

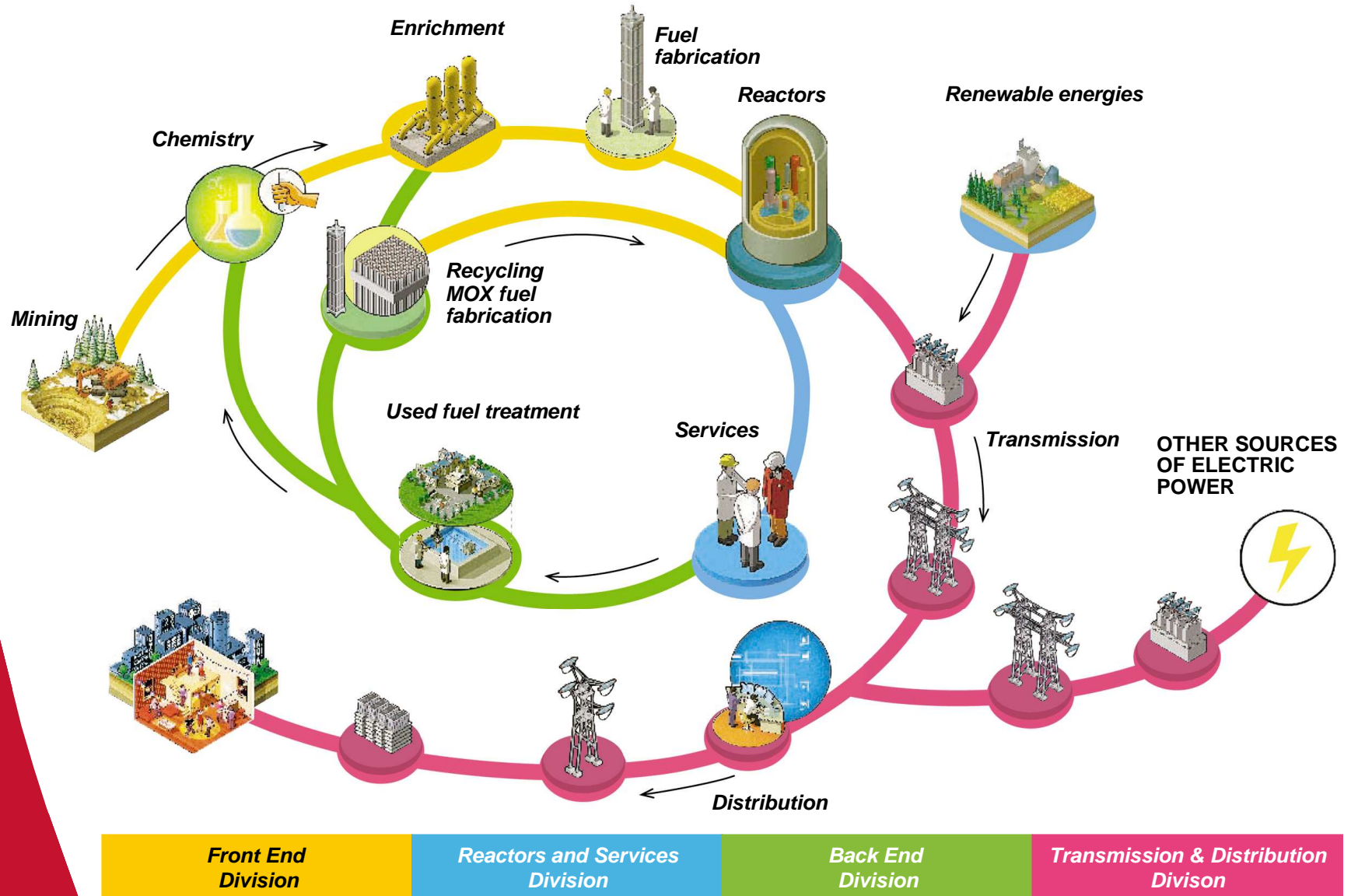
## *A view from AREVA*

**M-F DEBREUILLE**  
**AREVA-NC**  
**Technologies, Research and Innovation VP**  
**October 2007**

- ▶ **A few words about AREVA**
- ▶ **Focus on Fuel cycle activities**
- ▶ **Our environment**
- ▶ **Why do we need actinides chemistry ?**

- ▶ **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 strategic objectives (2011)**
  - ◆ Capture one-third of the world nuclear power market and five billion euros in electricity transmission and distribution sales revenue
  - ◆ Clear double-digit operating margin
  - ◆ Attain a significant position in the renewable energies field

# An integrated offer serving energy professionals



<b>Steady sales growth</b>	<b>€ 10.86B</b>	<b>+ 7.3%*</b>
<b>Strengthening of operating income</b>	<b>€ 407M</b>	<b>3.7% of sales</b>
<b>Strong growth in net income</b>	<b>€ 649M</b>	<b>+ 43.9%**</b>
<b>Employees</b>	<b>61,111</b>	

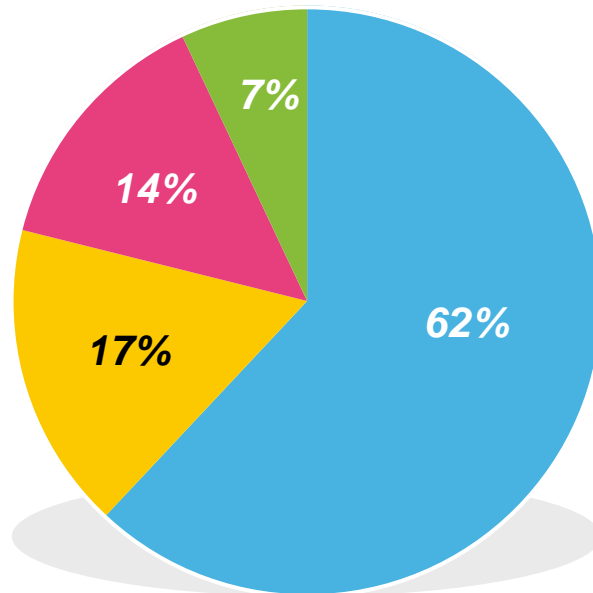
\* + 6.7% like-for-like

\*\* In relation to 2005 consolidated net income excluding income from discontinued operations (Connectors division)

## Key data for 2006

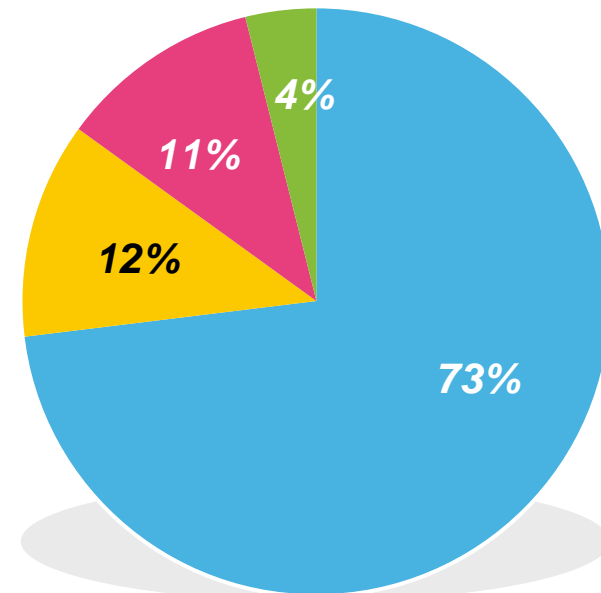
### Sales by region (in %)

[Total sales: €10.86B]



### Employees by region (in %)

[Total workforce: 61,111 employees]

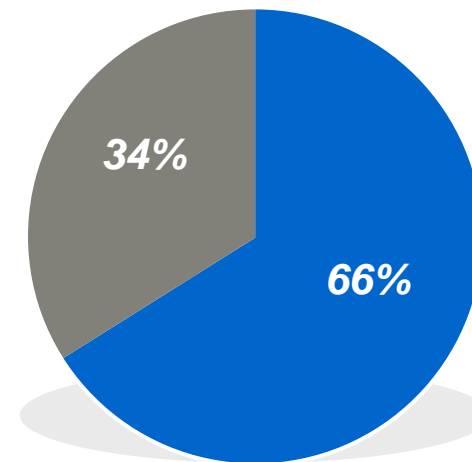
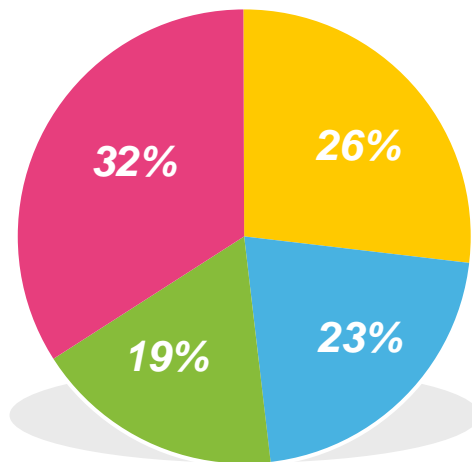


■ Europe & CIS   
 ■ North & South America   
 ■ Asia-Pacific   
 ■ Africa / Middle East

**Sales revenue by division**  
(in %)

**Sales revenue by business**  
(in %)

[Total sales: €10.86B]



■ Front End Division

■ Back End Division

■ Nuclear

■ Reactors and Services Division

■ Transmission & Distribution Division

■ Transmission and Distribution

# AREVA across the globe

**41 countries**

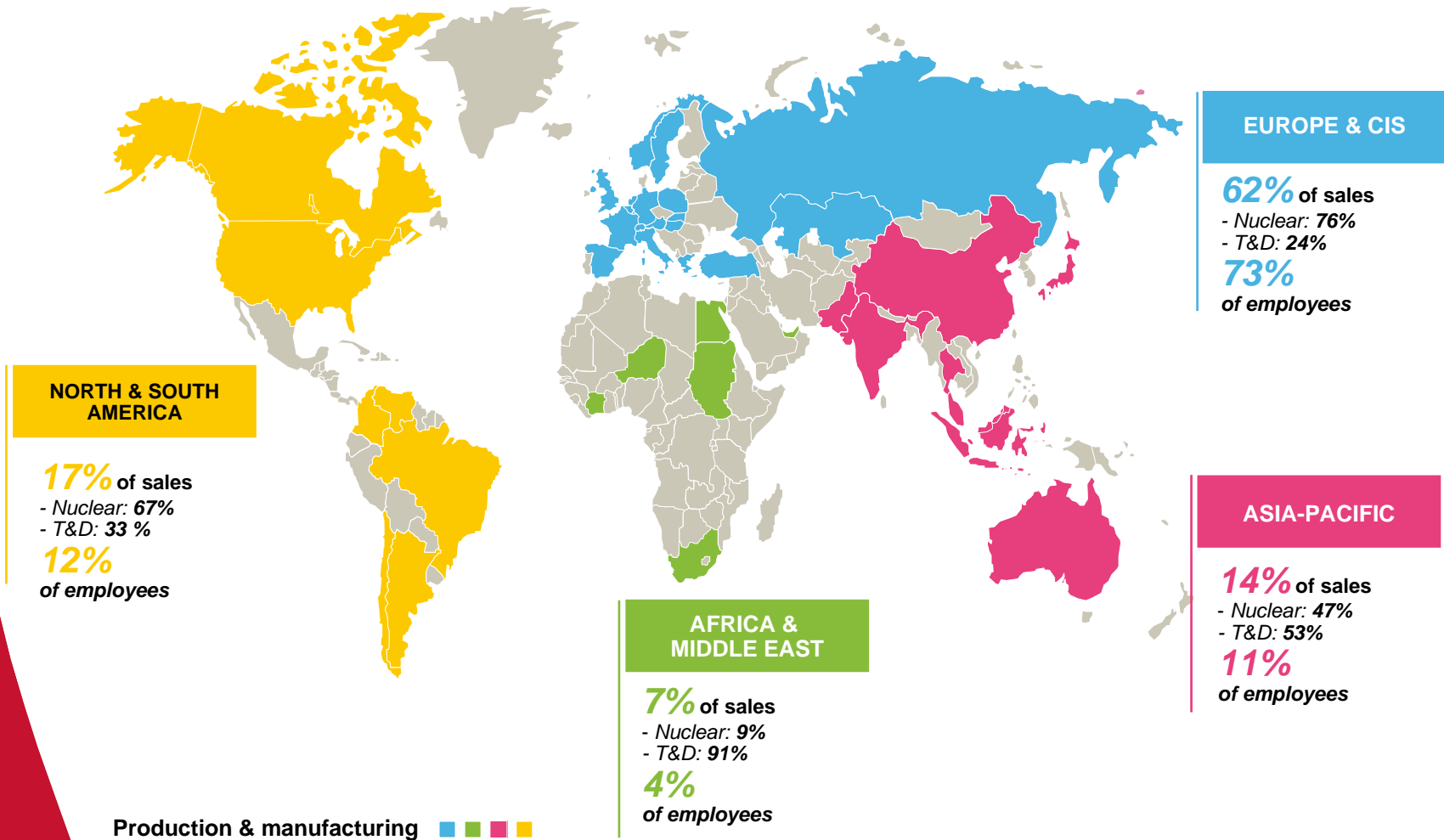
Production & Manufacturing

**100 countries**

Marketing & Sales

**Two-thirds of AREVA's sales revenue**

came from outside France



- ▶ Chairman of the Supervisory Board: *Frédéric Lemoine*
- ▶ CEO of AREVA: *Anne Lauvergeon*

<b>Shareholders</b>	
<b>Commissariat à l'énergie atomique (CEA) – French AEC</b>	<b>79%</b>
<b>French State</b>	<b>5%</b>
<b>Investment certificate holders*</b>	<b>4%</b>
<b>Caisse des dépôts et consignations</b>	<b>4%</b>
<b>ERAP</b>	<b>3%</b>
<b>EDF</b>	<b>2%</b>
<b>Framépargne**</b>	<b>2%</b>
<b>Total</b>	<b>1%</b>

\* Listed on Euronext Paris, compartment B, SBF 120 index

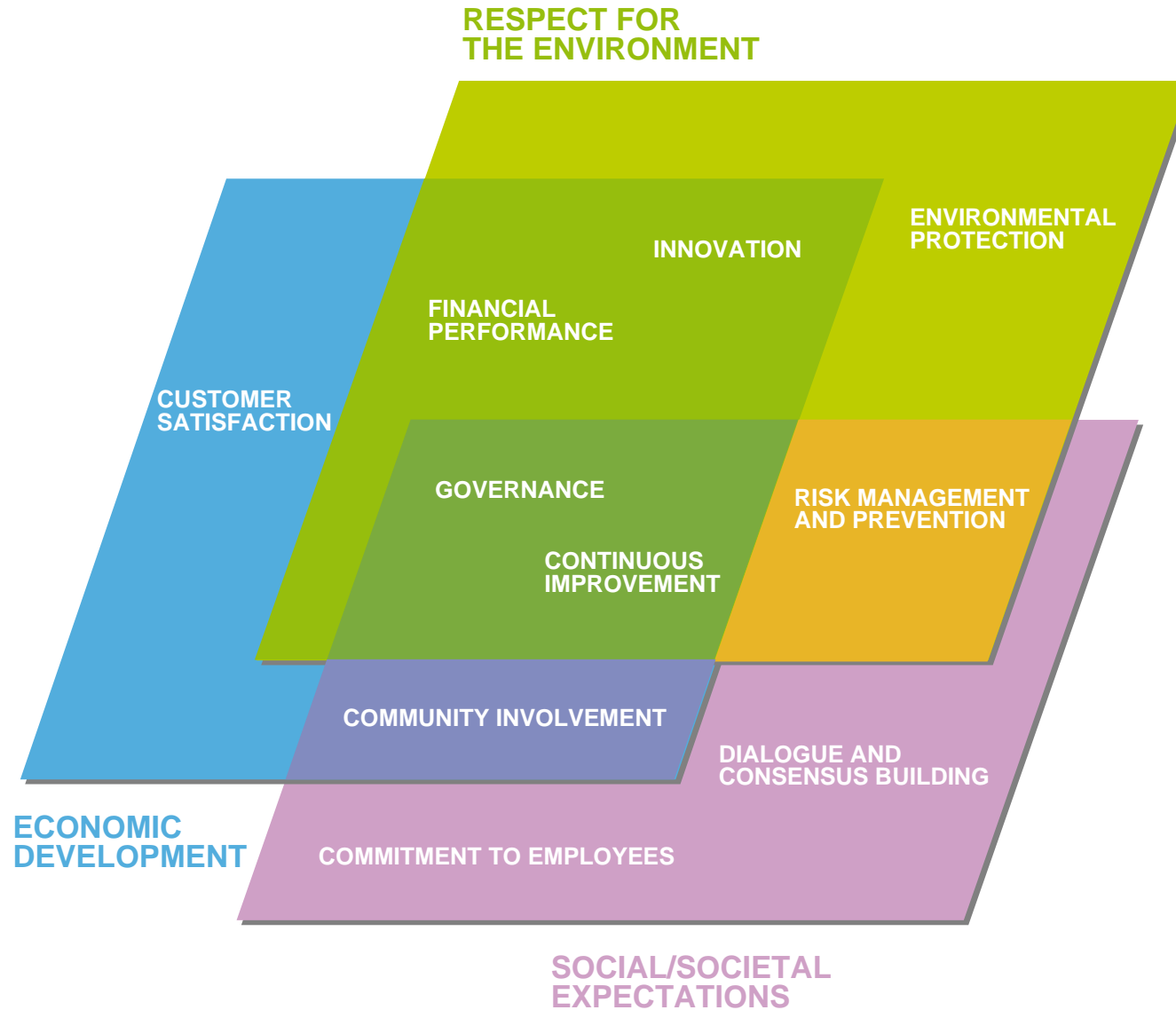
\*\* Employee-held investment fund

## ***A group at the heart of the 21<sup>st</sup> century's great challenges***

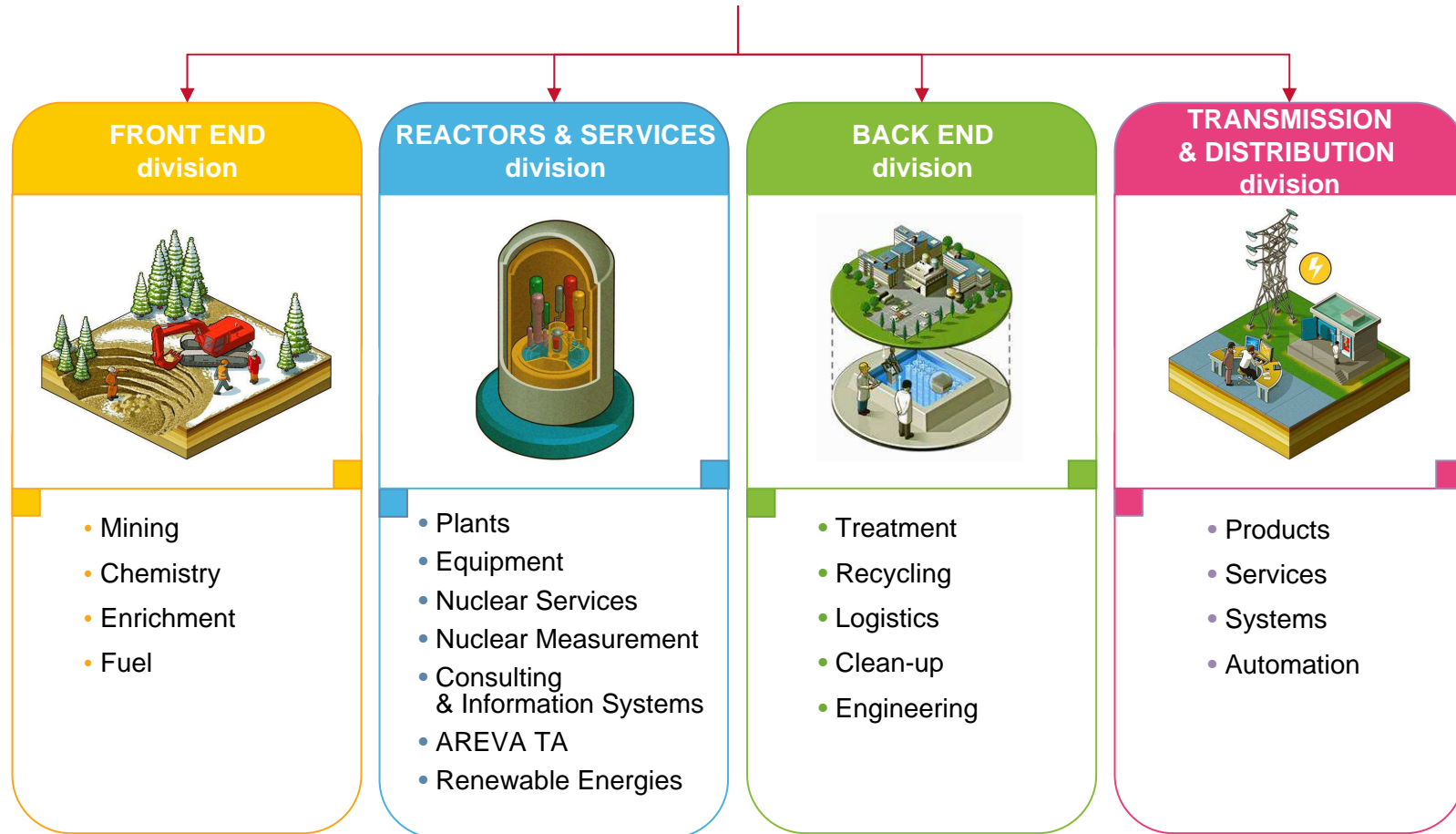
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- ▶ **Access to energy for everyone**
- ▶ **Preservation of the planet**
- ▶ **Responsibility towards future generations**
  
- ▶ **Anchored in our industrial strategy and our daily management, sustainable development combines**
  - ◆ **Profitable growth**
  - ◆ **Social responsibility**
  - ◆ **Respect for the environment**

# ***Sustainable development: our 10 major commitments***



# Organization of the group



## *Focus on Fuel Cycle Activities*

- ▶ **All of the activities leading up to the generation of nuclear power:**
  - ◆ **Uranium exploration and mining**
  - ◆ **Uranium conversion and enrichment**
  - ◆ **Nuclear fuel design and fabrication**

**€2.92B**  
Sales

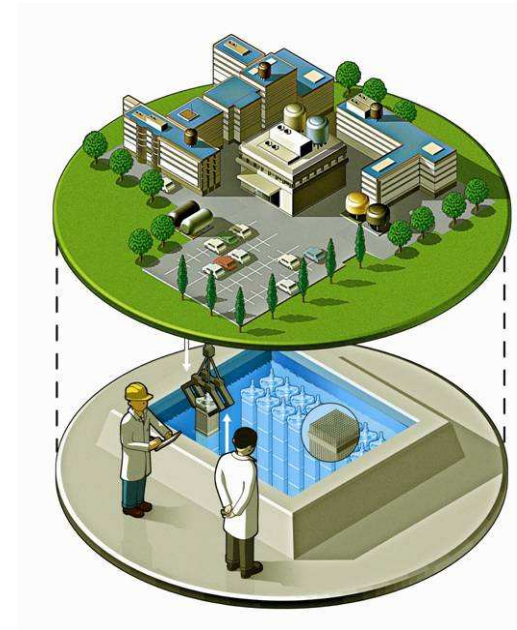
**11,995**  
Employees



- ▶ **Solutions for used fuel treatment and recycling of reusable materials**
- ▶ **Solutions for used fuel storage**
- ▶ **Facility decommissioning at the end of service life**

**€ 1.91B**  
Sales

**10,697**  
Employees



## *Our environment*

## ***A changing energy world***

- ▶ **Tensions on prices.**
- ▶ **Geopolitics with Middle East.**
- ▶ **Climate change challenge.**
  
- ▶ **A rebirth of nuclear power that could be very demanding.**
- ▶ **Which competitors for AREVA? Toshiba-Westinghouse, the Chinese, Gasprom .....**

- ▶ **China and India will account for at least 40% of the world's nuclear power plant population by 2035.**

- ▶ **The USA have decided to become leader again by 2020.**

**The Energy Bill, open negotiations with Asia on the climate issue, a redefined framework with India on the topic of non-proliferation.**

- ▶ **30 countries, representing two-thirds of the world's population, have clearly reverted to or maintained the option of nuclear power.**

## *Why do we need actinides chemistry?*

## *Huge needs of energy: Nuclear energy, part of solution*

- ▶ **Nuclear Renewal need closed fuel cycle**
- ▶ **WHY?**
  - ◆ **To recycle reusable materials and to preserve natural resources**
  - ◆ **To manage waste until deep disposal storage**
- ▶ **The question for the future is : (2006 law in France)**
  - ◆ **Which scope to recycle?**
- ▶ **Lead to 3 topics for actinides chemistry:**
  - ◆ **Actinides in the back end fuel cycle**
  - ◆ **Geochemistry for waste in deep geological storage**
  - ◆ **Fuel with actinides**

## *Actinides in the back end fuel cycle*

- ▶ **Leadership of AREVA : thanks to a closed collaboration between Research, Industrial experience and engineering studies**
- ▶ **We work to keep this leadership:**
  - ◆ always make progress
  - ◆ same methodology
- ▶ **To do the right industrial choice : need a great knowledge of phenomena**
- ▶ **Exemples**
  - ◆ Cm behaviour in glass, is it possible to increase Cm amount in a glass canister?
  - ◆ If we separate Am, which behavior in the separative step, then in the conversion phase, and at least fuel in reactor

## *Geochemistry for waste in deep geological storage*

### *Fuel with actinides*

- ▶ **Actinides Geochemistry : Key point to customize a spent fuel treatment plant:**
  - ◆ **EX: Np is mobile in an oxydizing storage like in Yucca Mountain and not at all in an reducing one like Burrens in France**
  
- ▶ **Fuel with actinides:**
  - ◆ **Ex: Actinides transmutation , which fuel?**
    - **Oxyde, Carbure, ...**
  - ◆ **Fuel for Gen IV system**

- ▶ **To do the right industrial choice**
  - ◆ **Need a deep basic knowledge**
    - on what is possible to do?
    - Phenomena understanding
  - ◆ **Even if other criteria have to be taken into account**
  
- ▶ **Basic research:**
  - ◆ **Ideas source of progress**
  - ◆ **Ideas for new services and products**