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- GDF SUEZ develops its businesses around a model based on responsible growth to take up the great energy and environment challenges: responding to energy needs, ensuring the security of supply, fighting against climate change and maximizing the use of resources.
- The Group provides highly efficient and innovative solutions to individuals, cities and businesses by relying on diversified gas-supply sources, flexible and low-emission power generation as well as unique expertise in four key sectors: liquefied natural gas, energy efficiency services, independent power production and environmental services.



A history of services in public utilities





Metropolis Congress





- €84.5 billion in 2010 revenues.
- 1st company in the "utilities" sector worldwide (Forbes Global 2000).
- **219,100** employees throughout the world
 - inc. 62,400 in energy and services
 - and **156,700** in energy and environmental services.
- 1 100 researchers and experts in 9 R&D centers.

* Including 100% of the capacity of GDF SUEZ assets at June 30, 2011 regardless of the actual holding rate.



Workforce and capacity by region













Urban population is growing



Percentage of population living in urban areas 2007, 2025, 2050

2007



2025



2050

World population 2007: 6 billion 2025: 8 billion Before 2050: 9 billion

Urban population 2007: 50% 2025: 65%





81 and over 61 to 80 41 to 60 21 to 40 Less than 21

The city for tomorrow: a sustainable city



Urban projects can be clustered in 3 types:

- ✓ City / district renovation
- ✓ Creation of new districts
- \checkmark Creation of new cities

And are done with a double approach:











Building the city for tomorrow with its inhabitants, and for them

- Listen attentively and respectfully to the various stakeholders' needs when developing a project.

- For each sustainable urban development, create a custom solution that optimizes the synergy between its techniques and organizations by adapting them to the local context.

PLANS

- The city's policy goals
- The climate plan
- Other environmental objectives
- Agenda 21
- Any major structural projects planned

SITUATION

- State of water, energy, sanitation, lighting & transportation networks
- Social & economic situation
- Local financial status
- Governance, existence of local associations
- Value, history, culture

Conceiving a waste, energy, water & sanitation system is totally integrated in urban planning.





All stakeholders should participate in the conception phase of the city project, in particular those who will use and deliver services on the long term.



















Developing synergies





The water cycle economy

Water / Treatment

- Collecting and recycling rainwater
 - Cleaning gutters
 - Filling flush tanks
 - Watering green spaces
 - · Outdoor uses for buildings and industrial companies

Reusing treated wastewater

- Watering green space
- Composting sludge from treatment plants
 - Producing organic amendment
- Reusing sand (fill)
- Recovering heat from wastewater
- Restoring groundwater with surface water or treated rainwater
 - Maintaining the ground water level







"Nothing is wasted"

Energy

- Recover heat from buildings' CMV outlets
 - Less energy consumed for heating
- Recapture braking energy from light rail
 - Less electricity consumed
- Recover heat from the smoke or gas emitted by energy systems
 - Energy produced









Waste becomes an energy source

Treatment / Energy

Recover heat from the wastewater in pipes
Less energy consumed for heating

• Recycle the excess heat from WWPPs to heat nearby neighborhoods

• Use sludge from WWPPs as fuel outside of manure spreading periods for agriculture







The circular economy applied to a region: regional ecology

The items that we consider together are:

The regional ecology is made up of 3 components:

- 1. cooperation between regional players
- 2. analyzing flows of materials and energy
- 3. defining strategies for managing and promoting local industry









Choosing the appropriate energy Mix



Selection criteria

Depending upon the context, the community's policy goals and financial and economic ability, **an Energy Mix is defined**.

Mastering the energy chain, from production to distribution to consumption, consulting and services, provides the basis for developing a comprehensive and consistent strategy.

Consumption profile

- ✓ Industrial companies
- ✓ Tertiary companies
- ✓ Individuals
- ✓ Transportation

SD policies

- ✓ Climate plan
- ✓ Agenda 21
- ✓ % renewable/local
- ✓ CO₂ objectives
- \checkmark Citizen expectations and policies

Financial and economic ability

- ✓ Investment
- ✓ Operation

Energy mix ✓ Security of supply ✓ % renewable/local ✓ Level of flexibility ✓ Financial commitments ✓ CO₂ emissions reduction





An overall understanding of energy in the city

GDF SUEZ is involved along the entire energy chain, which allows it to offer balanced, optimized solutions.





Choosing the appropriate energy Mix



Harnessing a variety of energy production sources

















Measure progress

Indicators give a synthesized image of the environmental performance of the community's major services:

They help choose the best solutions in terms of environmental protection while preserving residents' quality of life.







Give people opportunities to be pro-active in their area

Provide information on consumption

Thanks to remote meter-reading, each household can receive information at frequent intervals on **actual consumption** (water, energy and even waste collected pneumatically). **In case of excess consumption, the consumer can take immediate action**.

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Building the city in cooperation with its inhabitants

Neighborhood organizations represent the people who will be living in a neighborhood over the long term.

We consult with them and keep them informed, both during the planning phase and in the daily life of their neighborhood.







An integrated approach consistent with the decision-makers' primary role

Coordination of various program elements in a joint approach serves to optimize the undertaking **over the long term** and make commitments.

Of course, this approach takes into account decision-makers' willingness to delegate responsibility.





Some references





