Smart solutions for sustainable cities
Jeroen Bekx, Development Director
Isocarp Congress
Agenda

Part 1  Engie, an energy architect

Part 2  The context: how to address energy transition?

Part 3  Solutions for sustainable smart cities
Engie, an energy architect
Key figures*

- **€74.7 billion** in 2014 revenues.

- **152,900** employees throughout the world
  - inc. **58,200** in power and natural gas
  - and **94,700** in energy services.

- **€6-7 billion** of net investment per year over 2014-2016.

- Operations in **70 countries**.

- **900** researchers and experts at **11** R&D centers.

* At December 31, 2014.
Three expanding businesses

**Power**
- **No.1** independent power producer (IPP) in the world.
- **No.6** supplier in Europe.
- **115.3 GW** of installed power-production capacity.*
- **10.5 GW** of capacity under construction.*

**Natural gas**
- **No.3** seller of natural gas in Europe.
- **No.3** LNG supply portfolio in the world.
- **No.1** distribution network in Europe.
- **No.2** transport network in Europe.
- A supply portfolio of **1,296 TWh**.

**Services**
- **No.1** supplier of energy efficiency services in the world.
- **230** district cooling and heating networks throughout the world.
- **140** million m² managed in the tertiary sector.

* Including 100% of capacity of assets held by the Group at December 31, 2014, regardless of the actual holding rate.
The context: how to address energy transition?
The Energy Transition, an issue of balance

IEA SCENARIO “ENERGY FOR ALL” 2030

- B2T & B2B Microgrids: 36%
- B2C Off-grid Solutions: 20%
- Centralized power generation: 44%

Source: IEA, Energy for All, 2011
PV & battery prices are decreasing rapidly

PV and Battery price decrease will lead to a massive residential PV market

Li-ion battery module price (DC side)
USD/kWh

Installed PV costs (global average)
USD/kWp

Source: IHS EU report Jan 2015
Source: Clean Edge Inc
Source: IHS, Bloomberg 2015
03 Smart solutions
Smart solutions, a question of behaviour

**Focus on Mobility**: the Mobile2040 Study
Brussels, Belgium

**CONTEXT**
As the capital of Europe, Brussels wants to be a leader of the city of tomorrow.

**OBJECTIVE**
Delivering a ‘refreshing’ vision of mobility, with a people-first approach.

**SOLUTION**
- **Forward-looking** and multidisciplinary mobility study
- **Integrative** and **innovative** approach, analyzing mobility in terms of changes in behaviors, new technologies, urban planning, ‘local’ facilities, shared public spaces, citizen participation, time consideration, etc.

**VALUE PROPOSITION**
- Prospective and participative mobility study
- More on: https://www.youtube.com/watch?v=sElB2Ok5TGI
Smart solutions, a question of convergence

Focus on a solar smart grid: An innovative power plant combining power generation and smart management of solar energy.
Smart solution, a question of data

Focus on data management: An innovative platform to save energy, water, waste and carbon.
City of Tomorrow references
A worldwide overview

Tucunduba River in Belém (Brasil)
Surveying (topography, bathymetry)
Hydrological study/modelling
Technical and economic feasibility studies
Conceptual design of the channels

Rio de Janeiro
Video Protection system and telecommunication networks

Casablanca, Morocco
30 year concession contract
Centralized process for electricity, drinking water, wastewater, public lighting

Dubai
Energy Management Systems

Namibia (2014)
Flood protection
Supervision & measuring campaigns
Hydrological modelling
Etc.

South Africa (2014)
100 MW Concentrated Solar thermal demonstration power plant
Design, procurement, owner of engineering

Shanghai & Chongqing
Since 2000, Gérard Mestrallet is advisor to the Mayor of Shanghai, within the International Business Leaders Advisors Council (IBLAC) and Chairman of Chongqing Mayor’s International Economic Advisory Council (largest City in the World)

Singapore
Management of public lighting system and equipment for road and pedestrian tunnels (47,000 lights)
Supply of 25% of electricity needs
City of Tomorrow references
A European overview

**Newcastle, NELC, Chester**
Business Outsourcing Services
Performance Contracts

**Belgium**
Brussels
Mobil2040: visionary study applied to the City
Beyond technology approach

**Antwerp**
Design, Construction, Financing and maintenance of public spaces/roads/tram

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**Alzette Belval (2016)**
Creation of a “City of Tomorrow” in a region with many deserted industrial sites. Buildings, mobility, water treatment, energy…

**Avignon**
PPP for renewing public lighting and highlighting Avignon’s cultural heritage

**Paris**
Operation of the Heating network (CPCU), and largest cooling network in the world (Climespace)

**Barcelona (2015)**
City OS of the Barcelona City
At the UN Climate summit in New York, September 23 and 24, Gérard Mestrallet (CEO ENGIE) announced the environmental objectives:

- 50% increase in its installed capacity in renewable energy 2009-2015
- 40% increase by 2018 in its energy efficiency activities in Europe
- 10% reduction in its specific CO2 emissions by 2020.

For the new urban agenda, ENGIE will join the Urban Campaign. We definitively work into implementing the energy transition throughout the world.
« Cities are people’s future, the place where tomorrow and civilization are built »

Erik Orsenna