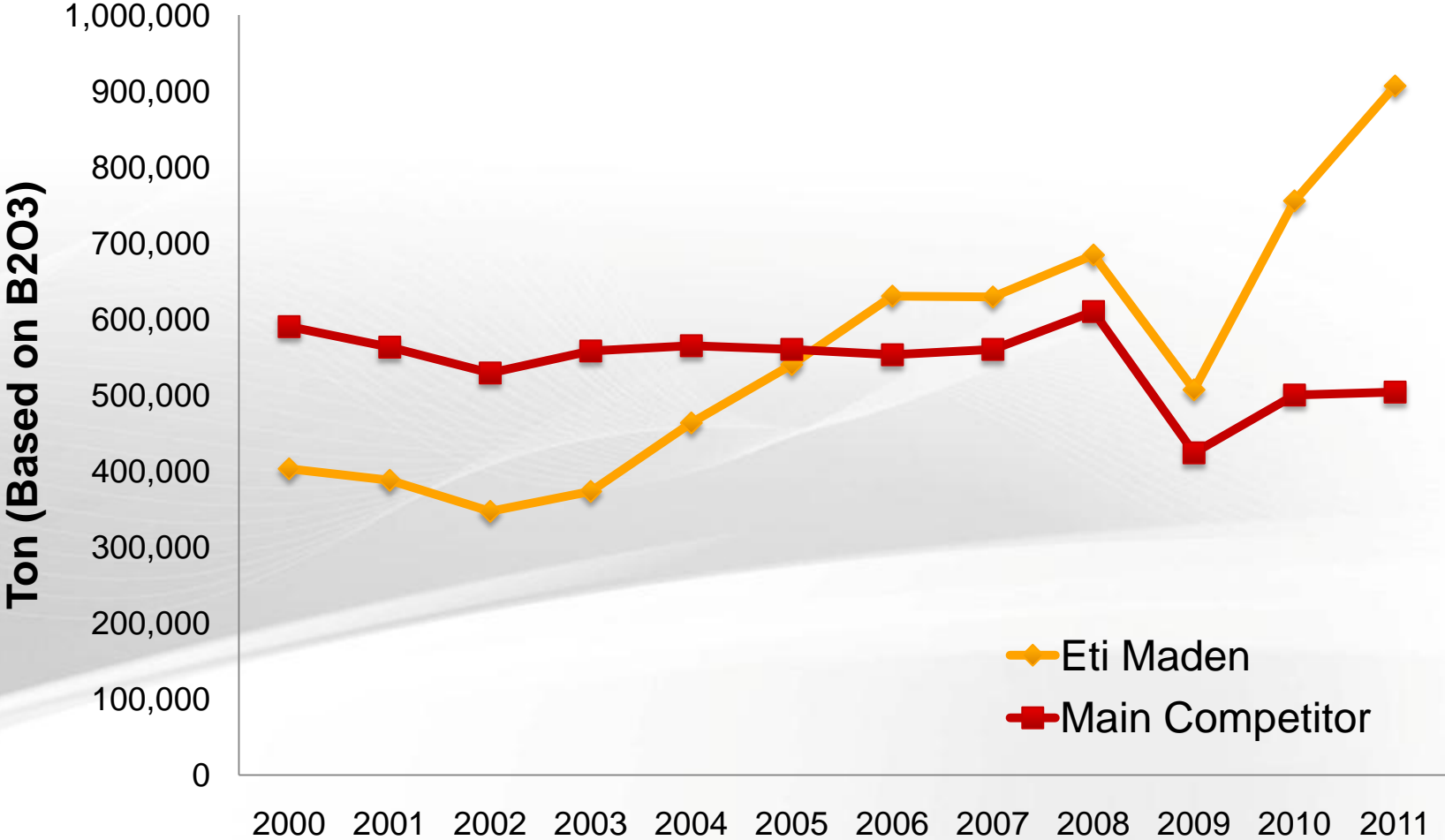




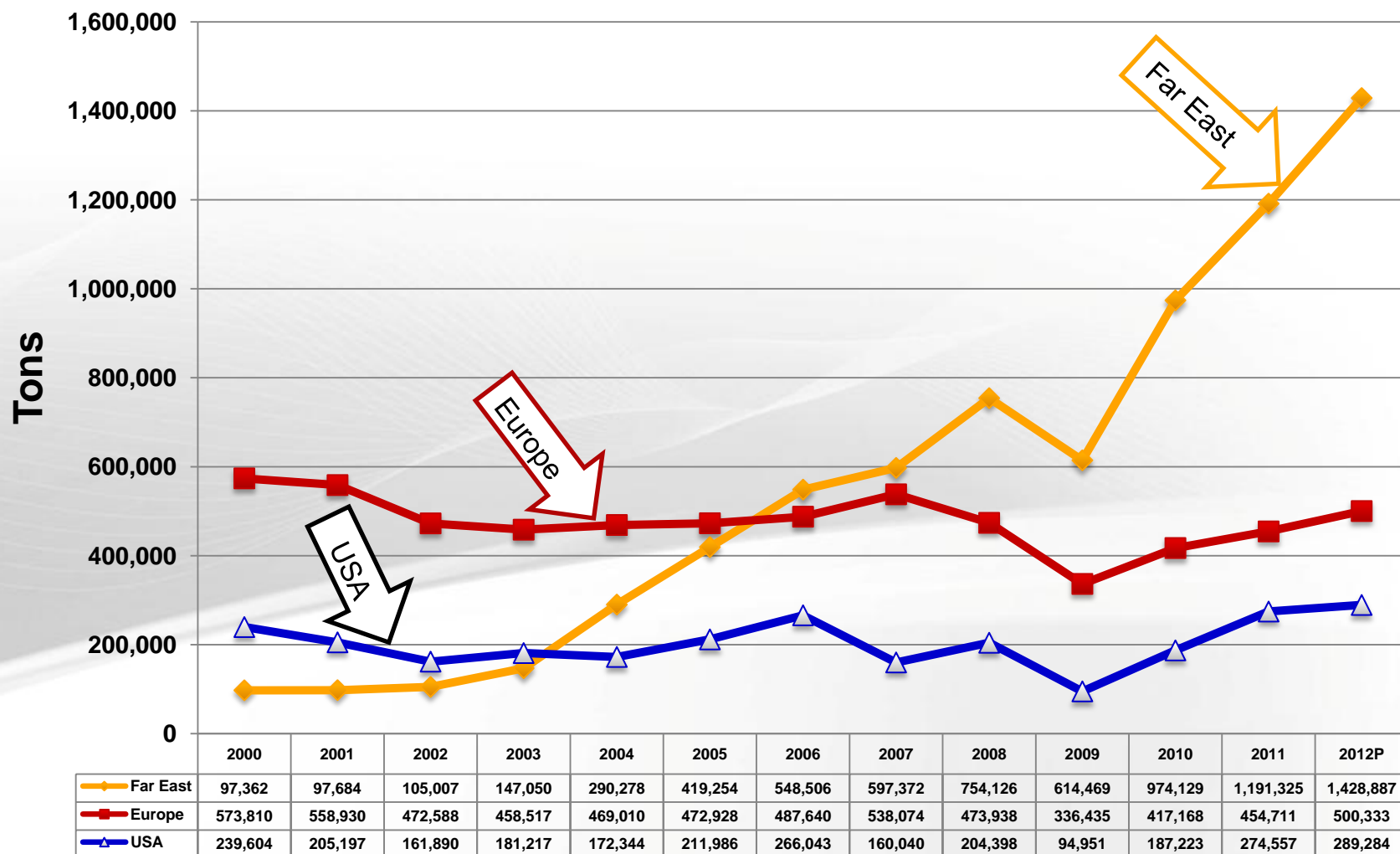
# Eti Maden in Figures; Sales



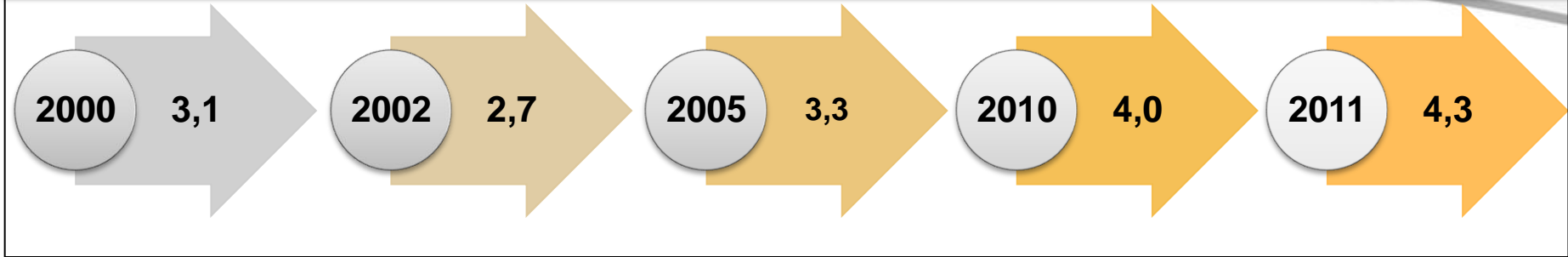
# Sales of Eti Maden Vs Main Competitor



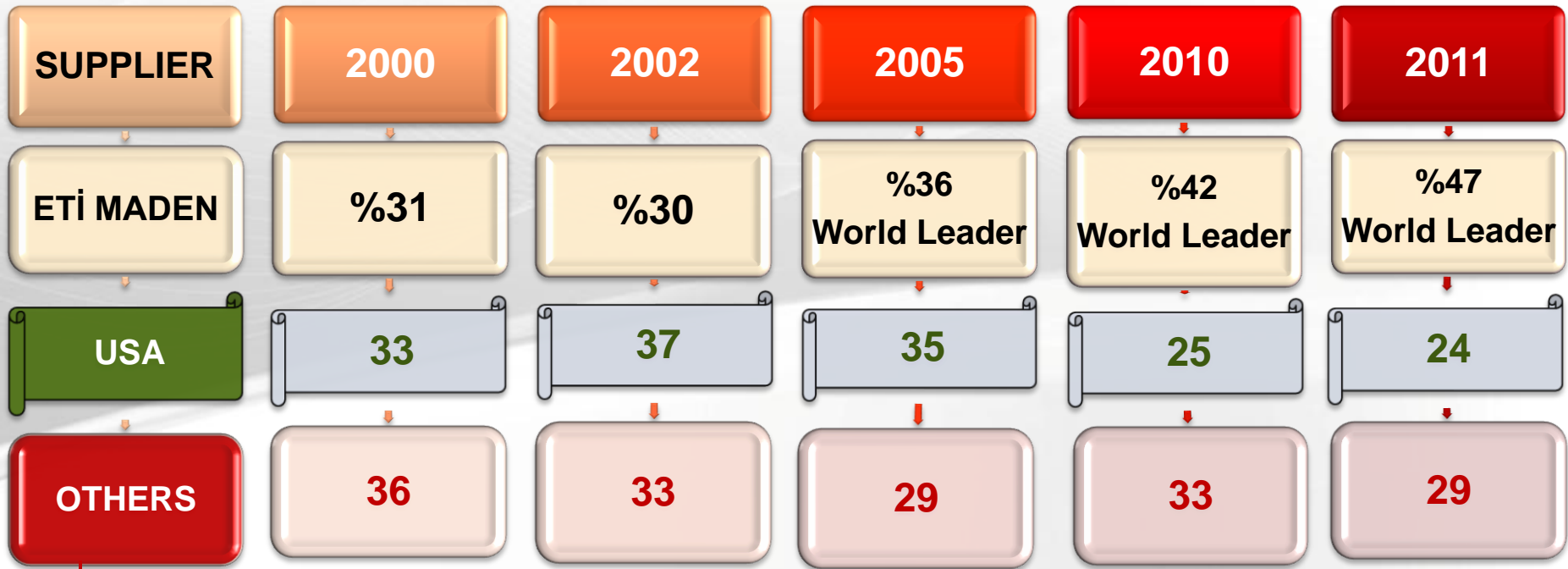
# Eti Maden in Figures; Regional Boron Export (Far East, Europe, USA)



# Consumption of Boron Products in the World (Million Tons)



## Global Suppliers & Market Shares



- Russia
- China
- South America

# Eti Maden in Turkish Economy



Eti Maden is stated as 1<sup>st</sup> in public rank and 16<sup>st</sup> in general rank in the list of “Top 1000 Exporters of Turkey\*”

\*TEA (Turkish Exporters Assembly)

# Eti Maden in Turkish Economy

- **Eti Maden** rose to **43<sup>rd</sup> in rank** of general evaluation from the level of **56<sup>th</sup>** in 2009 and **placed in 6<sup>th</sup>** as gross profit rank in the list of “500 Large Enterprises\*” in 2010.



# Eti Maden in Turkish Economy

## 2011 Corporate Income Tax Ranking

In the list of 2011 Corporate Income Tax Ranking Eti Maden is at **15<sup>th</sup> (in general)**, however at **4<sup>th</sup>** among the **producer corporates**.

No	Corporate Title
1	MERKEZ BANKASI A.Ş.
2	TÜRK TELEKOMÜNİKASYON A.Ş.
3	TURKCELL İLETİŞİM HİZMETLERİ ANONİM ŞİRKETİ
4	TÜRKİYE GARANTİ BANKASI A.Ş.
5	YAPI VE KREDİ BANKASI A.Ş.
6	TÜRKİYE HALK BANKASI A.Ş. GENEL MÜDÜRLÜĞÜ
7	TÜRKİYE VAKIFLAR BANKASI TÜRK ANONİM ORTAKLIĞI
8	T.C.ZİRAAT BANKASI A.Ş. GENEL MÜDÜRLÜĞÜ
9	İŞ BANKASI A.Ş. GENEL MÜDÜRLÜĞÜ
10	TÜPRAŞ TÜRKİYE PETROL RAFİNERİLERİ A.Ş.
11	TÜRKİYE PETROLLERİ A.O.
12	FİNANSBANK ANONİM ŞİRKETİ
13	ELEKTRİK ÜRETİM ANONİM ŞİRKETİ
14	AKBANK T.A.Ş.
<b>15</b>	<b>ETİ MADEN</b>
17	EREĞLİ DEMİR VEÇELİK FAB.T.A.Ş.
23	TÜPRAG METAL MADENCİLİK SANAYİ VE TİC.A.Ş.
27	KOZA ALTIN İŞLETMELERİ A.Ş.
35	ÇAYELİ BAKIR İŞLETMELERİ A.Ş.

# How succeeded



1

## Focusing Strategy

- Focused on core business
- Outsourced some secondary activities

2

## Cost Minimisation Strategy

- Adapted new technologies in our chemical processes,
- Automated some man-made activities and increased efficiency.

3

## Research and Development Strategy

- Developed new technology and new end-use market.



# COMPLETED INVESTMENTS (2002-2007)

## □ 2002

- THIRD BORAX PENTAHYDRATE PLANT, KIRKA, ESKİŞEHİR (2002)

## □ 2003

- SULFURIC ACID PLANT, BANDIRMA, BALIKESİR

## □ 2004

- SECOND GRINDING PLANT, BİGADIÇ, BALIKESİR

## □ 2005

- BORIC ACID PLANT, EMET, KÜTAHYA

## □ 2007

- SODIUM PERBORATE PLANT (EXPANSION), BANDIRMA, BALIKESİR
- CONCENTRATOR PLANT (EXPANSION), BİGADIÇ, BALIKESİR
- BORON OXIDE PLANT (SECOND LINE), BANDIRMA, BALIKESİR
- CALCINED TINCAL PLANT, KIRKA, ESKİŞEHİR



III.BORAX PENTAHYDRATE PLANT,  
KIRKA, ESKİŞEHİR

# COMPLETED INVESTMENTS (2008-2011)

## 2008

- BORAX DECAHYDRATE PLANT (EXPANSION), BANDIRMA, BALIKESİR
- ANHYDROUS BORAX PLANT, KIRKA, ESKİŞEHİR

## 2009

- BORAX DECAHYDRATE PLANT, KIRKA, ESKİŞEHİR
- AGRI-BORON (ETİDOT-67), BANDIRMA, BALIKESİR

## 2010

- REHABILITATION OF STOCK AREAS, BİGADIÇ, BALIKESİR
- CAMKOY WASTE RESERVOIR CAPACITY INCREASE, BİGADIÇ, BALIKESİR
- NEW STEAM BOILER UNIT, BANDIRMA, BALIKESİR
- SINGLE PHASE PENTA PRODUCTION PLAN, KIRKA, ESKİŞEHİR
- AGILDERE WASTE RESERVOIR ELEVATION, EMET, KÜTAHYA

## 2011

- FOURTH BORAX PENTAHYDRATE PLANT, KIRKA, ESKİŞEHİR
- BORIC ACID PLANT (EXPANSION), EMET, KÜTAHYA
- CONCENTRATOR & GRINDING PLANT, BİGADIÇ, BALIKESİR



II. BORIC ACID PLANT,  
EMET, KÜTAHYA

# Targets of Strategic Plan



- PRODUCTION CAPACITY OF BORON CHEMICALS

**2.1 MILLION TONS**

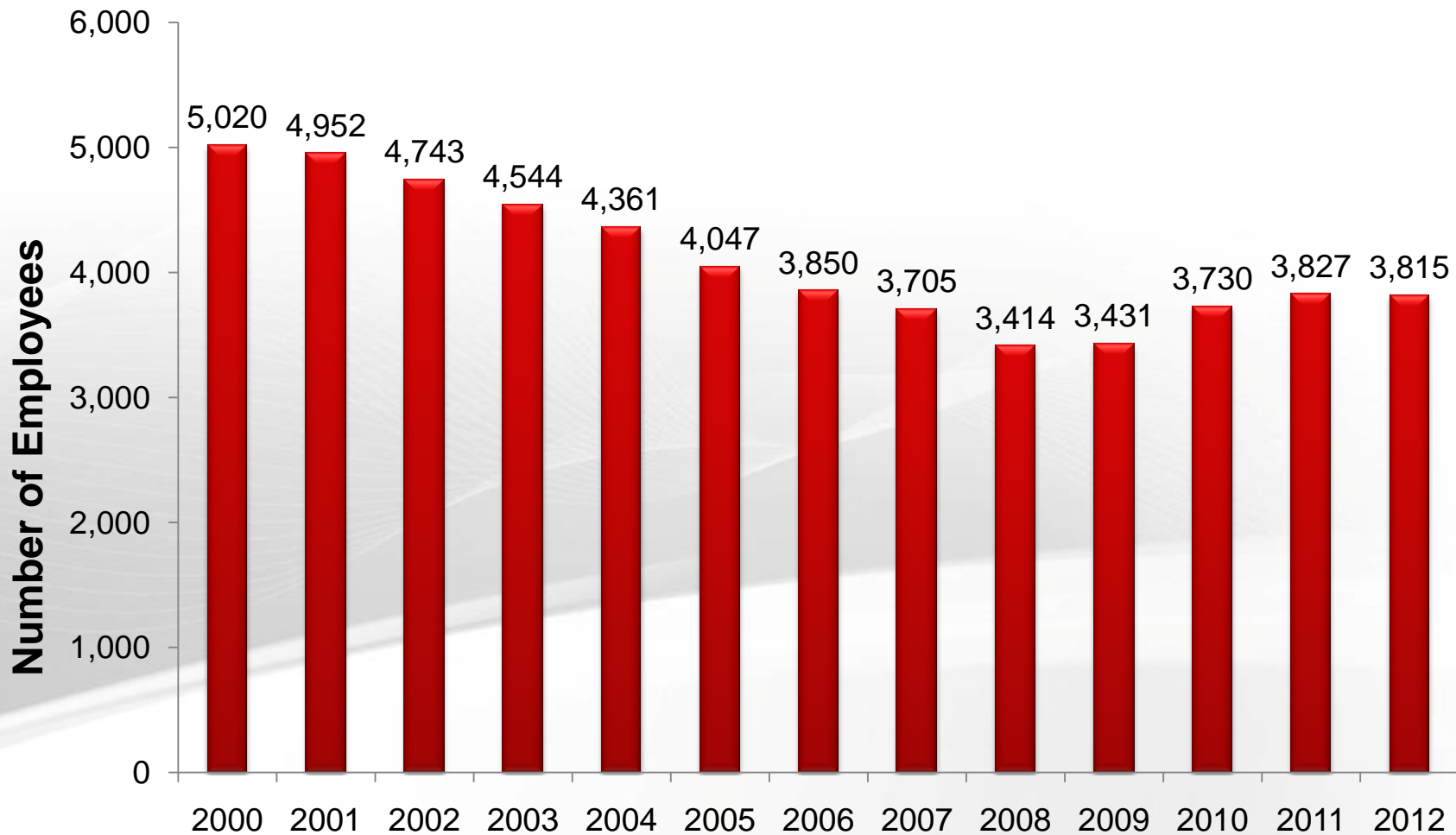
# Long Term Targets



- PRODUCTION CAPACITY OF BORON CHEMICALS

**5.5 MILLION TONS**

# Employment



# **NEW EMPLOYMENT PAST TEN YEARS AND COMING TEN YEARS**

**INVESTMENT COST FOR THE NEW  
CAPACITIES IN 10 YEARS PERIOD  
508,7 MILLION US\$**

**NUMBER OF EMPLOYMENT  
FOR THE NEW INVESTMENTS  
1.213 PERSON**

**TARGETED ADDITIONAL CAPACITY  
UP TO 2023  
3,8 MILLION TON**

**ESTIMATED EMPLOYMENT FOR  
THE ADDITIONAL CAPACITY  
2.500 PERSON**

## RARE EARTH ELEMENTS AND THORIUM RESERVE

- Eti Maden possesses the operating license of **rare earth elements and thorium reserve** located in **Eskişehir/Sivrihisar region**. The ore is complex in nature.
- The ore contains **REE (Rare Earth Elements)** Cerium, Lantan, Neodium, barite and fluorite besides thorium.
- Mineral contents of the **orebody**; 37,44%  $\text{CaF}_2$ , 31,04%  $\text{BaSO}_4$  and 3,14% RRE. Calculated total reserve is about 30.358.268 ton.
- Amount of those minerals in the orebody: 11.366.135 ton Fluorite, 9.424.424 ton Barite, 953.587 ton REE ( $\text{CeO}_2 + \text{La}_2\text{O}_3 + \text{Nd}_2\text{O}_3$ ), 8.612.182 ton gang minerals.

# RARE EARTH ELEMENTS PROJECT

- Feasibility study has been carried out.
- Accordingly, for operation of 10 year period; **10.000 t/y REE, 250 ton/y Thorium, 72.000 ton/y Barite** and **70.000 ton/y Fluorite** will be produced.
- Estimated annual revenue of the project is about 1 billion US\$.

# R&D Works

## Aim;

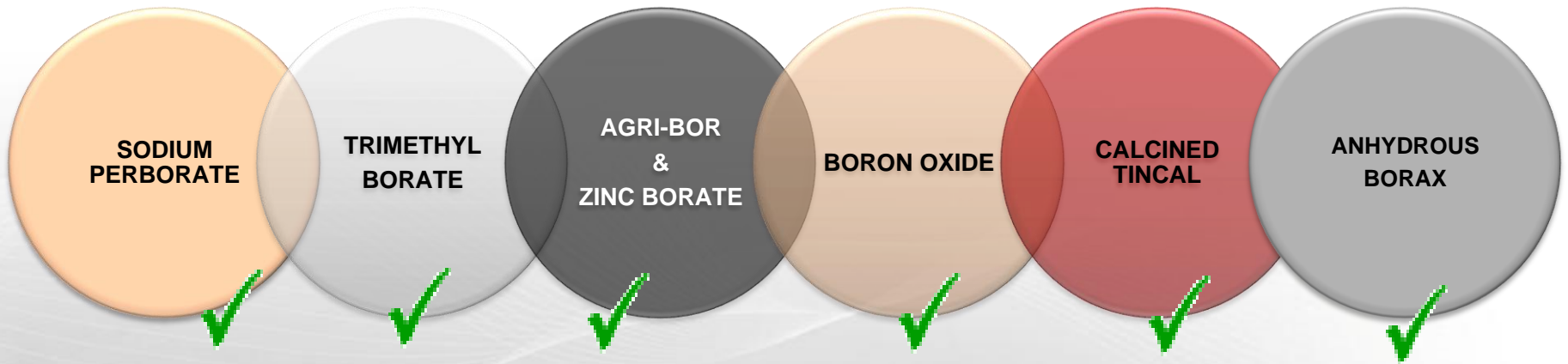
- Increase production efficiency
- Develop new usage areas
- Develop new products
- Contribute boron technology

**Strategy;** Rather than waiting the growth of boron market, leading to develop market by finding new boron products and new usages.

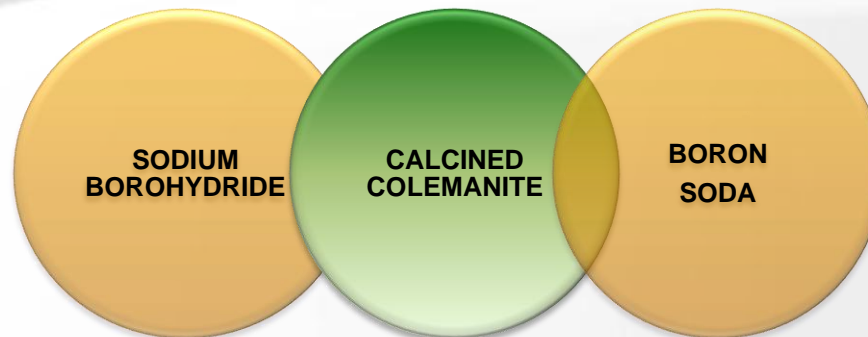


# R & D Works

## *Completed projects*



## *Ongoing projects*



# Possible Investment Opportunities in Turkey

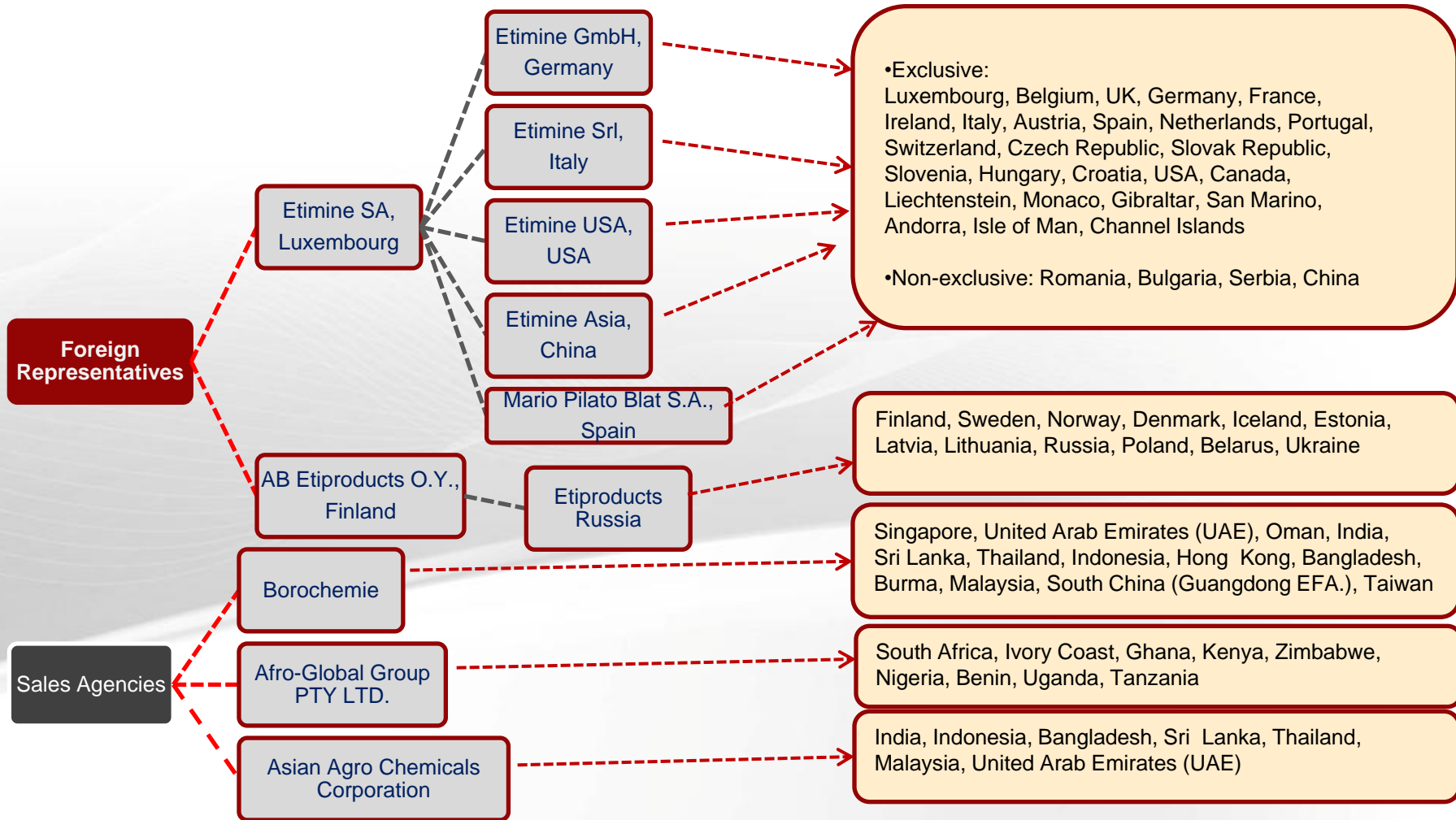
## ▪ **Glass Industry**

- Fiberglass (Reinforcement-Textile Fiberglass)
- Glass Wool (Insulation Fiberglass)
- Borosilicate Glass

## ▪ **Specialty Boron Products**

- The primary specialty boron products are boron carbide, boron nitride etc.

# Foreign Representatives & Sales Agents



# ELECTRICITY PROFILE CONSUMPTION AND PRODUCTION ( 2011)

**GENERATED  
ELECTRICITY**

**255,309,063  
kWh**



**INSTALLED  
POWER  
51.36 MWh**

**CONSUMED  
ELECTRICITY**

**278,387,448  
kWh**



The ratio of  
production and  
consumption  
**91.7 %**

***SOLD ELECTRICITY  
TO NATIONAL  
GRID (TEİAŞ)  
13,995,843 kWh***

***PURCHASED  
ELECTRICITY FROM  
TEİAŞ  
37,074,228 kWh***

# INVESTMENT POLICY AND METHODOLOGY

## PURCHASING POLICY

- to provide exchange savings by purchasing machinery and equipment from local manufacturers



## OUR STRATEGY

- To enlarge scale of investments with new and modern technology for the opportunities of the market



## INVESTMENT METHOD

- To implement as a turn key process covering know-how, engineering, construction and commissioning of the plant.



# Mission & Vision



## MISSION

- To utilize the national boron resources within the framework of sustainable development, and to serve these goods to all humanity by converting them into high quality value added boron products, thus to contribute to the nation's prosperity.



## VISION

- To become an establishment which continues steady growth in traditional boron products market and takes a pioneering role in developing new boron products that make difference, and creates maximum added value from boron resources by making the country information and technology base of the world boron industry.

# Contact

	ADDRESS	TELEPHONE	E-MAIL	FAKS
ETİ MADEN , TURKEY	Ayvalı Mah. Halil Sezai Erkut Cad. Afra Sok. No:1/A 06100 Keçiören/ANKARA	90 (312) 294 20 00 90 (312) 231 36 41	<a href="mailto:webmaster@etimaden.gov.tr">webmaster@etimaden.gov.tr</a>	90 (312) 230 71 84
ETIMINE SA, LUXEMBOURG	204, Zone Industrielle SCHELECK-II L-3225 Bettembourg LUXEMBOURG	+352 52 02 02	<a href="mailto:BoronMail@etimine.com">BoronMail@etimine.com</a>	+352-52 02 03
ETIMINE SRL, ITALY	Via Cassoli 4, 42100 Reggio Emilia, ITALY	+ 39 (522) 45 19 67	<a href="mailto:etiminesrl@libero.it">etiminesrl@libero.it</a>	+ 39 (522) 43 05 70
ETIMINE USA Inc, USA	Penn Center West Building 1 Suite 400 Pittsburgh, PA, 15276, USA	(1) 412-809 82 15	<a href="mailto:etimineusa@etimine.usa.com">etimineusa@etimine.usa.com</a>	(1) 412 809 82 17
ETIMINE ASIA, CHINA	325 Tianyaoqiao Rd. Gateway International Plaza, Room: 2510 P/C: 200030, Shanghai, CHINA	+86 21 336 324 13	<a href="mailto:info@etimineasia.com">info@etimineasia.com</a>	+86 21 336 325 12
AB ETI PRODUCTS O.Y. FINLAND	Piispanportti -9 02240 Espoo /FINLAND	+358-9-819 44 44 0	<a href="mailto:sales@etiproducts.com">sales@etiproducts.com</a>	+358-9-819 44 44 4
BOROCHÉMIE INTERNATIONAL PTE. LTD.	77 High Street, #09-09 High Street Plaza, 179433, SINGAPORE	+65 6334 7500	<a href="mailto:borochemie@singnet.co.sg">borochemie@singnet.co.sg</a>	+65 6334 0735
AFRO-GLOBAL GROUP PTY. LTD.	79 Oxford Road, Saxonwold 2196, Johannesburg, P.O.BOX 2381, Saxonwold 2132, SOUTH AFRICA	+26-11-486-1477	<a href="mailto:Felicia@AfroGlobal.co.za">Felicia@AfroGlobal.co.za</a>	+26-11-486-3699
MARIO PILATO BLAT S.A., SPAIN	Paseo de Alameda 17, 46010 Valenciya, SPAIN	+34-96 339 32 70	<a href="mailto:mpb@mariopilato.com">mpb@mariopilato.com</a>	+34-96 369 08 50
ASIAN AGRO CHEMICALS CORPORATION	11F-09 Amenity Centre Tower-2, Al- Jazeera Al Hamra, Ras Al Khaimah, U. A. E.	+971-7-2434822	<a href="mailto:marketing@asiangro.ae">marketing@asiangro.ae</a>	+971-7-2434823