LONG-TERM STRATEGY THROUGH LOW-CARBON TRANSITION

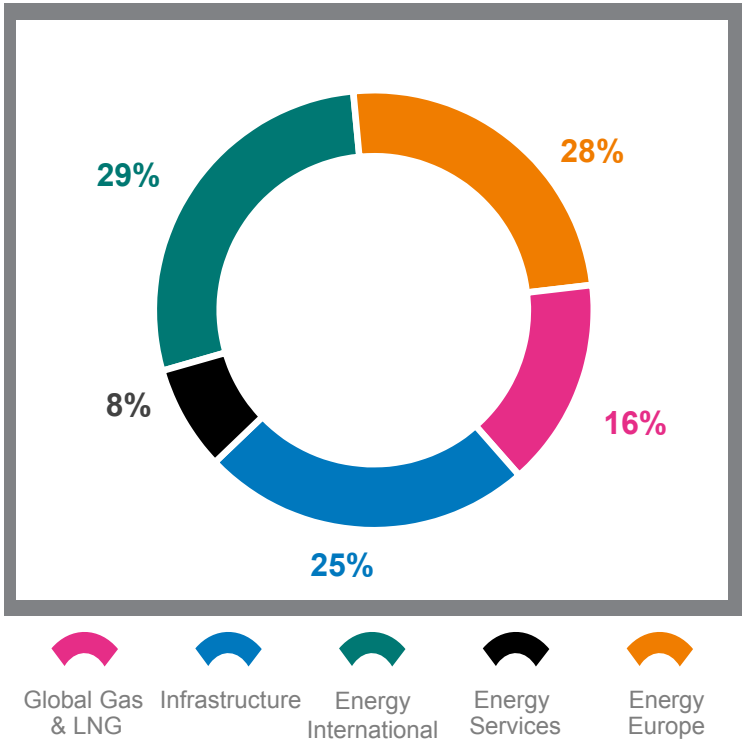
IEA, Paris July 7th, 2015

Edouard SAUVAGE
Group Strategy Director

GDF SUEZ, a global energy player becoming ENGIE

Key figures 2014

- **74,7 billion €** turnover
- **12,1 billion €** EBITDA
- **3,1 billion €** RNRpG
- **7,9 billion €** Free Cash Flow from operations
- **3,9 billion €** nets CAPEX
- An implantation in over **70 countries**
- **152 900 employees** worldwide (>60% in energy services)
- **Ambitious social and environmental targets**
  - -10% CO_2 specific emissions by 2020 (vs 2012)
  - +40% increase in revenues from the energy efficiency activities by 2018 (vs 2013)
  - 33% of women among new leaders appointment in 2015



Summary

Structural changes in the global energy landscape leads to an energy transition worldwide ...

…which results in multiple challenges, environmental and technological as well as in competition

ENGIE rolling out its strategy in Europe and internationally

Growth in energy demand is mainly outside OECD

Between 2012 and 2040 non-OCDE countries represent….

93% of increase in primary energy consumption

84% of additional electricity demand

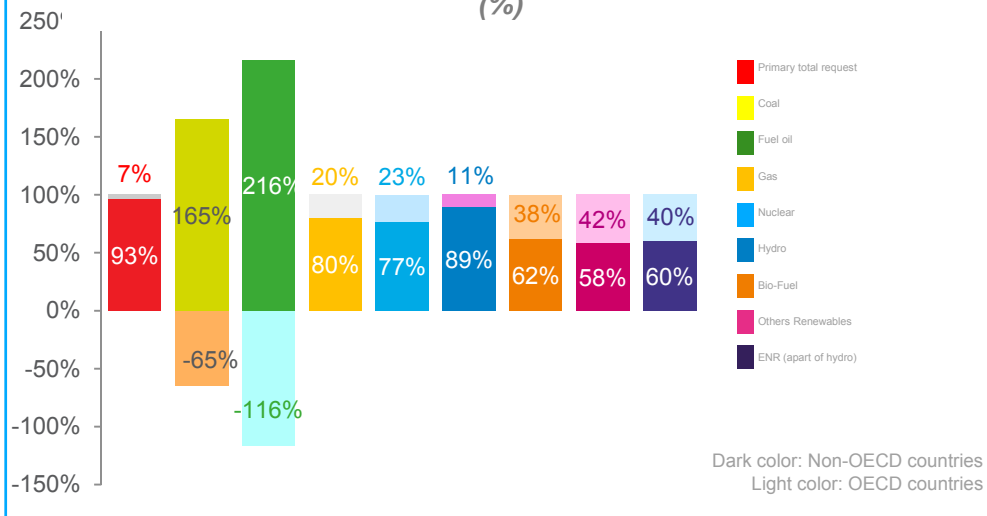
80% of additional gas demand

60% of renewable growth (apart from hydro)

Asia consumes more energy today than Europe + US combined: 40% of world energy consumption

Share of non-OECD and OECD countries in the growth of Primary Energy Demand 2012-2040

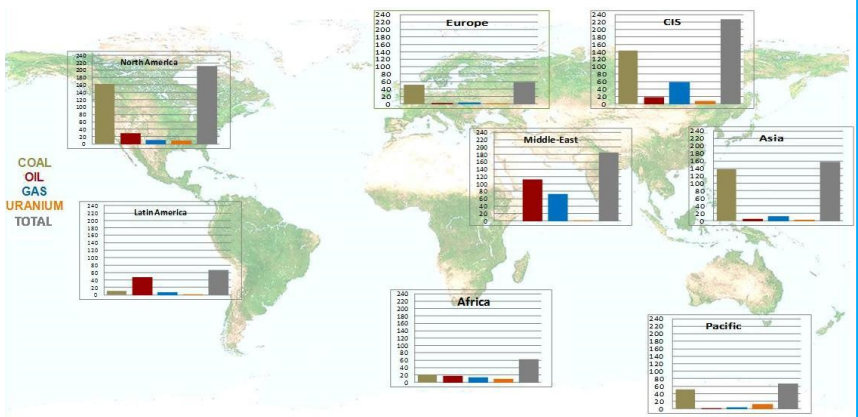
(%)



Source: International Energy Agency – World Energy Outlook – November 2014

Resources are in theory sufficient to meet this booming demand, but costs will be a challenge

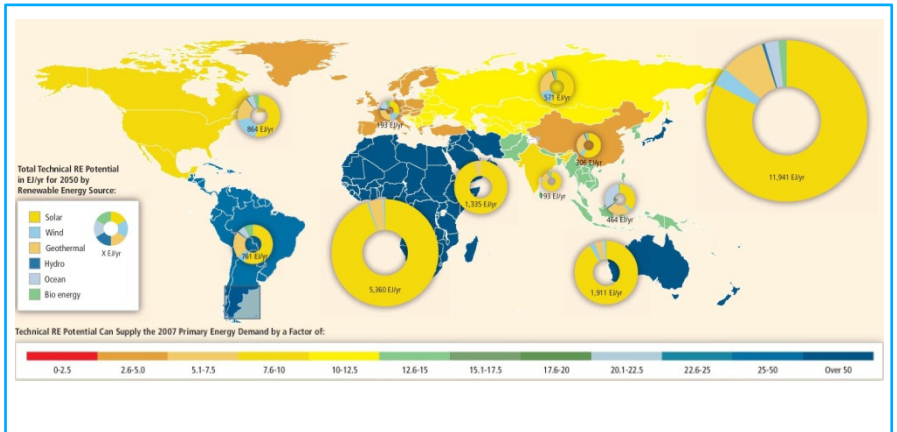
Fossils energy resources available, but not equally spread all over the world



Source: Enerdata, 2014

- **Europe and Asia are the most dependant: oil 28% and 30%, gas 52% et 67%, coal to a lesser extent (56% and 90%)**
- **Shale gas and tight oil allow to rebalance the world security of supply issue**

Theoretical renewable resources sufficient to feed the consumption, but not equally shared

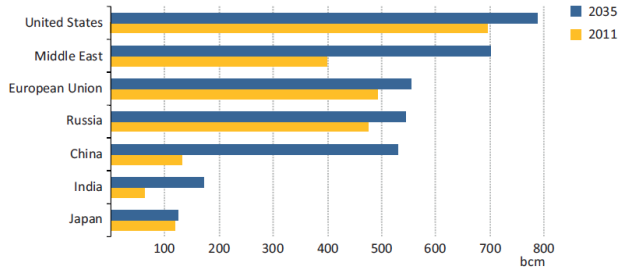


Source : IPCC Report on Climate Change and Renewables

- **The world theoretical renewable potential would be around 20 times higher than the today world energy consumption**
- **Solar resource represents about 80% of the total renewable resources**

The place of gas in the global energy mix is growing in the long term

Gas consumption by region

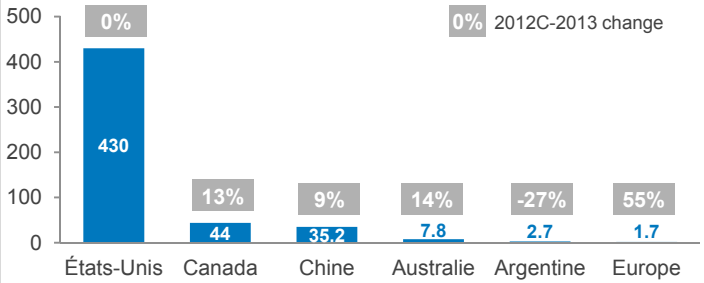


The position of gas in the global energy mix will be strengthened by 2035 due to its three main advantages

- Exploitable resources representing approximately **250 years of production**
- **Synergy with electric RES**
- A **contribution to reducing CO_2 emissions** as a substitute for coal and oil

➔ **Growth in demand to 2035 estimated at 1.5-2.0% per year, driven by China, India and the Middle East**

Production by country of non-conventional gas (bcm, 2013)



Source: Rystad Energy database

Non-conventional gas: significant potential but many uncertainties. Slowdown of the US shale boom in 2013

- **Gas prices have fallen in the USA** ($2.83 / MMBtu in March 2015), making oil production by US operators a priority
- **Production of non-conventional gas in the USA** (82% of the world total) remained stable in 2013, reducing global growth to just 2% in 2013, compared with +28% in 2012
- **In Europe, regulations remain restrictive** (Germany, France), except in the UK
- **In China, development is uncertain** (the government has delayed its official production plan and revised its targets downwards)

Customer's expectations and modes of consumptions are changing

THE **CITIZEN** CUSTOMER

- Expectations of **transparency** in services and costs, of **greener energy**
- Expectations of commitments relating to suppliers' **ethical**, **social and environmental responsibility**

THE **PROSUMER**

- Increased **autonomy**: customers want to build their own solutions, tailored to their needs, at low cost
- Increased **control** over consumption
- A customer that is **self-sufficient** in energy

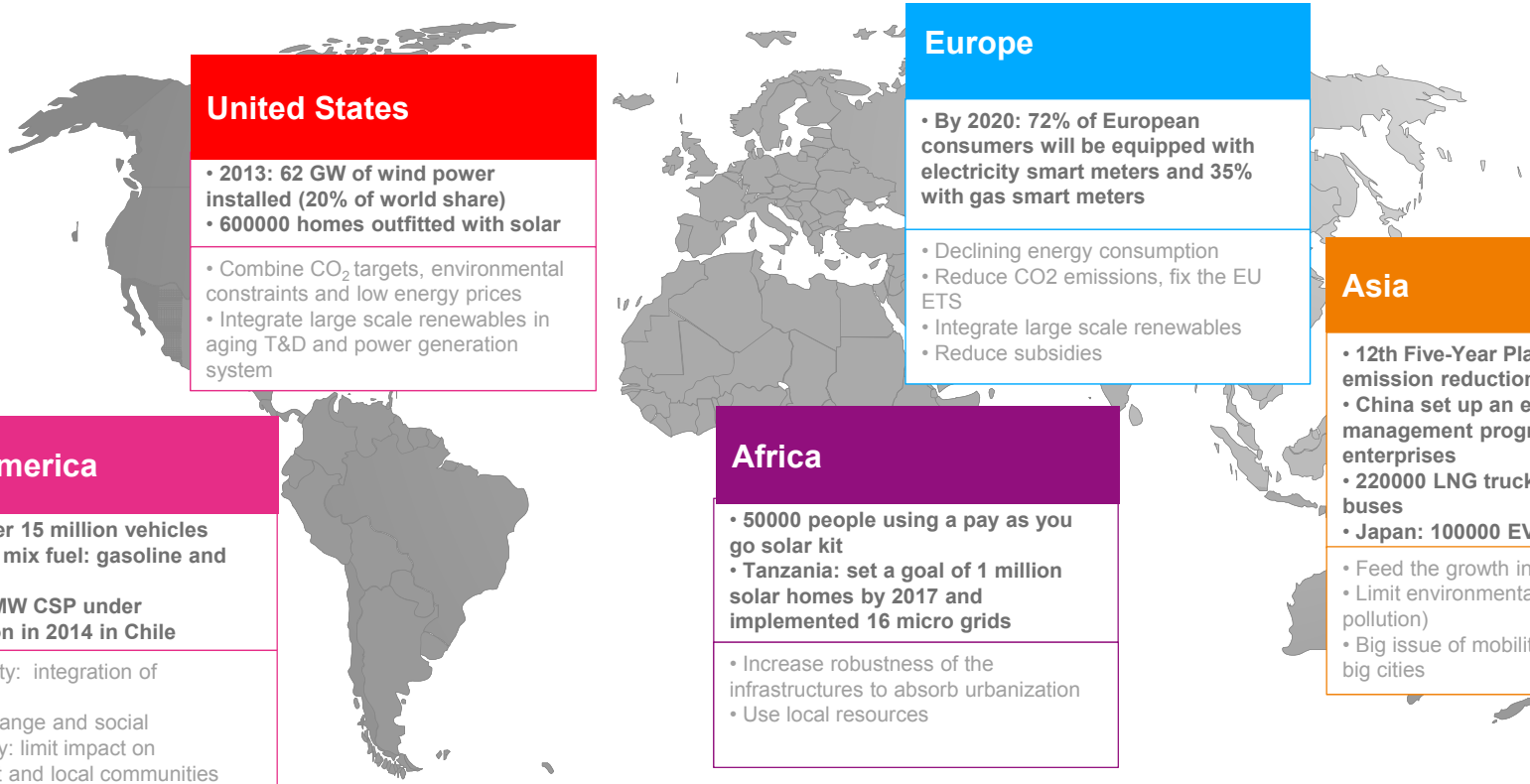
THE **PARTNER** CUSTOMER

- Request for **support** in an increasingly complex energy world
- Local authorities and businesses with **multiple needs**
- Regions that are energy **self-sufficient**

The digital revolution

- **40%** of the world's population has an **internet connection and 1/4** of the world's population owns a **smartphone**
- **8 new internet users** every second and the number of **mobile internet** accesses doubles every year
- In 2013: **15 billion** connected objects vs. **2.5 bn** connected people…

Various path in energy transition in the different markets



United States

- **2013: 62 GW of wind power installed (20% of world share)**
- **600000 homes outfitted with solar**

- Combine CO_2 targets, environmental constraints and low energy prices
- Integrate large scale renewables in aging T&D and power generation system

Europe

- **By 2020: 72% of European consumers will be equipped with electricity smart meters and 35% with gas smart meters**

- Declining energy consumption
- Reduce CO2 emissions, fix the EU ETS
- Integrate large scale renewables
- Reduce subsidies

Asia

- **12th Five-Year Plan and specific emission reduction targets in China**
- **China set up an energy management program for 10000 enterprises**
- **220000 LNG trucks and 40000 LNG buses**
- **Japan: 100000 EV**

- Feed the growth in electricity & gas
- Limit environmental impacts (air pollution)
- Big issue of mobility: Traffic issues in big cities

Latin America

- **Brazil, over 15 million vehicles running on mix fuel: gasoline and bio ethanol**
- **Two 110 MW CSP under construction in 2014 in Chile**

- Grid stability: integration of renewables
- Climate change and social responsibility: limit impact on environment and local communities

Africa

- **50000 people using a pay as you go solar kit**
- **Tanzania: set a goal of 1 million solar homes by 2017 and implemented 16 micro grids**

- Increase robustness of the infrastructures to absorb urbanization
- Use local resources

Source: World Bank data, EIA, Services Climat Energie Environnement de la Communauté urbaine de Toulouse

2014: in Europe, acceleration towards the energy transition

Continued shift in power generation toward RES

- Decreasing costs and increased performance observed on most of techno, including offshore and solar
- EU onshore wind growth concentrated in a few countries (Germany, France, Sweden, UK), although smaller growth pockets in other countries can still be tapped (PL, NL)

Starting development of Distributed Generation

- Solar ground mounted PV farms are continuing to be developed (France, Germany) but 80% is now coming from decentralized (BtoB and BtoC) development
- Strong penetration of heat pumps and growth trend (> 20% of new houses in Germany fitted with heat pumps in 2013)

Ramp up of Digital

- 2014 is year 1 of connected homes in Europe following US mostly in comfort & security (>>1M Nest thermostats sold in the US, 140k security solutions by AT&T in the US, 590k RWE Smart Home in Germany1, British Gas > 170.000 Hive thermostats)
- Growing big data stored on the web (x2 every 18 months)

In a context of lower and changing demand

- **Flat outlook in power** ($CAGR_{2014-2030}$[2]: +0,5%) **and no shared view on gas demand**, long-term forecasts being revised downward year-after-year[3]
- **Energy Efficiency**
- **Decreasing costs of DSM technologies for B2B, B2C remaining in a test phase**
- **Emergence of prosumers** and purchasing groups (UFC Que Choisir campaigns in 2013 and 2015)

(1) Number of devices sold. Each household buying several, number of houses (clients) in scope is lower
(2) Source: IHS CERA
(3) IEA 2030 forecasts : - 30% between 2007 and 2014

Summary

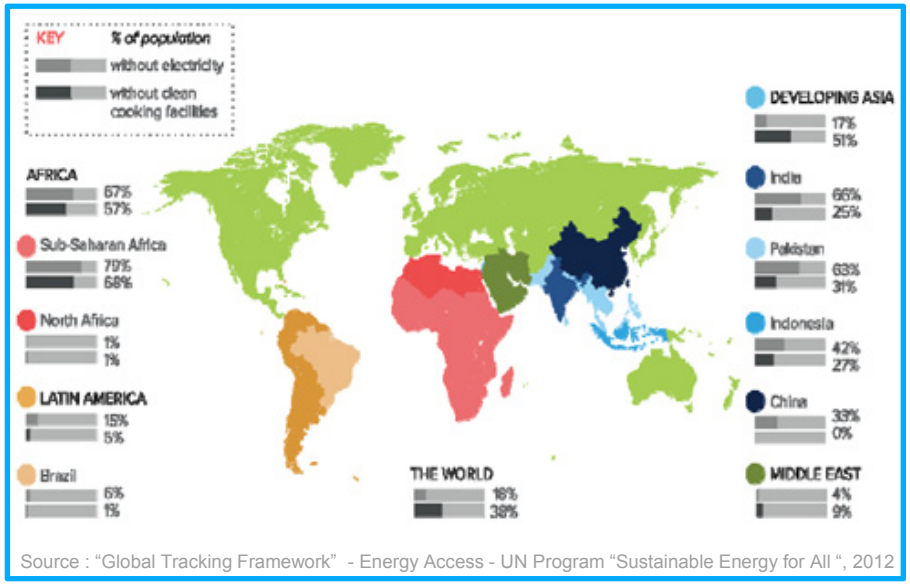
Structural changes in the global energy landscape leads to an energy transition worldwide ...

…which results in multiple challenges, environmental and technological as well as in competition

ENGIE rolling out its strategy in Europe and internationally

A challenge linked to the energy poverty

- **18% of world population** has no access to electricity
- 20 countries in **Africa** and **Asia** represent 2/3 of world energy deficit but in **Europe** 50 to 125 million people are victim of energy precariousness
- According to IEA, **48 b$/y would be necessary** to bring modern energy to all by 2030
- **Challenges:** financing, environmental performances



Source : "Global Tracking Framework" - Energy Access - UN Program "Sustainable Energy for All ", 2012

A challenge linked to global warming and the emergence of social and environmental concerns

An observable impact on climate and the environment

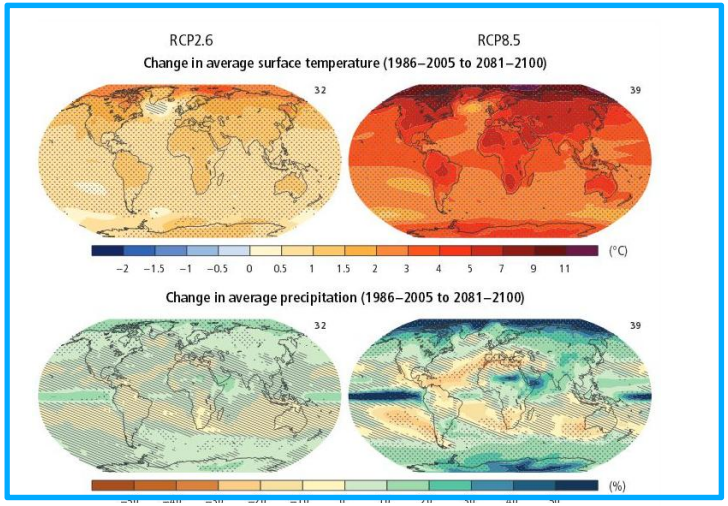
- **+ 2,4°C of temperature** by 2100 scenario according to the IPCC (RCP4.5 scenario)

Environmental issues that will have an impact on operational activities

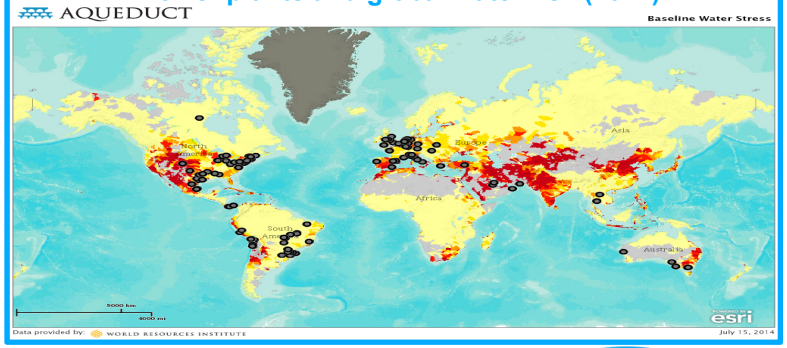
- Increased **water stress** for thermal and hydroelectric power plants
- **Adaptation of our activities** (impact on energy markets, on load curves, air conditioning, etc.)

But a growing awareness

- **127 countries now have RES support schemes**
- **EU 2030 framework for climate and energy policies,** in line with Magritte Group's positions



Power plants and global water risk (2014)



Source : IPCC
NB: the dots represent the Group's thermal and hydroelectric power plants. The colors represent the degree of water risk (global index defined by the World Resource Institute, combining 12 types of water risk)

A challenge linked to technological developments

Growing impact of technological progress linked to digital sector on energy sector

- *Big data* and *data analytics*; connected objects

Solar energy has grown well beyond 2000's beliefs:

- WEO 2002: Expected 50-65% reductions in capital costs in PV between 2000 and 2030
- **But:** -50% drop 2013 vs 2009 and **> -80% in crystalline silicon PV cost PV cells since 2000**

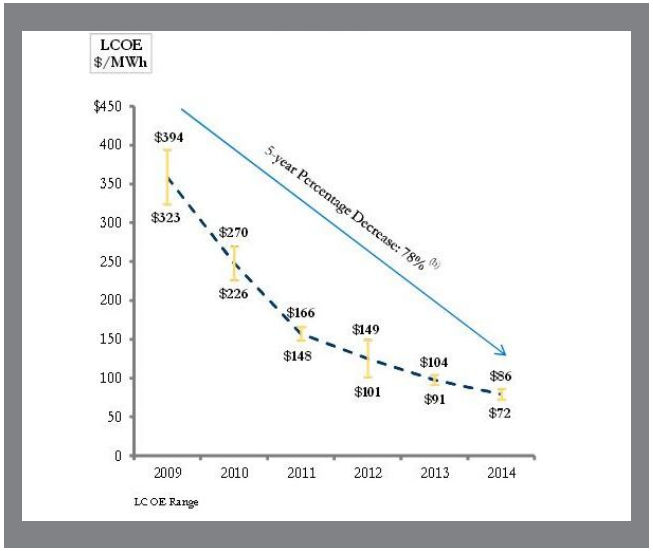
Energy storage technology is a key technology accompanying the development of small scale systems

- Price of lithium battery has dropped from **$1,000/kWh in 2010 to $530/kWh** in 2014
- Some companies are already betting on storage technology
  - Tesla launched a battery factory in 2014 that is expected **to produce 50 GWh of batteries by 2020, enough for 500,000 Tesla cars**
  - "We are going to unveil the Tesla home battery, the consumer battery that would be for use in people's houses or businesses fairly soon" E. Musk, Tesla Motors CEO, Feb 2015

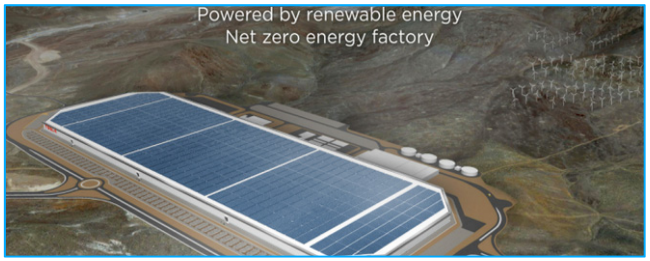
New technologies in development

- Examples: Organic PV; *Power-to-Gas;* Nanotechnologies, etc.

LEVELISED COST OF ENERGY (HISTORICAL), SOLAR PV



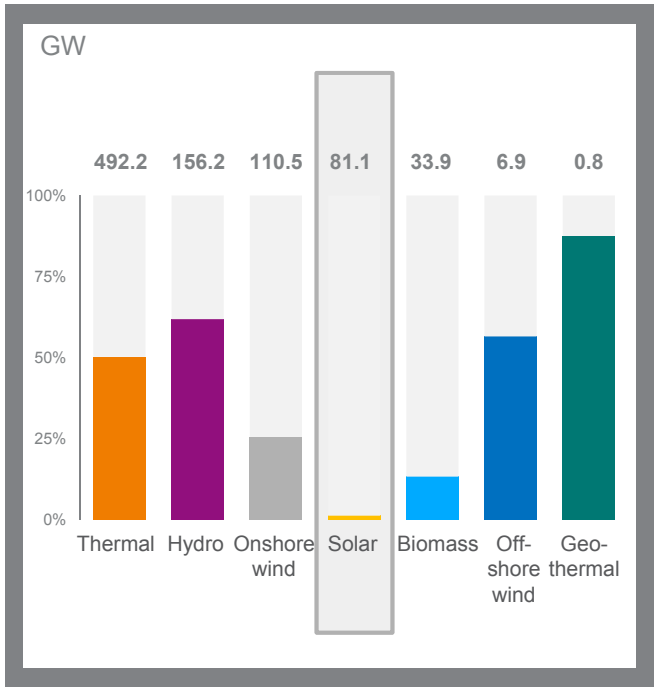
TESLA'S BATTERY FACTORY PLAN



A challenge linked to changes in the competitive landscape: a growing international competition from energy and non-energy players

- **The European *Utilities*** are developing internationally and in terms of services, but with less geographical ambition than ENGIE.
  - Everyone is focusing on South America, and specifically Brazil, but nobody has really entered into the Middle East. EDF is the only one to have secured a foothold in Asia
  - Services: Centrica is the most advanced in terms of B2C services, but currently only in the UK and USA;
- **New players in the energy sector with competitive financing** are present on the international scene (Japanese Conglomerates, KEPCO, local IPP players in the Middle East…)
- In the future, more and more **non-energy or specialized players** will appear , especially in the field of smart, connected or renewable technologies: TELCOs, GAFA, IBM….
- **ENGIE may appear as an attractive potential partner** for these players (synergy between the knowledge of the new tools & the knowledge of sector and customer bases)

UTILITIES'(1) SHARE IN ENERGY MIX IN EU 28



GAFA = Google, Apple, Facebook, Amazon

(1) ENEL, EDF, IBERDROLA, STATKRAFT, EDP, VATTENFALL, ENGIE, E.ON, FORTUM, RWE, GNF, SSE, COZ, DONG ENERGY, ONBW, CENTRICA
Source: Enerdata

Summary

Structural changes in the global energy landscape leads to an energy transition worldwide ...

…which results in multiple challenges, environmental and technological as well as in competition

ENGIE rolling out its strategy in Europe and internationally

Review of the reasons that led the Group to choose two strategic priorities in 2013

AN ENERGY LANDSCAPE IN DEEP CHANGE	STRATEGIC CHOICES ADAPTED TO THE CONTEXT …	… AND SUMMARIZED IN **TWO STRATEGIC LINES**
• Growth in non-OECD countries	• Acceleration of international development	
• Strengthened position for natural gas	• An integrated strategy along the gas chain	1 **Be the benchmark energy player in fast-growing countries**
• Worldwide aspiration to the energy transition	• Renewable and energy efficiency development, Europe and International	
• Crisis in thermal generation in Europe	• Optimization of thermal generation in Europe	2 **Be leader in the energy transition in Europe**
• Responsible and connected consumers	• Innovation and new customer-oriented approach, Digital Project	

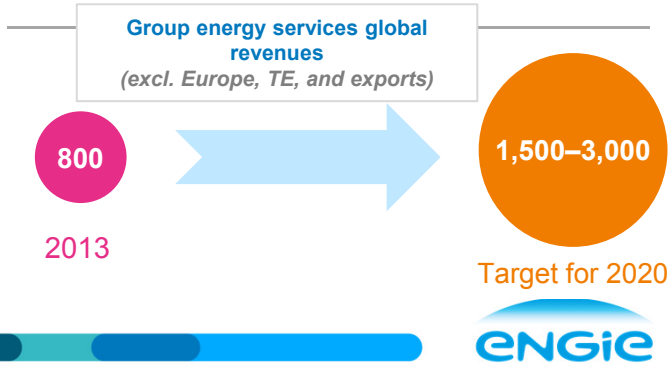
1- Be the benchmark energy player in fast-growing countries

Internationally, ENGIE pursues its development to respond to the shift in energy demand …

- By leveraging on **its strong positions in independent power production** (Brazil, Chili, Peru, Middle-East, Indonesia, Thailand)
- By expanding its range of activities into **more infrastructure and services, by seeking synergies between business lines and developing system plays** (Los Ramones in Mexico, Ecova in the USA…)
- By **entering into new countries**, including through thermal assets: India, Mongolia
- By continuing **development in E&P and LNG** in strategic zones (Jangkrik in Indonesia and Cameron LNG)

… and is positioning itself in RES and energy services

- By strengthening its presence in terms of **RES operation or development across the five continents**
- By accelerating its **positioning in energy services**
- By making **major acquisitions** (track record of 10 acquisitions worldwide since 2011, Ecova, Lahmeyer in 2014)



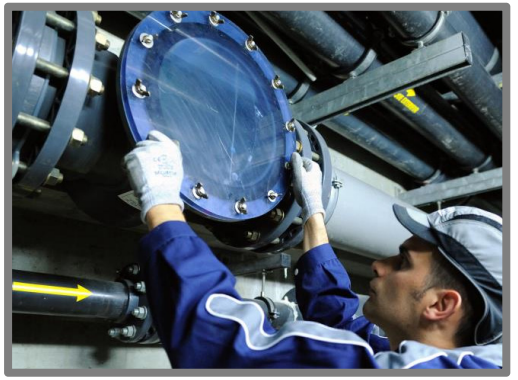
2- Be leader in the energy transition in Europe

ENGIE continues to develop in the field of renewable energies...

- **Develop** : hydro, biomass, onshore wind, solar, biogas, offshore wind…
  - ENGIE is number 1 in solar power (acquisition of SolaireDirect) and wind onshore in France
- **Evaluate**: tidal power, storage…
- **Partnership strategy** to accelerate development and maximize value

... and energy efficiency, as a partner of choice for its clients

- **BtoC:** goals for managing demand and load
  - Savelys, the spearhead of our B2C ambition
- **BtoB:** ENGIE is the European leader
  - Continued **expansion of its range of offers**, to be in a position to respond to all of its customers' demands (examples: acquisitions of Balfour Beatty Workplace, Ecova)
  - Cities: **solutions for sustainable urban networks** (smart-grids, heating/cooling networks, public lighting, clean mobility…)
  - A more **client-oriented approach to sales** (European offers, framework agreements, partnerships)
- **Furthering the Group's positioning on offers related to digital technology**



Conclusions

- ENGIE is **adapting to the new energy landscape** thanks to its **two strong strategic ambitions:**
  - **Be the benchmark energy player in the fast-growing countries**
  - **Be a leader of the energy transition in Europe**
- It will be necessary to **go beyond the Group's business model** used so far because **customers have changed** and **competitors multiply**
- **New ways of being profitable and competitive should be based on:**
  - A **new timeframe**: all goes faster (decisions, assets length of life, technologies roll-out…)
  - A **change of scale**: miniaturization (thermal plants > rooftop PV), decentralization
  - **Digital**
- **Customer-orientation and innovation will be key** to adapt to the specificities of each market **(be local)**