




**AGENDA DIGITAL LOCAL**  
galicia-norte portugal

# **For Smart Cities, Smart Solutions..! Energy Efficiency**

**LAIAS**

29 e 30 de Outubro de  
2013

# The basic needs of a city drive the market for intelligent infrastructure solutions



**Green**



**Competitive**



**Livable**

- Intermodal mobility / efficient and effective mobility
- Sustainable and decentralized energy supply
- Efficient water supply and waste management
- Security
- Rigorous reduced carbon footprint of the entire city (e.g. **smart buildings**, Electromobility, traffic management )

Requirements are drastically changing from closed island solutions / single products to **interlinked intelligent infrastructure solutions**

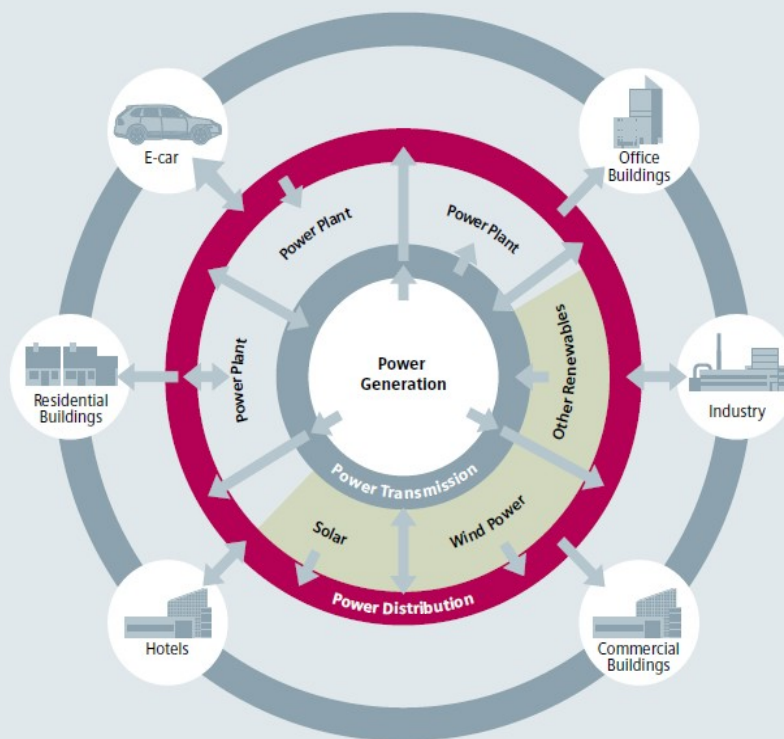
# With Smart Grid from the Smart Building to the Smart City

## Smart Building



- Smart Buildings communicate and integrate with the Smart Grid

## Smart Grid



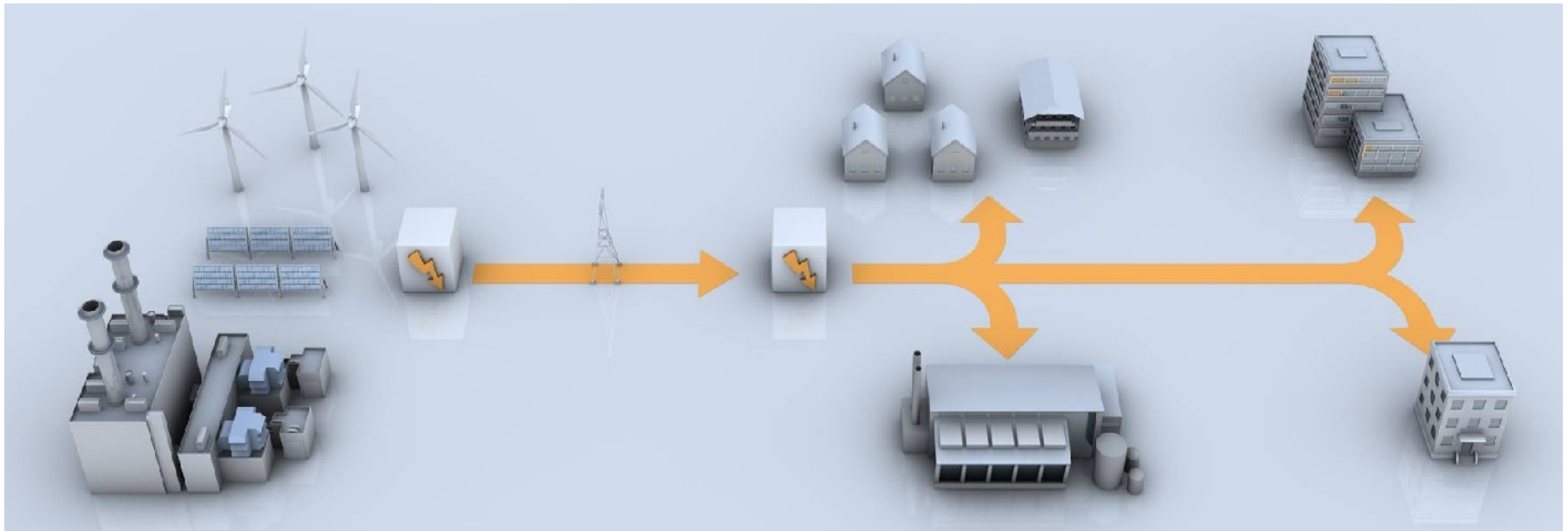
## Smart Cities



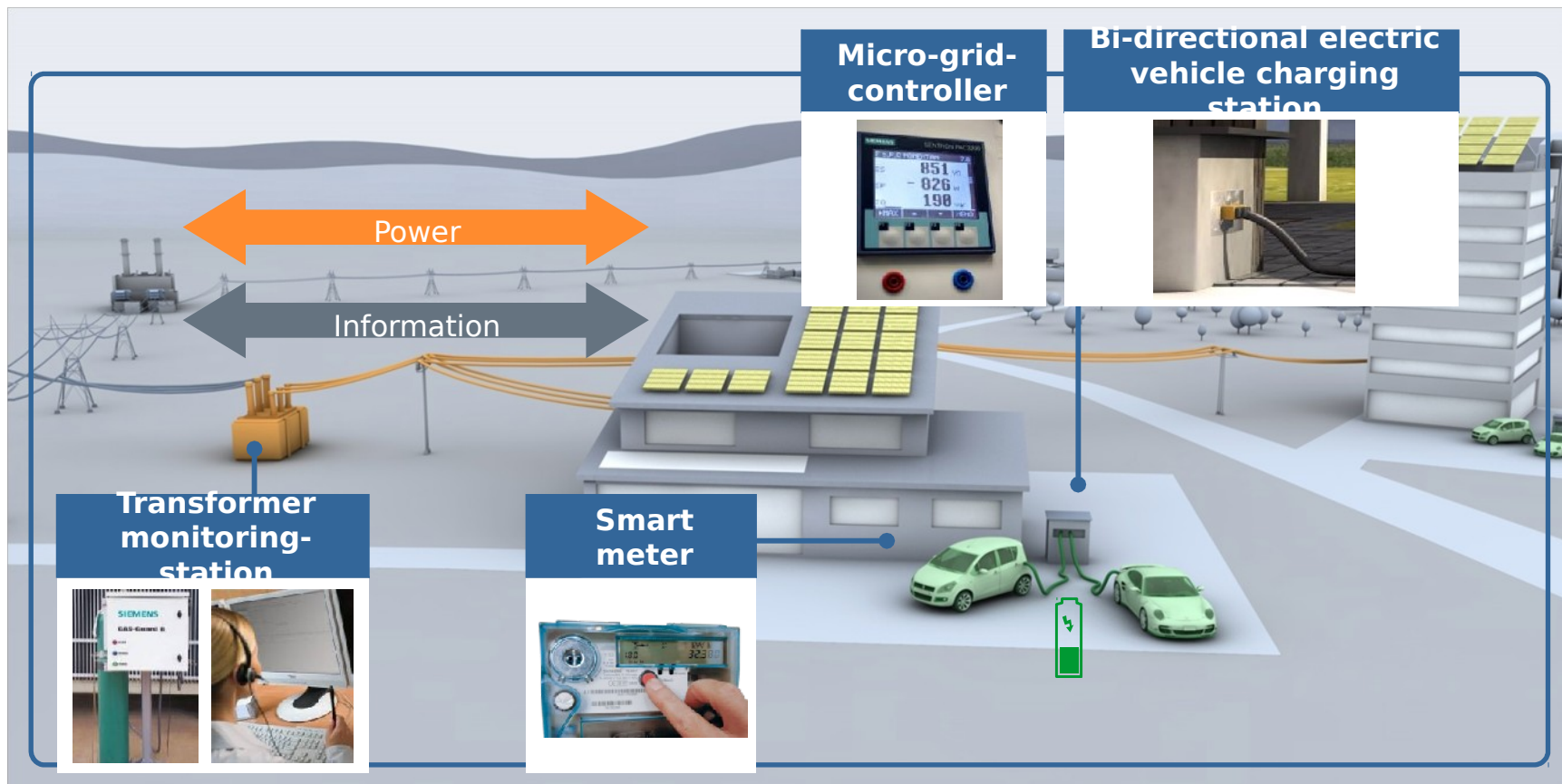
Together with the Smart Grid, Smart Buildings form the basis for a Smart City

# The energy system as we know it

TODAY

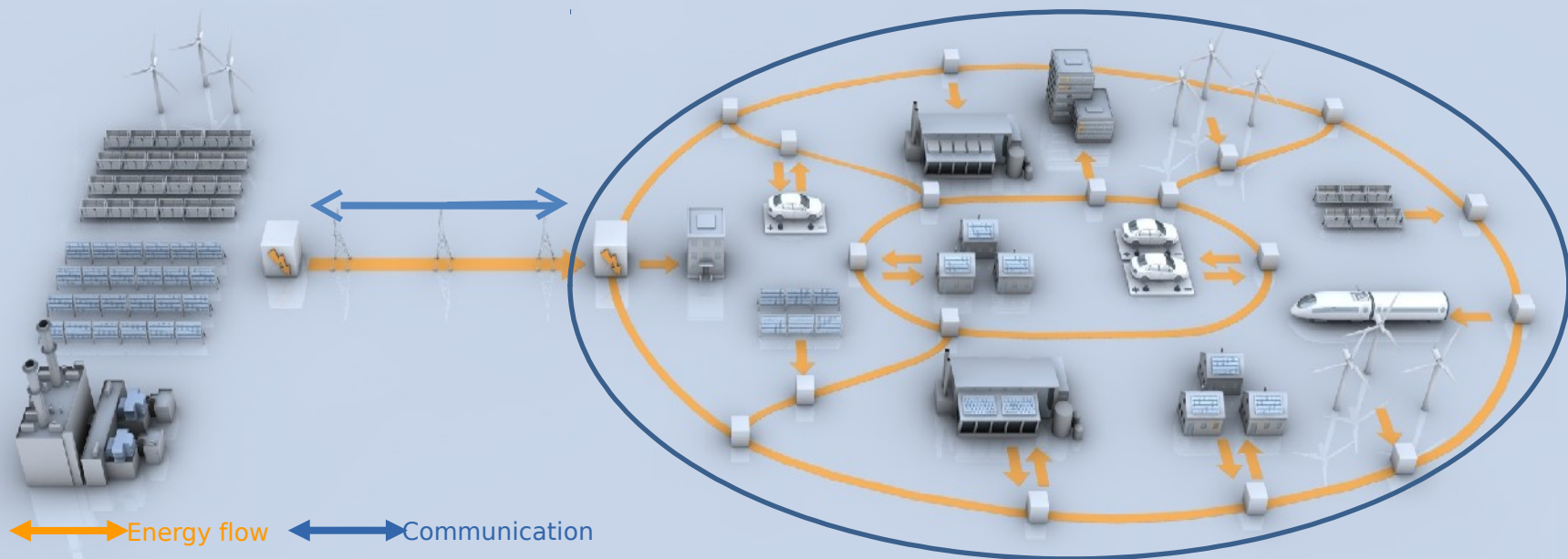


# Intelligent components enable the transition from conventional grids to *Smart grids*



# The basic concept of a Smart Grid

Tomorrow

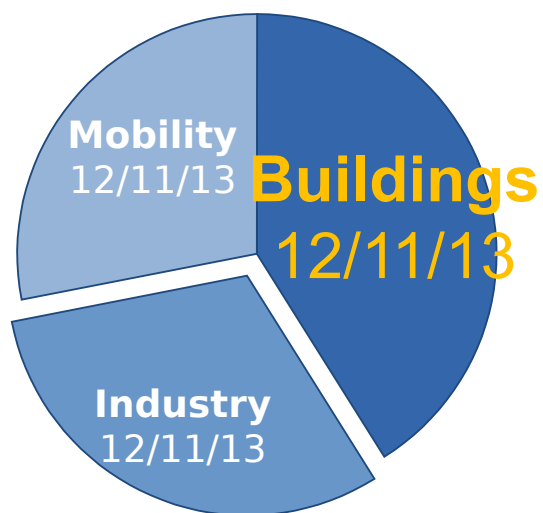


Smart buildings  
are active elements  
in a smart grid

“Smart grid is an intelligent  
management of load between  
energy generation and consumption.”

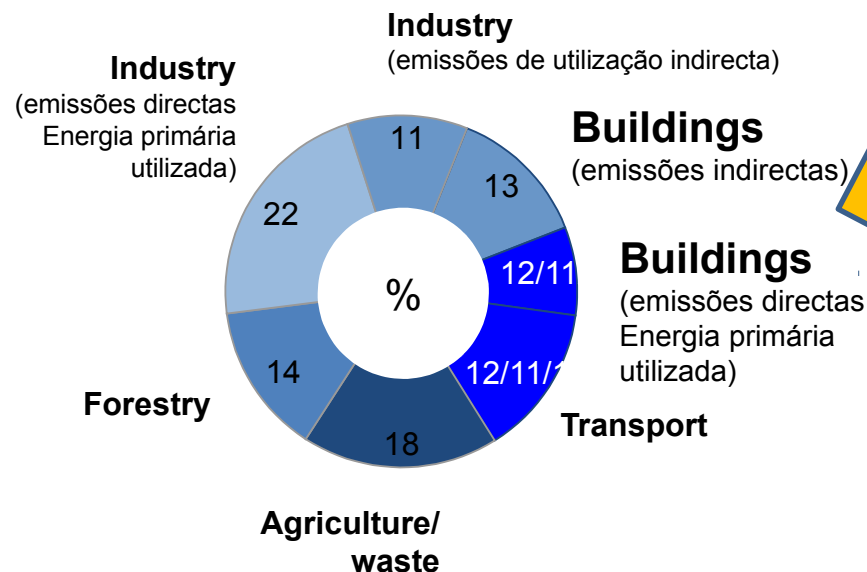
# Smart Buildings: A crucial role in smart grids and in energy efficiency

Buildings consume 40% of world-wide energy ... 1)



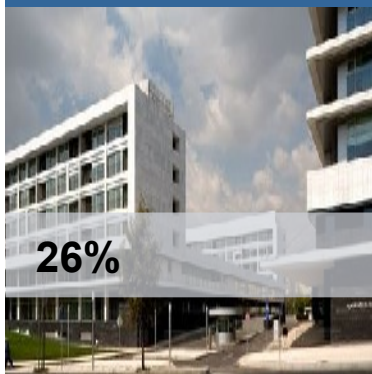
1) International Energy Association, on a worldwide basis, in 2002  
Source: Siemens Building Technologies

... and account for 21% of CO2 emissions



# Example Smart Buildings: Energy saving in every type of building and business

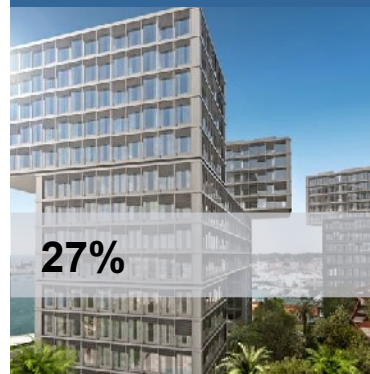
Hospital



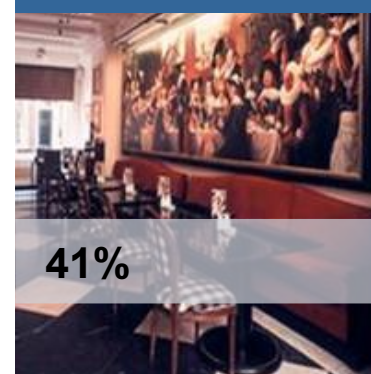
Office



Residential



Restaurant



Hotel



Shopping Center



School



# Smart Buildings play a crucial role in Smart Grids and in energy efficiency

- **Smart building:** Intelligent, integrated management of all building systems

## Connected to the Smart Grid...

- **Full interactivity** - Price signals, feedback, load reduction, etc.
- **Storage capability** - Balancing renewables and optimize energy price
- **Production source** - Sell back to the grid, reduce grid dependence, etc.

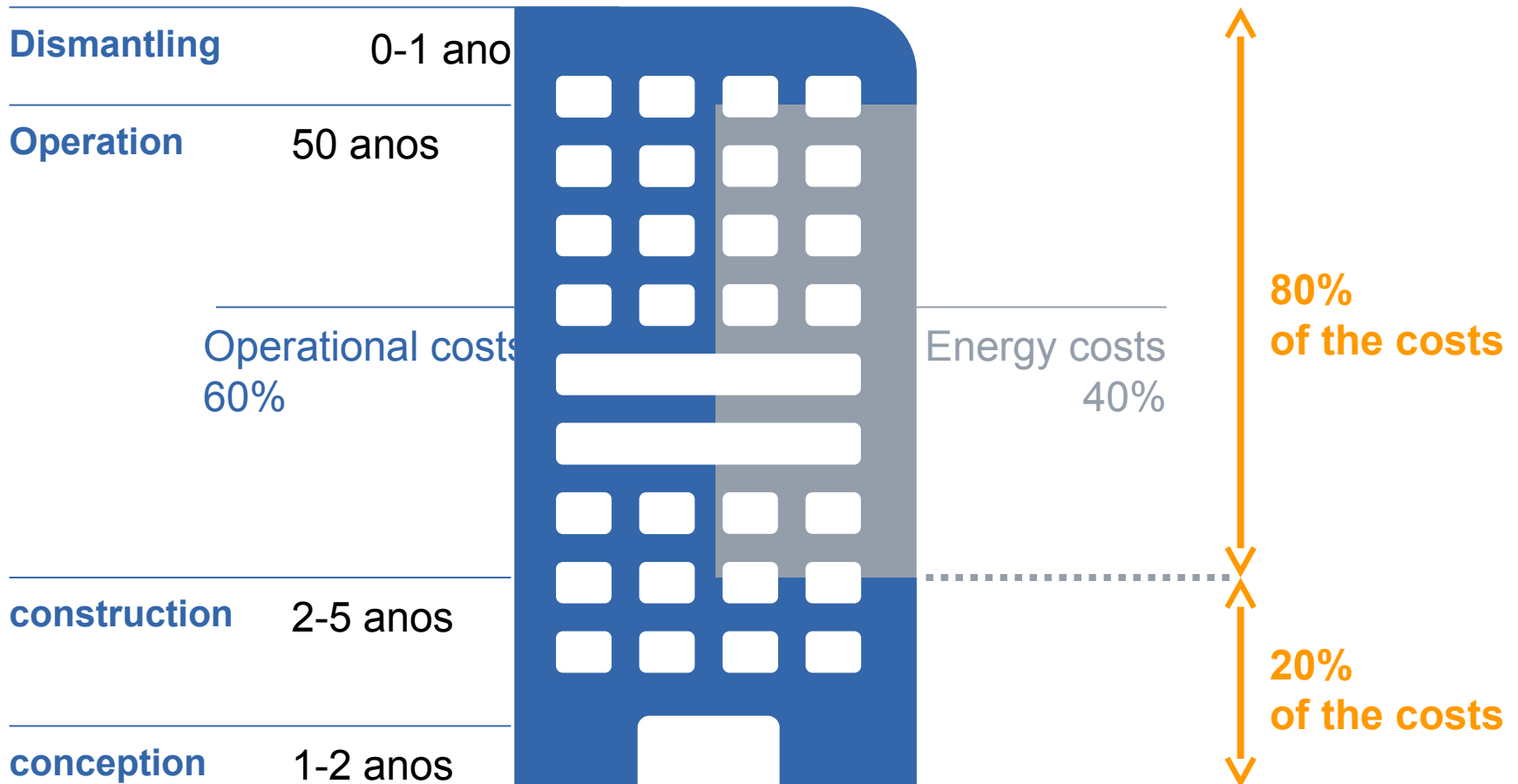
## Disconnected from the Grid / Off-Grid...

- **Fully independent** - Net zero energy, on-site generation, etc.
- **Sustainable** - Zero carbon, etc.



Zero net energy buildings are coming: CA 2020-2030 / EU 2018

# Energy Costs represent 40% of all life cycle of the building



# The Crystal

The Crystal is a Sustainable Cities Initiative by Siemens exploring how we can create a better future for our cities.

Home to the world's largest exhibition focused on urban sustainability and a world-class center for dialogue, discovery and learning.



# Crystal - one of the most sustainable buildings in the world

## The building at a Glance

- Audience is urban decision makers, infrastructure experts and general public;
- Combined office, exhibition and conference facilities;
- Office 100 desks, 2000m2 exhibition space, 270 seat Auditorium;
- Seat of Global Center of Competence Cities;
- Conference Program for dialogue on sustainable urbanization :

## Green Design & Sustainability

- Achieved Outstanding BREEAM accreditation and Platinum LEED accreditation;
- All-electric building that uses solar power and a ground source heat pump to generate its own energy;
- 50% less energy Consumption;
- 65% less CO2 emissions;
- Rainwater harvesting

BREEAM®



## Planned to attract:

City decision makers (mayors, politicians, architects, planners);

Infrastructure Experts; NGO's, academics Experts; Families, local community, schools and tourists.

## Organized to inspire:

Ten zones that attract, inspire, inform and encourage visitors to problem solve and participate.

## Designed for learning:

Drive conversation around urban sustainability issues including the megatrends, challenges and solutions



# The Future is Smart...!



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