GROWSMARTER FINAL CONFERENCE

Bringing together cities & industry to stimulate uptake of *smart city solutions*

Stockholm, 3 December 2019

Stockholm
Anna König Jerlmyr, Mayor of Stockholm

GrowSmarter
Transforming cities for a smart, sustainable Europe

Barcelona
Miquel Rodríguez, Barcelona Commissioner for Agenda 2030

Cologne
Dr Ralf Heinen, Vice Mayor of Cologne

GrowSmarter
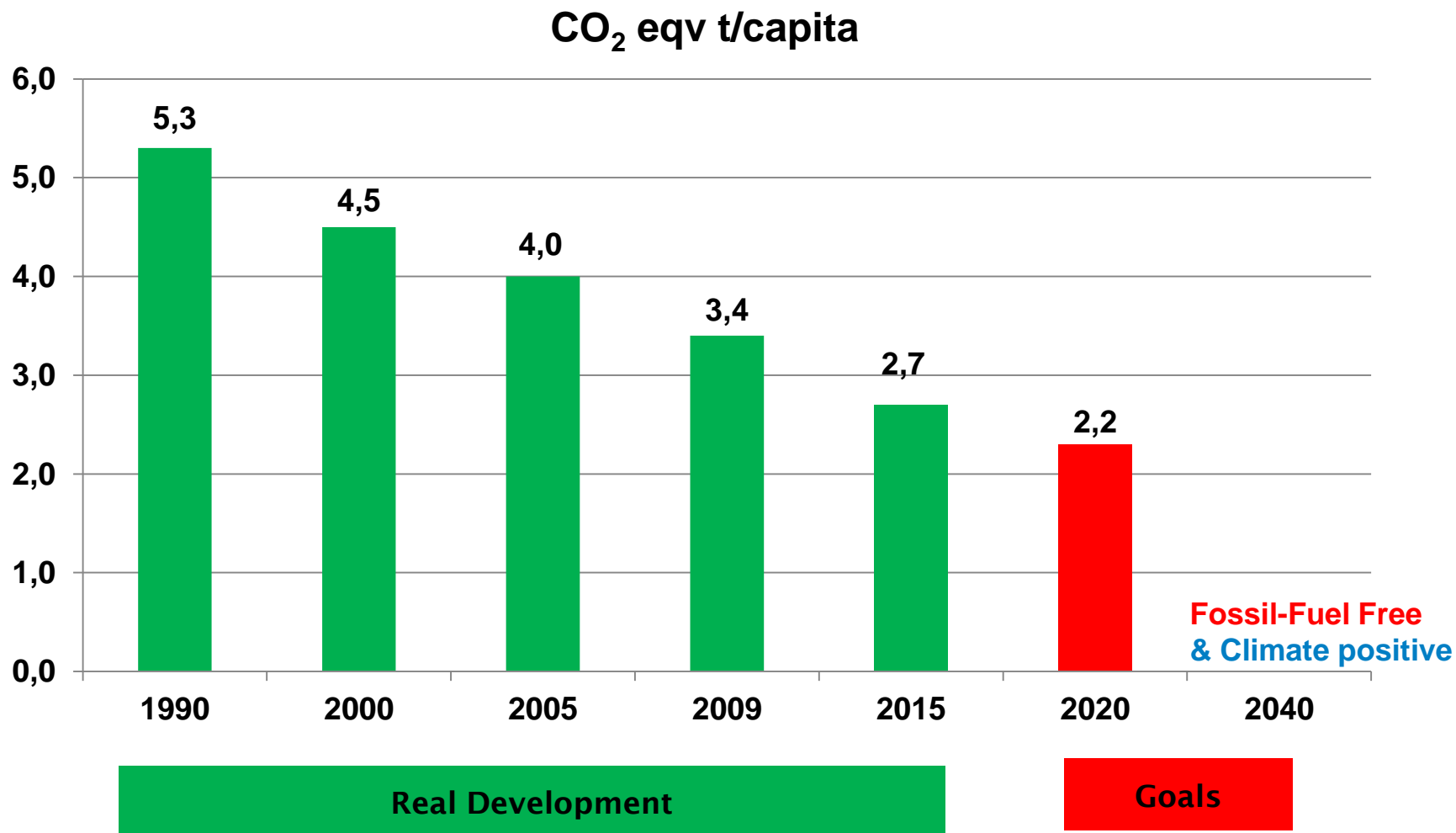*Transforming cities for a smart, sustainable Europe*

GROWSMARTER
Created a market for 12 smart solutions!

Gustaf Landahl,

GrowSmarter Project Coordinator

Stockholms GHG reductions
Goals and achievements

CO_2 eqv t/capita

Year	Value
1990	5,3
2000	4,5
2005	4,0
2009	3,4
2015	2,7
2020	2,2
2040	

Fossil-Fuel Free & Climate positive

Real Development

Goals

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Transforming cities for a smart, sustainable Europe

GrowSmarter demonstrated 12 smart solutions!

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Transforming cities for a smart, sustainable Europe

1. Efficient and smart climate shell refurbishment

- Renovated 130.000 square meters

- Improved energy efficiency 20-76%

- Financial sustainability depends on climate, size and rental model

- Social impact mostly positive

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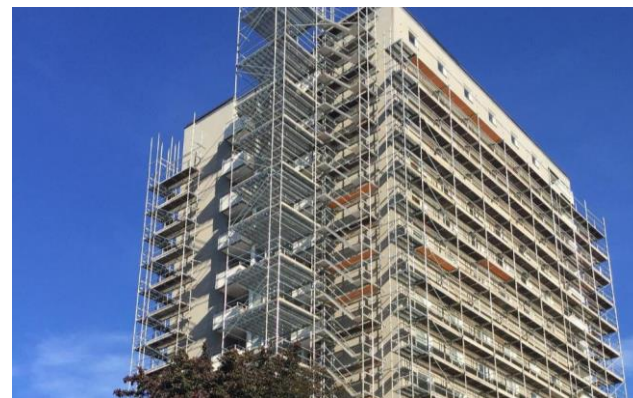
2. Smart, energy saving tenants

- Electricity savings 15 % were achieved

- High satisfaction among users but user acceptance cannot be guaranteed because of data confidentiality limitations

- Tenants together with a facility manager can make a difference

- Economic sustainability not guaranteed

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3. Local renewable energy production

- Solar panels and storage systems provided greater efficiency

- Smart control systems improved grid management

- Regulations determine scalability of renewable electricity generation

- V2G, V2B is difficult due to battery guarantees and legislation
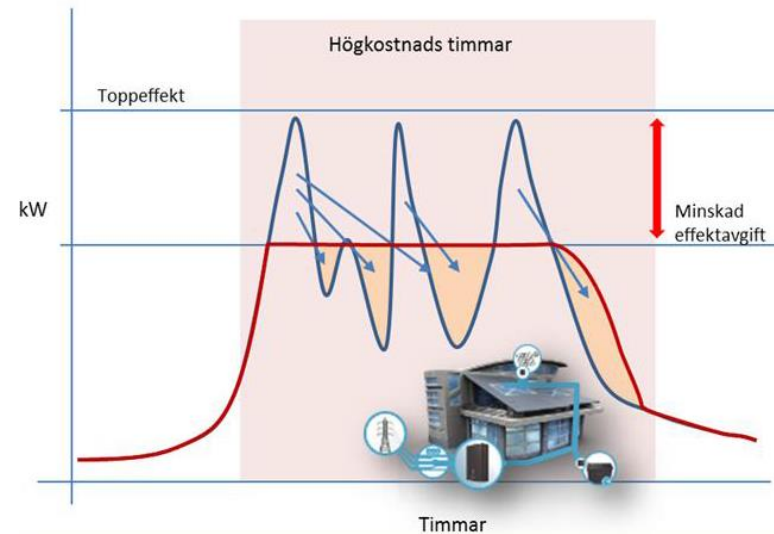
4 New business models for district heating & cooling

- The measure on waste heat recovery in Stockholm was economically and technically feasible

- Feasibility depends on existing networks and building energy needs

- Huge potential for replication also for heating and cooling in Mediterranean cities
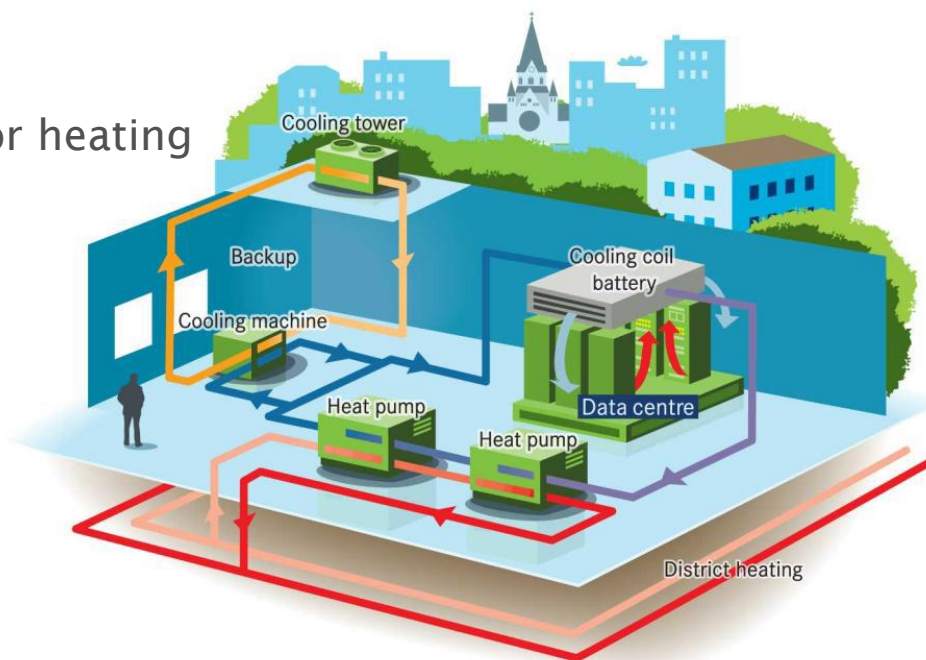
5. Smart street lighting

- Smart street lighting reduced energy consumption by 31 percent

- Easily scalable and is already being replicated

- Communication, charging facilities and other metering devices sometimes needs other poles
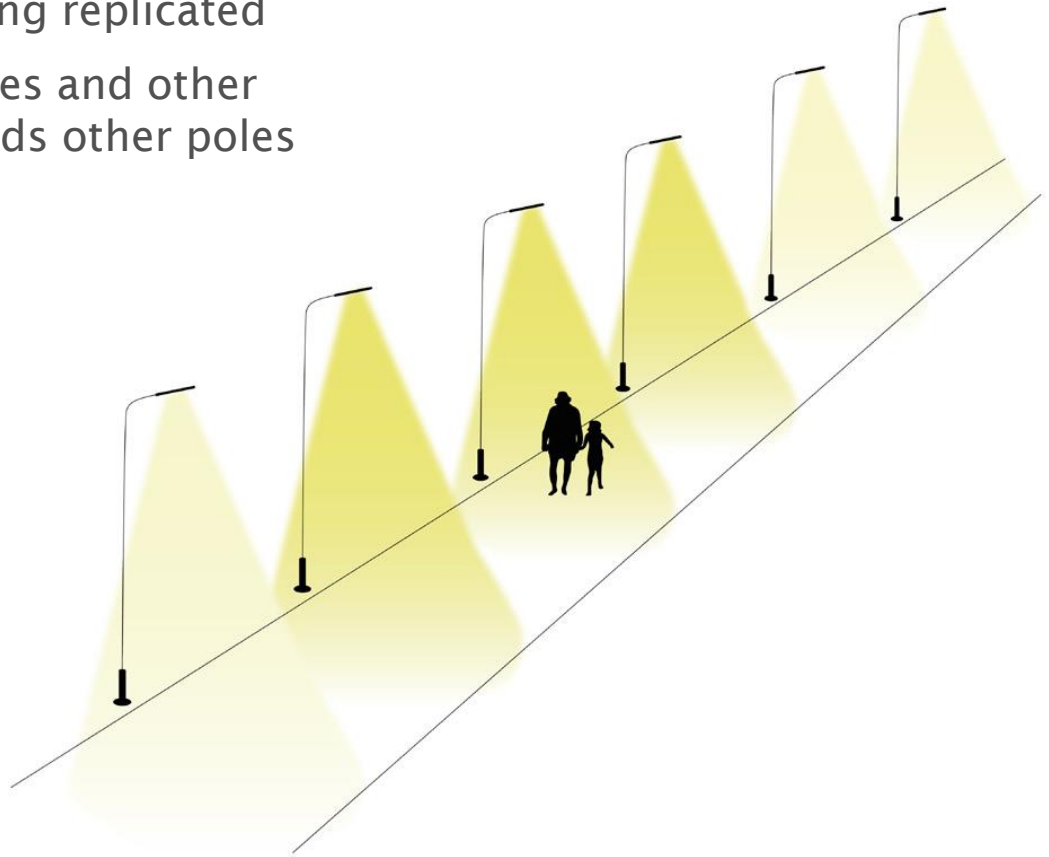
6. Smart waste collection

- Traffic in the area was reduced by 90 percent
- The residual waste was reduced by 66%
- Quality of life improved
- Installation cost can be a challenge

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7. Big open data platform

- Enables other measures

- Data collection must be driven by meeting the needs of the city

- main obstacles are concerns about data provision (ethics, security, value etc.) and legal limitations

- high start-up cost for the first use case.
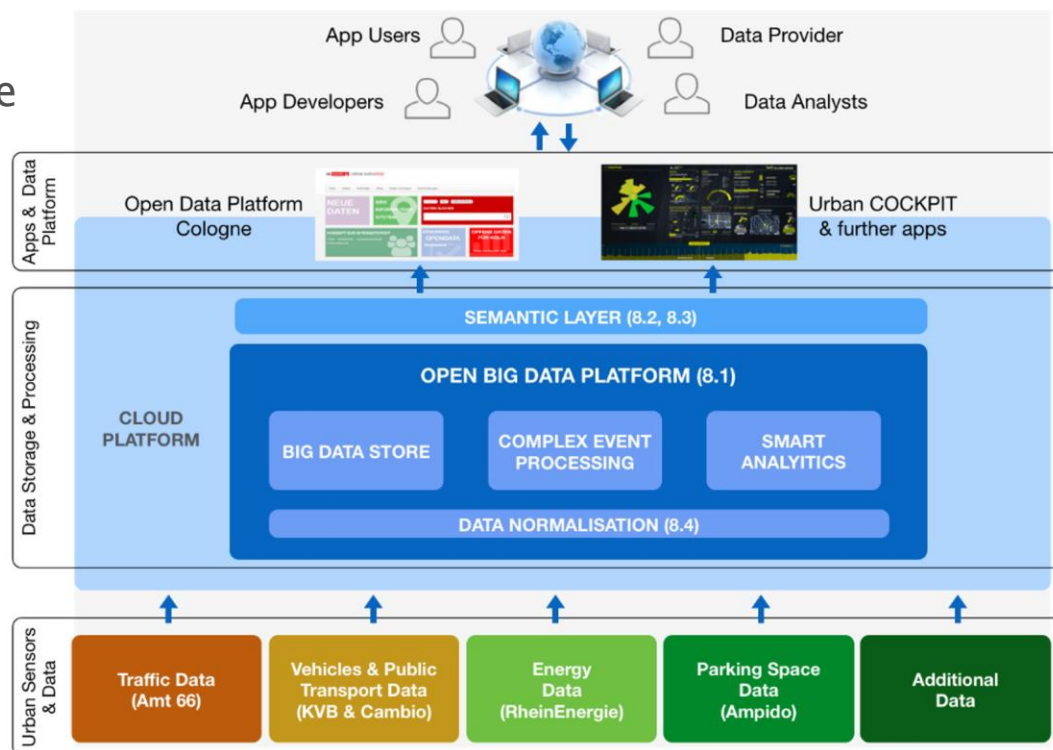
8. Sustainable delivery

- Bike delivery enabled all day delivery in Barcelona

- E-cargo bikes saved more than 90 % GHG emissions and reduced noise significantly

- Delivery rooms enabled last mile delivery service for residents in Stockholm

- Economic sustainability depends on number of parcels

- Innovative electronic key solution already replicated

- Replication has already happened

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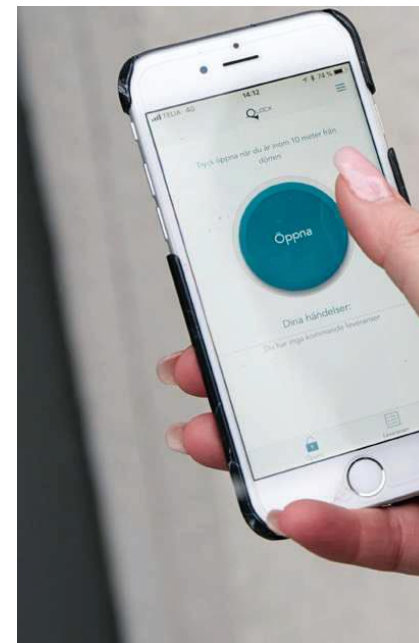
9. Construction consolidation centre

- 49% less CO2 emissions

- 56 % less time spent by trucks in traffic

- Four times larger centre would be required for financial sustainability

- Spin-off solutions: container-based construction consolidation centres
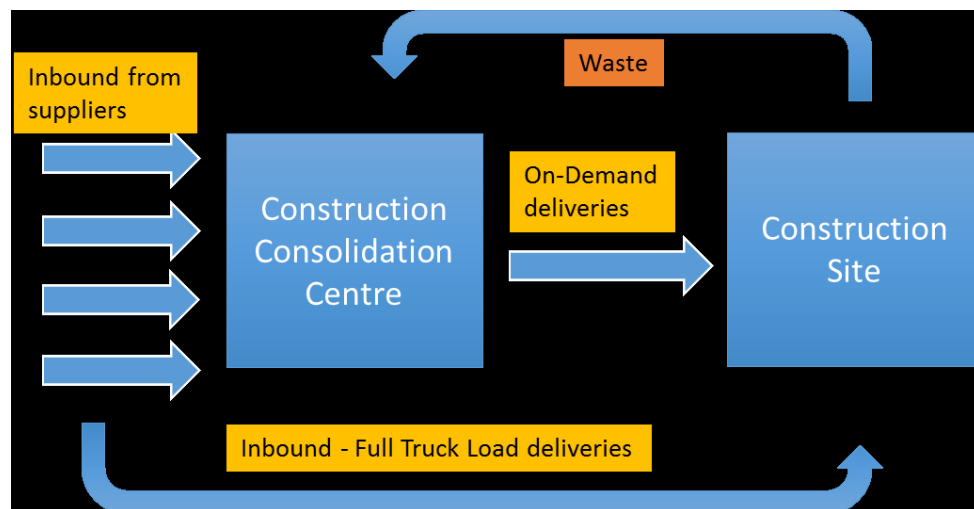
10. Shared mobility solutions

- Green parking index enabled alternative mobility services

- New market with few operators provides potential for expansion

- Bike and car pools improved social sustainability

- A mobility station offered multiple transport alternatives at one location

- Economic feasibility unclear

11. Smart traffic management

- The measure is technically feasible, but careful selection of the routes is needed in order to avoid negative impacts on other road users

- Potential benefits depend on the magnitude

12. Charging stations & renewable fuels

- Charging points on public land is complex

- Charging infrastructure is currently financially unsustainable.

- Demand for renewable fuels exists on a fully commercial basis.
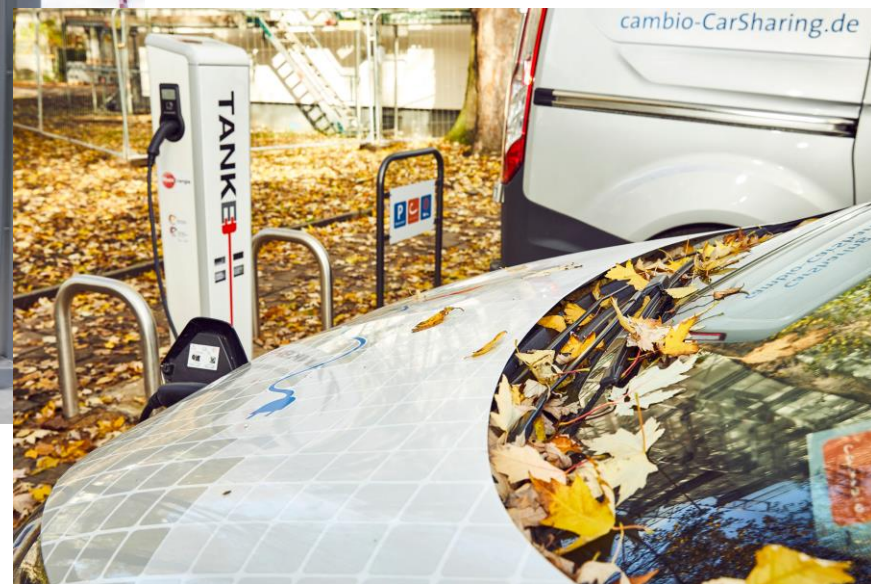
Conclusions

- GrowSmarter has successfully demonstrated more than 50 measures

- The project gives recommendations to the Cities, national government and the EU on how sustainable development better can be integrated

- Working together with the partners involved was very successful

- Read more at www.grow-smarter.eu!

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Final Conference I GrowSmarter   I   03.12.2019

GROWSMARTER
Created a market for 12 smart solutions!

Svetoslav Mihaylov,

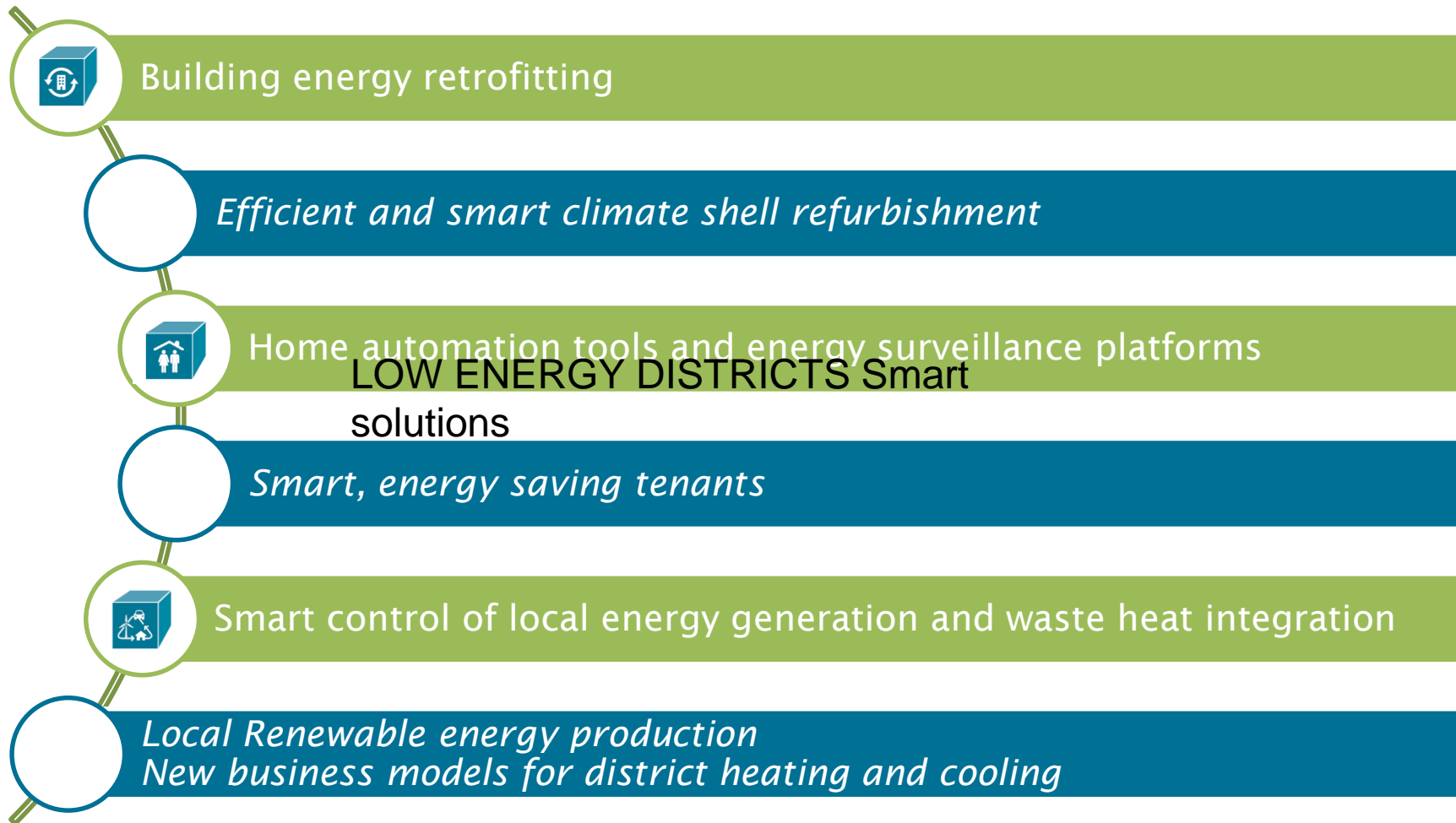*Policy Officer Smart Mobility & Living DG CNECT, European Commission*

Final Conference I GrowSmarter I 03.12.2019

LOW ENERGY DISTRICTS RESULTS & INSIGHTS

Manel Sanmartí,

Leader WP2 Low Energy Districts, IREC

Low energy districts
Smart solutions

Building energy retrofitting

Efficient and smart climate shell refurbishment

Home automation tools and energy surveillance platforms

LOW ENERGY DISTRICTS Smart solutions

Smart, energy saving tenants

Smart control of local energy generation and waste heat integration

Local Renewable energy production
New business models for district heating and cooling

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Project phases and methodology

Kickoff

End

Today

½ year	½ year	2 year	2 year

Preparation
Implementation
Evaluation

January 2015

2016

2017

2018

2019

KPI

Technical evaluation:
energy savings, CO2 emission reduction, …

Economic evaluation:
financial and economic sustainability

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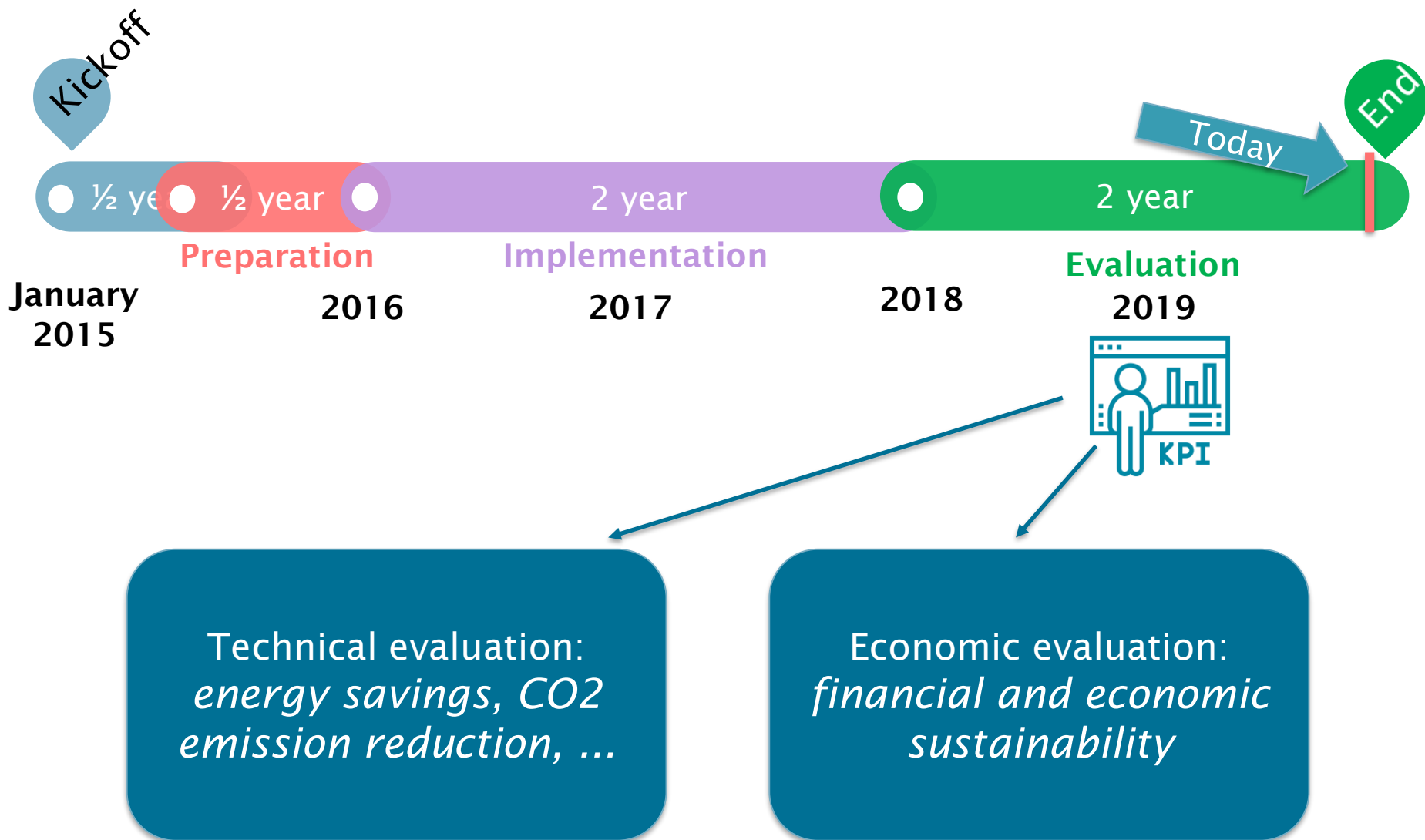
Low energy districts - implementation

BARCELONA

Several typologies of buildings representative of the city building stock (10 buildings):

290 dwellings
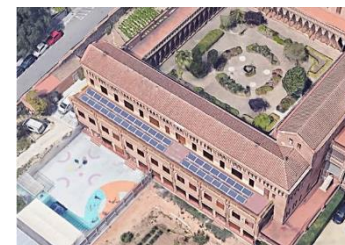Student housing
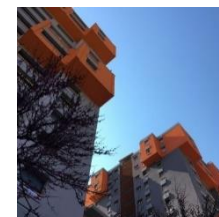Hotel
Educative centre
Sports centre
Library
R&D centre

Home Energy Management System

Open City Platform (>400 households)

Photovoltaics and storage systems under smart control

Energy surveillance platform

Low energy districts - implementation

STOCKHOLM

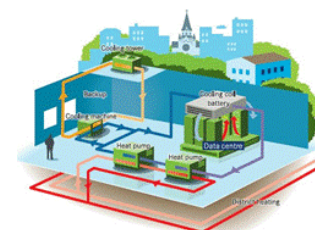High energy efficiency solutions in a cold climate (9 buildings):

356 dwellings
Offices building
Cultural centre

Home Energy Management System

Energy surveillance platform

Photovoltaics and storage systems under smart control

Innovative solution for waste heat recovery into DH network

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Low energy districts - implementation

COLOGNE

Localized action in a residential neighbourhood:
687 dwellings

Smart Home System

Energy management system at neighborhood level (PVs, storage, heat pumps)

city kpi's for energy retrofitting of buildings

**BARCELONA
Residential &
tertiary buildings**

30% energy savings
28% CO2 savings
Reduction of
13 kg CO2/m2

**COLOGNE
Residential
buildings**

37% energy savings
57% CO2 savings
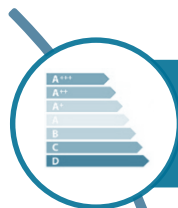Reduction of
15 kg CO2/m2

**STOCKHOLM
Residential
buildings**

64% energy savings
70% CO2 savings
Reduction of
8 kg CO2/m2

three lighthouse cities: three different contexts

Climatic conditions and existing energy infrastructure

Possible business models

Municipal and National regulations

Social engagement

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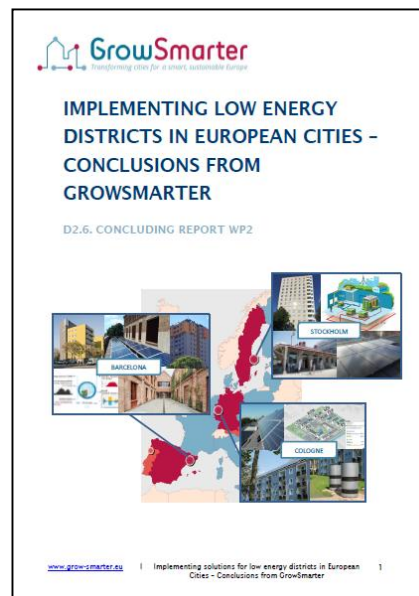
LOW ENERGY DISTRICTS RESULTS & INSIGHTS

Helena Gibert, Naturgy

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LOW ENERGY DISTRICTS RESULTS & INSIGHTS

Christian Remacly, RheinEnergie

Energetic renovation of 16 Buildings (700 Apartments)

New Energy Systems by RheinEnergie

- PV on all roofs (ca. 6.126 m², 1084 kWp)

- 41 air-water heat pumps for baseload (492 kWth)

- District heating for peak load (1743 kW)

- 16 Battery storages (210 kW, 655 kWh)

Energetic refurbishment by Dewog

- Insulation (Facade/Roof/Basement)

- 3-glazed Windows

- Energy efficient Elevators

- LED conversion

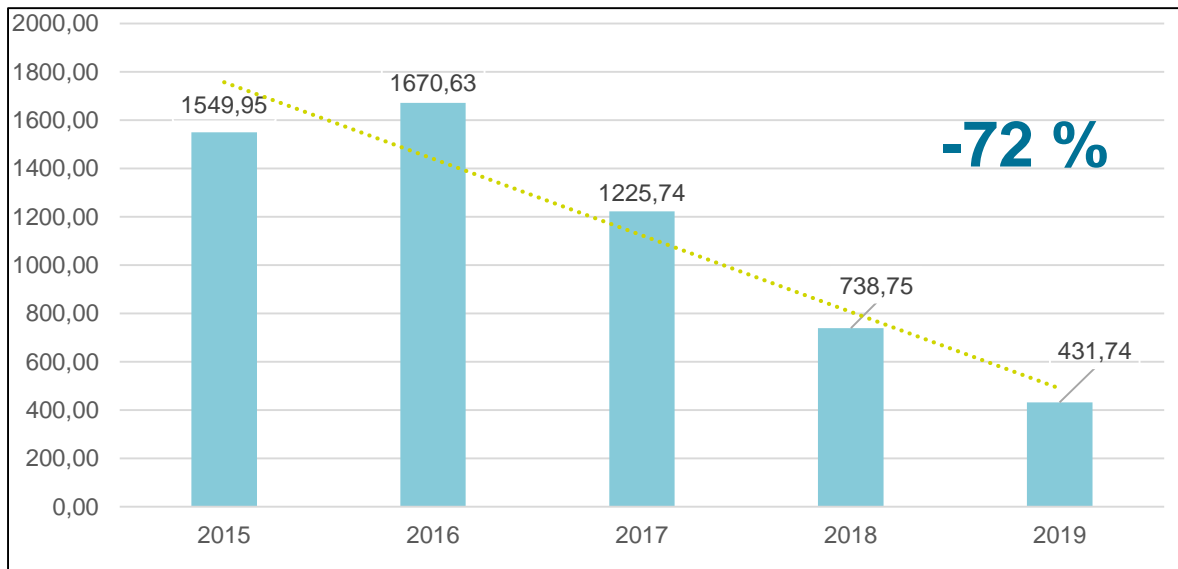Programming of a Self-learning cloud-based energy platform

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Results

Primary Energy

*	2015 (kWh)	2019 (kWh)	
Type I	400.374	83.589	79,12 %
Type II	663.027	147.790	77,71 %
Type III	646.704	104.039	83,91 %

* Calculated

CO2

-72 %

2015	Energie [kWh]	Emissionen CO2 [t]
Electricity	1.197.289	516,03
Heat Energy (Gas)	5.019.011,28	1033,92

2019	Energie [kWh]	Emissionen CO2 [t]
Electricity	1.105.633	338,32
PV (avoidance)	- 690.870,87	- 194,82
Heat Energy (DH/HP)	4.212.581,19	288,24

Lessons Learned

- Renovation in the current tenancy

- High developmet costs
  - Settlement was built on old industrial wasteland
  - Upstream network had to be strengthened
  - Conversion to larger house connections

- High coordination effort between the individual trades in the construction field
  - Dependencies on other trades
  - Manufacturer's promises were partially not fulfilled

- Little space for the system technology
  - Basement rooms had to be rented

- Error in the measured values
  - Data volume: approx. 6,000 data points per building every 15 minutes

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Next steps/What are the replication plans?

- Experience from the project will be incorporated in future renovations

- Settlement management is optimized and extended to other facilities

- "Mieterstrom" is now a standard product of RheinEnergie

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# LOW ENERGY DISTRICTS RESULTS & INSIGHTS

Martin Brolin, Stockholm Exergi

District Heating
Traditional urban heating supply

- Large scale production plants produces hot water for heating and tap water

- The hot water is distributed to each building and circulated back to production unit for reheating again in a closed system

- Each building have a secondary distribution system for heating and tap water

- District heating system in Stockholm consists of 3.000 km of pipes and 180 million liters

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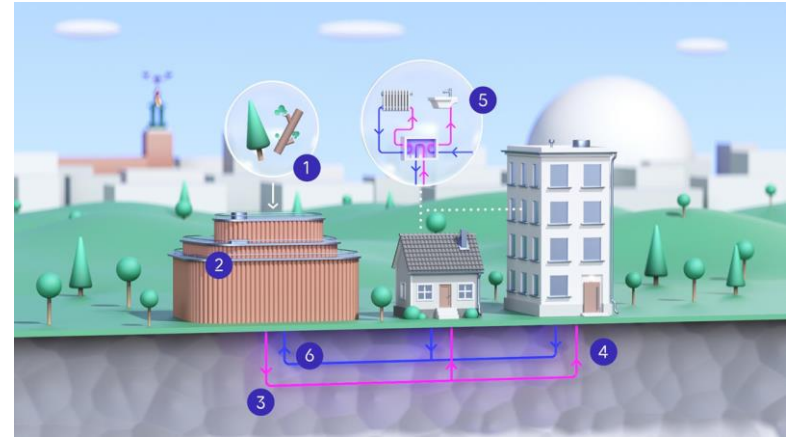
Open District Heating
Turning waste into a heating source

- Urban environments generates waste heat due cooling needs such as data center's, grocery stores and industries

- Open District Heating supports reuse of waste heat into a energy source for heating and tap water

- Open District Heating is a business model that enables third parties to gain value of its waste heat by deliver the energy into the district heating network

- The deliveries function as small scale production units distributed on the system and other production can by reduced or avoided in favor for waste heat and by that an improved overall production mix
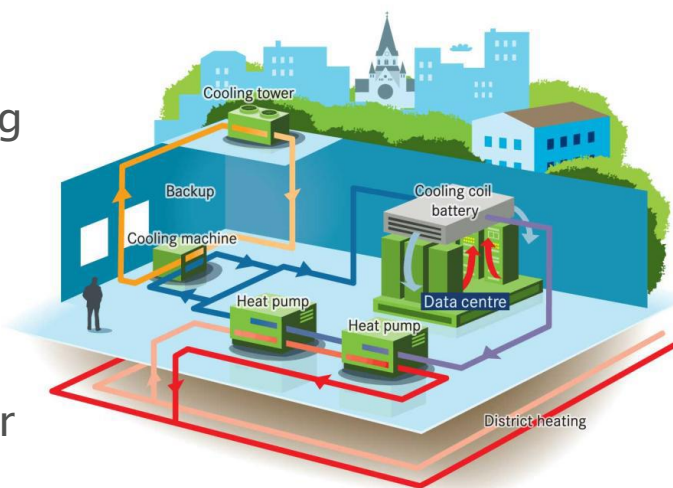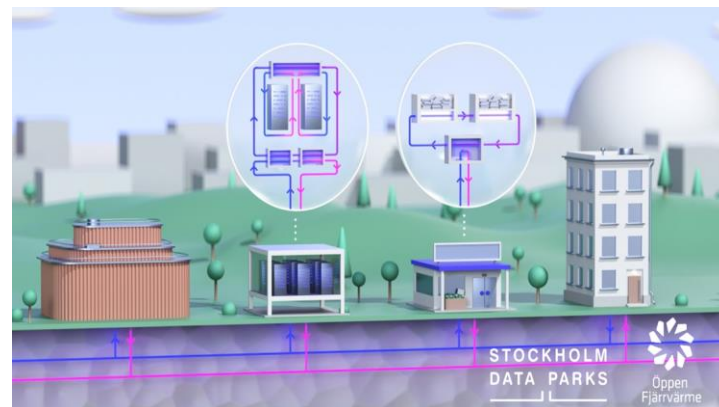
Heat recovery is today an essential part of the energy system – and its share increases appr 20% p.a.

Two measures within Grow Smarter

- During 2019 a total amount of over 3500 MWh waste heat is prospected to be recovered corresponding heating of appr 300 apartments

- Corresponding a reduction of 230 tCO2 emissions in the production mix

Heat recovery in Stockholm

- During 2019 a total amount of over 130 000 MWh waste heat is prospected to be recovered corresponding heating of appr 11000 apartments

- Corresponding a reduction of 8500 tCO2 emissions in the production mix

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Lessons learned and next step

- Long and complex implementation processes due to relatively large investment and installations for each supplier

- Heat recovery is an important piece to be energy smart within the growing digitalization and data center segment

- Collaboration with other parties enables large scale heat recovery

- Customer pushing heat recovery concept to other geographies and cities

Three new data centers with heat recovery in Stockholm Data Parks

IP-Only, Interxion and Advania Data Centers build new data centers with heat recovery in Stockholm Data Parks

Three leading data center operators, IP-Only, Interxion and Advania Data Centers, have decided to build new data centers in Stockholm Data Park Kista with large-scale heat reuse. When operational, the data centers have the potential to heat more than 35 000 modern residential apartments in Stockholm.

GleSYS storsatsar och bygger klimatsmart datacenter i Falkenberg

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LOW ENERGY DISTRICTS RESULTS & INSIGHTS

Panel & Q&A

THANK YOU!

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INTEGRATED INFRASTRUCTURE RESULTS AND INSIGHTS

Julia Egenolf, City of Cologne

Leader WP3 Integrated Infrastructures

GrowSmarter - Integrated Infrastructures
Introduction
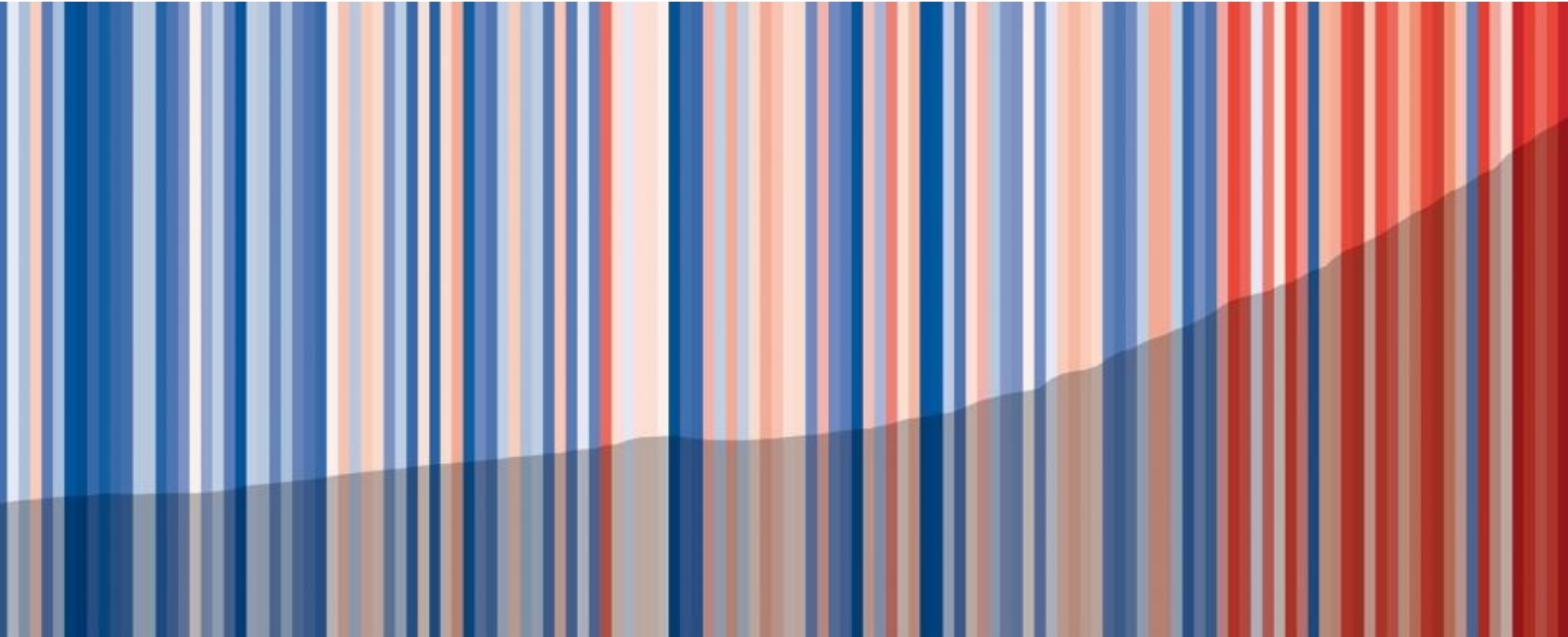
GrowSmarter - Integrated Infrastructures
Introduction

- Smart Lighting, Lampposts and Traffic Posts as Hubs for Communication

- Smart waste collection, turning waste into energy

- Big open data platform

- 11 measures in 3 cities

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GrowSmarter

Smart Lighting, Lampposts and Traffic Posts as Hubs for Communication

- **Smart Street Lighting**

  21% - 31-% energy savings with several smart lighting technologies

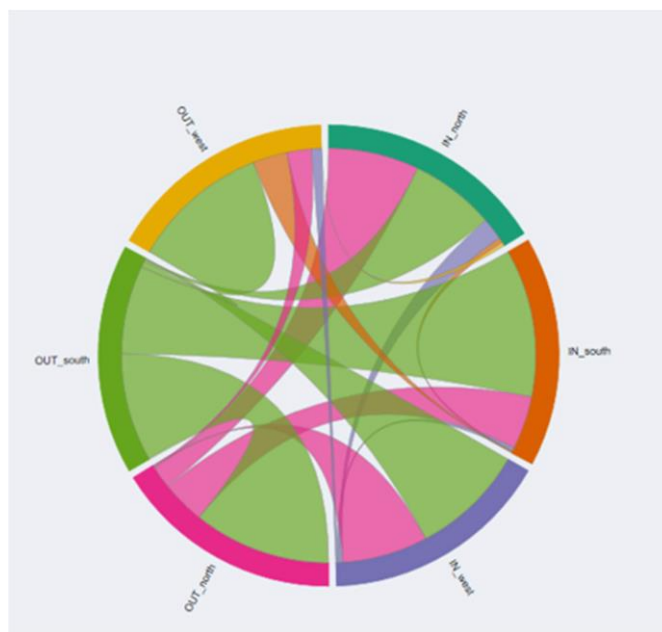 | | |
  |---|---|
  | Stockholm | ~4 520 hours |
  | Cologne | ~4 480 hours |
  | Barcelona | ~4 460 hours of sun above the horizon |

GrowSmarter
Smart Lighting, Lampposts and Traffic Posts as Hubs for Communication

- **Combined electrical charging and street lighting poles & WIFI to grid connection**

  Barcelona | Stockholm | Cologne
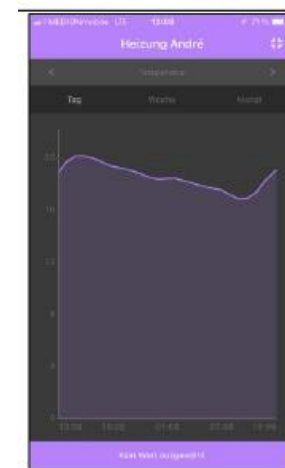
GrowSmarter
Smart Lighting, Lampposts and Traffic Posts as Hubs for Communication

- **Smart Meter Information Analysis and Actuators:**

  Barcelona | Cologne
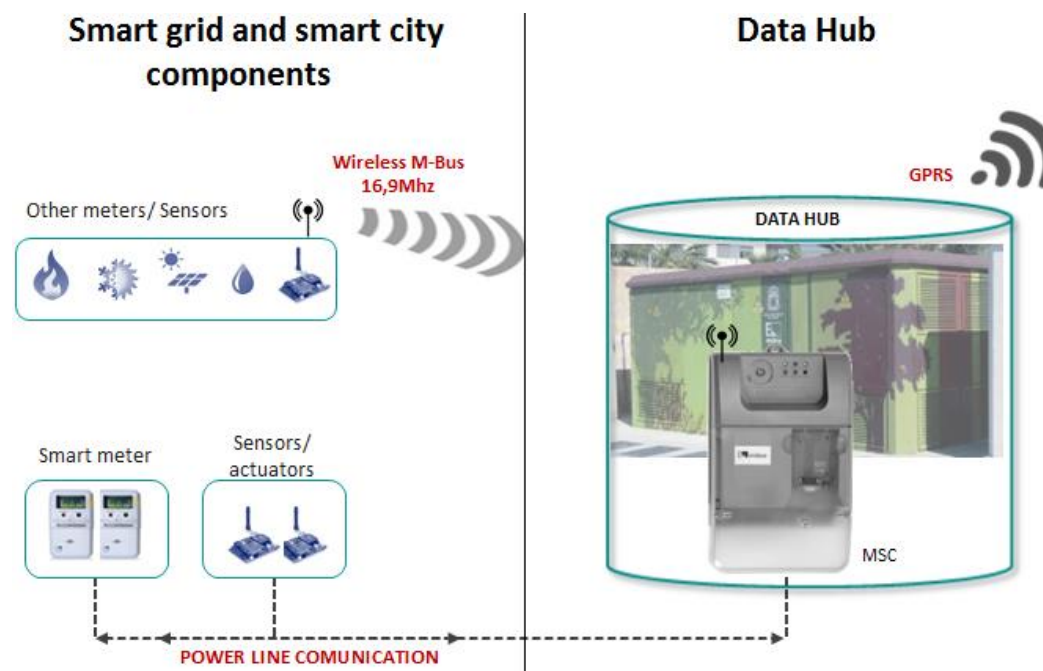
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Smart Waste Collection & Turning Waste into Energy

- **Optical Sorting of Waste | Introduction of AWCS in an existing neighborhood | Statistics for individual households/ businesses**

  Stockholm

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Big Open Data Platform for saving energy and improving the quality of life

- **Big consolidated open data platform | Urban Models | Semi-automatic instance mapping | Integration of sensor and heterogeneous data in standard data format | Sustainable connected lighting to enhance safety and mobility**

   Barcelona | Stockholm | Cologne
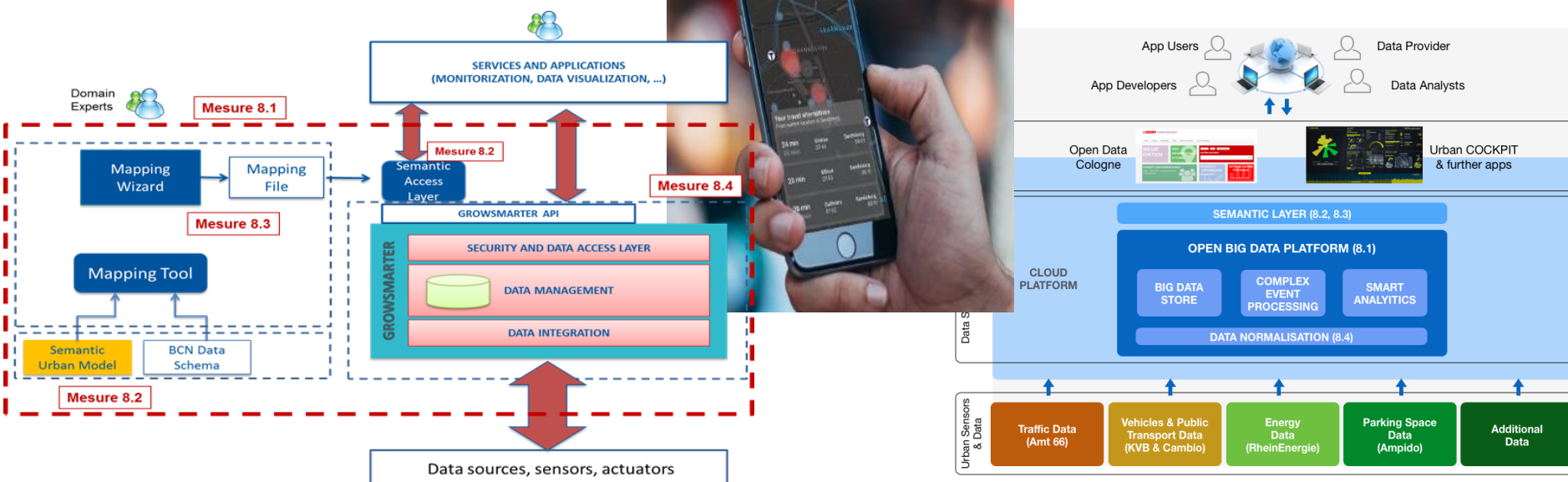
INTEGRATED INFRASTRUCTURE RESULTS AND INSIGHTS

Carmen Vicente, CELLNEX

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Growing demand of connected things and people

Monitor → Analyse

↑ ↓

Actuate ← Predict

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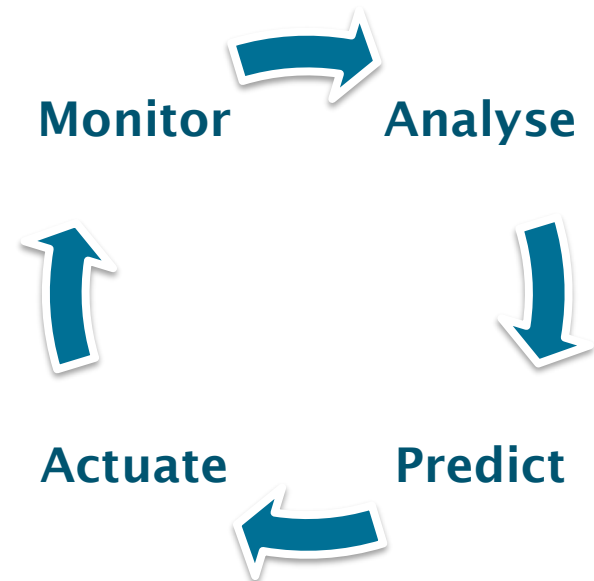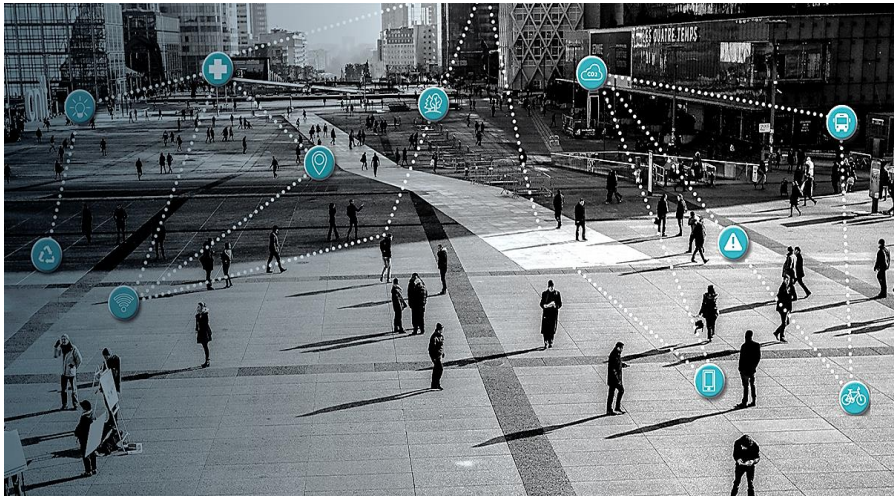
GrowSmarter
Transformation of Urban Furniture

Lamppost as Hubs for Communications

| Stakeholder Requirements | Feasibility studies | Planning | Deployment |

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Lessons Learnt

Meet aesthetic, functional, operational and maintenance criteria

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Outcomes

Lamppost not only provide light

Scalability and Replication

Prepare the city for future demand of wireless connectivity services

Suitable for new and existing lamppost

Fibber Optic & Wireless connected lamppost

Easy to be applicable for any city

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INTEGRATED INFRASTRUCTURE RESULTS AND INSIGHTS

Dirk Blauhut, City of Cologne

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Measure 8.1 Big consolidated open data platform

Open Urban Big Data Platforms (OUP) are a necessary key component to integrate infrastructures.

Needed: Realtime data of the measures

- store, combine and process raw real-time data of different infrastructures

- gain value added smart city services (enabling function)

- make Smart City data and services accessible for citizens, government, companies and research

- Enable dialogue among decision makers and smart solution developers

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Measure 8.1 Big consolidated open data platform

What did we do ?

Technical Aspects

- "UrbanPULSE"
- Integrate 13 different data sources
- Urban COCKPIT Web App
- DIN SPEC 91357 - Reference Architecture Model Open Urban
- Platform Green Air Application and Dashboard

Communication Aspects

- Meetings with each partner
- Workshops with all partners together
- Meetings and Workshops with several departments of the CoC
- Evaluation Workshops with the partners and the departments

1

2

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Measure 8.1 Big consolidated open data platform

What did we learn?

Before data and services can be connected with each other,
the persons behind the data and service must be connected!!

Foster acceptance

Develop key use cases

Create a legal framework

Define the value and
quality of the data

Contracts need a clause
for further use of the data

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Measure 8.1 Big consolidated open data platform

What are the results/conclusions?

An urban data platform is necessary to handle all the urban data in the best way, but you need:

Conclusion 01
Definition of how the city will handle data (Ethic, security, ..)

Conclusion 02
Acceptance and strong agreements

Conclusion 03
Standardized platforms to ensure interoperability and to avoid vendor lock-ins

Conclusion 04
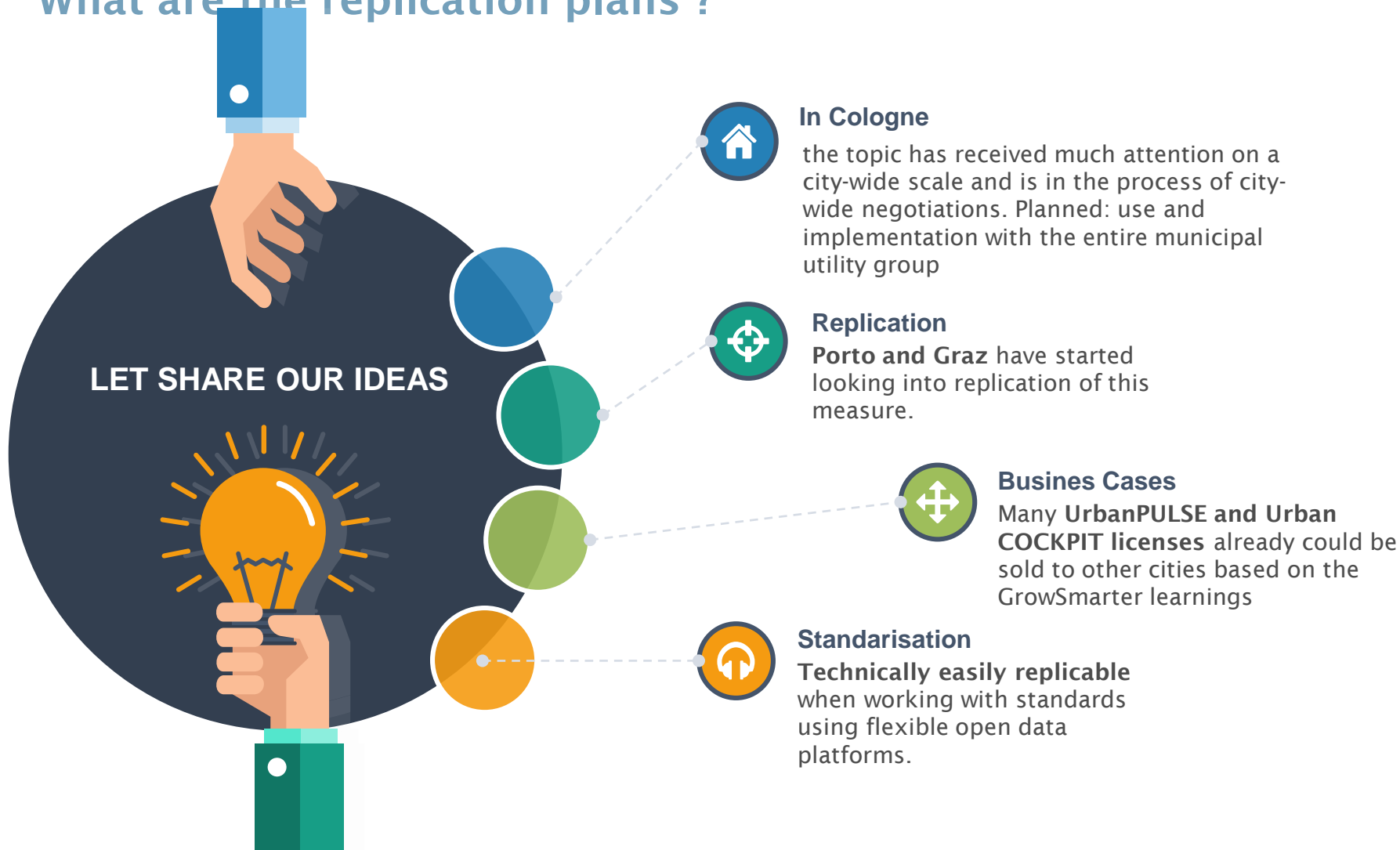Political decisions and guidance of all stakeholders and on all levels

.

Conclusion 05
The use of a flexible horizontal and open platform approach and working with technical standards seems to yield best results

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Measure 8.1 Big consolidated open data platform

What are the replication plans ?

LET SHARE OUR IDEAS

In Cologne
the topic has received much attention on a city-wide scale and is in the process of city-wide negotiations. Planned: use and implementation with the entire municipal utility group

Replication
Porto and Graz have started looking into replication of this measure.

Busines Cases
Many **UrbanPULSE and Urban COCKPIT licenses** already could be sold to other cities based on the GrowSmarter learnings

Standarisation
Technically easily replicable when working with standards using flexible open data platforms.

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INTEGRATED INFRASTRUCTURE RESULTS AND INSIGHTS

Hans Anebreid, Envac

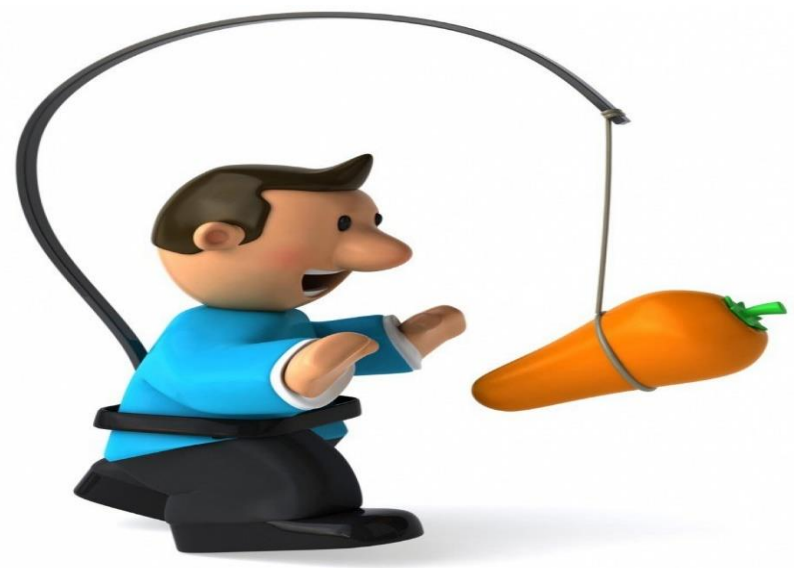# GrowSmarter – Envac

Imagine a city without waste trucks

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The Circular Concept

300 households in existing residential area
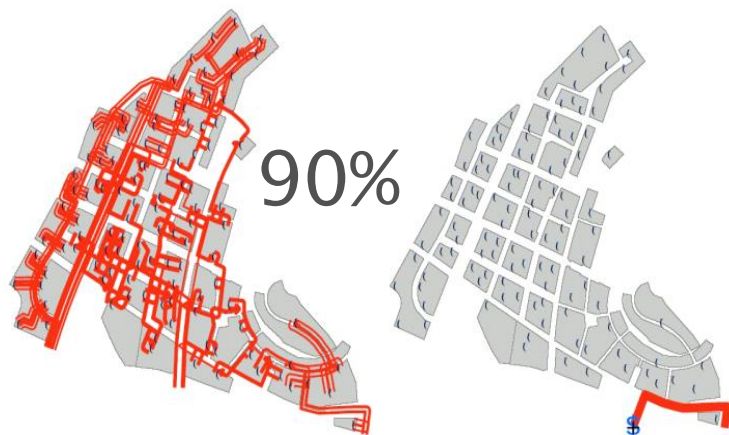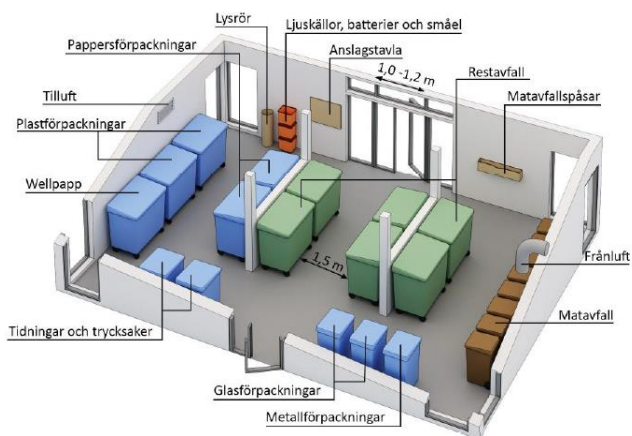
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Lessons Learnt

Results

90%

66%

70%

$$CO_2$$ 70% CO_2

Replication plan
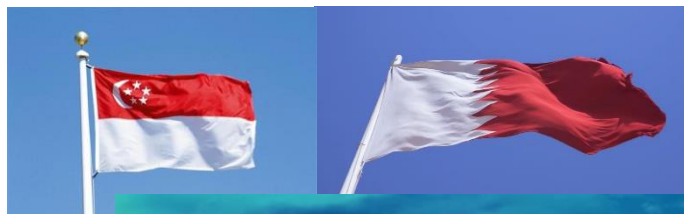
GrowSmarter
Presenters & Panel participants

Carmen Vicente

Cellnex

Dirk Blauhut

City of Cologne

Hans Anebreid

Envac

Stanley Ekberg

IBM

Mika Hakosalo

City of Stockholm

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INTEGRATED INFRASTRUCTURE RESULTS AND INSIGHTS

Panel & Q&A

THANK YOU!

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SUSTAINABLE MOBILITY RESULTS & INSIGHTS

Paul Fenton, City of Stockholm

Leader WP4 Sustainable Urban Mobility

Mobility & Transport

Smart Solutions

- Smart building logistics

- Sustainable deliveries

- Smart traffic management

- Alternative fuel-driven vehicles and e-vehicles

- Smart mobility solutions

17 measures in 3 cities

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Smart Solution 2

Smart building Logistics and Alternative fuel Vehicles

Stockholm: Construction consolidation centre for housing renovation project.

Smart solution 9

Sustainable Delivery

Barcelona: Micro-distribution of freight using cargo bikes in inner city.

Stockholm: Delivery room introduced to multi-family residence.

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Smart Solution 10

Smart Traffic management

Barcelona: Modelling of traffic management to reduce congestion.

Stockholm: Travel demand management and signal prioritisation for smart passenger vehicles and alternatively-fuelled HGVs.
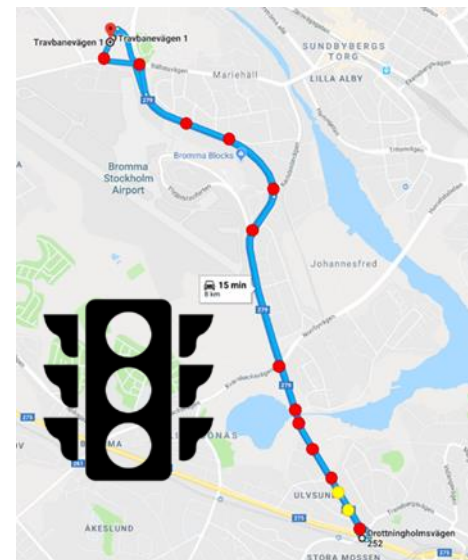
Smart solution 11

Alternative fuel driven vehicles for

de-carbonising and better air quality

Barcelona: improve charging infrastructure and management.

Cologne: develop e-vehicle charging infrastructure.

Stockholm: increase number of e-vehicle charging points and number of alternative fuel pumps for HGVs.

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Smart Solution 12

Smart mobility solutions

Barcelona: Smart taxi stand management system.

Cologne: Mobility stations and increasing electric and conventional car-sharing.

Stockholm: E-vehicle car-sharing and e-cargo bike pool in Living Lab.

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Smart solutions – urban mobility and logistics

- Active mobility is always smart mobility

- Cities should have an orchestrating role

- Technology can be right but the context wrong

- The evaluation of mobility measures can be more challenging than other sectors

- In most cases significant emission and energy consumption reductions are achieved

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SUSTAINABLE MOBILITY RESULTS & INSIGHTS

Julia Egenolf, City of Cologne

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What did we do?

Car-sharing reduced privately owned cars & supplied E-mobility
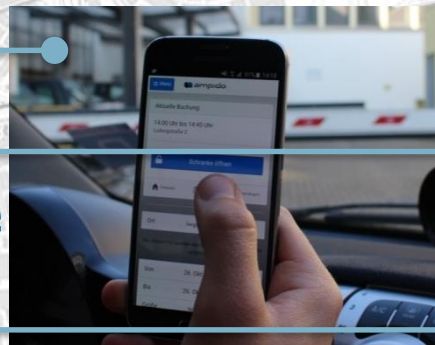
Introduced E-ticket

Supplied Bike-sharing & initialized behavioural change

Reduced traffic search for parking spaces

Installed additional charging infrastructure

Installed signage

CleverCity

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What did we learn?

THIS ONE
RUNS ON FAT
AND SAVES YOU MONEY

THIS ONE
RUNS ON MONEY
AND MAKES YOU FAT

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What are the results and conclusions?

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What are the replication plans?
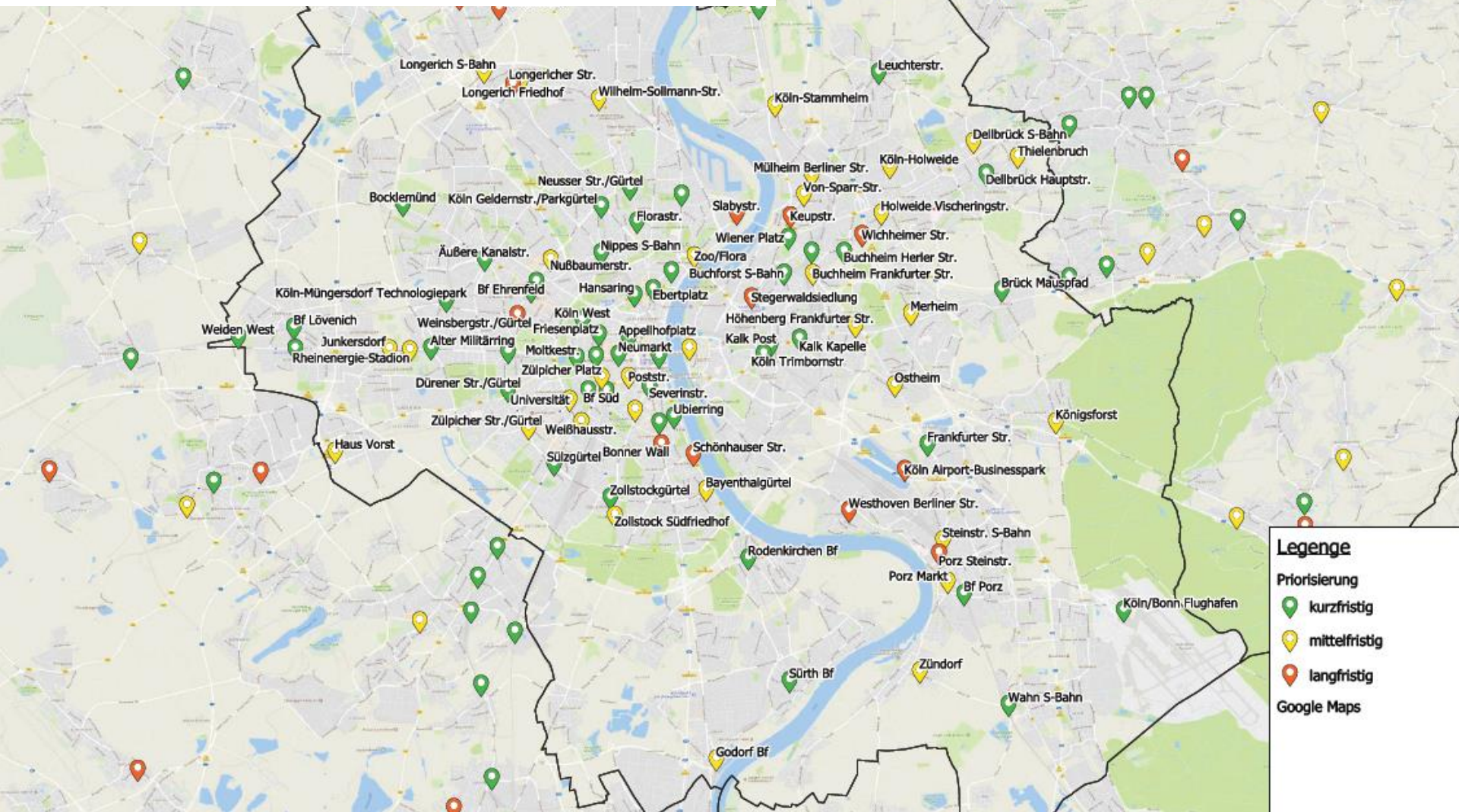
SUSTAINABLE MOBILITY RESULTS & INSIGHTS

Gonzalo Cabezas, City of Barcelona

The challenge

Online shopping has led to more delivery trucks visiting residential areas increasing:

- Emissions
- Noise levels
- Traffic hazards

1.5 Million Packages a Day: The Internet Brings Chaos to N.Y. Streets

The push for convenience is having a stark impact on gridlock, roadway safety and pollution in New York City and urban areas around the world.

29 Oct, 2019, The New York Times

El efecto Amazon en Madrid: la ciudad se "colapsará" si no se cambia el modelo de reparto de paquetes

La patronal CEL pide crear centros de distribución en los barrios para desatascar la ciudad de furgonetas que van muchas veces semivacías

15 Nov, 2019, El Pais

UCC for microdistribution of freight

- UCC: Seeks the reduction of large urban freight distribution vehicles entering the city center.

- Transport operators carry their goods to a [r]
where these are transferred for the last mile
electric tricycles equipped with sensors.

- Targets the delivery of small packages.

Results

2 years monitoring

16,7 FTE

72,163 KM

95.9% CO_2 reduction =

22%dB reduction

~200,000 deliveries

92,7 Successful deliveries

56 parcels per tour

Lessons learnt

- UCC with electric cargo bikes is a good solution to:

  - Reduced environmental and noise impact

  - Improve delivery rates

  - Reduce congestion

  - Reducing costs & mileage for conventional carriers

- Sustainable in high-density areas

- Most suitable in old quarters and pedestrianized areas.

- Collaboration between council and operator has been a key to:

  - Service sustainability
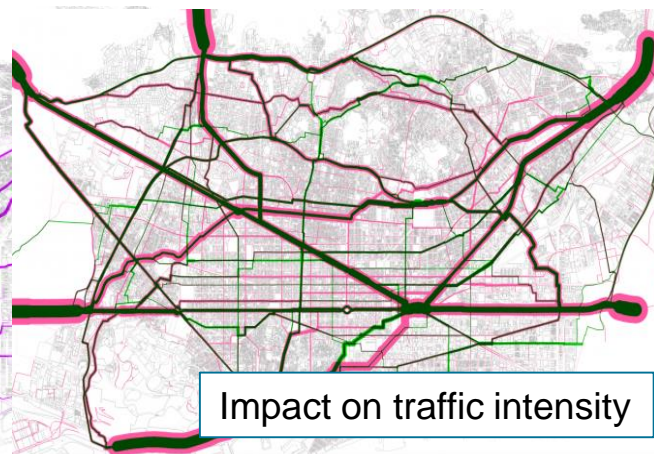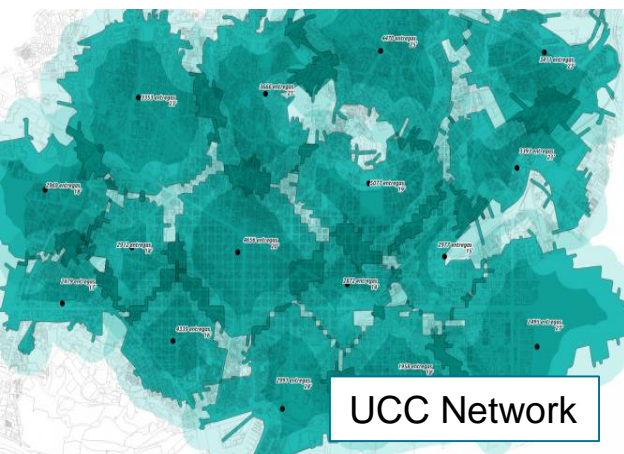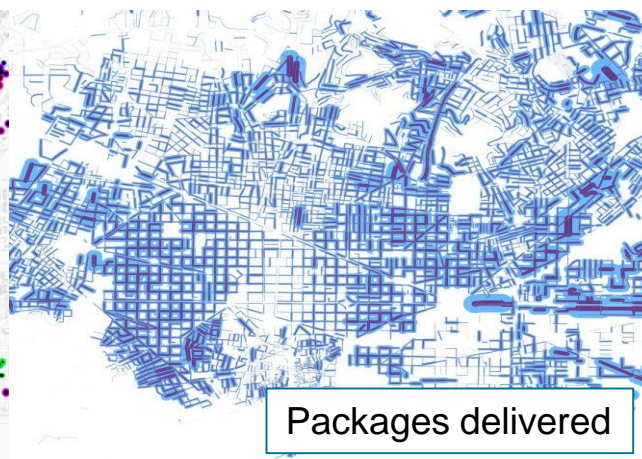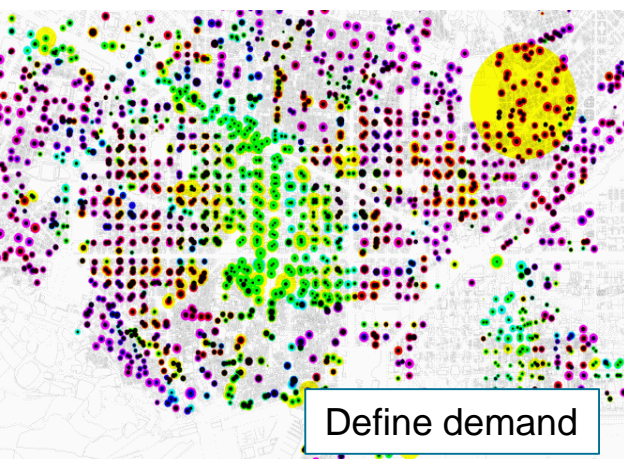
  - Increase service operation knowledge

La creación de puntos de reparto reduciría la congestión a la mitad

- La apuesta por flotas de cero emisiones en la última milla rebajaría hasta un 70% la polución

19 Nov, 2019, La Vanguardia

Replication plans

Define demand

Packages delivered

Sizing and scope area

UCC Network

Routes reduction

Impact on traffic intensity

SUSTAINABLE MOBILITY RESULTS & INSIGHTS

Jordi Farré Montané, IREC

# Vehicle to Building (V2B)' services through bidirectional chargers

CHALLENGE:

- The **integration of Electric Vehicles (EVs)** in electricity grids and the increasing **penetration of renewable energy generation** creates a big challenge for the DSO

SOLUTIONS:

- **EVs** are able to offer **other services** than mobility itself **when they are parked**

- Use the **potential flexibility** of the load associated to **charging EVs**

- Use **vehicle-to-grid chargers (V2G)** to benefit from **EVs discharging** possibilities
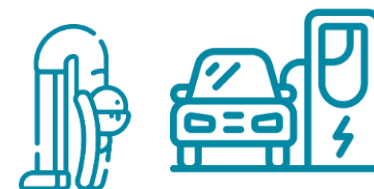
INNOVATIVE SMART ENERGY MANAGEMENT:

- The use of **V2G** chargers **requires** an adapted **smart management** to exploit their potential

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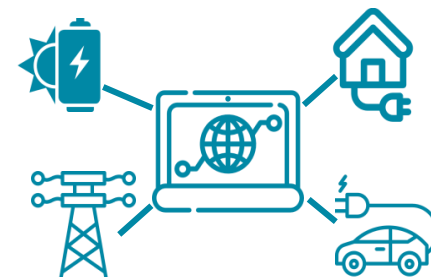
Scope of the measure
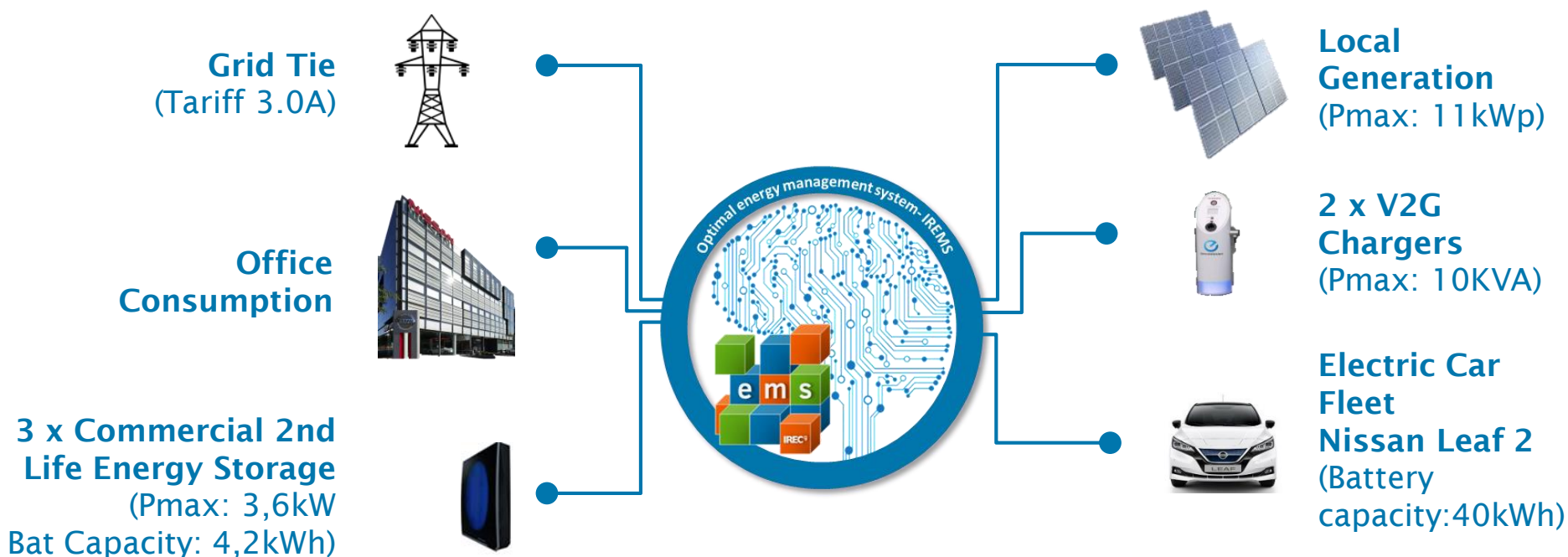
The scope of the measure is to demonstrate the **integration of electric vehicles, buildings, and local energy generation in cities** through the combination of:

- V2G chargers providing Vehicle-to-Building services

- On-site renewable energy generation (PVs) & storage systems in buildings

- Smart control by an advanced Energy Management System

Grid Tie
(Tariff 3.0A)

Office Consumption

3 x Commercial 2nd Life Energy Storage
(Pmax: 3,6kW
Bat Capacity: 4,2kWh)

Optimal energy management system- IREMS

e m s

IREC

Local Generation
(Pmax: 11kWp)

2 x V2G Chargers
(Pmax: 10KVA)

Electric Car Fleet Nissan Leaf 2
(Battery capacity:40kWh)

Lessons learnt

Barriers to overcome for the upscale of the measure

Technology maturity: Technical challenges due to the maturity of the technology. Limited availability of V2X-ready EVSE and electric vehicle models.

Regulation: Lack of regulations, V2X should be included in grid codes and develop global standards for V2X technology.

Business models: Need for a re-design of energy tariffs to better reflect the real-time value of energy and capacity in the power system to achieve sustainable business models.

Social acceptance: it will be necessary to promote potential benefits and address possible concerns, such as data security or battery guarantees.

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Results and conclusions

	Reduction in CO2 emissions	Reduction in energy consumption	Reduction in energy costs
	17.6%	13.0%	16.0%

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Replication plans

The plan is to deploy new pilots at European level in order to continue improving V2X solutions to fill the gaps between the actual state of technology and real market solutions.

Work to include V2X in grid codes.

Dissemination of the results of the project.

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SUSTAINABLE MOBILITY RESULTS & INSIGHTS

Panel & Q&A

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Smart city solutions replication in GrowSmarter

Replication of solutions in Follower Cities

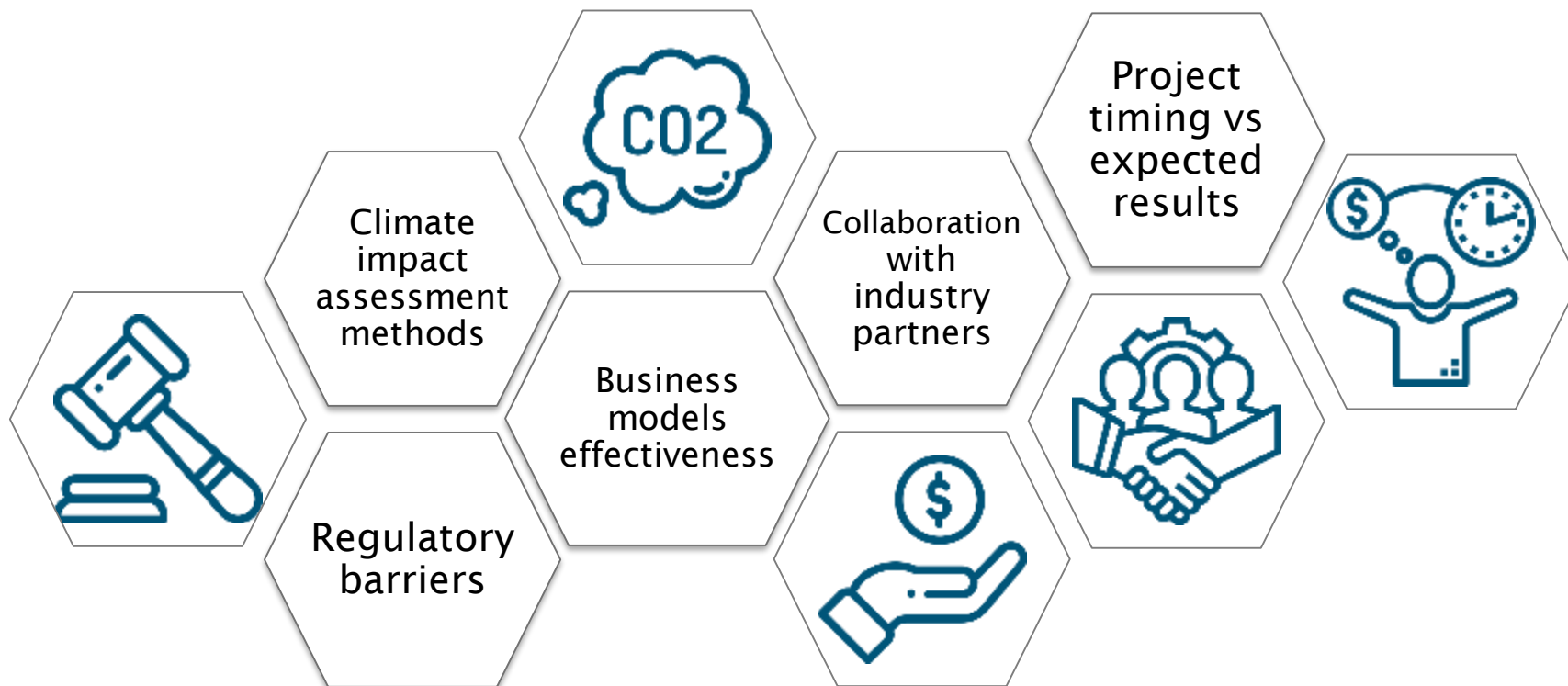Final Conference I GrowSmarter I 03.12.2019
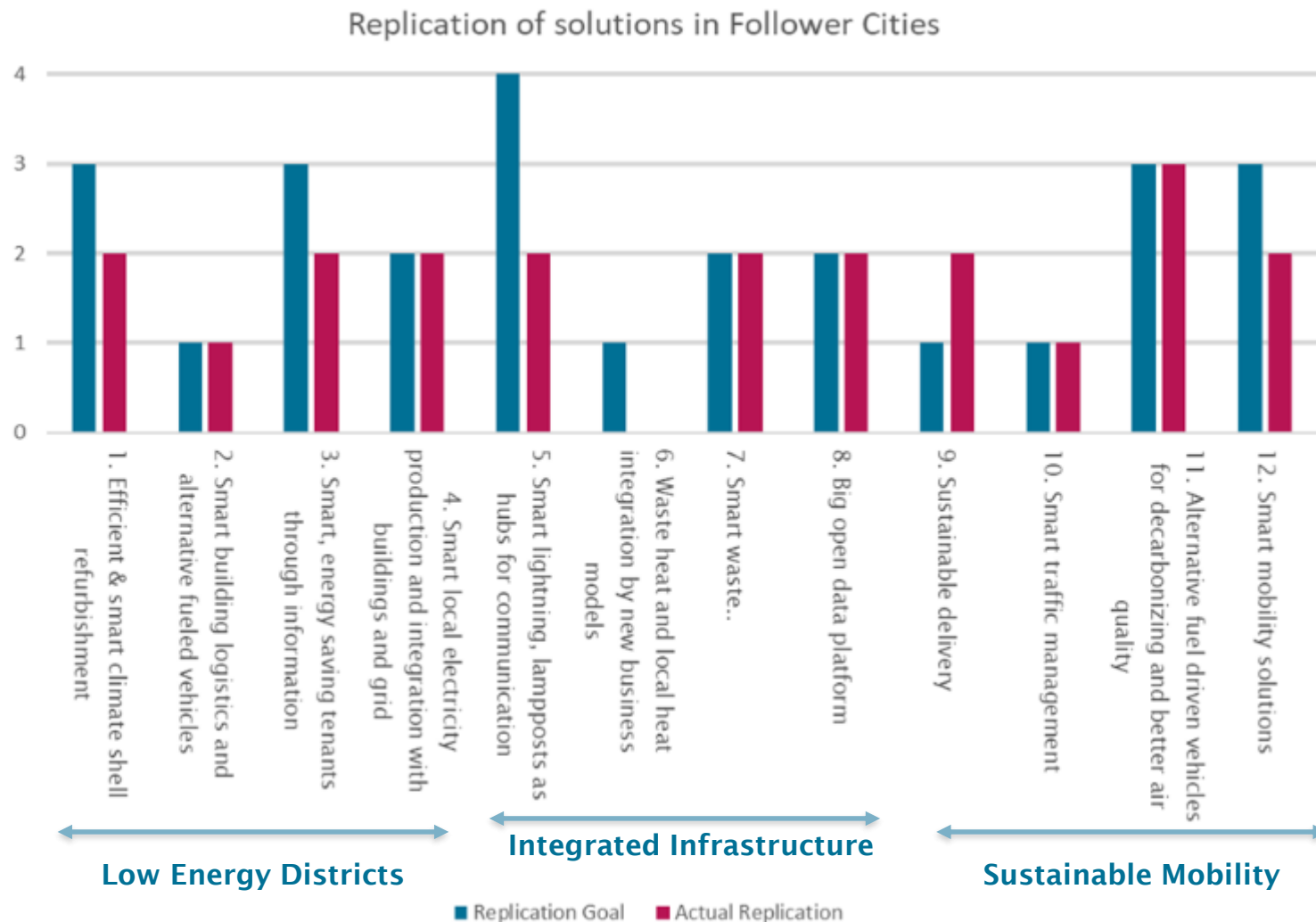
The way forward

Recommendations for future replication

- Govern smart developments effectively through an Integrated Management Cycle

- Achieve meaningful replication by building on existing processes, city targets and plans

Review, upscale and advocate
Year 5
Dec 2018 – Dec 2019

Baseline assessment
Year 1
May 2015 – February 2016

LIGHTHOUSE CITIES

FOLLOWER CITIES

Implement, monitor, report
Year 4
Nov 2017 – Nov 2018

Priorities and Target setting
Year 2
March - September 2016

Action Plan and Political Approval
Year 3
Oct 2016 – Oct 2017
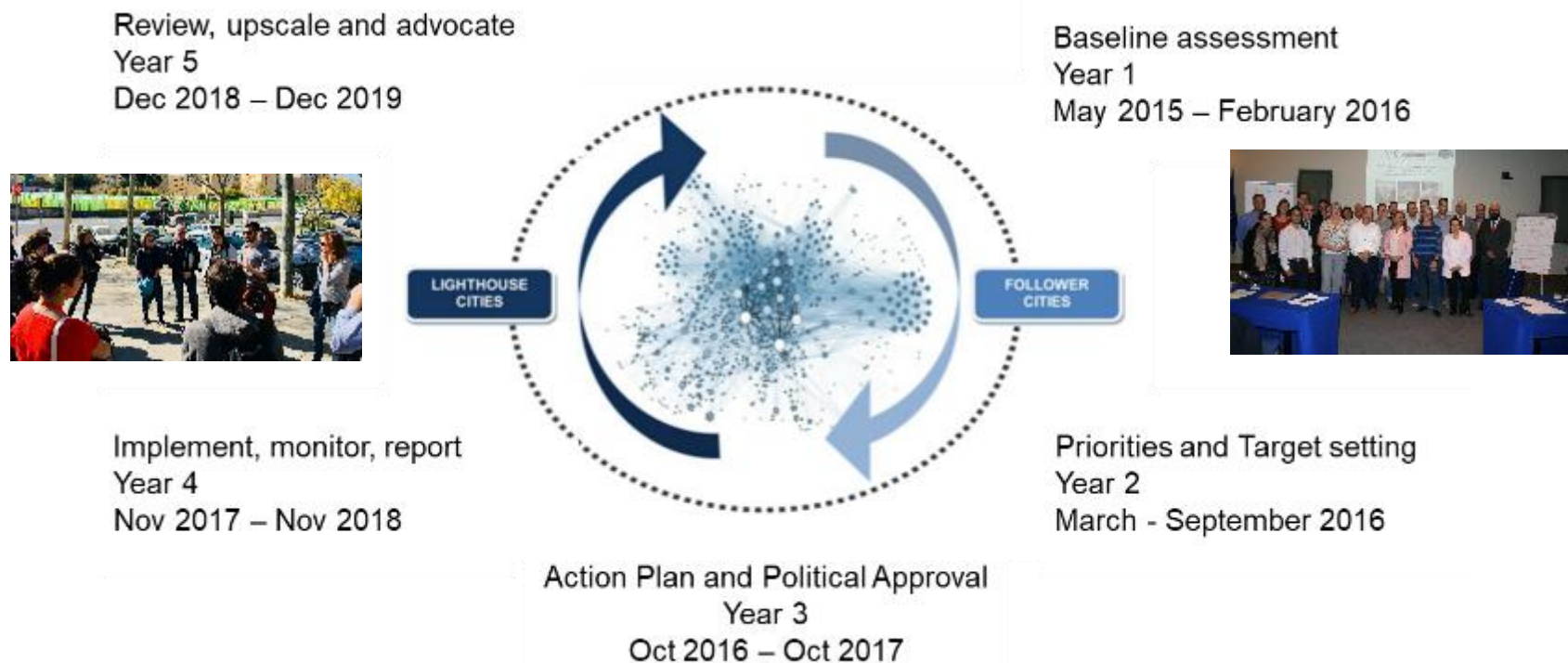
Replication challenges in follower cities

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GrowSmarter - Fellow Cities

Suceava

Population: 107,000

Metro pop: 120.000

Size: 52 km²

Graz

Population: 288,000

Metro pop.: 405,000

Size: 127 km²

Porto

Population: 250,000

Metro pop.: 1,800.000

Size: 41,42 km²

Valletta

Population: 6.000

Metro pop.: 390.000

Size: 0,8 km²

Cork

Population: 120,000

Metro pop.: 300.000

Size: 39,6 km²

GrowSmarter Follower Cities

2018 data

GrowSmarter

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GrowSmarter Follower City Suceava / Romania

Lucian Harsovschi

Vice-Mayor,

Suceava Municipality

GrowSmarter Follower City
Graz / Austria

© City of Graz/Pachernegg

Dr. Peter Piffl-Percevic

Member of the Municipal Council,

Chairman of the Municipal Committee for Urban Planning and Green Infrastructure

Follower City Graz

VISION SMART CITY GRAZ 2050

- Graz is a dynamic city with compact buildings and mixed urban use, attractive public space as well as high-quality and networked green spaces.

- Their further development will be shaped together with the citizens.

- The total energy is produced 100% in the region and from renewable energy sources, the emissions cause no environmental pollution.

- As a research, qualification and business location, Graz is an international benchmark for added value through Urban-Technologies.

Follower City Graz

URBAN DEVELOPMENT CONCEPT 4.0

- The current 4.0 Urban Development Concept of the City of Graz describes 10 generally accepted principles for the future "smart" development of the City of Graz.
  The first principle is: „Graz is developing into a Smart City" - i.e. Graz strives to increase the quality of life and reduce CO2 emissions.

- Despite a growing population, by 2050 only one fifth of the consumption of resources should be incurred. This requires optimal spatial, urban, traffic and energy planning.

- Energy and resource-optimised urban development helps in the areas of energy, ecology, infrastructure, mobility, urban planning, society, buildings and economy and increases the attractiveness and quality of life of Graz.

GrowSmarter Follower City
Graz / Austria

Filipe Araújo

Vice-Mayor,

City of Porto

Road to Replication

Process and Lessons Learned by Follower Cities in GrowSmarter

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The way forward

Recommendations for local governments

- Achieve scale by being socially and environmentally more comprehensive and ambitious

- Embed smart measures into the core of urban planning

- Ensure new staff capacity and a cross-departmental approach

- Create an open alliance for Smart City applications

- Align and ally with national and regional energy and climate policies

- Make technical validations comparable to enable impact investments

- Find synergies with other SCC projects to implement more resource efficiently

- Determine scalability based on experience of demonstration projects

- Budget public participation and stakeholder engagement in your implementation plan

- Allocate resources to mobilise public and private finance as well as create and maintain partnerships
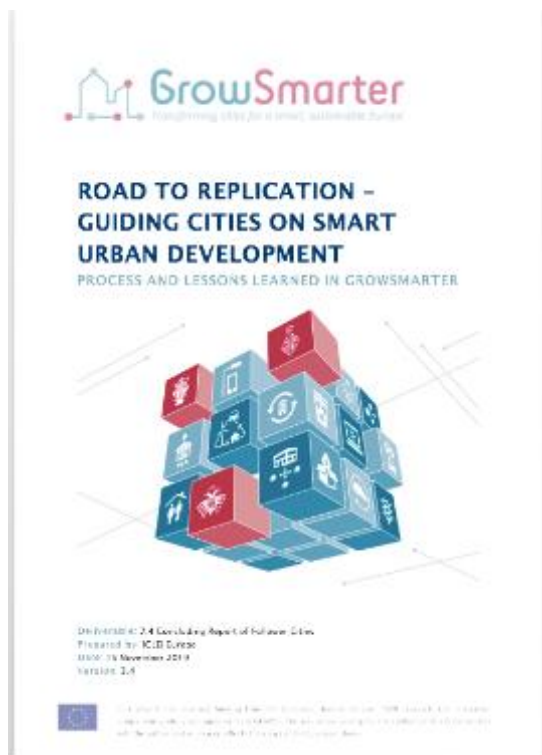
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The way forward

Recommendations for national and European authorities

- Shape Smart City programmes to deliver on local sustainability and the European vision

- Support more demonstration projects as they prove to cause big changes

- Seek regular dialogues with demonstration cities to adapt framework conditions for scaling smart urban development

- Renew regulatory frameworks to reduce transaction costs for implementing smart solutions

- Recognise, incorporate and empower local policies and ambitions

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Download our report

Road to Replication. Guiding cities on Smart Urban Development

- Factsheets of the solutions
- Replication Plans of our Fellow Cities
- others…

http://www.grow-smarter.eu/inform/publications/

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GROWSMARTER FINAL CONFERENCE

Bringing together cities & industry to stimulate uptake of *smart city solutions*

Stockholm, 3 December 2019

THANK YOU!