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International experience

View over the fence – what are the neighbours doing?

Polona Čufer Klep
pcuferklep@deloittece.com
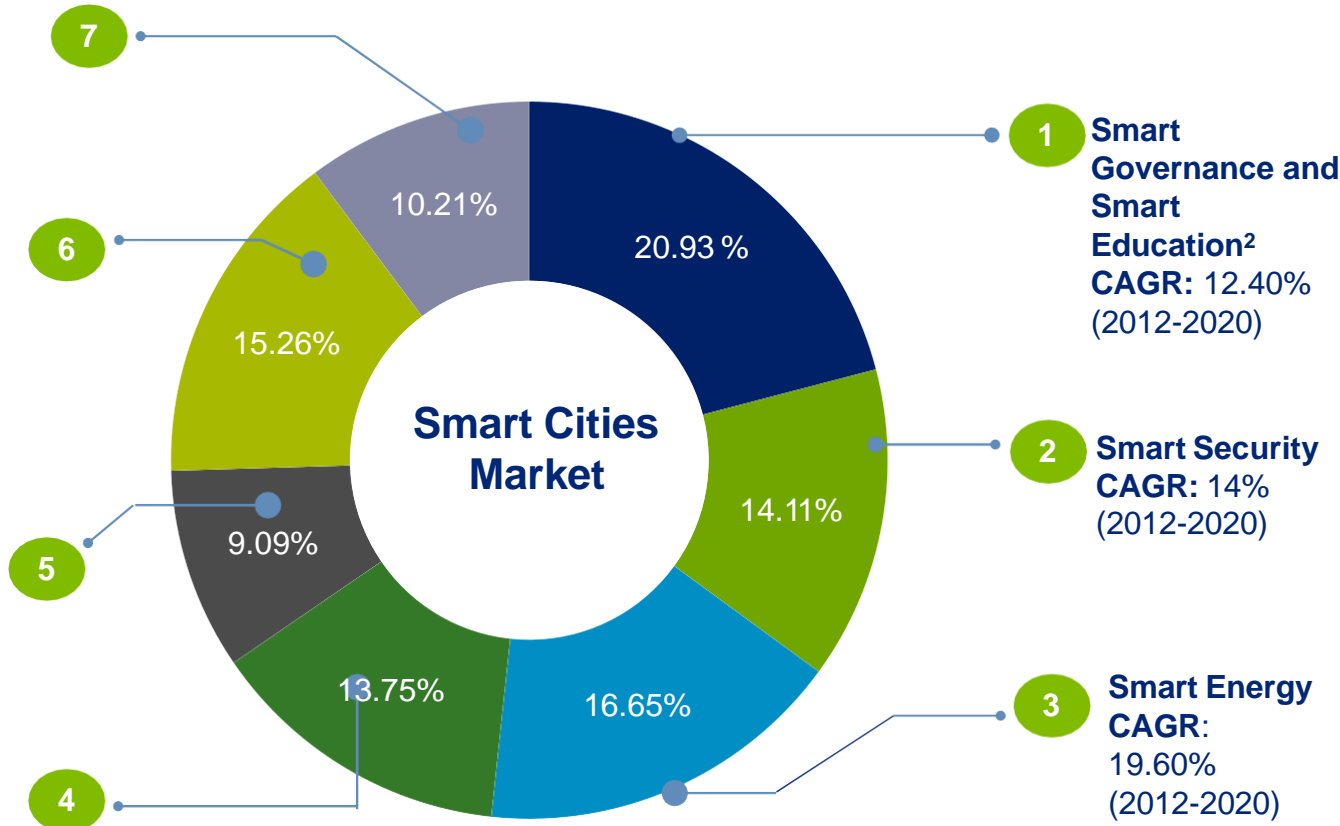
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Content

Global Smart City Market 2020
Smart cities industry is expected to have a market value of $1.50 trillion in 2020.

Smart Building
CAGR: 8.80% (2012-2020)

Smart Healthcare
CAGR: 6.90% (2012-2020)

Smart Transportation
CAGR: 14.80% (2012-2020)

Smart Infrastructure[3]
CAGR: 8.90% (2012-2020)

7

6

5

4

Smart Cities Market

- 20.93 %
- 14.11%
- 16.65%
- 13.75%
- 9.09%
- 15.26%
- 10.21%

1 **Smart Governance and Smart Education[2]**
CAGR: 12.40% (2012-2020)

2 **Smart Security**
CAGR: 14% (2012-2020)

3 **Smart Energy**
CAGR: 19.60% (2012-2020)

28 countries in EU have at least 100 cities that will introduce Smart city services

Smart city has been recognised as one of development priorities on the EU level. Potential sources of funding for smart city solutions are not limited and include for example the following:

- Funding sources on the central EU level – e.g. Horizon 2020, LIFE+, etc.
- Funding sources on national level – specific objectives from national OPs covering individual smart city solutions (e.g. smart transportation, energy efficiency, etc.)
- EIB and other similar funding sources
- Private – public partnerships, etc.

Source: Frost & Sullivan report titled Global Smart City Market

The potential economic benefits of smart cities continue to encourage and drive future development worldwide

Left panel (economic benefits)

+1.0%

Lower unemployment rate recorded by cities that invest in smart grid technology and infrastructure

+0.7%

Higher GDP growth rate recorded by cities that invest in smart grid and infrastructure

+2.5%

Higher office occupancy rate recorded by cities that invest in smart grid technology and infrastructure

+1.0%

Growth in GDP growth[16], resulting from every 20% increase in ICT investments

Success factors

- **Transparent & collaborative governance**
- **Seamless integration of analytics with sensor network**
- **Effective use of ICT technology and cognitive computing**
- **Citizen awareness and smart meters**

Smart Cities help enhance the quality of life for citizens and provide an efficient and sustainable urban living

Environment | Energy	Environment | Water	Mobility	Living	Others
Amsterdam's smart city recorded **9-14% savings on energy bills**, with projected **40% reduction in carbon emissions** by 2025.	Barcelona's smart water initiative saves the city **USD 58 million annually**	Barcelona's smart parking increased parking revenue by **USD 50 million per year**	In Songdo, smart building solutions **reduced energy consumption by 30%** in each building	Smart initiatives have resulted in savings of **USD 1.2 billion** for Dubai Government from 2003 to 2015

Potential Public benefits of smart city solutions

- Co-creation of decision making, new forms of digital democracy and participatory government
- Data-driven policymaking resulting favorable environment for businesses and citizens

- Increase in public safety through real-time analysis of sensor and surveillance camera video data
- Improved water usage through early detection of network leaks using data analytics

- Efficient waste collection using sensors in waste containers
- Lower congestion and pollution levels through optimal use of transportation infrastructure

- Better diagnostics and personalized treatment through artificial intelligence and analytics applied on massive volumes of patient data

- Energy savings through real-time monitoring of energy usage

Deloitte's approach to smart city development

Deloitte has structured a comprehensive approach and designed a roadmap for a Smart City project development and implementation

12 Communication plan
the results, the benefits of the project, the main benefits for the citizens and the city, etc. Internationalization plan and highlighting the benefits and improvements of the project

1 Define objectives
Define Smart City Strategy, which the city wants to achieve objectives, definition city model to be achieved through the introduction of technology.

11 Project management office
When the project is underway, the PMO who defines and maintains the standards and processes related to project management. It will define the roadmap and implementation plan of the project

2 Define priorities
What are the specific needs of my city? Define vertical and most relevant: mobility, education, energy, social services, etc..

10 Technology platform model
Definition of cross-platform to manage information from various projects and vertical.
Need to integrate technology partners in the value chain of service

3 Set specific targets
Reduce rush hour 30 minutes
20% increase in tourism
Increase the volume of economic activity

9 Analysis of best practices
Maintain contact with the projects developed in other cities.
Manage information on project results.
Also note failed projects

4 Identify projects
For each specific objectives should be determined one or more projects.
It should identify the resources, people and decisions necessary to achieve projects.

8 Legal aspects
They must analyse the legal and regulatory aspects will be affected since the municipal ordinance
Redefining the specifications of public service.
Regulations on the Management of Public Information

7 Map of actors and selection criteria
In every link of the value chain, you can interact with multiple companies
These companies can be the government, technology companies, banks, service providers, telecom operators, etc. Define a list of companies that, according to the activities to be performed, can provide solutions.

6 Analysis of the value chain
Perform a detailed analysis of the value chain of each vertical and associated pose a Business Case

5 Funding model
Map of financing alternatives and resources in the short and long term for each project
Different alternatives for funding:
Public funding: the EU, the World Bank, the European Investment Bank, etc.
Vendor Finance: Private Companies
Self-Funded Projects: The operation of the project finances the project itself

Central diagram labels:
Communication Plan
Define objectives & strategy
Define Priorities
PMO and Roadmap
Define specific targets
Technology Platform Model
Identify projects
Analysis of best practices
Funding model
Legal aspects
Map of actors
Analysis of Value chain

"Smart cities" Vision by **Deloitte.**

Deloitte helped designing and establishing The European Platform for Intelligent Cities - EPIC

EPIC definition

- Goal of the project **(The European Platform for Intelligent Cities, EPIC)** is to create expendable and adjustable platform for innovative public services focused on users and use that to improve the innovation process.
- Before EPIC platform was spread among wider European audience, it was tested in 4 European cities: Issy-les-Moulineaux (France), Brussels (Belgium), Manchester (United Kingdom) and Tirgu-Mures (Romania).

Results

- Robust, tested, flexible and expendable European platform for providing intelligent services.
- Practical guidelines which cities can follow to become smarter.
- Ecosystem that helps with development of new services across all of Europe.

Expected impact

- Simulation services that are based on an internet and innovative technologies.
- Increase of innovation in cities due to networking and exchange of experience.
- Strengthening the role of users/citizens in the innovation life-cycle.
- Help to small and mid sized companies with development and launching new ideas and products.

Innovative side

- Smart city „in a cloud": IT as a service not a product. Cloud has 3 characteristics that separate it from traditional hosting: very elastic sales (user can have as many data as he/she wants), sale on demand and easier supervision over service – user needs only a computer and internet access.
- Semantic tester (motor): semantic tester enables users easier access to appropriate services and information. It can also be used to help citizens when they move into the city for the first time.
- Future internet *middleware*: interfaces and hardware that enables „plug and play" aspect of EPIC platform.
- Application for urban planning and smart living: geo-locating enables 3D replica of a city and virtual overview – this makes work easier for city planners.
- Internet of things (IoT): sensors are tracking changes at home – this enables citizens to see their own needs and habits.

Deloitte's value added

… lies in the multidisciplinary expertise of its professionals alongside the experience within the complete ecosystem of partners related to smart cities

DELOITTE IN THE PUBLIC SECTOR

- *Development of Strategic Plans for City councils and Regional governments in key countries within Telefonica's footprint such as Spain, Brazil, UK or Germany*
- *Development of Systems and Technology plans for multiples public institutions in those countries*
- *Development of Financial Plans for Public/Private Projects*

Some Clients:

DELOITTE IN THE INFRASTRUCTURE AND UTILITIES SECTOR

- *Development of Strategic Plans for utilities and infrastructure companies in key countries within Telefonica's footprint*
- *Development of Systems and Technology Plans for lead companies in the sector in Spain*
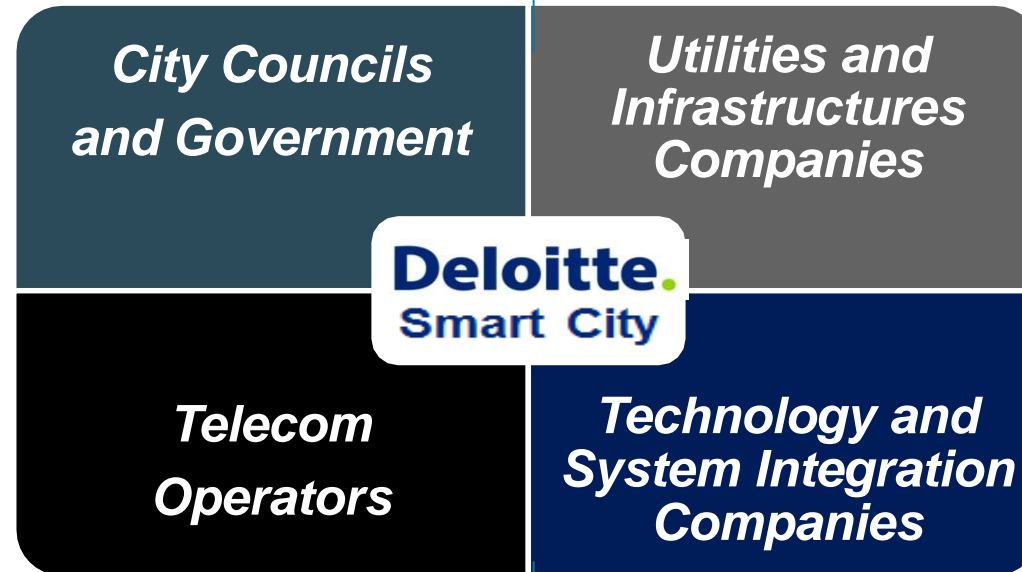- *Development of Financial Plans for Public/Private projects*

Some Clients:

City Councils and Government	Utilities and Infrastructures Companies
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Telecom Operators	Technology and System Integration Companies

Some Clients:

Some Clients:

DELOITTE IN THE TELECOMMUNICATIONS SECTOR

- *Our strategy team has prepared plans for the development of new services (M2M, mobile payments NFC, MDM, Smart Cities) in key countries within Telefonica's footprint*
- *National and International Experience*
- *Development of Technology and Systems Plans*

DELOITTE IN THE TECHNOLOGY SECTOR

- *Strategic agreements with the main technology companies with solutions and applications in the area of Smart Cities*
- *Group specialized in the assessment of disruptive and emerging technologies*
- *Platinum Partner of Living Plan IT*
- *Leading the EPIC project of the European Union*

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6 trends that will define smart cities in 2019

1. New and seemingly outlandish mobility offerings

Advanced modes of transportation. Hyperloop tunnel – high speed, cheap travel. Maglev and other train systems.

2. Continued consolidation

Big transporting companies like Uber and Lyft are adopting dock less bike and scooter phenomenon.

3. The changing face of parking

Unlike 2018 when residents and commuters were pushed away from personal car usage, in 2019 functionality of parking infrastructures and efficient use of curb space will be addressed. More efficient parking spaces for non-car commuters (scooters, bikes…)

4. Scooter predominance over bikes

Immense popularity of dock less bikes ensure smooth transition to adopting dock less scooters. Powered by electricity scooters help the green part of smart cities. Goal is to increase public mobility without a car.

5. New ways to pay

The era of smartphone use will shift society away from cash payments. Digital payment methods (mostly subways and bus fares).

6. Continued emphasis on 5G

5G connection - an important part to create the ecosystem of the future smart cities. Internet of things – ecosystem capable of transcending the smartphone world. Examples: wireless health care, remote surgical procedures, streaming a movie while travelling by tram, car2car connections, virtual reality, building connected to a smartphone…

Case study of good example: Smart City Budapest – aims to introduce best practices from businesses, institutions, non-profit organisations and the people of Budapest.

Main milestones of the Smart City Budapest initiative:

2014
Website + Mind the Game conference

- Methods of gamification – how to playfully motivate residents to make their city more livable.
- Idea is to make a city more livable, more lovable more colorful and to form fidgety communities.

2015
2nd Mind the Game conference

- Urban game – motivation through gamification
- Overview of best examples from Berlin to Valencia
- Smart City Lab proposal by Design Terminal was introduced to the audience

2016 – 2019
Shared cities: Creative momentum

SCCM is on a mission to improve the quality of life in European cities.

Domains:
- Architecture
- Urbanism
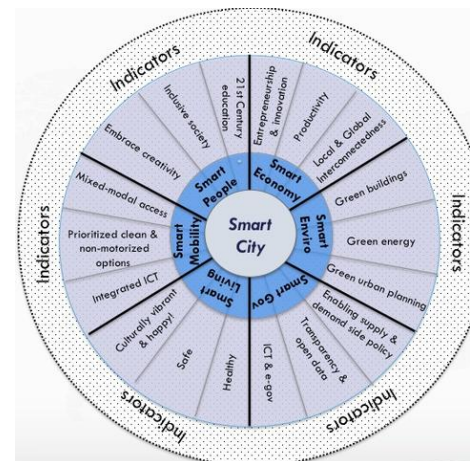- Art and design
- Participation

Activities:
- Festivals
- Films
- Exhibitions
- Workshops
- Residencies
- Research and case studies

General global trends:
- Gentrification
- Political situation
- Tourism

Smart City Budapest initiative:

- SCB collects mostly grassroots projects and organizations from Budapest which are connected to the smart city concept.
- Goal is to encourage citizens to take actions for a better city with knowledge transfer.
- Investments in capital and communication infrastructure fuel sustainable economic growth and a high-quality of life, in combination with an efficient use of natural resources.
- SCB focuses on smart citizens and improving citizen involvment with projects.

Case study of good example: Vienna – strategy aims to guarantee the highest quality of life for all citizens and to save resources throuhg comprehensive innovations

Mission statement:

- Long term initiative by the City of Vienna to improve the design, development and perception of the federal capital.
- Covering all areas of life, work and leisure activities in equal measure.
- Includes everything from infrastructure, energy and mobility to all aspects of urban dvelopment.
- The task of consistently and continuosly modernising the city in order to reduce energy consumption and emissions significantly without having to forego any aspects of consumption or mobility.
- Intelligent and innovative solutions, responsible and sustainable use of resources.

Main topics:

- Education
- Digital
- Energy
- Buildings
- Mobility

- Innovation
- Mobility
- Social affairs
- Location
- Environment

Smart & Simple – 14 examples:

- Delivering the goods
- Crossing on demand
- E-car sharing
- Integrated renovation
- Baking hot: local energy supply
- Energy from cleaning sludge
- WienBot – providing information
- Creativity in public space
- Innovative energy system lab
- Think tank on green logistics
- Seismic sensors to find hot water
- One space for nursery, school and leisure time
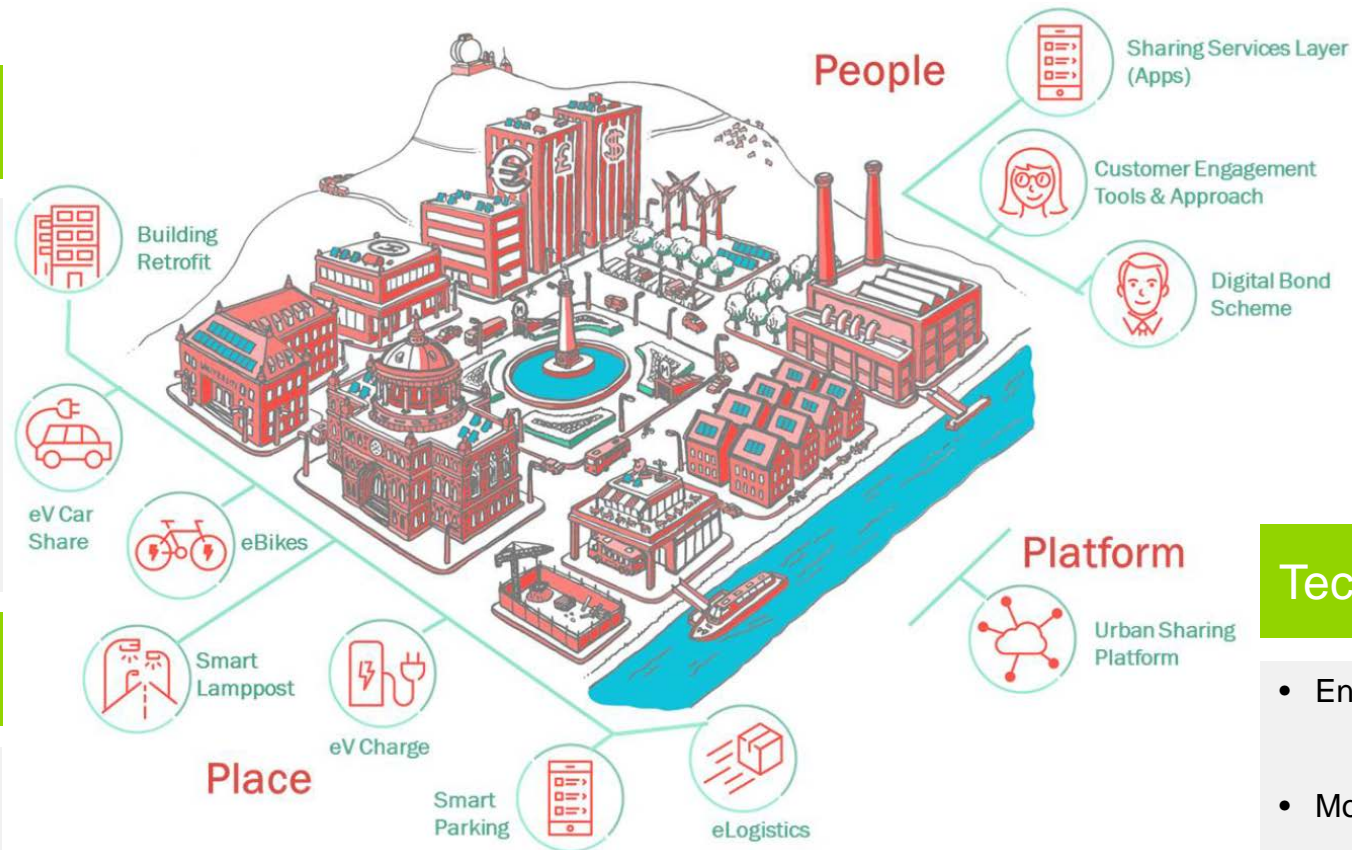- Co-owning a solar power plant
- Age support assistance systems

Case study of good example: Milan considers the idea of a smart city as being not technology-driven, but centred on its citizens

Applications: Some examples:

- In-airport infowall
- Exposition – events around you
- On-board bus info
- City1Tap – RCS MEDIAGROUP
- Infoblu Traffic for Expo
- Infomobility Fiera Milano
- Mobile app SEA
- In-station interactive totems
- Multitouch interactive totems

Pillars of the Milan Urban sharing platform:

- The monet EMD solution by Siemens IT
- The Interoperability Platform of the Municipality of Milan
- The federation machanisms between USP instances
- The open approach based on APIs and microservices (API Economy)

People

- Sharing Services Layer (Apps)
- Customer Engagement Tools & Approach
- Digital Bond Scheme

Building Retrofit

eV Car Share

eBikes

Smart Lamppost

eV Charge

Place

Smart Parking

eLogistics

Platform

- Urban Sharing Platform

The concept Smart city for Milan covers smart mobility, smart environment, and smart inclusion and citizenship.

Re-orientation of demand for transport services, the standardisation of payment technologies and methods and the adoption of a range of energy efficiency solutions.

Technologies:

- Energy:
  - Energy efficiency buildings
  - Energy systems integration
- Mobility & transport:
  - Clean fuels and fuelling infrastructure
  - Electric, hybrid and clean vehicles
  - Car sharing
- ICT:
  - Smart city lab

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Scale down example: Maribor – sustainable development, innovations and pilot projects (smart services, technologies and products) - improving quality of life

Slovenia doesn't have huge cities, most urban areas are smaller towns that have different challenges to big cities and they have also smaller budgets for investing in new solutions. New solutions to improve the quality of life are mostly transportation and energy based solutions.

Projects

SMART MOBILITY
- Integrated Transport Strategy
- Free internet on buses in Maribor
- Protected bicycle store room
- Real-time passenger information at the bus stations
- Mobility centre Maribor
- Bike routes in Maribor
- Mini mobility plans for companies and public institutions
- TRAMOB – Measures for sustainable mobility

SMART ENVIRONMENT AND ENERGY
- Implementation of remote or smart meters in Maribor Water Supply
- Web application My water at a glance
- Eko City Maribor
- Smart neighbourhood Maribor

SMART BUILDINGS AND URBAN PLANNING
- Interactive Web service for the submission of initiatives
- Sustainable Urban strategy of the municipality of Maribor
- Common urban ECO garden
- Application of Maribor water distribution system company

SMART ECONOMY AND NETWORKING
- Participatory budget of municipality of Maribor
- Weaver – the co-working space in the centre of the city Maribor
- Demola Slovenia

Scale down: European parliament granted 2,4 billion euros for Smart Villages concept on March 28, 2019

Smart Villages concept 2021 - 2027:

- Strenghtening new mobility models – often there is no public transport in rural areas.
- Development of modern farming and countryside tourism.
- Decentralized jobs in the social field – better quality care for the elderly than in urban areas.
- E-health and decentralized energy production.
- Harnessing renewable natural resources.
- Digitalization.
- Creation of new jobs (green and innovative).

Case study of Smart Villages in Alpine space:

The project aims to apply a SV approach and bring together - in so-called Regional Stakeholder Groups (policy makers, business, academia and civil society) to improve the framework for innovation through new forms of stakeholder involvement facilitated by Information and Communication Technologies (ICT).
Specific objectives:
- To initiate understanding and mutual learning on the SV Ecosystem.
- To Fscilitate innovation through the development of tools and transnational exchange.
- To raise awareness for a SV Policy.

Results:
- Regional analisys – to determine how advanced the test areas already are.
- Digital exchange platform – enables the transnational knowledge sharing.
- Tool box – methods that guides partners and the wider public.
- Policy recommendations – aims to promote the results on a national and transnational level to facilitate their implementation into strategies and policies.

Why Smart Villages?

- To stop people migrating from countryside to cities.
- Improving quality of life in the countryside.
- Opportunities for new income streams, new jobs.
- In some cases villages could become completely energetically independent.

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Challenges in a smart city development are mostly in a low-carbon sustainable future and climate resilient urban infrastructures that are accessible to all citizens

1. Collaboration and coordination

Collaboration and coordination between policy, industry, and society is required. Particularly in the urban space, there is a strong interdependence between different technologies and the development of various infrastructures.

2. Coordinated investments in different areas of cities

Investments in mobility, infrastructure, housing and quality of life, are critical. Not only technological, but also social innovation is needed to develop locally-appropriate smart city concepts. Monitoring and evaluation is also necessary to learn from action undertaken and to share experiences.

3. Coordination between sectors

The Smart City Framework Strategy of the City of Vienna showed that collaboration, cooperation and coordination between sectors (infrastructure, energy, climate, housing, etc.) is becoming increasingly critical for long term success.

4. Political commitment

Political commitment is absolutely necessary to move forward a sound Smart City strategy. A political champion can provide substantial support and facilitate coordinated efforts.

5. Public-Private-Partnerships (PPPs)

Can be useful for the development and implementation of Smart City strategies, allowing for an effective use of public and private financial resources, fostering innovation and facilitating risk management.

6. Renewable energy and energy efficiency

Renewable energy and energy efficiency are a key element in making cities climate-resilient and can also have multiple benefits in different areas such as poverty reduction, improvement in air pollution and sanitation.

7. Rapidly growing cities

Increasing mobility requirements in rapidly growing cities create a substantial challenge. Conventional approaches have significant impacts on the environment, energy consumption, health and productivity

8. Coordination on a municipal level

Governance systems need to facilitate the coordination between municipal administrations and regional and national authorities such that policies and programmes at these different levels reinforce one another.

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