"21st century technologies for powering a sustainable world growth"

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Sustainability (I)

Two dimensions will be considered in this contribution:

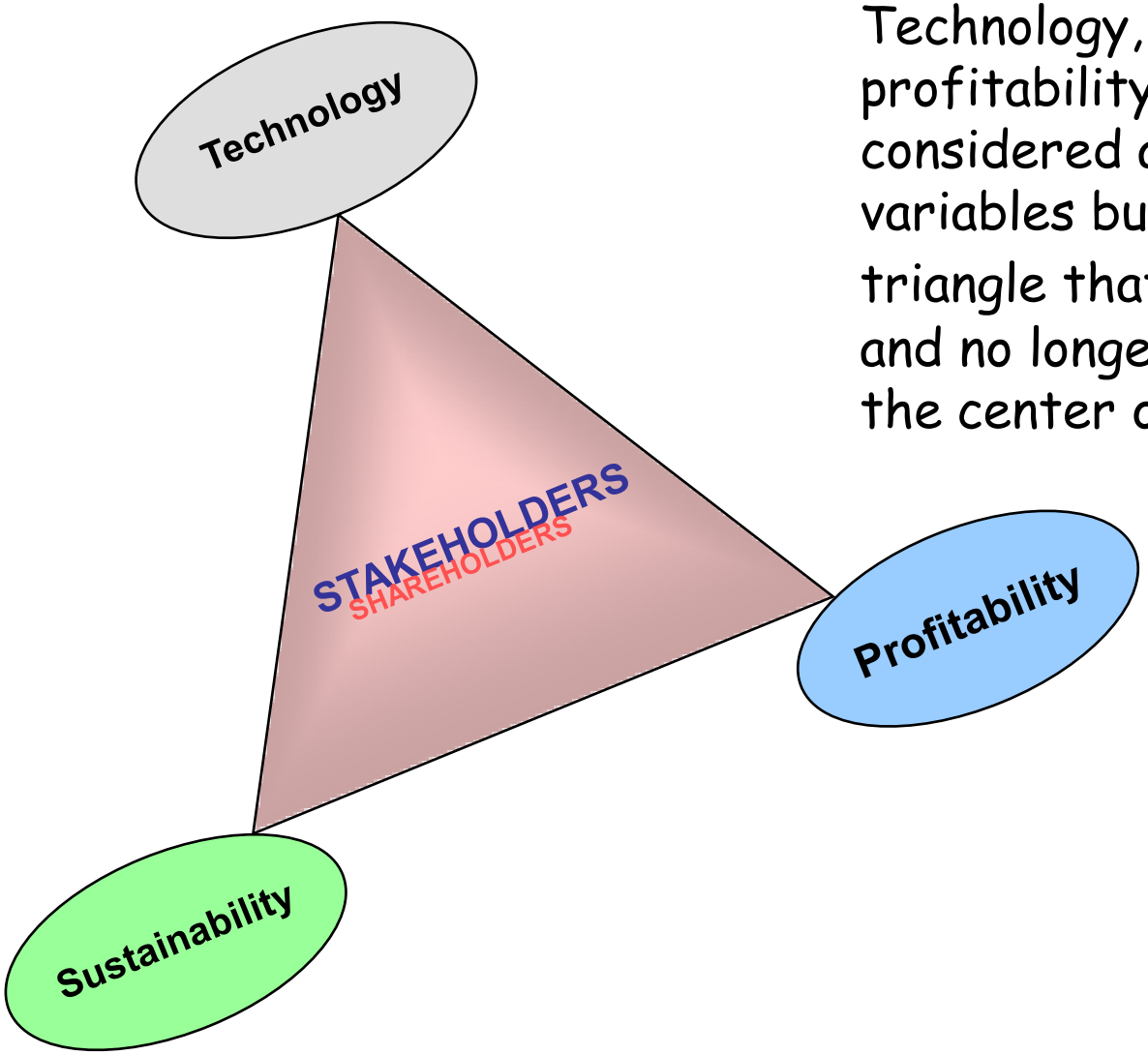
- The **Economic dimension** – primarily from an enterprise management perspective
- The **Environmental dimension** – specifically arising from the energy needs and consumptions

Sustainability (II)

Economic	Environmental
In the interest of whom…	Who is pushing to…
We add Value to our Products & Services?	Minimize the environmental impact in satisfying energy needs?
Yesterday's answer: Of the shareholders	Politically driven "green" movements
Today's answer: Of the **stakeholders**(*)	The **stakeholders**(*)

(*) citiziens, customers, local communities, suppliers, shareholders, employees, unions, …

Sustainability (III)



Technology, sustainability and profitability can no longer be considered as independent variables but as corners of a triangle that sees **stakeholders** and no longer only shareholders at the center of the stage.

Ansaldo Energia and the **Economic dimension of Sustainability**

Ansaldo Energia - 155 Years of History

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1853	Gio. Ansaldo & C. was born manufacturing the first locomotive
1923	First Power Station
1949	GE License for Steam Turbines and Generators
1980	Strong overseas commitment
1989	ABB Licensee for Steam Turbines and Generators
1991	Ansaldo Energia was born Siemens License for Gas Turbines Westinghouse License for Steam Turbines
1998	Business model refocused on energy sector
2004	Ansaldo Energia Service New Global Service Strategy
2005	Total technological independence
2006	ISP Strategy Launch: acquisition of two new companies

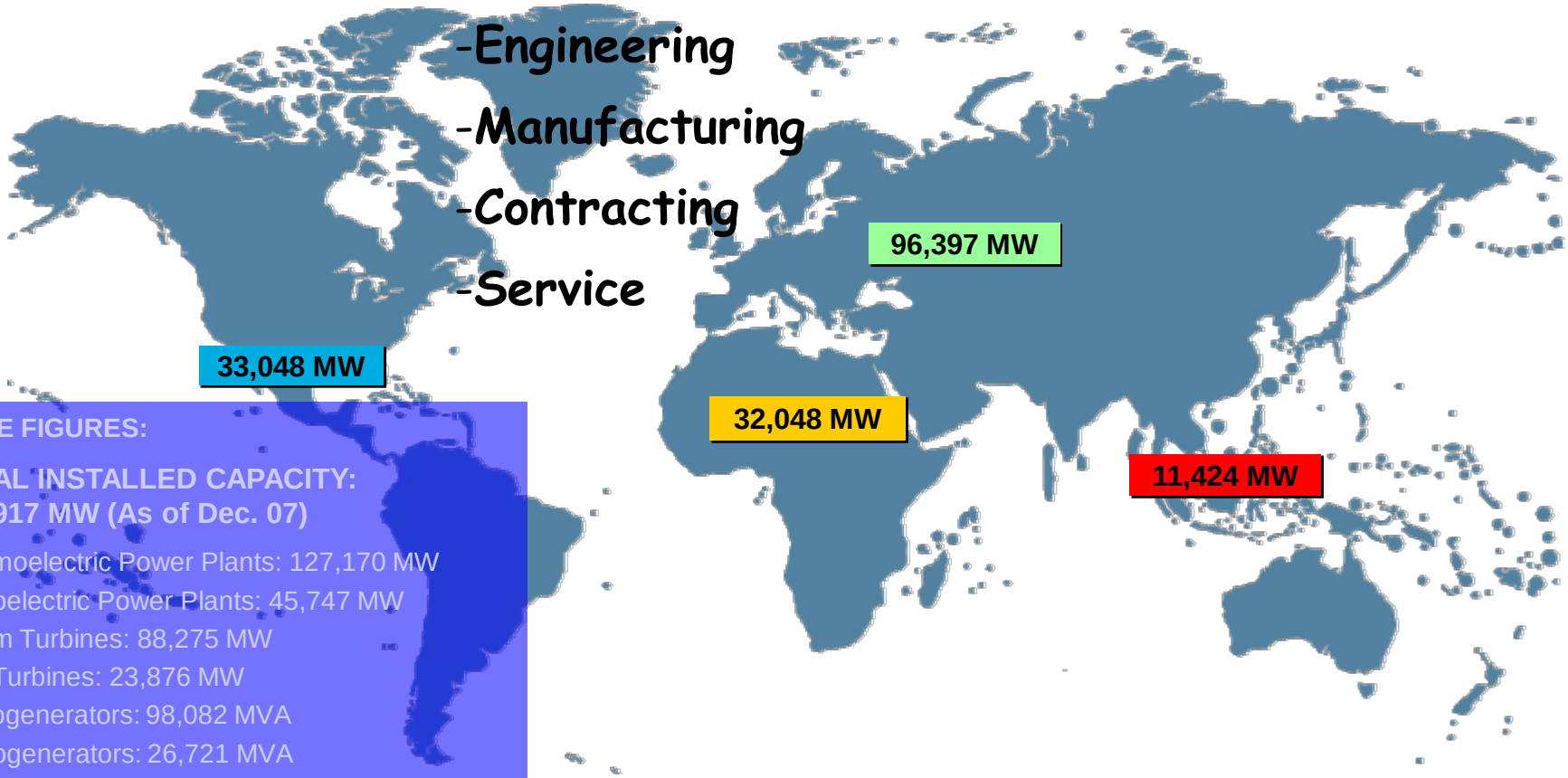
Sustainable Transportation!

Deep roots are a huge heritage!

Our Mission

To be a distinguished player in the energy industry, providing reliable and flexible solutions across a complete and innovative product portfolio:

- Equipment & Plant Design
- Engineering
- Manufacturing
- Contracting
- Service

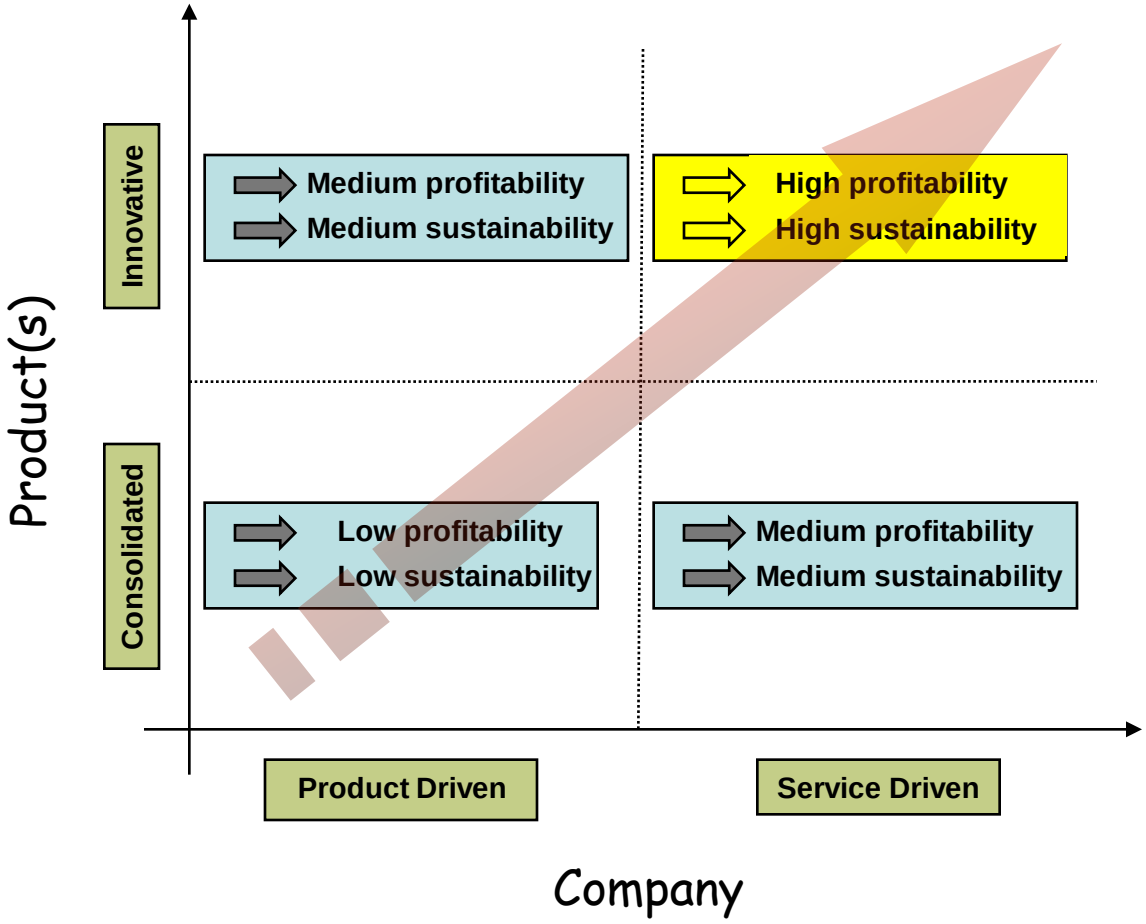


SOME FIGURES:

TOTAL INSTALLED CAPACITY: 172,917 MW (As of Dec. 07)

Thermoelectric Power Plants: 127,170 MW
Hydroelectric Power Plants: 45,747 MW
Steam Turbines: 88,275 MW
Gas Turbines: 23,876 MW
Turbogenerators: 98,082 MVA
Hydrogenerators: 26,721 MVA

Profitability vs Sustainability ?



Service-driven enterprises, heavily investing in R&D and with strong product and process development capabilities, are more likely to maximize stakeholders value, being **both profitable and sustainable** i.e.:

- Higher financial returns
- Long term sustainable growth
- More adaptive to new laws & regulations
- More aware and respectful of local & diverse environments

Some numbers about Ansaldo Energia strategy

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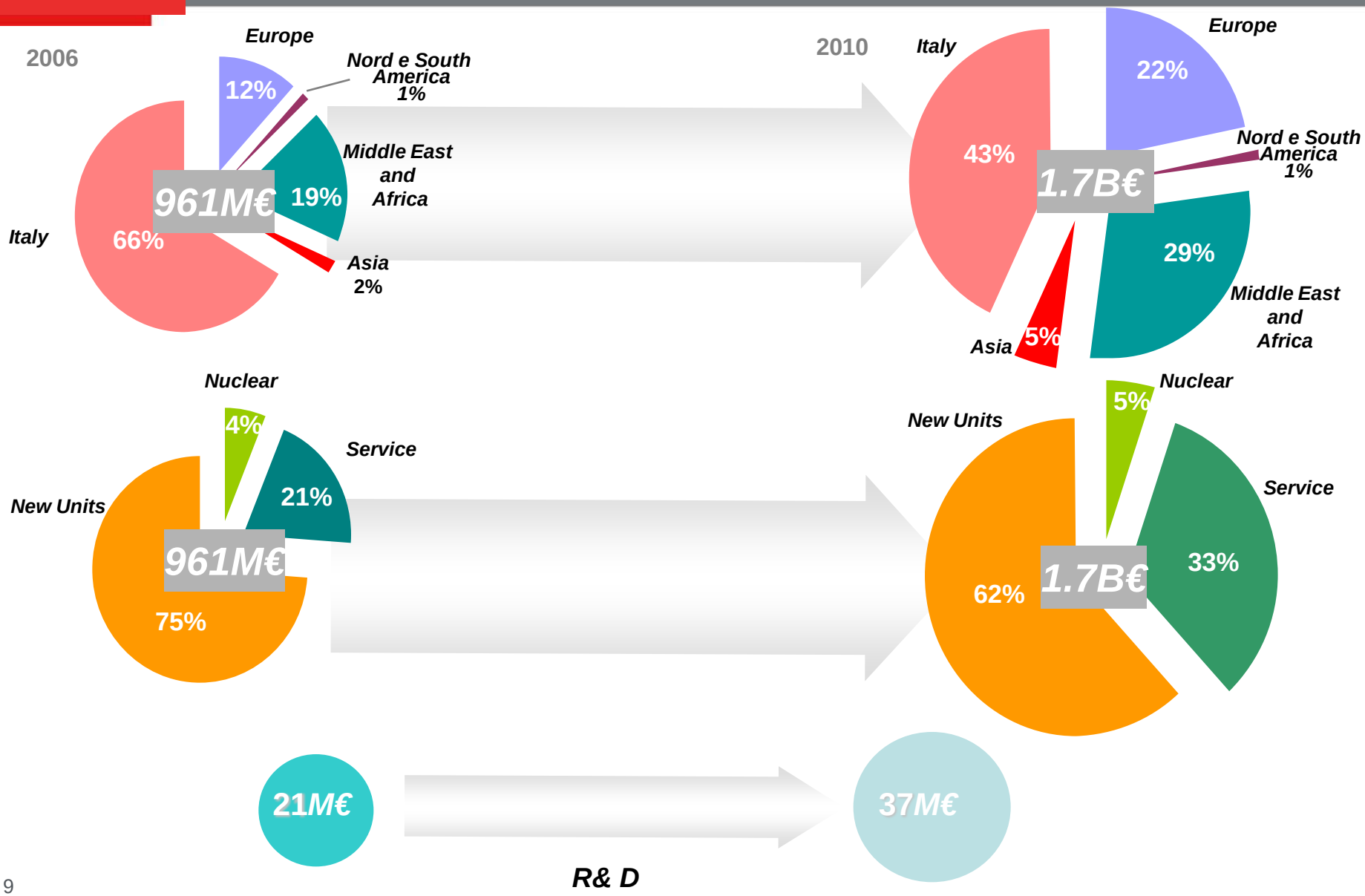

Processes and Products in Ansaldo Energia for achieving sustainability and pursuing profitability

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Key Processes in Ansaldo Energia today:

- Design for maintainability
- Total life cycle management
- Product life extension
- Supply Chain redesign
- Environmental, Health & Safety procedures

Key Products in Ansaldo Energia today:

- Low NOx gas turbine burners
- Low BTU gas combustors (e.g Biogas)
- Increase efficiency, through Service, of existing plants
- Water independent powerplants

Technology: Building the future

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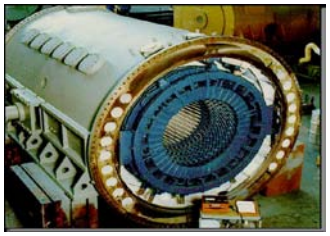
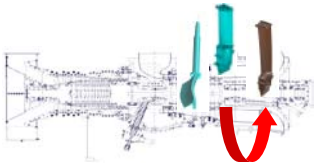
- New Units



- Focus on Gas Turbines: performance improvements with retrofitable upgrades
  - Large Size V94.3A(5): 450MW 58% Eff. in Combined Cycle
  - Medium Size V94.2(7): 270MW @ 53.5% Eff. in Combined Cycle
  - CC operational flexibility
- Ultra supercritical development for Steam Turbines
- Extend air cooled generators up to 400MVA

- Service OEM

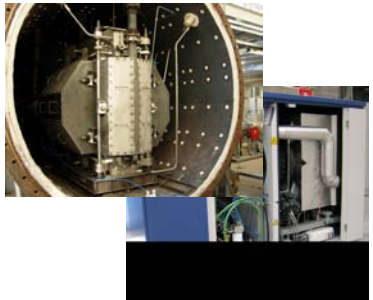


- V94.2 Life Extension
- V94.3A Extend Maintenance Intervals
- Field service improvements

- Service OSP™

- GE…extend portfolio and solutions
- Other technologies on GTs

- Renewables



- Fuel Cells: 1MW by 2012
- Microturbines: 0,6MW unit in 2009

Ansaldo Energia and the **Environmental dimension of Sustainability**

The dimension of the challenge is unprecedented

Technological innovation, industry competitiveness and sustainable development should walk hand in hand in the next decades to come. As long as everyone realizes that

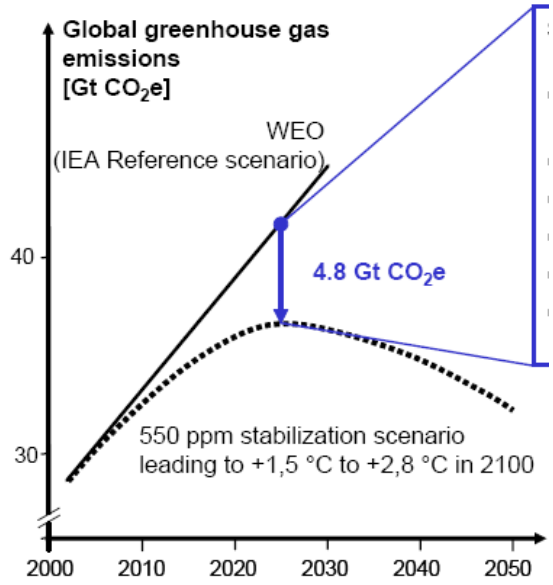
***TIME* is the scarcest resource we have on the planet**,

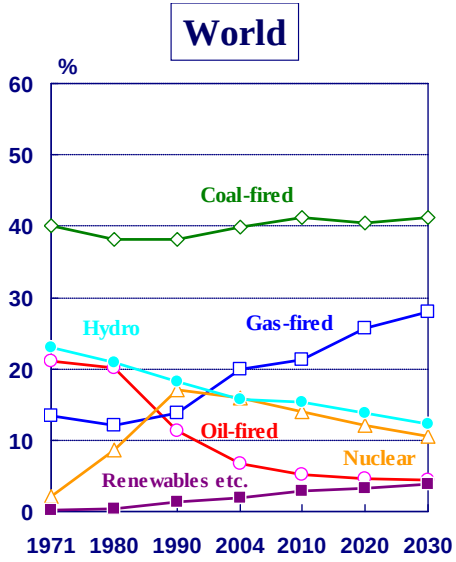
rather than oil or natural gas.

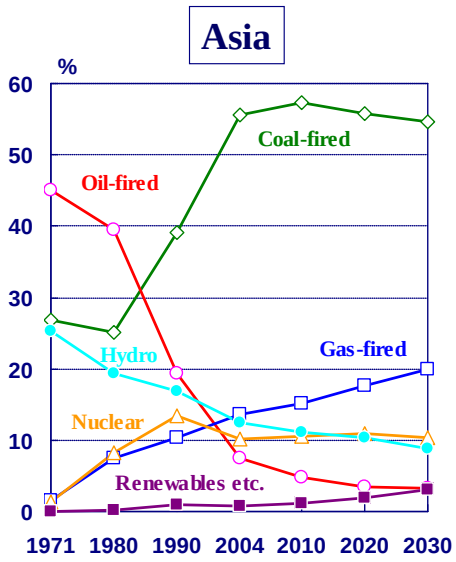
When it comes to the environmental concerns, decoupling emissions from economic growth is a long term goal, which even the more optimistic scenarios cannot predict to happen before 2050. This is particularly important in the field of power generation.

The dimension of the challenge is unprecedented

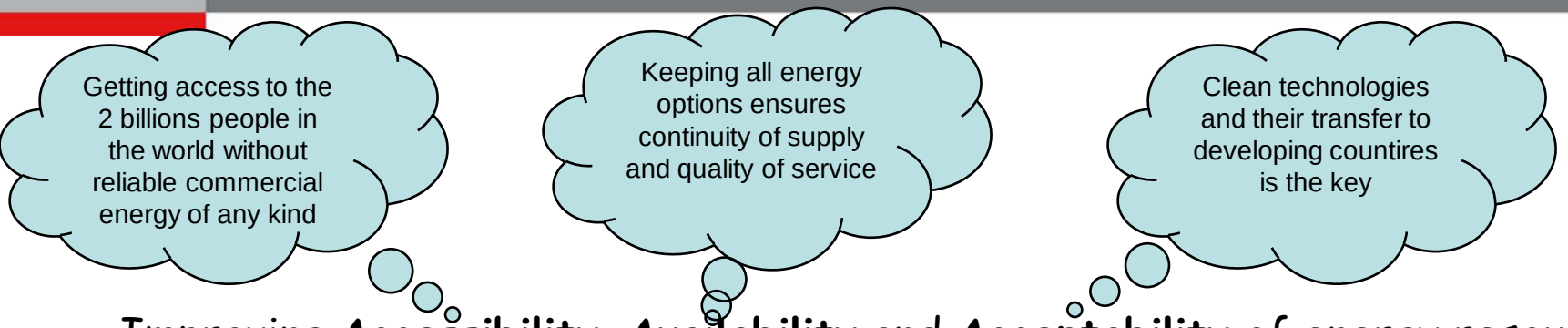
In 2050 the world demand for energy is expected to be double than today, but the mix of power generation technologies and their impact on the environment will have to be dramatically changed in order to preserve a living earth.







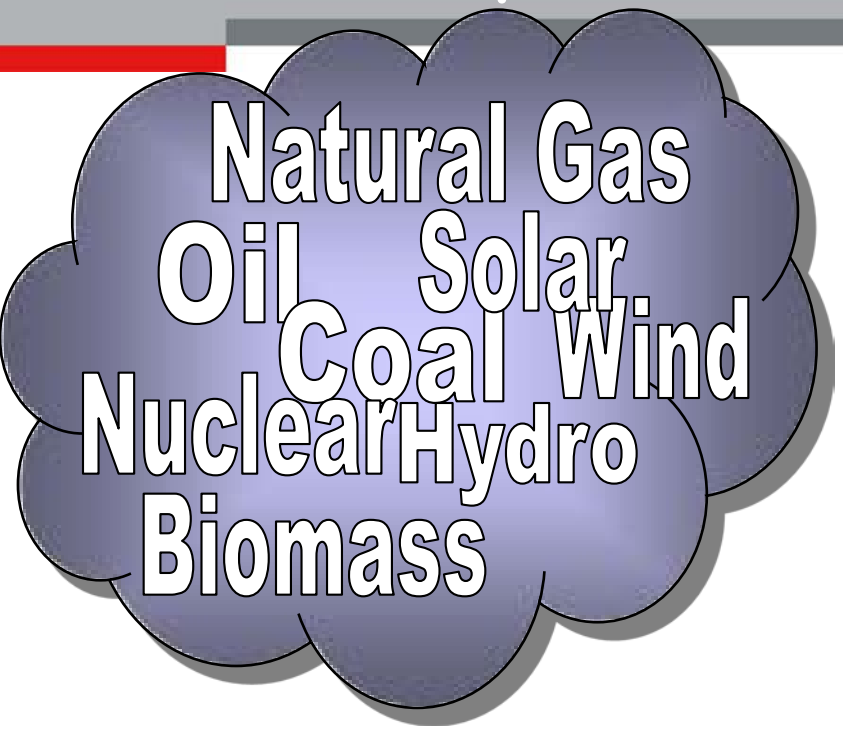
The 3 A's for world Energy



Improving **Accessibility**, **Availability** and **Acceptability** of energy resources through cleaner and more efficient technologies is the key issue in the medium term towards a low-carbon world. This will only be achievable if at least :

- A **global dialogue** is pursued between energy consuming countries and energy producing countries……and no dialogue can be constructive if security of supply is "the one" concern, while security of demand is left behind
- A serious energy technology and energy efficiency discussion is entertained at world level, resulting in a **clear and binding political, economical and legal framework**, enabling all players along the whole energy chain to plan and act the best moves in the common interest of all stakeholders
- A **closer integration** of energy **markets** is achieved

A wide spectrum of energy sources…….



None of them can be excluded from the game….solution comes from a combination and Ansaldo Energia is ready to play 360° with new stakes on renewables and its nuclear competences

- More funding has to be deployed for energy R&D
- In the short and medium term (2020 vision), funding has to be addressed to clean energy technologies….e.g. those who help reaching the Kyoto and the new EU targets (i.e.: the "20-20-20" target)
- In the medium to long term (2050 vision), a new generation of technologies (implying major breakthrough's) needs to be commercially viable, in order to head to a complete decarbonization (e.g. hydrogen economy, fuel cells, zero-emission fossil fuel plants with 100% carbon sequestration, 4th generation nuclear from fission, nuclear fusion,…)

Ansaldo Energia specific contribution to the Environmental Dimension – Some examples

- **Reduce emissions and conserve resources on conventional powerplants**:
  - Low emission new units or Improve emissions/efficiency of existing units through highly specialized service plans
  - Achieve zero-water consumption through water recovery and recycle in conventional powerplants

- **Investing on New Technologies**:
  - Development of Fuel Cell systems, with particular focus on their use as Carbon Sequestrators and on syngas/biogas applications
  - Micro gas turbines for Distributed Generation and valorization of small amounts of syngas where available

- **Reduce Oil Consumption**:
  - "Opportunity Fuels" :
    - Realization of big power plants fuelled with gas recovered from steel mills, refineries, chemical plants etc.

In Conclusion…..

- We are facing an unprecedented challenge, on a global scale
- Oversimplifications & slogans do not lead anywhere
- Energy-producing and energy-consuming countries have to embarque in a constant dialogue on energy options
- Technology & Innovation make the difference, especially in a clear political, economical and legal framework
- In such scenario, typical business' metrics & goals do not conflict with environmental goals and targets, actually they get along hand in hand
- Ansaldo Energia is committed to make energy not only a profitable but also a sustainable business, in the interest of Stakeholders

We should always keep in mind Einstein's guidance….

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The significant problems we have cannot be solved at the same level of thinking with which we created them.