



# Smart Cities

Training on

**SUSTAINABLE ENERGY DESIGN TOOLKIT**

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## ➤ Smart Cities

### ➤ Definition:

Smart city: *a place where traditional networks and services are made more efficient with the use of digital and telecommunication technologies for the benefit of the inhabitants and business.*

- A smart city:
  - ✓ goes beyond the use of information and communication technologies (ICT) for better resource use and less emissions
  - ✓ means *smarter urban transport networks, upgraded water supply and waste disposal facilities and more efficient ways to light and heat buildings*
  - ✓ means a more *interactive and responsive city administration, safer public spaces and meeting the needs of an ageing population.*



Lighthouse project area with smart lampposts in Munich.  
Source: Dominik Parzinger.

- European innovation partnership on smart cities and communities
  - The *European innovation partnership on smart cities and communities (EIP-SCC)*:
    - ✓ is an initiative supported by the European Commission that brings together cities, industry, small business (SMEs), banks, research and others.
    - ✓ aims at improving the urban life through more sustainable integrated solutions and addresses city-specific challenges from different policy areas such as energy, mobility and transport, and ICT.
    - ✓ builds on the engagement of the public, industry and other interested groups to develop innovative solutions and participate in city governance.

## ➤ Priorities of the EIP-SCC partnership

- ✓ sustainable urban mobility
- ✓ sustainable districts and built environment
- ✓ integrated infrastructures and processes in energy, information and communication technologies and transport
- ✓ citizen focus
- ✓ policy and regulation
- ✓ integrated planning and management
- ✓ knowledge sharing
- ✓ baselines, performance indicators and metrics
- ✓ open data governance
- ✓ standards
- ✓ business models, procurement and funding



## ➤ EIP-SCC marketplace (<https://eu-smartcities.eu/>)

### Goals:

- ✓ develop and implement integrated smart city solutions
- ✓ support networking, partnerships and exchange of information
- ✓ focus on the intersection of energy, ICT and transport

Action Clusters: assemblies of partners committing to work on specific issues related to smart cities, by sharing the knowledge & expertise with their peers, giving added-value to their national and local experience and identifying gaps that need to be fulfilled at European level.

Initiatives: they pool the work of various partners around a particular objective, promoting learning beyond project and geographic borders, and opening the results to the world at large. Links with EU-funded projects allow results to be consumed by the thousands of people active on the Marketplace. Each Initiative is led by one of the 6 Action Clusters.

## ➤ Related policies

- ✓ Digital single market and smart cities
- ✓ Energy and smart cities
- ✓ Sustainable transport for smart cities



E-carsharing in Simmering Lighthouse project in Vienna (Source: SmarterTogether 2019d)

## ✓ Digital single market and smart cities:

In Smart Cities, digital technologies are translated into:

- ✓ better public services for the citizens,
- ✓ better use of resources, and,
- ✓ less impact on the environment.

With this vision in mind, the European Union is investing in *ICT research and innovation* and *developing policies* to improve the quality of life of citizens and make cities more sustainable in view of Europe's 20-20-20 targets.



➤ *European Innovation Partnership (EIP) on Smart Cities and Communities*

✓ EC has initiated the European Innovation Partnership on Smart Cities and Communities that brought up together European cities, industry leaders, and representatives of civil society to smarten up Europe's urban areas (July 2012).

✓ So far, the EIP on Smart Cities and Communities has received ~ 370 commitments to fund and develop smart solutions in the areas of energy, ICT and transport (more than 3,000 partners from across Europe), creating a huge potential for making cities more attractive, and creating business opportunities.

# European Innovation Partnership Smart Cities & Communities

Invitation for Commitments

**1 Smart Cities and Community** a European Innovation Partnership

How to make our cities smarter?  
The Partnership integrates the **ICT, energy** and **transport** sectors. It aims to apply innovative solutions to tackle issues such as **congestion; air pollution; high energy costs** and to achieve **better mobility; cleaner urban environment; energy efficiency**.

**2 Meet our Partners**

In 2014, **370 commitments** around smart city projects & solutions were submitted by more than **3 000 partners**. The lead organisations come from **31 countries**.

**Classification of lead organisations**

Public Authorities	36%
Business	26%
Academic/Research Institutions	16%
Others	14%
NGOs	6%
Private individuals	2%

**3 Some of the areas we are working on**

## ✓ Energy and smart cities:

Urban areas in Europe are important contributors to the EU's energy consumption and greenhouse gas emissions, with a huge impact on climate change.

Cities are the main drivers of the EU's economy, opening effective pathways to growth and jobs for Europe.



### ➤ Policies, proposals & initiatives at EU level:

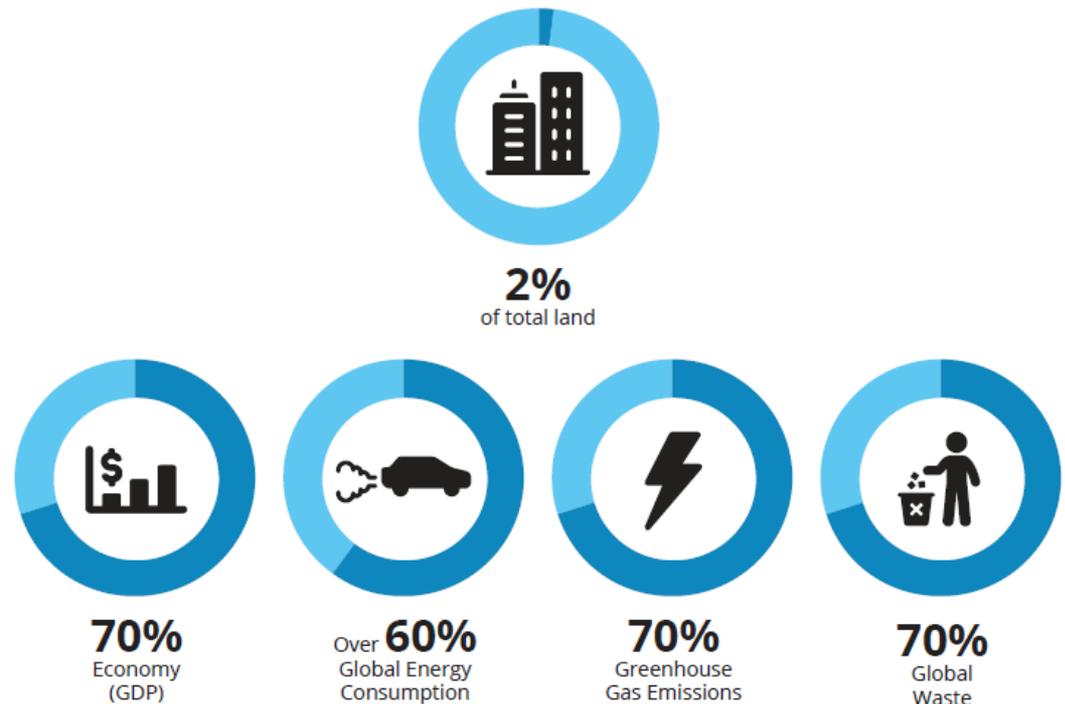
- ✓ The energy union strategy sets out the target/actions to transform the European energy system into the most sustainable in the world.
- ✓ The Urban Agenda for the EU promotes better laws, easier access to funding and more knowledge sharing on issues relevant for cities, bringing together the Commission, national ministries, city governments and other stakeholders
- ✓ The smart cities policy context aims at supporting the energy union and the Urban Agenda for the EU.
- ✓ EPBD promotes smart technologies in buildings to increase their energy efficiency.
- ✓ The EU Covenant of Mayors for Climate & Energy brings together thousands of local governments to implement EU climate and energy objectives in cities.
- ✓ The SET-Plan promotes research and innovation efforts across Europe by supporting the most impactful technologies in the EU's transformation to a low-carbon energy system.
- ✓ The Smart Cities Information System (SCIS): provides a lasting repository of information on smart city projects and serves as a knowledge platform to exchange data, experience and know-how.

- ✓ Sustainable transport for smart cities:
  - The European Commission is working to improve citizens' quality of life and strengthen the economy by promoting sustainable urban mobility and increased use of clean and energy efficient vehicles.
  - New political challenges have emerged in recent years. Climate change, energy policy, air quality legislation and the difficulties of tackling congestion are just some examples. The objective now is to enhance mobility while at the same time reducing congestion, accidents and pollution in European cities.

## ➤ The needs for developing “Smart City Strategies” & implementing “Smart City Plans”:

### 1) Challenges for the cities:

- ✓ Nowadays, *more than 60%* of the 7.5 billion inhabitants live in cities, which contribute to *70% of the world economy*
- ✓ *By 2050*, we expect over 10 billion inhabitants, of which close to *80% will live in cities*.
- ✓ The challenge: “*how to best deliver the facilities and services needed to ensure a thriving population and good economic performance in a sustainable manner*”.



The impact of cities

➤ *Pressing urban issues in Europe:*

- ✓ Lack of progress in the transition to clean, affordable and secure energy systems and circular economies, while keeping a healthy economic basis of local economies. As a result, the adverse effects of climate change and pollution are insufficiently combatted;
- ✓ Lack of protection of biodiversity, national and cultural heritage, and identity of areas, not only in Europe, but also in other parts of the world, as both directly and indirectly affected by European consumption and urbanisation;
- ✓ Congested, crowded and cluttered cities, in particular regarding mobility and accessibility, poor quality of local living environment and public space, and unaffordable housing;
- ✓ Social polarisation as a result of globalisation and migration, ageing and lack of intergenerational justice, manifesting itself in less social connections, unsafety and insecurity, deprivation, erosion of communities, high costs of health care;
- ✓ Economic competitiveness of European cities, now and in the future;
- ✓ Lack of overview of what new ICT technologies might mean for European cities and their citizens (robotisation, further digitisation, autonomous vehicles etc.).

 **SUSTAINABLE  
DEVELOPMENT GOALS**

All 17 Sustainable Development United Nations.

## 2) Global and European responses to urban challenges:

Several reference frameworks and strategies have been adopted at global/EU level:

- ✓ UN Habitat & UN Sustainable Development Goals(SDGs)
- ✓ EU policies related to smart cities and low energy districts

## 3) European & global collaborations on smart cities and low energy districts:

- ✓ *European Innovation Partnership on Smart Cities and Communities*
- ✓ *EIP-SCC Action Cluster on Integrated planning, policy and regulation*: what is needed to plan and manage smart city projects in an integrated way.
- ✓ *SCIS*
- ✓ *The Covenant of Mayors for Climate and Energy – Europe*: initiative by which European cities voluntarily commit to reducing CO<sub>2</sub> emission & adapt to climate change. Achieved through the implementation of Sustainable Energy (and Climate) Action Plans (SEAPs or SECAPs)
- ✓ *European Energy Award (EEA)*: establishes interdisciplinary planning and action as well as a process-oriented and long-term energy and climate protection policy in the municipalities, in 6 different areas: mobility, supply and disposal (electricity, district heating, RES, water supply, waste, etc.), communal buildings & facilities, urban planning & development model, internal organisation (continuing training, performance agreements, and planning & controlling) and external communication & cooperation information
- ✓ *CEN/CENELEC/ETSI SF-SSCC*: a joint group of the 3 European Standardisation Organisations (ESOs) acting as an advisory/coordinating body for European standardization activities related to Smart Sustainable Cities and Communities field.

**EUROPEAN  
ENERGY AWARD****COMMUNAL  
DEVELOPMENT,  
PLANNING**

Energy policy,  
action plan,  
regulations  
and increasing  
enforcement

**COMMUNAL  
BUILDINGS,  
FACILITIES**

Energy  
management,  
building efficiency

**SUPPLY, WASTE  
DISPOSAL**

Electricity, distant  
heating, water  
supply, waste  
treatment

**MOBILITY**

Public transport,  
zones low speed,  
parking  
management,  
pedestrian zones,  
bicycle routes

**INTERNAL  
ORGANIZATION**

Capacity building,  
policies, strategies,  
controlling

**EXTERNAL  
COMMUNICATION**

Information,  
promotion,  
subsidies



The main activities of the municipality in the field of energy and climate protection in the eea.

#### 4) Key issues in integrated planning and management of smart city projects at district level (approach based on information on best practices and commonly experienced pitfalls shared by successful projects):

- ✓ timeframe of policies and decisions is limited to the current political cycle
- ✓ focus is on specific issues and technologies without taking much of a holistic, interdisciplinary approach
- ✓ involvement of many government and business sectors while lacking experience in interdisciplinary collaboration or having unclear mandates, can lead to the so-called “siloes”, hampering smooth collaboration
- ✓ Key stakeholders as citizens and local businesses, but also energy network and transport operators, might be difficult to engage or having other priorities
- ✓ Business cases and business models might be less attractive than regular investment opportunities
- ✓ the final performance of subcontracts and their contribution to cities’ overall aims, is usually not assessed

## ➤ Starting points for development of Smart City plans:

Smart city visions and projects often have a background in other plans with comparable aims. There are common plans, which can trigger the planning of a dedicated, smart city or low energy district project, but also can amplify the impact of such a project:

- ✓ OVERALL SMART CITY STRATEGY:
- ✓ SUSTAINABILITY OR ENVIRONMENTAL PLAN
- ✓ SUSTAINABLE ENERGY ACTION PLAN (SEAP) AND SUSTAINABLE ENERGY AND CLIMATE ACTION PLAN (SECAP):
- ✓ ENERGY VISION, ENERGY PLAN
- ✓ TRANSPORT AND MOBILITY PLANS
- ✓ SUSTAINABLE URBAN MOBILITY PLANS
- ✓ URBAN RESTRUCTURING, REHABILITATION, REAL ESTATE PROJECT DEVELOPMENT
- ✓ MASTER PLAN AND ZONING PLANS FOR AREAS
- ✓ REFURBISHMENT AND RENOVATION OR MAINTENANCE PLANS FOR BUILDINGS AND URBAN INFRASTRUCTURES AS ELECTRICITY NETWORKS
- ✓ HORIZON2020 AND NATIONAL OR REGIONAL RESEARCH AND INNOVATION-BASED PROJECTS
- ✓ BOTTOM-UP INITIATIVES
- ✓ EUROPEAN ENERGY AWARD
- ✓ ICT AND DIGITISATION PLANS

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