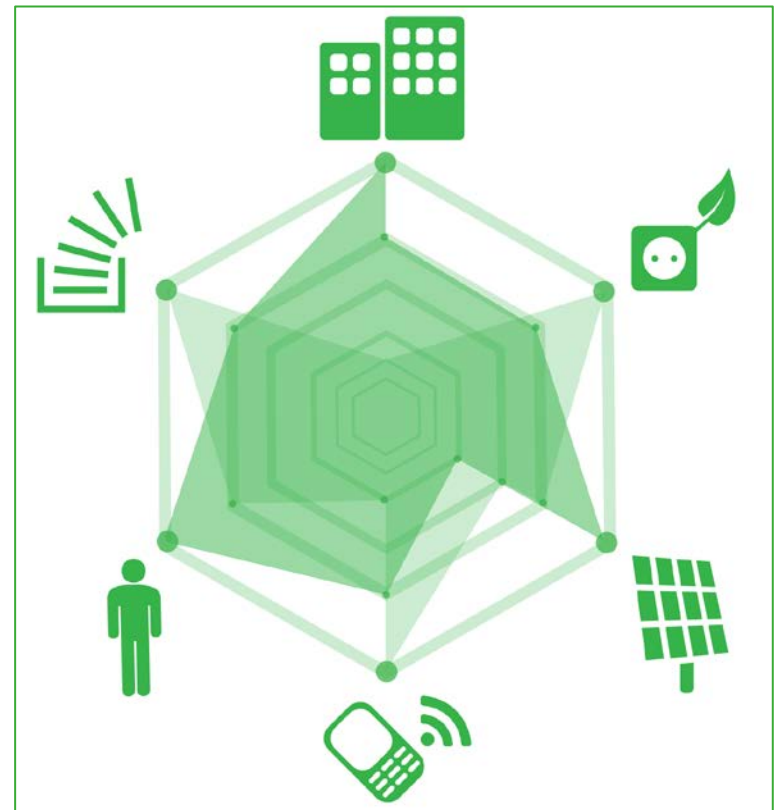


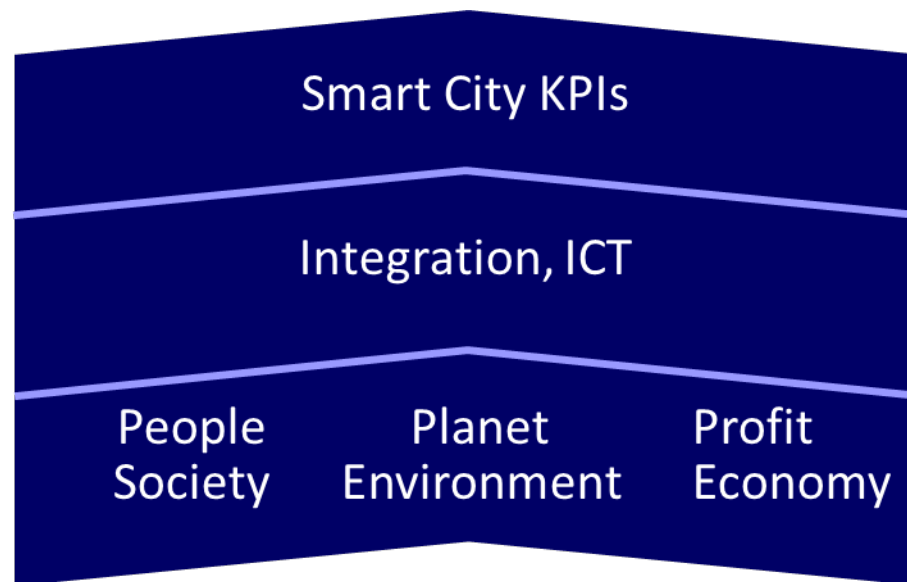
CITYkeys

Performance measurement of smart cities

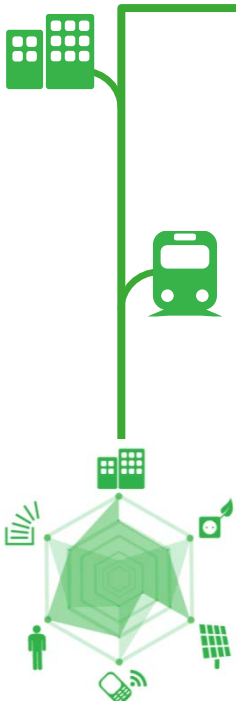
Miimu Airaksinen, VTT

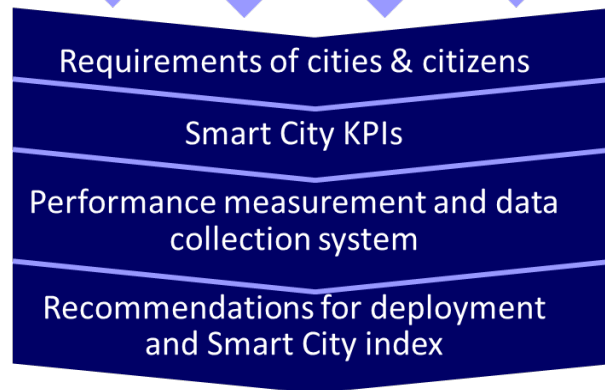
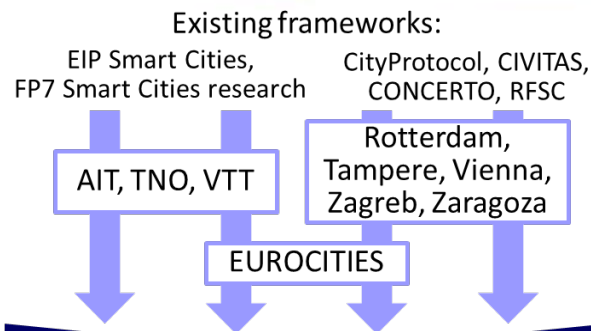


The goal of CITYkeys is to provide a validated, holistic performance measurement framework for monitoring and comparing the implementation of Smart City solutions.



CITYkeys - 646440





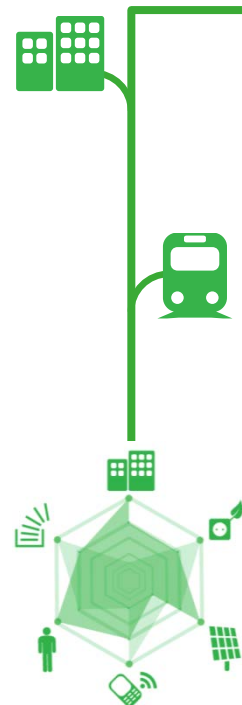
Direct impacts: Ability of cities to set holistic targets and assess progress

In-direct impacts: Use of renewables, increasing energy efficiency, better quality of life, new business opportunities, lower CO2

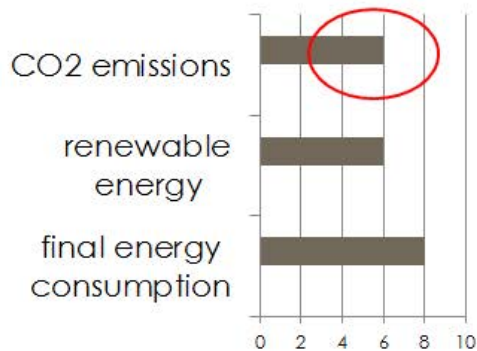
Cities and citizens needs



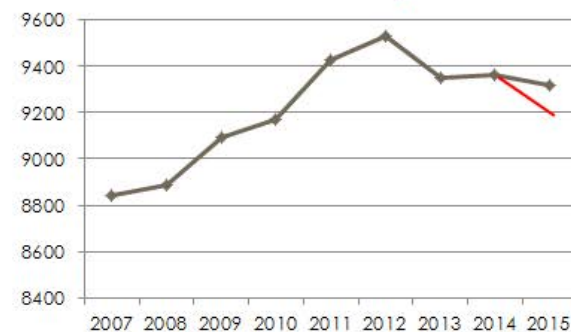
CITYkeys - 646440



From project to city



Reduction: 135t CO₂/yr



CITYkeys - 646440



Mapping existing frameworks

European Initiatives

- 1 - Concerto
- 2 - Smart City Information System (in development)
- 3 - Civitas
- 4 - Green Digital Charter
- 5 - RFSC Reference framework for sustainable cities
- 6 - Covenant of Mayors
- 7 - European Smart City Index

International and European Standards

- 1 - ISO 37120 Sustainable Development of Communities
- 2 - ISO 37151
- 3 - ITU FG-SSC

Neighborhood Certification Schemes

- 1 - DGNB / OEGNI for urban districts
- 2 - BREEAM Communities
- 3 - LEED v4 for Neighborhood Development
- 4 - CASBEE Cities
- 5 - CASBEE Urban Development
- 6 - 2000-Watt-Site

Other relevant indicator frameworks

- 1 - ClimateCon
- 2 - Global City Indicators Facility
- 3 - OECD Green growth in cities
- 4 - UN Habitat City Prosperity index
- 5 - UNECE United Smart Cities
- 6 - CITY PROTOCOL

Relevant FP7 and Horizon 2020 Projects

- 1 - CITINES (in development)
- 2 - CIVIS
- 3 - DESIRE
- 4 - ECODISTR-ICT
- 5 - URBANLAB
- 6 - IDEAS
- 7 - PLEEC
- 8 - READY
- 9 - TRANSFORM
- 10 - URB-GRADE
- 11 - URBES
- 12 - 2DECIDE

Relevant National Initiatives

Dutch

- 1 - SCP Rotterdam
- 2 - GPR-Stedenbouw
- 3 - IVAM - DPL (/Duurzaamheidsindex)
- 4 - Telos: European Green Capital Award

Austrian

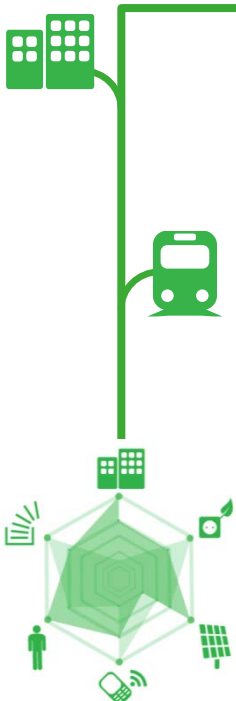
- 5 - Smart City Profiles

Finnish

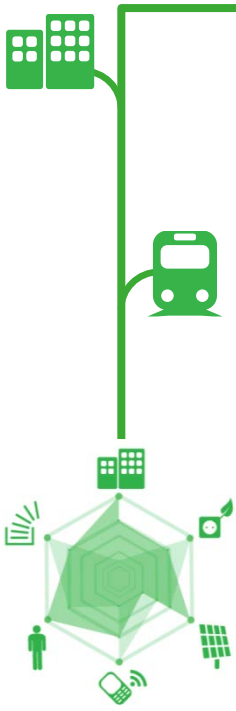
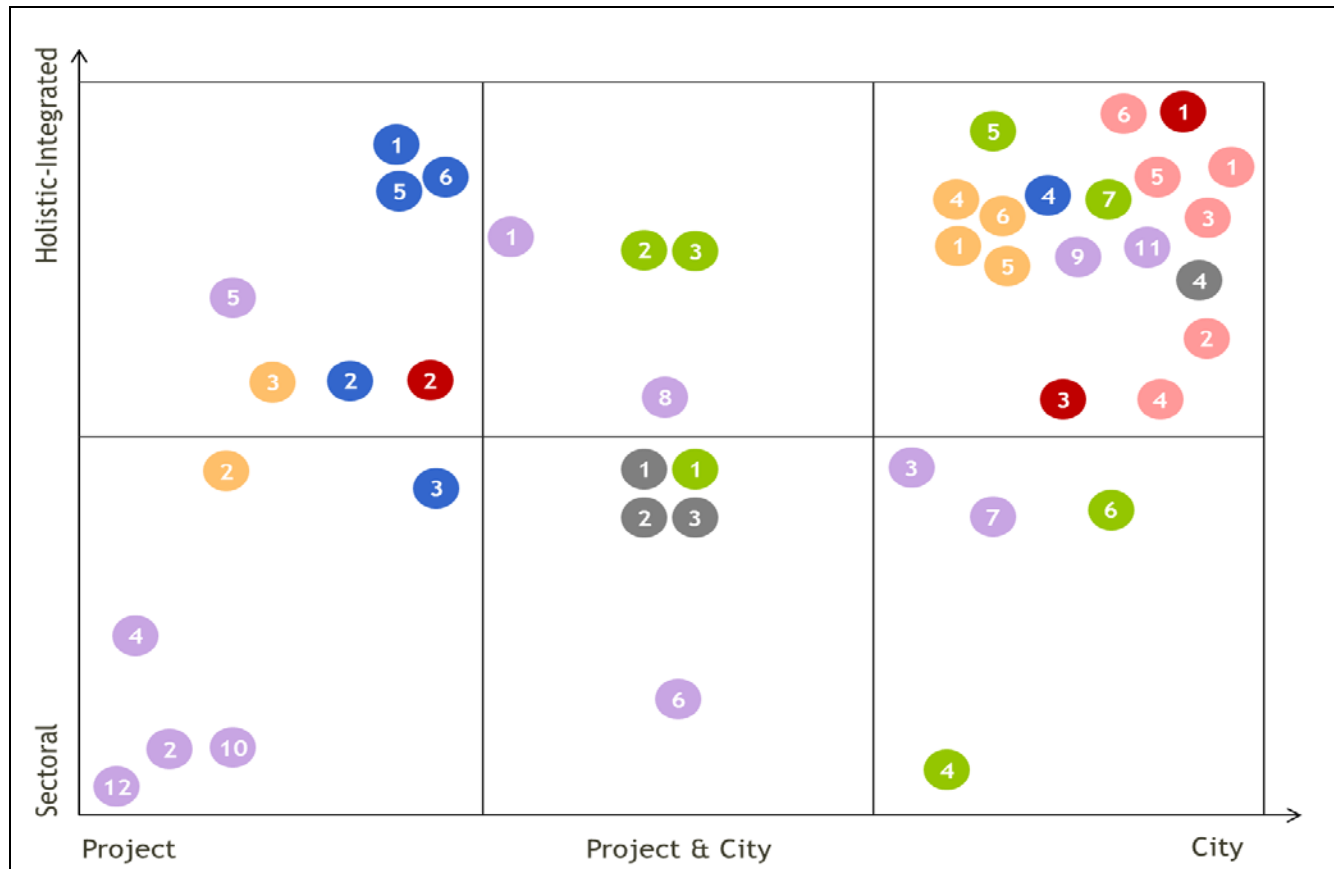
- 6 - Common indicators for sustainable development in 6 Finnish cities

Other indicator systems mentioned in the proposal

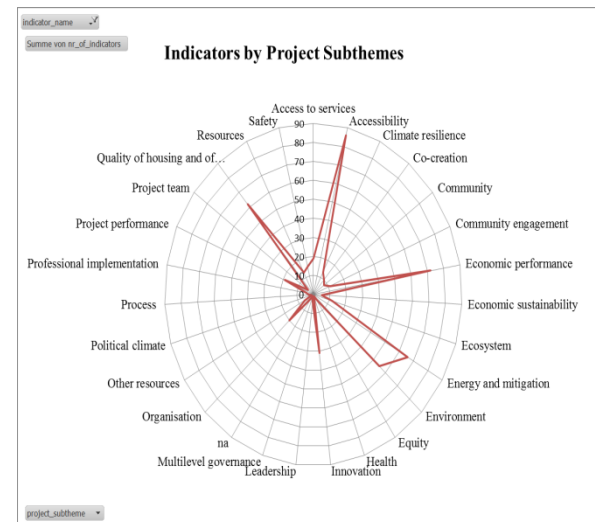
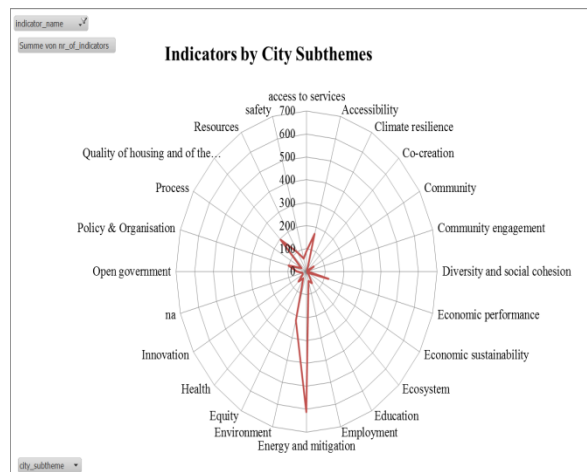
- 1 - Siemens Green City Index
- 2 - Smart City Wheel
- 3 - Triple Helix



Mapping existing frameworks



- There are in principle indicators available for each of the subthemes. However, there are significant variations in the coverage of the subthemes
- Best covered are People, Planet and Prosperity
- Gaps:
 - Project level Education, Employment, Scalability, Replicability
 - City level: Multilevel governance





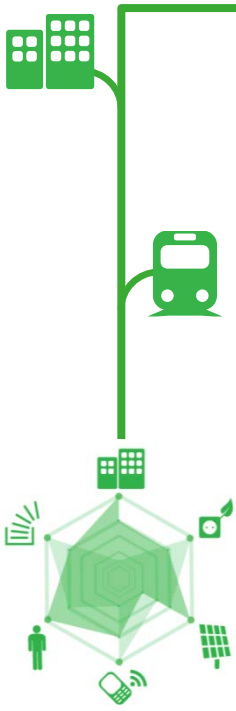
Framework structure

Themes, Subthemes and # of project indicators

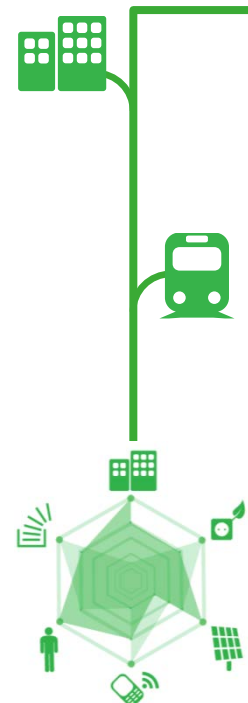
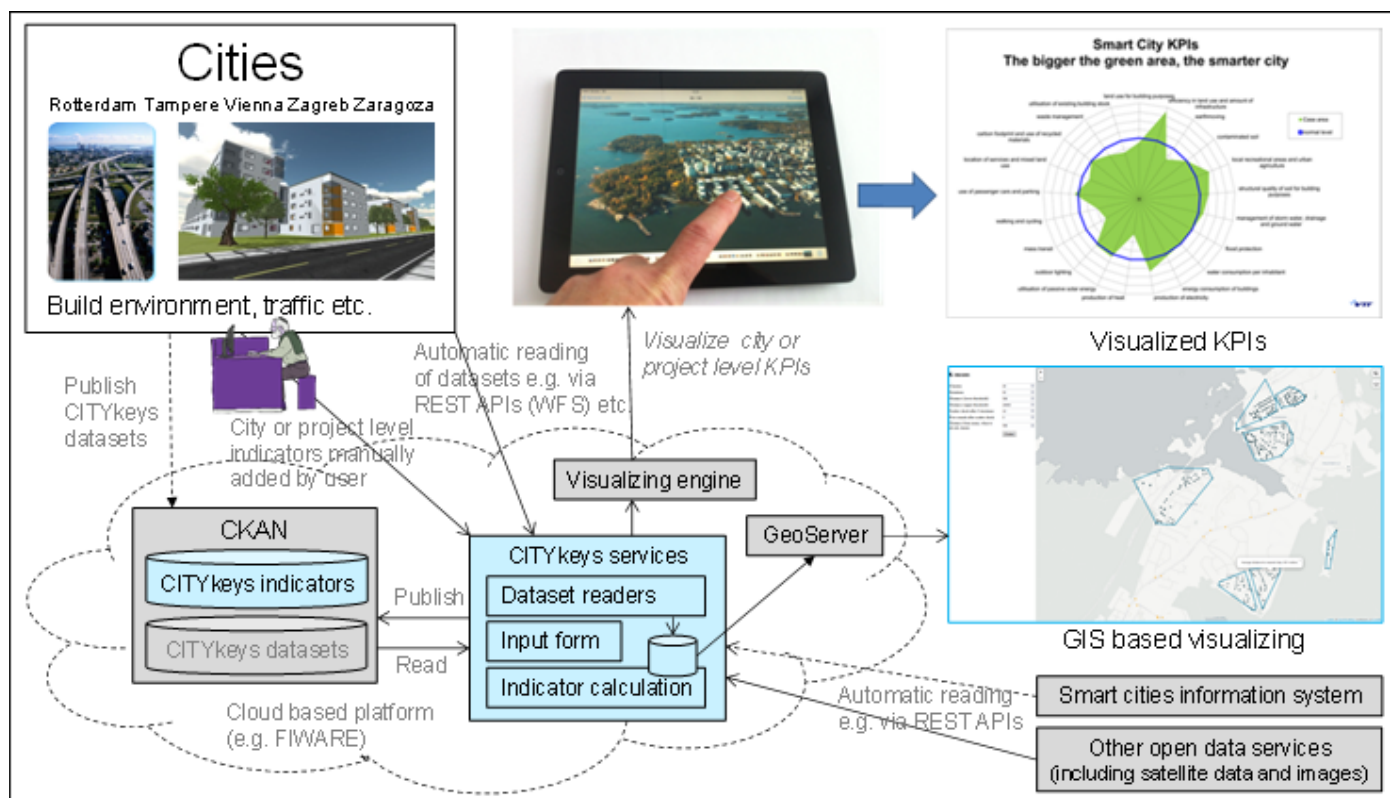
People	Planet	Prosperity	Governance	Propagation
<ul style="list-style-type: none">• Health (3)• Safety (4)• Access to (other) services (7)• Education (3)• Diversity & social cohesion (3)• Quality of housing and the built environment (6)	<ul style="list-style-type: none">• Energy & mitigation (7)• Materials, water and land (10)• Climate resilience (1)• Pollution & waste (4)• Ecosystem (2)	<ul style="list-style-type: none">• Employment (2)• Equity (2)• Green economy (3)• Economic performance (5)• Innovation (5)• Attractiveness & competitiveness (1)	<ul style="list-style-type: none">• Organisation (6)• Community involvement (5)• Multi-level governance (2)	<ul style="list-style-type: none">• Scalability (10)• Replicability (8)

Framework and datasets needed for testing

- In total the smart city KPIs need 116 raw data sets
 - On average 72% of them seem available in partner cities
 - Most of them can be retrieved from statistical sources
- The boundaries of SC project data sets usually depend on the project
 - Needed data is typically not readily available
 - Typical sources include project documentation and interviews with project manager
- The share of open data providing the needed data sets varies from 1% to 25%, and is 15% on average
 - Cities have up to 300 open data sets in their portals but only some of them are relevant for CITYkeys smart city KPIs
 - Today, a smart city performance measurement system cannot yet rely only on open data



- Testing of indicators in cities
 - Both automatic reading and manually filling in the data





Welcome to join the testing phase
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