



AREVA

Making the Nuclear Renaissance a certainty

Dr Yves GUENON

Business Development Director

AREVA NP

Johannesburg, November 13th, 2008

- ▶ AREVA
- ▶ Energy in the world
- ▶ Why Nuclear Energy?
- ▶ Why Nuclear Energy in South Africa?

▶ **World leader in the energy business**

- ◆ N°1 in the entire nuclear cycle
- ◆ N°3 in electricity transmission and distribution

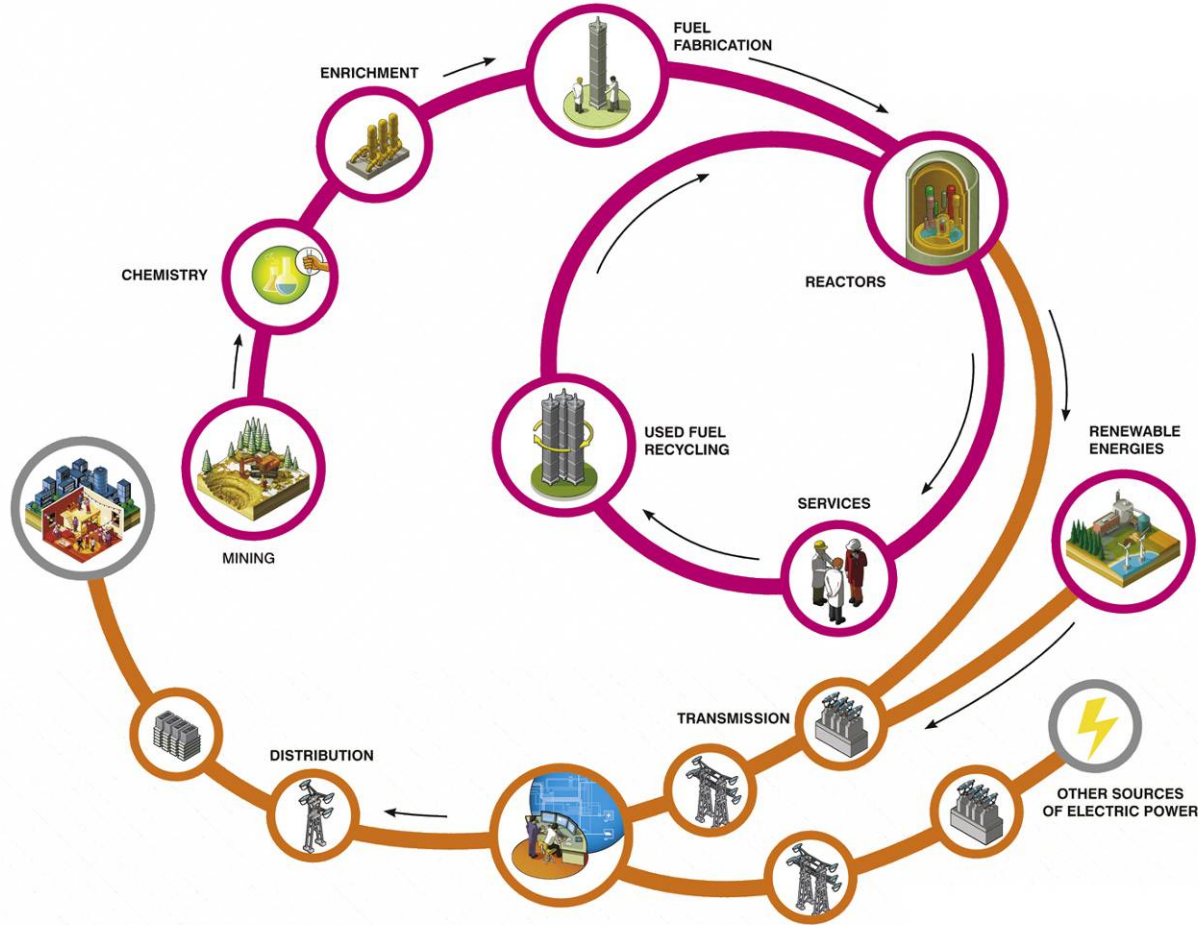
▶ **Our mission**

- ◆ **Enabling everyone to have access to ever cleaner, safer and more economical energy**

▶ **Our strategy**

- ◆ **To set the standard in CO₂-free power generation and electricity transmission and distribution**
 - **Capitalize on our integrated business model to spearhead the nuclear revival:**
 - Build one third of new nuclear generating capacities
 - Make the fuel secure for our current and future customers
 - **Ensure strong and profitable growth in T&D**
 - **Expand our renewable energies offering.**

CO₂-free power generation solutions



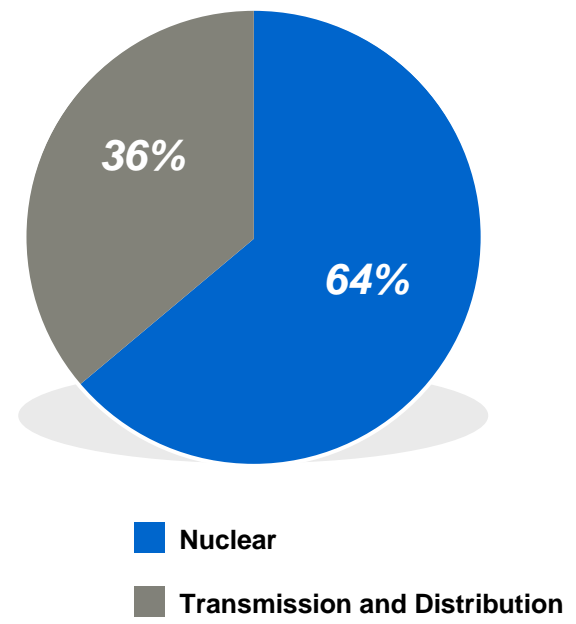
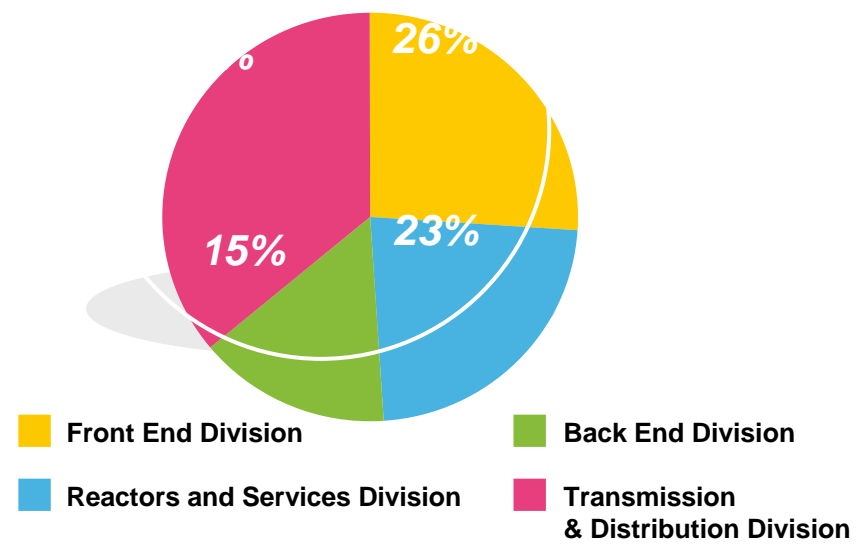
Solutions for reliable electricity transmission and distribution

Nuclear
Transmission & Distribution

Sales revenue by division
(in %)

Sales revenue by business
(in %)

[Total sales: €11.92B
Employees: 65000]



43 countries

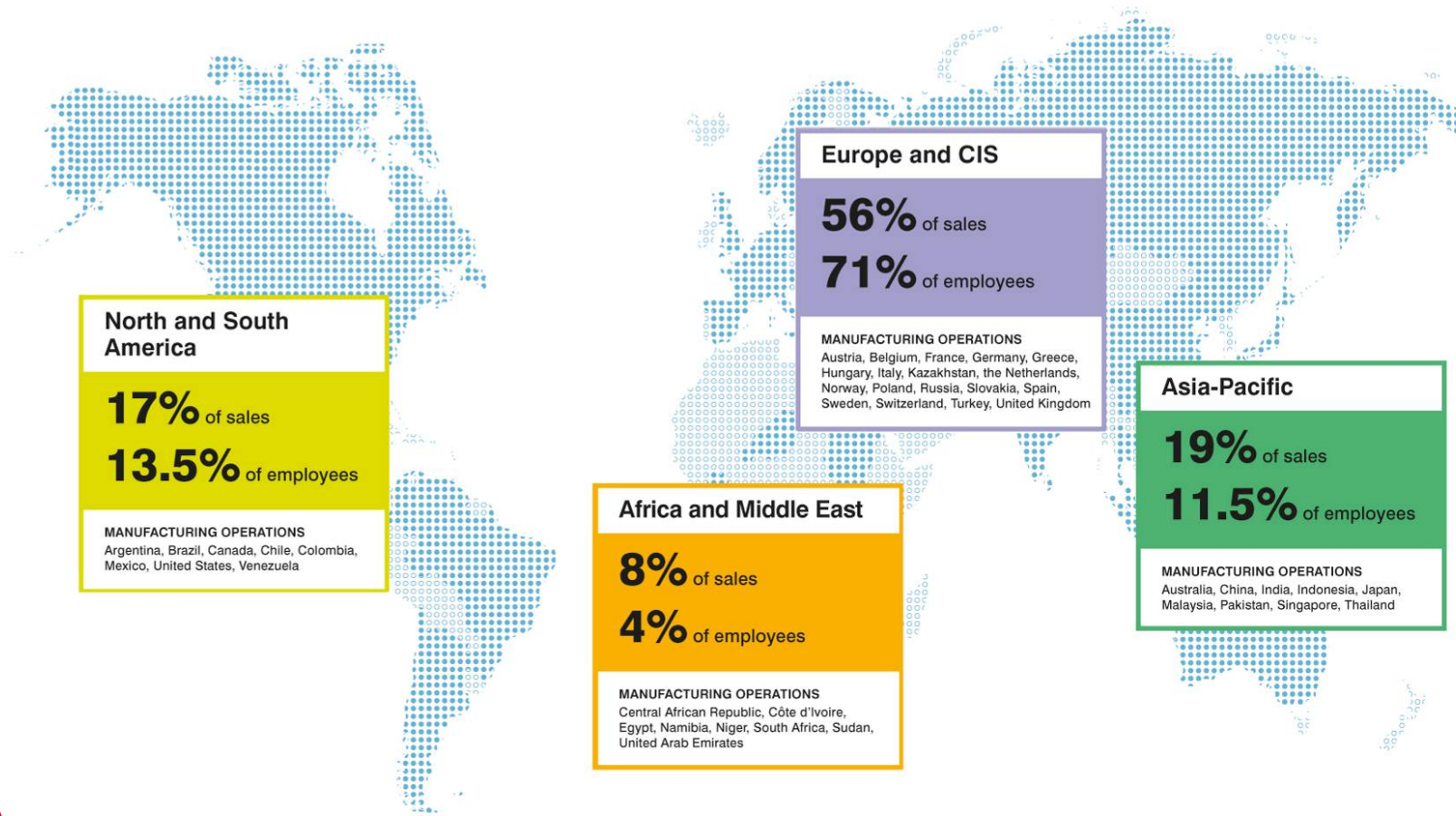
Production & Manufacturing

100 countries

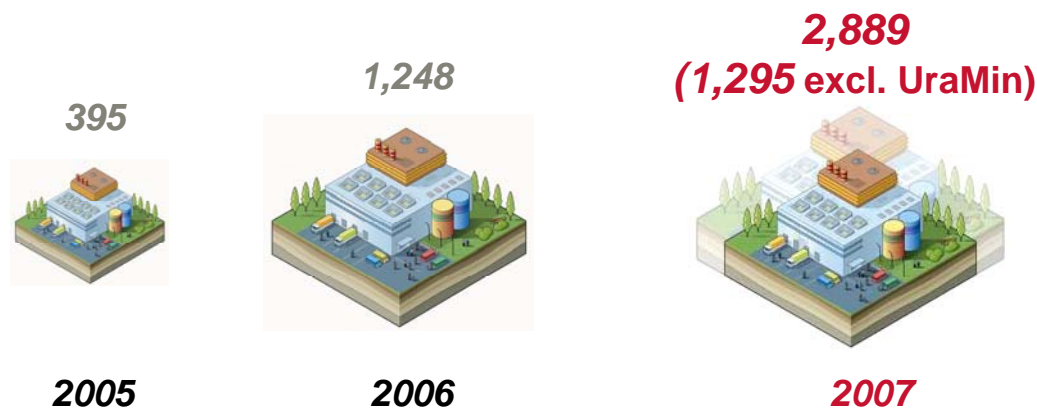
Marketing & Sales

Two-thirds of AREVA's sales revenue

came from outside France



Net capital expenditure (in millions of euros)



GBII, EPR certification

▶ Mining projects

▶ Sfarsteel
▶ Mining projects
▶ Centrifugation technology

▶ UraMin, East Asia Mineral
▶ Mining projects
▶ Multibrid
▶ Nokian Capacitors
▶ 10 new T&D manufacturing sites

▶ Mining
▶ EPR, ATMEA
▶ Industrial capacities (incl. Comurhex II)

- ▶ Clearly expressed values (**Values Charter**) based on the 10 principles of the U.N. Global Compact linked to human rights, labor conditions, environmental protection and anti-corruption efforts
- ▶ Implementation through **AREVA Way** of a continuous improvement process structured around our 10 sustainable development commitments and integrated into the general management system
- ▶ **AREVA Way** is also a way of being and a way of acting, every day: the will to improve, readiness, responsiveness and openness to dialogue

▶ **Two 900 MW units at Koeberg, built by AREVA**

- ◆ **A 30 year relationship between Eskom and AREVA (and also EDF and Alstom) at Koeberg: construction, maintenance, upgrades, fuel, training, and (sometimes crucially) spare parts**
- ◆ **Lesedi Nuclear Services: a BEE subsidiary maximizing local engineering and maintenance involvement, with full support from AREVA**



▶ **Uramin uranium mining in the Karoo**

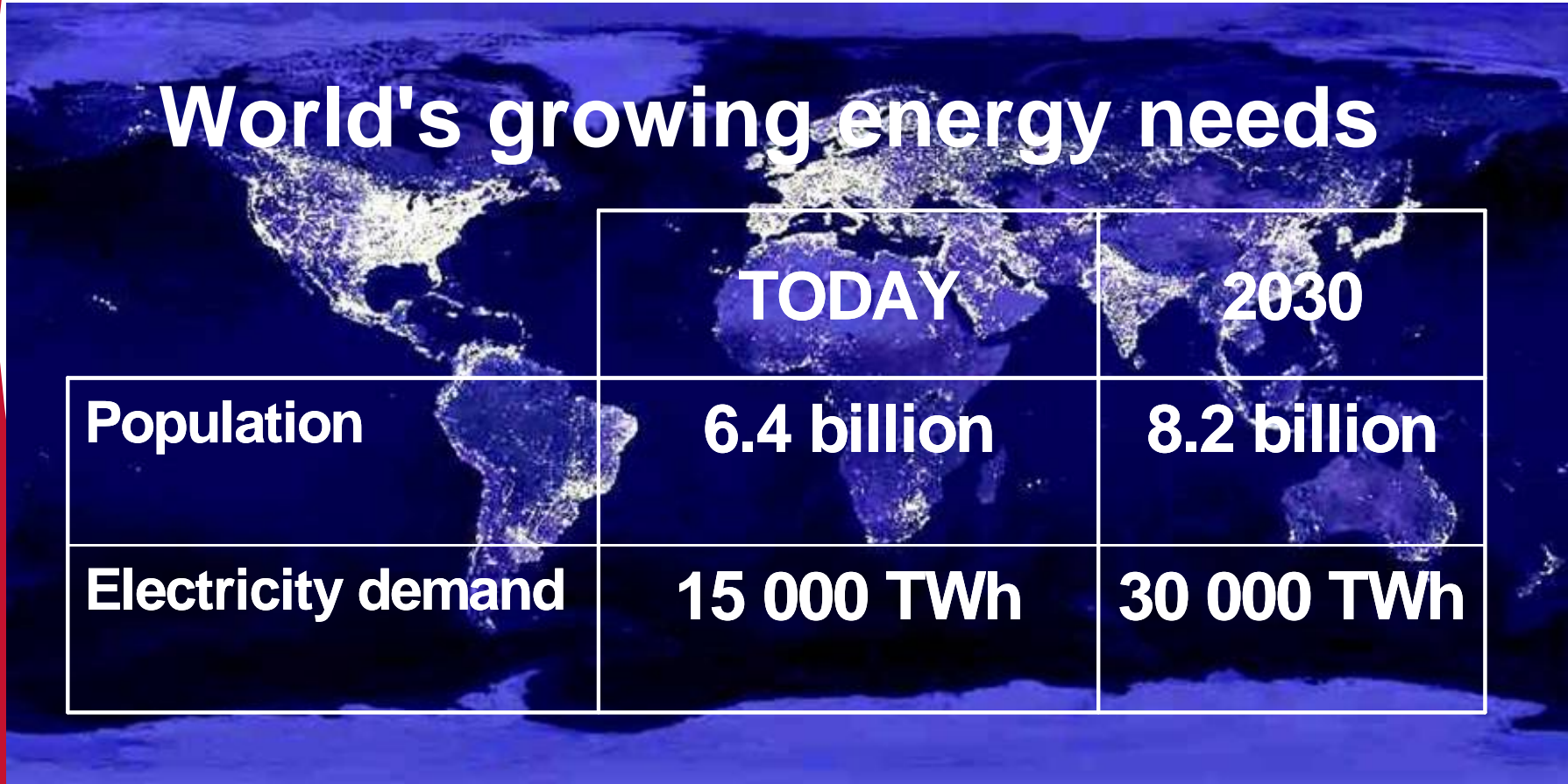
▶ **AREVA T&D through Alstom South Africa: local fabrication & sales**

▶ **ARECSA joint venture with NECSA, dedicated to training in the nuclear sector and related fields**

▶ **Renewable and Innovative Energy programs like the “Green Coal” JV with Pro-Natura (in cooperation with NECSA)**

- ▶ **World energy needs are growing and will continue to grow**
- ▶ **Oil and gas production growths are limited**
- ▶ **Political parameters could strongly affect production**
- ▶ **Climate change will affect the choices of raw energy**
- ▶ **Economies of countries are impacted by energy cost but also by energy shortage**
- ⇒ **Nuclear Energy could participate more actively in electricity mix**

World's growing electricity needs

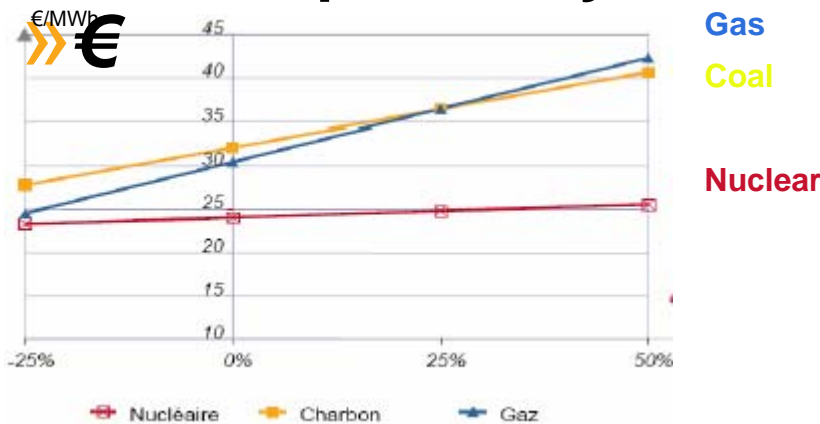


World's growing electricity needs

▶ Investment needs:

- ◆ In EUROPE: 600 GWe
- ◆ In America: 850 GWe
- ◆ In China: 1300 GWe
- ◆ In India: 400 GWe

▶ Fuel cost dependency



⇒ **Nuclear Energy could participate more actively in electricity mix**

3 ways forward... none sufficient by itself

 AREVA

- 1. Energy Efficiency/Conservation
(Behavior + Technology)**
- 2. Energy Mix Diversification
(Nuclear + Renewables)**
- 3. Upgrading + CCS when mature
(Coal is back)**

**Nuclear will only be part of the big picture if our
entire industry gears up to the challenge now**

Why a Nuclear Renaissance?

To try to answer to the market uncertainties:

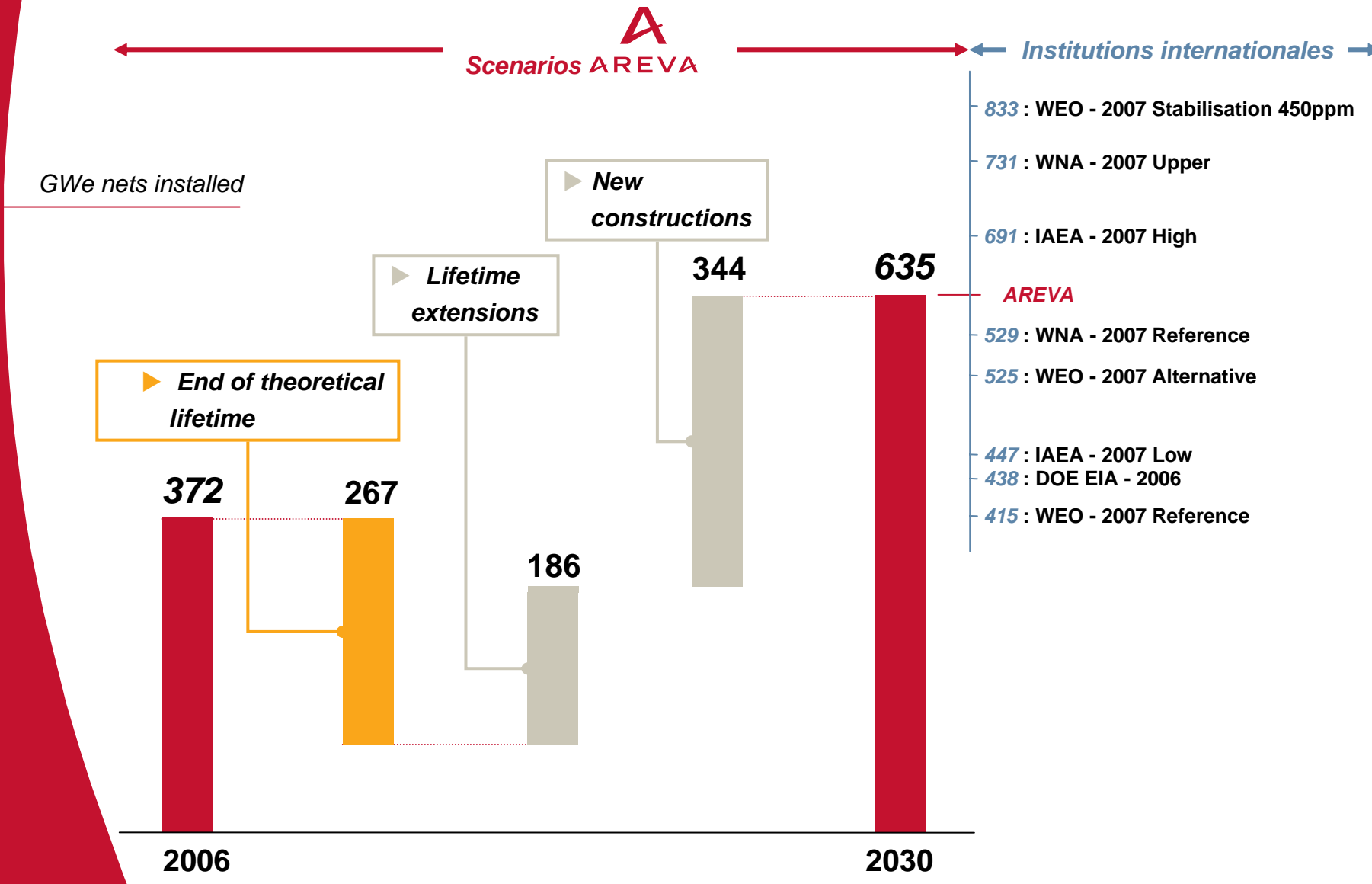
▶ Nuclear energy provides:

- ◆ a better Energy Independence for the countries
- ◆ a greater Security of Supply for the countries and firms
- ◆ a real solution to Climate Change
- ◆ an electricity price stability compare to fossil energy
- ◆ a real competitiveness over a long time period





▶ Nuclear energy is also:

- ◆ taking care of the future by managing the full waste cycle until final disposal

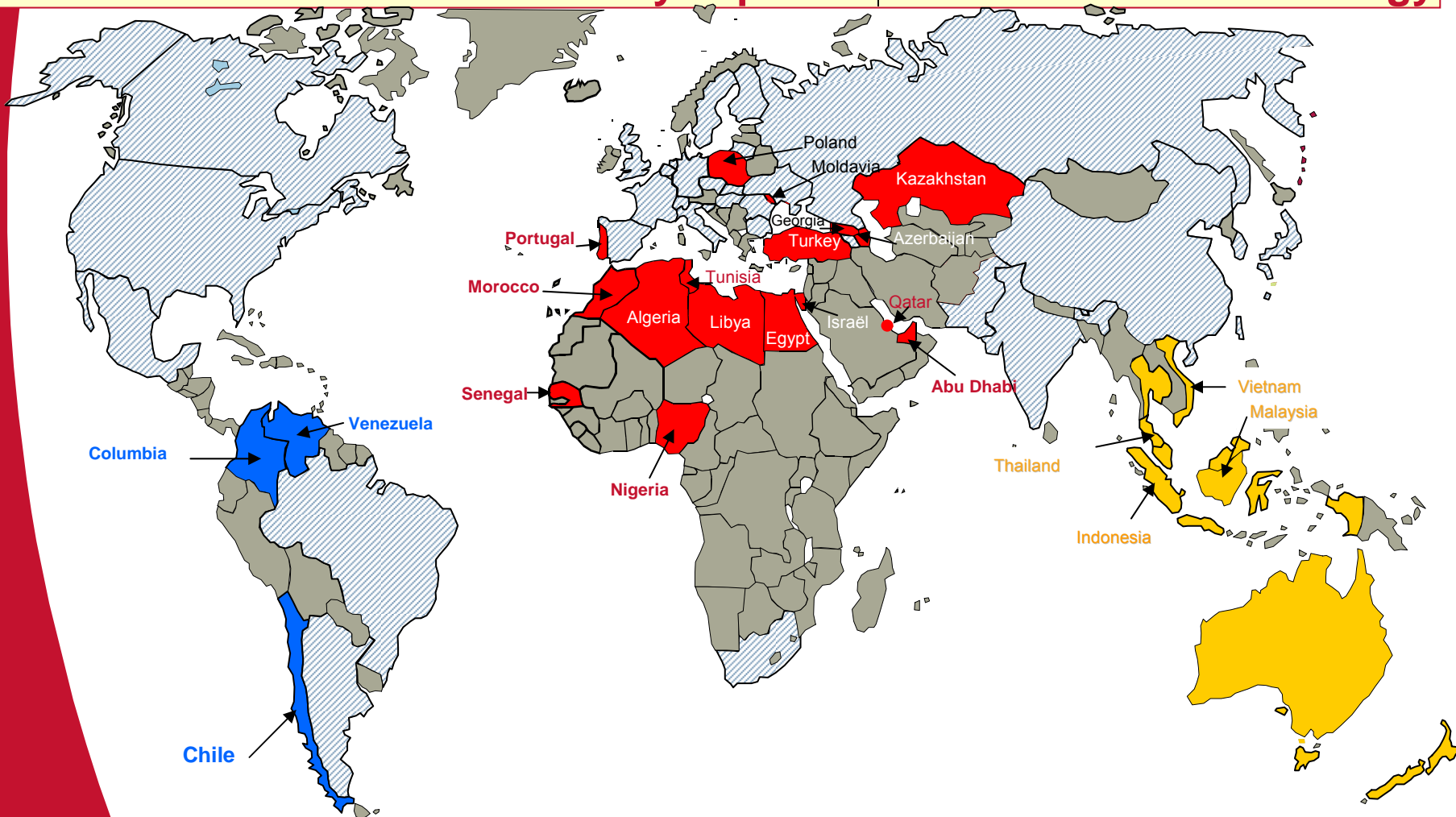
The 2030 AREVA scenario foresees more than 500 GWe of nuclear will be constructed or extended



The nuclear renaissance is a fact

-  Nuclear countries
-  Asian emerging nuclear countries
-  South American emerging nuclear countries
-  Africa/Middle & European emerging nuclear countries

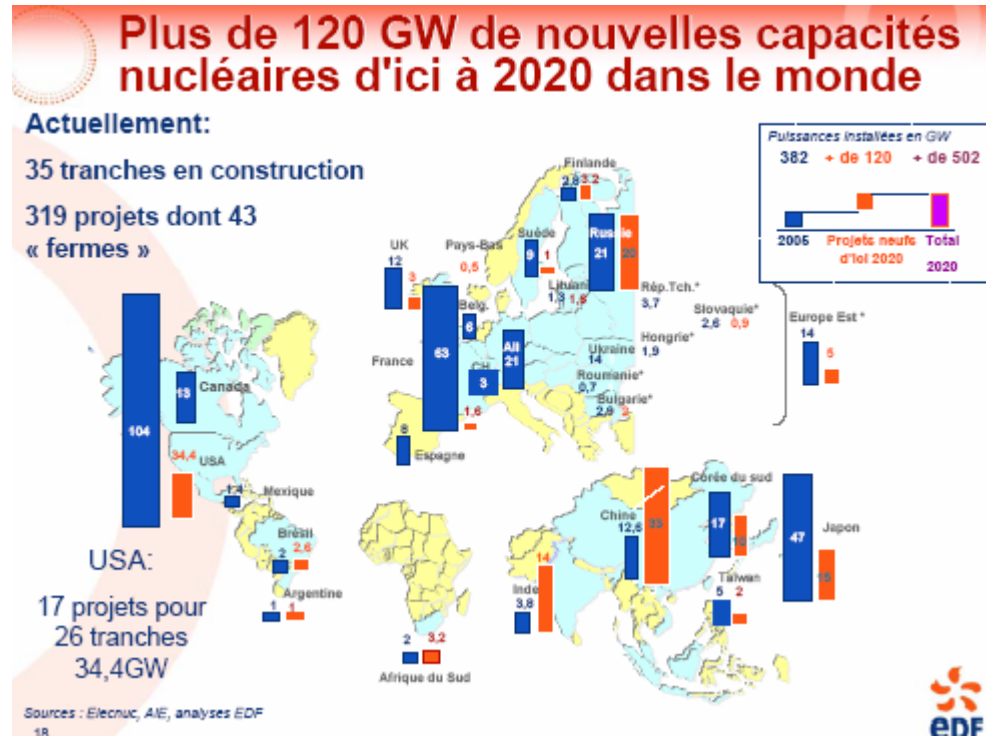
More than 20 new countries clearly expressed interest in nuclear energy



China and India will account for at least 40% of the world nuclear power plant population by 2035

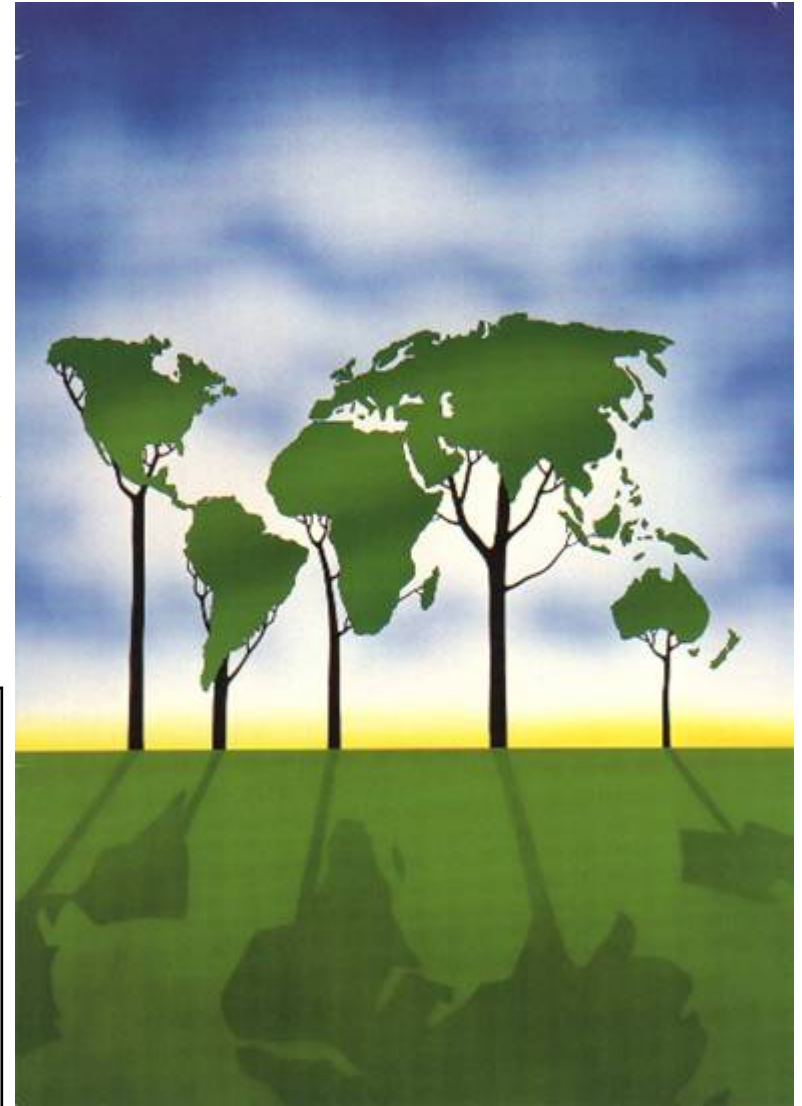
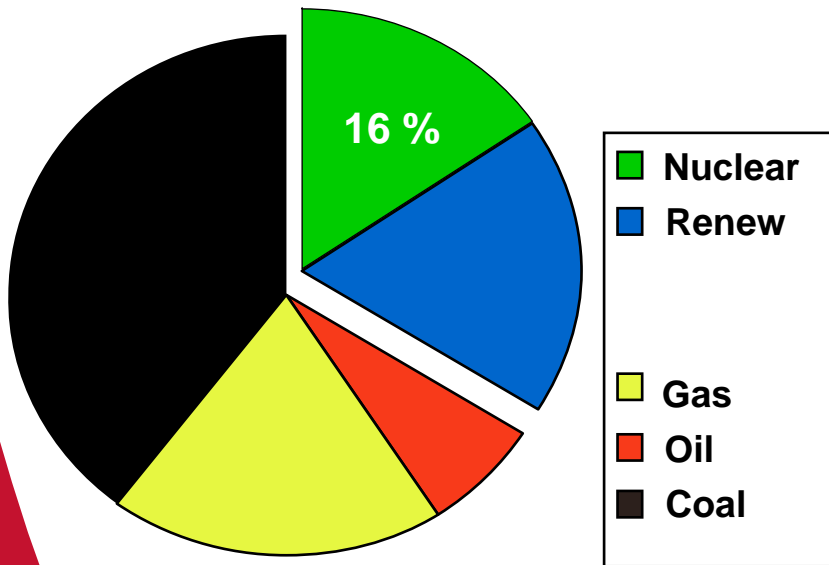
USA, Canada, UK and other countries have shown a growing interest in maintaining nuclear power

The nuclear renaissance is a fact



The world wants more energy for less CO₂

Actual worldwide electrical power mix



The « More for Less » Global Challenge

Cartoonists' climate view



First down the Gen III+ learning curve



EPR design currently being licensed by leading safety authorities

Construction License



February 2005



April 2007

Licensing Launched



Submission
December 2007



Submission
June 2007

**AREVA supports a shorter licensing process
by providing comprehensive reference documents**

EPR is supported by industry leaders



USA

COL preparation



Technology selected



South Africa

Short-listed
(offer submitted)



UK

Pre-licensing (GDA)



Baltic Project

Under preparation



UAE

Under preparation



EPR the FIRST Generation III+ under construction: Nth of a Kind

Under Construction



Olkiluoto 3, Finland



Flamanville 3, France

Project Launched



Taishan 1&2, China

Project Preparation



Calvert Cliffs 3, U.S.

Predictability based on experience





Reactor Building September 2008



Copyright EDF



Turbine building (top) and pumphouse - September 2008

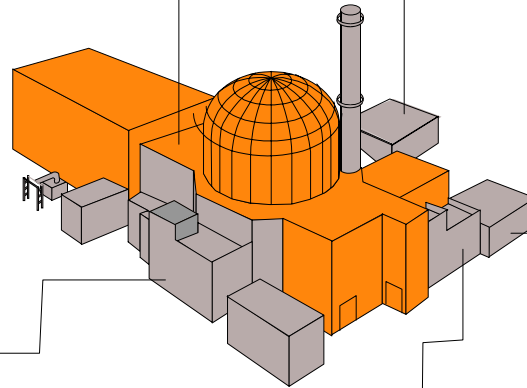




OL3 Nuclear Island (NI) View



Diesel Building (UBP)



Waste Building (UKS)



Safeguard Building 1



Nuclear Auxiliary Building (UKA)

General overview – September 2008

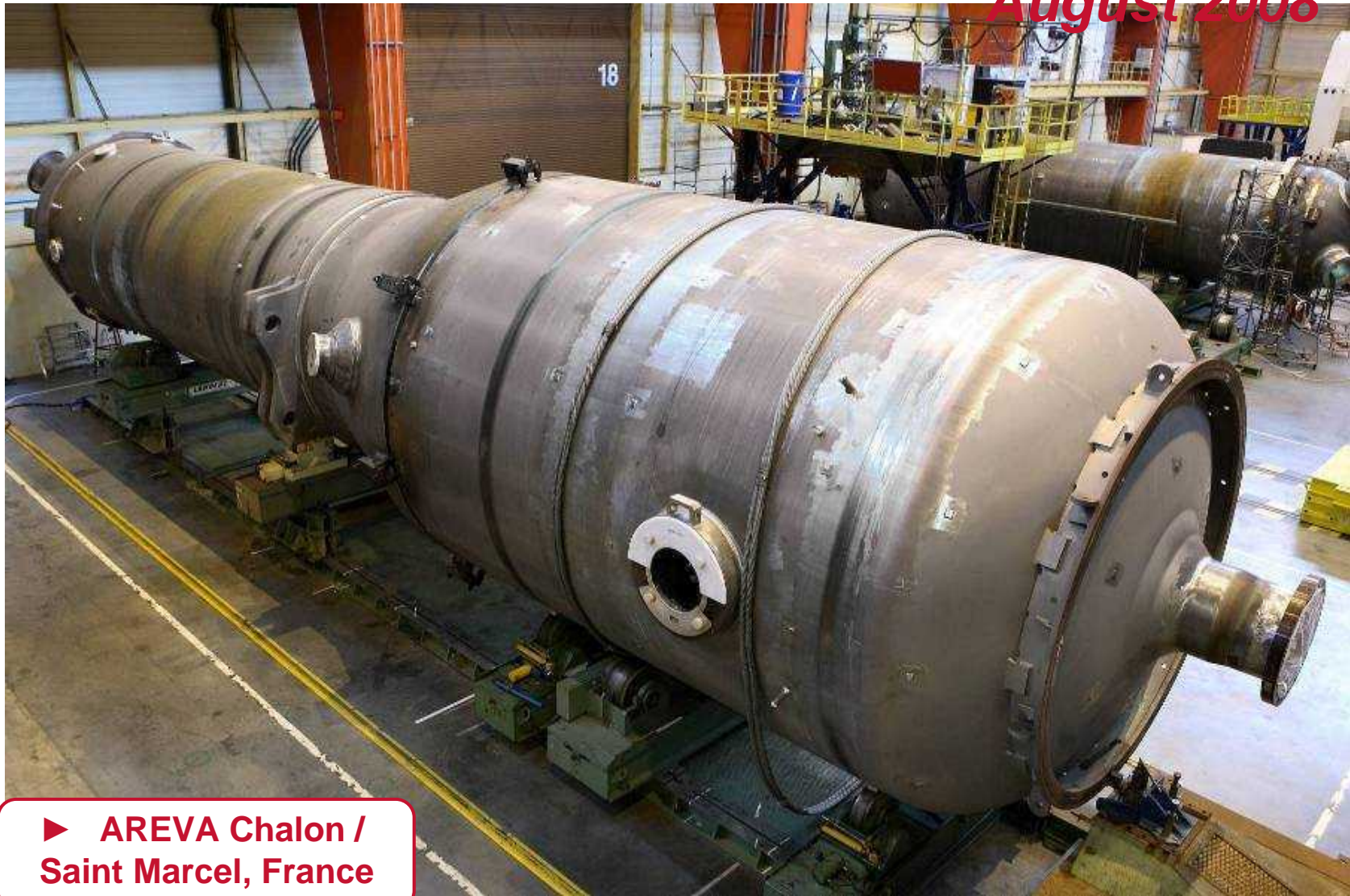




General overview



Final assembling of Steam Generator completed August 2008



► **AREVA Chalon /
Saint Marcel, France**

AREVA global partnership for South Africa

- ▶ AREVA is supporting its commercial offer with a global partnership plan contributing to the development of the energy industry in South Africa. We are not just vendors
 - ◆ All business areas of AREVA are potentially involved
 - ◆ The aim is to serve local needs, and develop exports when possible
- ▶ We are investing in the local industry
- ▶ We are investing in skill development
- ▶ We are investing in mining
- ▶ We have BEE partners in our investments



**We believe we are the best partners for South Africa
and we intend to prove it**

The Nuclear Renaissance is here...

*and AREVA is working hard to making it
a certainty*



AREVA