



D1.2 DATA MANAGEMENT PLAN FOR GROWSMARTER



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Contents

1	INTRODUCTION.....	3
1.1.	Ethics advisors organisation and responsibilities	3
1.2.	Dissemination of results	3
2	DATA SET DESCRIPTION	5
3	STANDARDS AND METADATA	22
4	DATA SHARING.....	27
5	ARCHIVING AND PRESERVATION.....	34

1 INTRODUCTION

The development and use of a Data Management Plan (DMP) is required for projects participating in the Open Research Data Pilot (ORDP). Data Management Plans are a key element of good data management. This DMP is written in order to describe the data management of all datasets that the EU research project GrowSmarter collects, processes and generates through its lifetime. The DMP includes the handling of research data both during and after the project, a description of which data are collected, processed or generated, what methodology and standards that are applied, whether data are shared and/or made open access and how, and lastly how the data will be stored and preserved in the future. After the first development, the DMP should be updated during the project when necessary and evaluated during the mid-term and final project reviews.

The GrowSmarter deliverable 1.2 Data Management Plan is due in month 28. The DMP is based on the latest version of the “Guidelines on Open Access to Scientific Publications and Research Data in Horizon 2020” and “Guidelines on FAIR Data Management in Horizon 2020”, version 3.0 (26 July 2016) which were published by the European Commission. The DMP has been developed by all GrowSmarter participants directly dealing with data sampling and handling. The data will as far as possible be made accessible by the participants in GrowSmarter. The principle is “As Open as Possible and as closed as necessary”. All collected data will be given a name including the acronym GrowSmarter.

There is no conflict between the provisions and obligations under the Consortium Agreement and the Grant Agreement regarding the DMP. Article 10.2 in the Consortium Agreement stipulates that information required by the Grant Agreement is public and cannot be marked as confidential. In cases where access is not given to data, the DMP contains the reasons for not giving access.

1.1. Ethics advisors organisation and responsibilities

Sensitive information on individual users are collected according to the regulations of each country. Typically, this means that the user must write consents to collecting data related to the private behavior. The data will be used in evaluations in a format that does not allow identifying the exact source of the information. For each city an ethics advisor has been given the responsibility to assure that the data collection is performed in a way not violating the legislation in this respect. The following persons have this role:

- For Stockholm: Eva Debels (eva.debels@stockholm.se) (National legislation: Personuppgiftslagen, PUL).
- For Cologne: Frank Fricke (frank.fricke@stadt-koeln.de) (National legislation: Article 2, paragraph 1 of the German Constitution).
- For Barcelona: Lluís Sanz Marco (lsanz@bcn.cat) (National legislation: LOPD; Ley Organica de Protección de Datos. See Spanish Data Protection Agency official site: <http://www.agpd.es/>)

1.2. Dissemination of results

The results from GrowSmarter and the evaluation will be disseminated in various ways during the whole project period. As face-to-face communication is the most effective way of communication, events and workshops form a key part of the communication strategy.

However, disseminating through web sites, blogs, project diaries, social media, videos, press, reports, study visits, fact sheets, brochures and scientific publications will also take place. Stakeholders interested in the results will be local authorities, policy makers, business, researchers, associations, general public and media. The WP8 leader is responsible for this task and will coordinate work in cooperation with the Lighthouse cities and other partners.

Throughout the lifespan of the project, active engagement with existing platforms related to Smart cities will be sought, in particular via the thematic groups in the Smart City Market Place and it will be coordinated by ICLEI.

2 DATA SET DESCRIPTION

This chapter describes the data to be generated or sampled, its origin, nature and scale and to whom it could be useful, and whether it underpins a scientific publication or not. Furthermore, this chapter lists possible information on the reuse of the data.

	Introduction							
Data set	Responsible Partner	WPs included	Key word/ Identification	File name	Description of Data	Responsible author	Date of publication	Areas (subject addressed)
1. Raw data specified further per Smart city below	Cities of Stockholm, Cologne and Barcelona	WP2-4	GrowSmarter	Individual files at each partner	Each partner will store the raw data used to evaluate the Smart Solutions in GrowSmarter.	Partners in GrowSmarter (pls see below)	2018	Energy in refurbishment, renewable energy, transportation, IoT and infrastructure
1a. Raw data Cologne								
Energy efficient refurbishment of the building	RheinEnergie	WP2	GrowSmarter	To be determined	Raw data from monitoring the electric, gas, and hot water consumption	Mr. Remacly, RheinEnergie, Mr. Esser, Dewog	2018	Energy in buildings, refurbishment
Energy consumption data from individual appliances in households	AGT	WP2 und WP 3	GrowSmarter	To be determined	Energy data from smart plugs distributed in households.	Manuel Goertz, AGT	2018	Energy consumption in households.
Car-Sharing at the City of Cologne Mobility Stations in the Mülheim district, including E-Cars	Cambio	WP4	GrowSmarter	To be determined	Data of car using, emissions and consumption of energy (electricity too)	Holger Kahl / Thomas Ross, Cambio	First data mid 2017	EV, car-sharing, renewable energy, transportation
Parking App	Ampido	WP4	Grow Smarter	To be determined	Data of parking bookings and emissions	Emine Sahbaz/ Steven Pakasathanan, Ampido	First Data mid 2017	Sharing of parking slots
Bike-Sharing at the Mob Hubs of City of Cologne in Mülheim district also with E-Bikes	KVB	WP4	GrowSmarter	To be determined	Data of bike using, and consumption of electricity by E-Bikes	Frank Gassen-Wendler / Holger Kahl, KVB	First data in the mid of 2017	bike-sharing, e-bikes, transportation

Big Consolidated Urban Platform; Traffic Data	City of Cologne Traffic agency data	WP3	GrowSmarter	To be determined	Traffic lights, traffic	Andrea Menke and Harald Gellhaus, City of Cologne	First data at the end of 2017	Traffic
1b. Raw data Barcelona								
Technical raw data - building refurbishing Barcelona	IREC, Barcelona city council	WP2	GrowSmarter	To be determined	Raw data from monitoring the electric, gas, and hot water consumption in residential and tertiary buildings. Indoor and outdoor temperatures, humidity, and solar radiation.	Alaia Sola, IREC	Part of the data already available during 2016. The rest in summer of 2017 for BigBlue. For Ca l'Alíer, data will become available in 2018.	Energy in buildings, refurbishment
Technical data - building refurbishment GNF	GNF	WP2	GrowSmarter	To be determined	Raw data from monitoring the electric, gas, and hot water consumption in residential and tertiary buildings. Indoor and outdoor temperatures, humidity, and solar radiation.	GNF	To be determined	Energy in buildings, refurbishment
Photovoltaic installations	GNF	WP2	GrowSmarter	To be determined	Electricity production of the PV, client consumption	Verdiana Russo, GNF	To be determined	Electricity production and consumption
Sustainable hub	Endesa	WP4	GrowSmarter	To be determined	Energy data of sustainable hub	Jan Wenke / Carlos Rodriguez, ENDESA	Before end of 2017	EV, renewable energy, energy management system, environmental pollution
MSC / Smart CT	Endesa	WP3	GrowSmarter	To be determined	Electric consumption, water consumption, environmental data	Jan Wenke / Carlos Rodriguez, ENDESA	To be determined	Smart metering, IoT
Mobility measures	CENIT, Barcelona city council	WP4	GrowSmarter	To be determined	Measure 9.2-raw data on location and other parameters of electric cargo tricycles	Jaume Roca, CENIT Robert Furió, City of Barcelona	2017-2019	Smart mobility

					Measure 11.2- Data of fast- charging events. Measure 12.5- motosharing data on trips performed Measure 12.6-raw data obtained from sensors on occupation of taxi parking stands.			
Urban ontology	BSC	WP3	GrowSmarter	To be determined	Metadata describing energy, mobility, and integrated infrastructure conceots	Maria-Cristina Marinescu, BSC	2017	Energy, mobility, integrated infrastructures
1c. Raw data Stockholm								
Energy efficient refurbishment - of the building Valla Torg	Stockholmshem, Skanska, Veolia	WP2	GrowSmarter	TBD	Raw data from monitoring the heat, electric and hot water consumption in residential and tertiary buildings. Indoor and outdoor temperatures, humidity, and solar radiation.	Stockholmshem, Skanska, Veolia	2016-2019	Energy in buildings, refurbishment
Energy efficient refurbishment - of the building Årstakrönet	Veolia	WP2				Veolia		
Energy efficient refurbishment - of the building Slakthus area	City of Stockholm	WP2				City of Stockholm		
Construction logistics center	Carrier	WP4	GrowSmarter	TBD	Raw data from monitoring transports and material flow to construction site	Carrier	2017-2019	Transports and material flow
Energy Saving tenants	Fortum Markets	WP2	GrowSmarter	TBD	Raw data from monitoring household energy use and indoor temperature	Fortum Markets	2018	Energy consumption in households
Virtual Power Plant BRF Årstakrönet	Veolia	WP2	GrowSmarter	TBD	Raw data from solar energy production and electricity use in building	Veolia	2018	Solar energy and electricity use

Smart LED-lighting	City of Stockholm	WP3	GrowSmarter	TBD	Raw data from electricity use for street lighting	City of Stockholm	2018	electricity
Open district heating	Fortum	WP3	GrowSmarter	TBD	Raw data from waste heat production from data center and supermarket	Fortum	2018	Waste heat
Smart Waste handling	Envac	WP3	GrowSmarter	TBD	Raw data from waste handling	Envac	2018	waste
Delivery boxes	Carrier	WP4	GrowSmarter	TBD	Raw data of amount of deliveries to delivery boxes	Carrier	2018	delivery
Mobility Management	KTH, Insero	WP4	GrowSmarter	To be defined Yymmdd – Interview – No. (consecutive)	Raw data from vehicles Interviews with drivers	KTH, Insero	Report published H2-2017 Data will not be published	Travel behaviour
Electric Charging	Fortum	WP4	GrowSmarter	TBD	Raw data related to charging of vehicles	Fortum	2018	Charge station use
Renewable fuel stations	City of Stockholm	WP4	GrowSmarter	TBD	Raw data from use volumes	City of Stockholm	2018	Renewable fuel
Electrical car pool	Stockholmshem	WP4	GrowSmarter	TBD	Raw data of users	Stockholmshem	2018	Car pool users
Electrical and Cargo bike pool	Stockholmshem	WP4	GrowSmarter	TBD	Raw data of users	Stockholmshem	2018	Bicycle pool users
2. Technical Research Data	KTH	WP2-5	GrowSmarter	To be determined	Data reported to WP5 from other WPs, i.e. processed data.	Björn Palm, KTH	2016-2019	Energy in buildings, ICT/Smart city solutions, transport
3. Economic Research Data	IESE	WP2-6	GrowSmarter	Financial and economic data	The dataset includes the financial and economic data for each measure	Carlos Carrasco, IESE	2018	Energy in buildings, ICT/Smart city solutions, transport
4. Smart City Data - Cologne	City of Cologne	WP2-4	GrowSmarter	Smart_City_Data-Cologne_vnn.docx	Value added data produced on Colognes Urban Platform (e.g. statistical data)	Stephan Borgert, [ui!]	2017-2019	Smart City Solutions
5. Smart city Data – Barcelona	Cellnex	WP2-4	GrowSmarter	To be determined	Data from Smart Solutions	WP2-4 partners	2016-2019	Smart City Solutions

					implemented in Barcelona			
6. Smart City Data – Stockholm	City of Stockholm	WP3-4	GrowSmarter real time data	TBD	Sensor data from street environment	Mika Hakosalo, City of Stockholm	2017-2019	ICT/Smart City Solutions, Transport
7. SCC1 Touch Screen	ICLEI	WP7-8	Compilation of measures	To be determined	Knowledge sharing - Explanation of all the measures to be implemented in the SCC1 cities	Simon Clement, Caroline Chandler, Mika Hakosalo, Roberto Furio, Lisa Enarsson	2016-2017 (may be updated budget allowing)	All smart solutions
8. Webinars	ICLEI	WP8	Webinars	Individual presentation files Audio files	List of attendees Presentations of smart measures Audio files of presentations	Carsten Rothballer, ICLEI	Continuously 2016-2019	Energy in buildings, ICT/Smart City solutions, transport
9. Fact sheets	ICLEI	WP7	Factsheets	2016.12.14 factsheets overview.xlsx	List of fact sheets (potentially downloads) Individual fact sheets of smart measures	Simon Clement, ICLEI	Continuously 2016-2019	Energy in buildings, ICT/Smart City solutions, transport
10. Data on dissemination activities	ICLEI	WP8	GrowSmarter Dessimination	To be determined	Overview on events, appearances, web sites, social media and press	Helen Franzen	Continuously 2016-2019	Dissemination and communication
11. Documentation data	City of Stockholm	WP1-9	GrowSmarter	ECOS GrowSmarter project documentation	Records of all relevant documentation from application to finalization of project including agendas and minutes of meetings.	Lisa Enarsson and Andreas Ek	2016-2019	Coordination, transportation, infrastructure, energy efficiency, renewable energy, communication, replication

Data set	Origin (Source specifications)*			Scale*		Data Utility Useful to whom?
	Spatial/Physical origin of data	Time measured	Reason	Scope (approx. amount)	Areas (map)	Organisation
1. Raw data specified further per Smart city below	From the smart solutions each partner is responsible for	2018-2019	For technical and economic evaluation of the smart solutions	Approximately 40 different smart solutions	Stockholm, Barcelona and Cologne	The partner who owns the data
1a. Raw data Cologne						
Energy efficient refurbishment of the building	Siedlungsmanagemnt Software; data from households and power plants RheinEnergie, Electric meter in households	2017-2019 2011-2018	To evaluate the consumption and production To create Baseline	Building evaluation; local production; Demand/storage Data from monitoring the electric, gas, and hot water consumption	City of Cologne, Stegerwaldsiedlung City of Cologne, Stegerwaldsiedlung	RheinEnergie
Energy consumption data from individual appliances in households	Smart plugs measuring current, voltage, frequency, power, energy.	2018-2019	Power consumption of individual appliances in households	50	Cologne	AGT
Mobility measures (11.1, 12.3 and 12.4): Car-Sharing at the City of Cologne Mobility Stations in the Mülheim district, including E-Cars Parking App Bike-Sharing and E-Bikes	Directly from RheinEnergie, Cambio, Ampido and KVB, , Measure 11.1: Data from the charging points Measure 12.3: Operation data of the mobility station. Measure 12.4: Data from car- and bike-sharing	2016-2019	To evaluate the mobility measures by using the new mobility stations	To be determined	City of Cologne Approximately 8 mobility stations	Cologne city administration Cambio KVB Ampido RheinEnergie
Big Consolidated Urban Platform; Traffic Data	The cloud environment where the platform is hosted	2017-2019	To integrate the data into the big consolidated open data platform Measure 8.1	Platform: about 6 different data types provided by the cloud environment Traffic: To be determined.	City of Cologne	Cologne City Administration
1b. Raw data Barcelona						
Technical raw data - building refurbishing Barcelona	Available on Sentilo, data platform owned by the city of Barcelona	2018	To evaluate building operations after refurbishment. In the case of BigBlue, additionally to	Data from 2 buildings with different type of use, both in Barcelona, 1 smart solution	City of Barcelona	City of Barcelona, other energy partners in GrowSmarter

Technical data - building refurbishment GNF	Available on GNI data platform		evaluate the operation before refurbishment as well. To evaluate building operations before and after refurbishment	Data from 4 residential buildings and 3 tertiary, in Barcelona.	City of Barcelona	GNF
Photovoltaic installations	Photovoltaics installed	To be determined	To be determined	3 Photovoltaics	City of Barcelona	City of Barcelona, other energy partners in GrowSmarter
Sustainable hub	Endesa's cloud platform	To be determined	To evaluate the measures and reuse data/results for further projects or research.	To be determined	Endesa's facilities in Barcelona	Utilities, researchers, journalists, public organizations
MSC / Smart CT	Endesa's cloud platform	To be determined	To evaluate the measures and reuse data/results for further projects or research.	To be determined	Barcelona 22@	Barcelona city council, utilities, researchers, journalists, public organizations
Mobility measures	Available on GrowSmarter platform/ Directly from the carsharing company	2017-2019	To evaluate the mobility measures that provide data to the GS platform	Measure 9.2: Data from 3 different sensors installed in the tricycles. Measure 11.2: Data from the 5 fast-charging points. Measure 12.5: Operation data of the motor sharing system. Measure 12.6: Data from three taxi stands	City of Barcelona	Barcelona city council, researchers, public organizations, utilities
Urban ontology	Manually defined based on discussions with specialists	N/a	To implement semantic data access	Any measure that will decide to use I instead of direct access via API.	For now the city of Barcelona. In the future possibly the city of Cologne..	The applications and partners that will use it.
1c. Raw data Stockholm						
Energy efficient refurbishment - of the building Valla Torg	Meters, sensors in buildings	2015-2019	To create Baseline, To evaluate the consumption and production	Building evaluation; local production; Demand/storage	City of Stockholm, Valla torg	Skanska, Stockholmshem, Veolia, Fortum
Energy efficient refurbishment - of the building Årstakrönet		2016-2018		Data from monitoring the heat, hot water, electricity, renewable energy production	City of Stockholm, Årsta	Veolia
Energy efficient refurbishment - of the building Slakthus area		2016-2019				City of Stockholm, Veolia

					City of Stockholm, Slakthusarea	
Construction logistics center	To be determined	2016-2019	To create baseline, to evaluate decreased transport emissions and energy/fuel savings for construction material logistics	Data from logistical, warehouse systems, questionnaires, possible sensors	City of Stockholm, Slakthusarea and Valla Torg	Carrier
Energy Saving tenants	Smart plugs measuring current, voltage, frequency, power, energy.	2017-2019	Power consumption of individual appliances in households	50 apartments	Valla Torg	Fortum
Virtual Power Plant BRF Årstakrönet						
Smart LED-lighting	Electric meters in cabinets	2017-2018	Investigate possible energy savings	Three models for controlling ~100 luminaires	Sandfjärdsgatan Årsta, Stockholm	City of Stockholm
Open district heating	District heating system, heat pump	2017-2019	Investigate how much renewable heat is generated from waste heat in Supermarket and datacenter	1 supermarket 1 datacenter	Supermarket, Farsta Datacenter, Västeberga In Stockholm	Fortum Värme
Smart Waste handling	From sensors in inlets, from statistical data from waste handling organisation	2016-2019	To create baseline, to evaluate decreased transport emissions and energy/fuel savings for waste handling and increase of biogasproduction	6 buildings, 10 inlets, 3-4 waste fractions	Valla Torg, Stockholm	Envac
Delivery boxes	From delivery systems	2016-2019	To create baseline, to evaluate decreased transport emissions and energy/fuel savings for package deliveries	6 buildings	Valla Torg, Stockholm	Carrier
Mobility Management	From data trackers in cars	2017 – 1 month (May)	Quantitative evaluation of the measure	4 weeks of driving with two cars, approx. 40 hours each week	Ulfsvandavägen in Stockholm	Insero, Stockholm, HERE, Swarco, Audi
	Interviews with qualitative test drivers	2017 – 1 month (June)	Qualitative evaluation of the measure			
Electric Charging	Data from normal and fast charger	2016-2019	Amount of users, behavior pattern, charged amount, electricity load	10 normal chargers 1 fast charger	4 Valla torg 4 Slakthusarea 2 Årsta Fast charger Årsta	Fortum Markets
Renewable fuel stations	Data from fuel stations	2016-2019	Amount of users, behavior pattern, amount of different fuels	10 stations	Stockholm Metropolitan area	City of Stockholm

Electrical car pool	Data from Car pool provider system	2017-2019	Amount of users, behavior pattern, amount of kilometers driven, fossil fuels saved	2 electrical cars	Valla Torg	Stockholmshem
Electrical and Cargo bike pool	Data from bike pool system	2017-2019	Amount of users, behavior pattern, amount of kilometers driven, fossil fuels saved	2-4 bikes	Valla Torg	Stockholmshem
2. Technical Research Data	Compiled, processed raw data from all partners	2016-2019	For evaluation and validation purposes.	Approximately 40 different smart solutions	Stockholm, Cologne, Barcelona	Other researchers and public bodies
3. Economic Research Data	Financial data from all partners	2016-2019	Financial and economic validation of the measures	Approximately 40 different smart solutions	Stockholm – Cologne – Barcelona	IESE Business School
4. Smart City Data - Cologne	Colognes urban data	2017-2019	For analysis and applications	About 6 different data sources	City of Cologne	City departments, city organisations, public organisations, app developers, researchers
5. Smart city Data – Barcelona	Barcelona Smart Solutions	2016-2019	For analysis and applications	Barcelona smart solutions	City of Barcelona	Ontology & semantic systems of BSC, Barcelona Smart city solutions
6. Smart City Data – Stockholm	Generated from sensors	2017-2019	For analysis and applications	Some 10 cameras for vehicles and 35 sensors for people flow	Slakthus area	City departments, city organisations, public organisations, event arranger
7. SCC1 Touch Screen	From partners involved in the respective smart solutions	2016-2017	Knowledge sharing and to promote market uptake of the smart solutions	Information on all measures applied in the Lighthouse Cities.	Stockholm, Cologne and Barcelona for exploitation Europe-wide	Cities (practitioners, policy makers), businesses and research.
8. Webinars	GrowSmarter cities, and other expert partners	2016-2019	For Follower Cities and City Interest Group – for public knowledge and awareness	30 – 40 attendees per webinar	Europe	Public awareness
9. Fact sheets	GrowSmarter cities	2016-2019	For Follower Cities and City Interest Group – for public knowledge and awareness	To be determined	Europe	Public awareness
10. Data on dissemination activities	All countries involved	2016-2019	For monitoring and evaluation of communication activities	GrowSmarter partners	All over the world	GrowSmarter partners
11. Documentation data	WP leaders	2014-2019	Public organisations need to keep records of all operation according to the National Law	To be determined	Stockholm, Barcelona, Cologne, Cork, Graz, Valetta, Suceava, Porto	Researchers, journalists, public organisations etc.

	Nature*					
Data set	Type of content	Type of file	Format	Language	Current ownership	Frequency in sampling
1. Raw data specified further per Smart city below	Numerical data from measurements and data from surveys	Different types of files for different partners	.pdf, .xlsx, .docx	English, Swedish, Spanish, German	Each responsible partner	Different, from minutes to months. Some data measured only before and after.
1a. Raw data Cologne						
Energy efficient refurbishment of the building	Numerical data from monitoring for photovoltaic, heat pumps, batteries	To be determined	To be determined	English, German	RheinEnergie, Dewog	Every 15minutes
Energy consumption data from individual appliances in households	Numerical data from measurements	csv-file from internal AGT database	.csv	English	AGT	Every 2 seconds
Mobility measures (11.1, 12.3 and 12.4): Car-Sharing at the City of Cologne Mobility Stations in the Mülheim district, including E-Cars, Parking App, Bike-Sharing and E-Bikes	Numerical data form monitoring	excel file	.xlsx	English, German	City of Cologne, Cambio, KVB, Ampido, RheinEnergie	Measures 11.1, 12.3 and 12.4 monthly for each mobility station
Big Consolidated Urban Platform; Traffic Data	Numerical data	Automatic Programming interface	To be determined	German, English	City of Cologne	Different, from minutes to months. Some data measured only before and after
1b. Raw data Barcelona						
Technical raw data - building refurbishing Barcelona	Numerical data from monitoring	To be determined (from Sentilo)	To be determined	n/a	City of Barcelona	Every 15 minutes
Technical data - building refurbishment GNF	Numerical data from monitoring	To be determined	To be determined	n/a	GNF	Every hour an aggregated value for each residential building – file passed daily. Monthly an aggregated value for each tertiary building.
Photovoltaic installations	Numerical data	To be determined	To be determined	n/a	GNF	To be determined
Sustainable hub	Electrical consumption/ production data	To be determined	To be determined	English	Endesa	Every day
MSC / Smart CT	City data, consumption measurements	To be determined	To be determined	English	Endesa	Every hour
Mobility measures	Numerical data form monitoring	To be determined (from GrowSmarter platform)	To be determined (.xlsx, .xml)	n/a	Cenit/City council of Barcelona	Depending on the measure: Measure 9.2: To be determined (every less than a minute). Measure 11.2: Each charging event is registered. Measure 12.5:

						Monitored at each trip event. Measure 12.6: Continuously when a taxi enters or leaves the taxi stand
Urban ontology	OWL ontology, triples.	Triples	.ttl	English	BSC	n/a
1c. Raw data Stockholm						
Energy efficient refurbishment - of the building Valla Torg	Numerical data from monitoring of heat, hot water, building electricity, photovoltaic, heat pumps, batteries	To be determined	To be determined	English, Swedish	Skanska, Stockholmshem, Veolia	Every 10 minutes
Energy efficient refurbishment - of the building Årstakrönet					Veolia	
Energy efficient refurbishment - of the building Slakthus area					City of Stockholm, Veolia	
Construction logistics center	Numerical data of number of goods, materials, transports to building site	To be determined	To be determined	English, Swedish	Carrier	Every day
Energy Saving tenants	Numerical data from measurements	csv-file from internal database	*.csv	English, Swedish	Fortum	Every second
Virtual Power Plant BRF Årstakrönet	Numerical data of electricity demand and local electricity production, and load on different phases	To be determined	To be determined	English, Swedish	Veolia	Every second
Smart LED-lighting	Values on current load and energy consumption on an hourly basis	Gathered in Excel, stored in Access database	.xlsx, .accdb	Dates, times, Watts, Watts/h	City of Stockholm	Every hour
Open district heating	Numerical data from measurements	To be determined	To be determined	English, Swedish	Fortum Värme	To be determined
Smart Waste handling	Numerical data from measurements	To be determined	To be determined	English, Swedish	Envac	To be determined
Delivery boxes	Numerical data from measurements	To be determined	To be determined	English, Swedish	Carrier	To be determined
Mobility Management	Numerical data from measurements, compilation of data from interviews,	To be determined	To be determined	English, Swedish	Audi, Insero	To be determined
Electric Charging	Numerical data from measurements	To be determined	To be determined	English, Swedish	Fortum Markets	To be determined
Renewable fuel stations	Numerical data from measurements	To be determined	To be determined	English, Swedish	City of Stockholm	To be determined
Electrical car pool	Numerical data from measurements	To be determined	To be determined	English, Swedish	Stockholmshem	To be determined

Electrical and Cargo bike pool	Numerical data from measurements	To be determined	To be determined	English, Swedish	Stockholmshem	To be determined
2. Technical Research Data	Numerical data from measurements, compilation of data from interviews,	To be determined	To be determined	English	GrowSmarter partners	Different, from minutes to months. Some data measured only before and after.
3. Economic Research Data	Financial and economic data and indicators	Spreadsheet file	.xlsx or .csv	English	GrowSmarter partners	Twice a year
4. Smart City Data - Cologne	Numerical data, position data, tbc	Data base storage, spreadsheet files	Data storage modals, .csv, .tbc	English	City of Cologne, Cambio, .kvb, .tbc	Real time, 1 event/15 minutes, monthly updated
5. Smart city Data – Barcelona	Geolocated data		.json		WP2-4 partners of Barcelona	According to the original data source: some data sets are real time updated, whereas the others are daily or monthly updated.
6. Smart City Data – Stockholm	Numerical data, position data, heat maps,	To be determined	To be determined	English	Stockholm City	Real-time, but some data aggregated to 10 min
7. SCC1 Touch Screen	List of solutions, partners, contact information	Software (produced by Fraunhofer)	Easire launcher (java enabled software)	English	All SCC1 projects and the EC.	n/a
8. Webinars	Lists of attendees	Excel file	.xls	English	Presentations owned by organization giving presentation	With project reporting
	Webinar presentations	Presentations	.ppt			
		Audio file	.xls			
9. Fact sheets	List of factsheets (potentially downloads)	Excel file	.xls	English	Factsheets owned jointly by ICLEI and the partner which developed the individual factsheet concerned	With project reporting
	Factsheets	Factsheets	.pdf			
10. Data on dissemination activities	Numerical data on the counting of outputs	Excel file	.xlsx	English	ICLEI	With project reporting
11. Documentation data	Agendas, Minutes, Deliverables, Factsheets, etc	PDF and spreadsheets	.pdf	English	City of Stockholm	Regularly throughout the project

Data set	Reuse*			Quality	Security*
	Opportunities	Restrictions	Limitations	Data quality assurance process	Secure data recovery and storage
1. Raw data specified further per Smart city below	Partners will evaluate the measures and disseminate the results and processed data for validation	Each partner must decide if raw data is available for reuse	Each partner must decide if raw data is available for reuse	KTH and IESE will check quality of data	Data is stored by each partner to assure security
1a. Raw data Cologne					
Energy efficient refurbishment of the building: Siedlungsmanagement – balancing demand with supply	Partners will evaluate the measures and disseminate the results and processed data for validation	Data is owned by RheinEnergie	Privacy issues may occur in certain type of data. All data from privately owned businesses are forbidden to be public outside GrowSmarter	Data checked for irregularities	To be determined
Home Energy Management Systems/ SmartHome, SmartMeter		To be determined			National legislation for data protection
Energy consumption data from individual appliances in households		Raw data will be restricted to AGT International internal use	Aggregated data from homes could be made available for research based on individual license agreements		Data will be transmitted using secured channels from the homes to the backend. Data will be stored according German Data Protection Laws.
Mobility measures (11.1, 12.3 and 12.4): Car-Sharing at the City of Cologne Mobility Stations in the Mülheim district, including E-Cars, Parking App, Bike-Sharing and E-Bikes	Quantitative evaluation of measures. Data for research and optimization and for a blue print in the whole town	Data owned by the partners will be available only for GrowSmarter	Privacy issues may occur in certain type of data. All data from privately owned businesses (Ampido, RheinEnergie, Cambio and KVB) such as the car-and bike-sharing are forbidden to be public outside GrowSmarter	Data checked for irregularities	To be determined
Big Consolidated Urban Platform; Traffic Data	Data for research and optimization and for a blue print for the entire city	In each case it is to be decided if raw data is available for reuse	In each case it is to be decided how raw data is available for reuse	Cologne will check quality of data	Data is stored at the azure cloud to assure security
1b. Raw data Barcelona					
Technical raw data - building refurbishing Barcelona	Partners will evaluate the measures and disseminate the	Data owned by the city will probably be available without	Limitations of data quality due to the number of monitored	Depends on Sentilo and platform and Measure 8.4	Depends on Sentilo and platform and Measure 8.4

Technical data - building refurbishment GNF	results and processed data for validation. Partners will evaluate the measures and disseminate the results and processed data for validation.	restrictions, but we will specify this more clearly when the data becomes available on M8.4 platform. Aggregated data available through the Measure 8.4 platform and the semantic tool (Measure 8.2).	dwelling in residential buildings. Limitations of data quality due to aggregation.	platform's traceability mechanisms. Depends on GNI platform and M8.4 platform's traceability mechanisms.	platform's traceability mechanisms Depends on GNI platform and M8.4 platform's traceability mechanisms
Photovoltaic installations	Partners will evaluate the measures and disseminate the results and processed data for validation.	Energy production numbers will be available from the Measure 8.4 platform. Client consumption to be determined	To be determined	Depends on Cellnex's platform – traceability mechanisms	Access policies
Sustainable hub	Exploitation, input to future similar projects and research	Only aggregated consumption data because of privacy issues	Only aggregated consumption data because of privacy issues	Data checked for irregularities	To be determined
MSC / Smart CT	Exploitation, input to future similar projects and research	Only aggregated consumption data because of privacy issues	Only aggregated consumption data because of privacy issues	Data checked for irregularities	To be determined
Mobility measures	Quantitative evaluation of measures. Data for research and optimization	Data owned by the city will probably be available without restrictions, but we will specify this more clearly when the data becomes available	Privacy issues may occur in certain type of data. (raw data from privately owned businesses such as the motor sharing might not be public)	Data checked for irregularities	To be determined
Urban ontology	The model reflects domains and therefore is reusable by design. Cities that may, at a later date, use this ontology, may have to extend it if the concepts in their cities are not reflected in the urban ontology.	None	None	Tested against queries provided by interested partners.	n/a
1c. Raw data Stockholm					
Energy efficient refurbishment - of the building Valla Torg	Partners will evaluate the measures and disseminate the results and processed data for validation	Data is owned by Stockholmshem, Skanska, Veolia and Fortum	Privacy issues may occur in certain type of data. All data from privately owned businesses are forbidden to be public outside GrowSmarter	Data checked for irregularities	To be determined
Energy efficient refurbishment - of the building Årstakrönet		Data is owned by Veolia			
Energy efficient refurbishment - of the building Slakthus area		Data owned by City of Stockholm			

Construction logistics center	Partners will evaluate the measures and disseminate the results and processed data for validation	Data is owned by Skanska and Carrier	Privacy issues may occur in certain type of data. All data from privately owned businesses are forbidden to be public outside GrowSmarter	Data checked for irregularities	To be determined National legislation for data protection
Energy Saving tenants	Partners will evaluate the measures and disseminate the results and processed data for validation	Raw data will be restricted to Fortum and Stockholmshem use	Aggregated data from homes could be made available for research based on individual license agreements		Data will be transmitted using secured channels from the homes to the backend. Data will be stored according EU Data Protection Laws.
Virtual Power Plant BRF Årstakrönet	Partners will evaluate the measures and disseminate the results and processed data for validation	Data is owned by Veolia	Privacy issues may occur in certain type of data. All data from privately owned businesses are forbidden to be public outside GrowSmarter	Data checked for irregularities	To be determined National legislation for data protection
Smart LED-lighting	Amount of saved energy, ROI	To be determined	No "smart" control in real time by sensors Different control systems also have different luminaires and lumen output	Data checked for irregularities	TBD
Open district heating	Partners will evaluate the measures and disseminate the results and processed data for validation	Data is owned by Fortum Värme	Privacy issues may occur in certain type of data. All data from privately owned businesses are forbidden to be public outside GrowSmarter	Data checked for irregularities	To be determined National legislation for data protection
Smart Waste handling	Partners will evaluate the measures and disseminate the results and processed data for validation	Data is owned by Envac	Privacy issues may occur in certain type of data. All data from privately owned businesses are forbidden to be public outside GrowSmarter	Data checked for irregularities	To be determined National legislation for data protection
Delivery boxes	Partners will evaluate the measures and disseminate the results and processed data for validation	Data is owned by Carrier	Privacy issues may occur in certain type of data. All data from privately owned	Data checked for irregularities	To be determined

			businesses are forbidden to be public outside GrowSmarter		National legislation for data protection
Mobility Management	Partners will evaluate the measures and disseminate the results and processed data for validation	A test plan has been agreed with the partners, where all key partners have 3 gates to approve.	Basic data from quantitative test is not allowed to be published.	KTH and Insero will check quality of data	Data is stored by each partner to assure security
Electric Charging	Partners will evaluate the measures and disseminate the results and processed data for validation	Data is owned by Fortum markets	Privacy issues may occur in certain type of data. All data from privately owned businesses are forbidden to be public outside GrowSmarter	Data checked for irregularities	To be determined National legislation for data protection
Renewable fuel stations	Partners will evaluate the measures and disseminate the results and processed data for validation	Data is owned by Fuel Company	Privacy issues may occur in certain type of data. All data from privately owned businesses are forbidden to be public outside GrowSmarter	Data checked for irregularities	To be determined National legislation for data protection
Electrical car pool	Partners will evaluate the measures and disseminate the results and processed data for validation	Data is owned by Stockholmshem	Privacy issues may occur in certain type of data. All data from privately owned businesses are forbidden to be public outside GrowSmarter	Data checked for irregularities	To be determined National legislation for data protection
Electrical and Cargo bike pool	Partners will evaluate the measures and disseminate the results and processed data for validation	Data is owned by Stockholmshem	Privacy issues may occur in certain type of data. All data from privately owned businesses are forbidden to be public outside GrowSmarter	Data checked for irregularities	To be determined National legislation for data protection
2. Technical Research Data	Industry stakeholders and policy makers can evaluate the solutions of the project and assess their replicability	Each data set needs to be evaluated individually for possible reuse. Most processed data may probably be shared or reused	Privacy issues may occur in certain type of data	Type of sensor/method of data collection should be traceable	To be determined

3. Economic Research Data	Industry stakeholders and policy makers can evaluate the solutions of the project and assess their replicability			All the datasets delivered by partners are revised to find inconsistencies before uploading the data to the final dataset	All the financial and economic data is stored at IESE's Dropbox account
4. Smart City Data - Cologne	Data can be cross-analysed to derive information about traffic, parking, car and bike sharing, pollution. The information can be used for apps to improve smart city solutions	The data quality will probably lead to some restriction we can specify more precisely during the monitoring phase	Privacy issues may occur in certain type of data	Data quality is checked during the monitoring phase	The data is stored by mechanisms of the Microsoft Azure cloud
5. Smart city Data – Barcelona	Exploitation by data analytic applications, which can offer valuable information to: <ul style="list-style-type: none"> - increase the efficiency of smart city services - better support policy makers' decisions - assess the deployed smart solutions 	According to each incoming data set access policies	According to each incoming data set access policies	Traceability mechanism to grant data integrity	Secured methods & access policies implementation
6. Smart City Data – Stockholm	Data can be cross-analysed to give insight about what factors affect the transport emissions and give a possibility to develop applications to reduce transport emissions	Some data, related to mobile phone devices, cannot be displayed real-time, so this data can only be used after person has left the area. Further restrictions to data will be analysed as part of implementation	Privacy issues may occur in certain type of data	Data collection is fully traceable to the sensor and data quality is continuously evaluated	To be determined
7. SCC1 Touch Screen	Inspiration for other cities looking to replicate measures	Only available to SCC1 projects	Currently only for use at events where the touch screen hardware is available	Information is up to date	On Fraunhofer server.
8. Webinars	Inspiration for other cities looking to replicate measures	Public – no restrictions on use	Public – no limitations		Stored on project website (presentations), and on ICLEI server
9. Fact sheets	Inspiration for other cities looking to replicate measures	Public – no restrictions on use	Public – no limitations	Factsheets approved by both ICLEI and relevant GrowSmarter partner	Stored on project website (factsheets), and on ICLEI server
10. Data on dissemination activities	Developing communication activities for similar projects	Internal project data	Internal project data		Stored on ICLEI server

11. Documentation data	Historic review, Input to future similar projects	No restrictions	No limitations	All documents will be finalised and approved before uploaded	The high secure Record system of the City of Stockholm is used
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Fields related to ethical issues.

3 STANDARDS AND METADATA

Chapter 3 describes the references to existing standards as well as the form of the metadata produced.

Data set	Data process*	Standards and methodologies*	Mechanisms (creation of metadata)		Automation	Standards
	Description of data creation	Description of used criteria	Creation of metadata	Capture of metadata	Automatically created information/data	Description of used criteria and standards
1. Raw data specified further per Smart city below	The Smart Solutions are implemented until the end of 2018. The raw data is gathered in the following evaluation phase according to the evaluation strategy for each smart solution	Different for each partner, existing standard methods for technical data The criteria for the economic data selection is based on economic and financial literature for business analysis	Created by partners		In some cases automatically created data will be collected and in some cases manually	
1a. Raw data Cologne						
Energy efficient refurbishment of the building: Siedlungsmanagement – balancing demand with supply Home Energy Management Systems/ SmartHome, SmartMeter	Data from PV systems, heat pumps and district heating, such as SmartMeter will be collected from our Siedlungsmanagement Software	Indicators developed to evaluate measures	Created by RheinEnergie		Automatically	To be determined in the first sheet of excel
Energy consumption data from individual appliances in households	Data points will be collected by smart plugs measuring the power consumption of individual appliances	Indicators developed to evaluate measures	Metadata will be assigned manually to the homes.	Metadata will automatically be associated and stored in our data collection infrastructure		To be determined in the first sheet of excel file

Mobility measures (11.1, 12.3 and 12.4): Car-Sharing at the City of Cologne Mobility Stations in the Mülheim district, including E-Cars, Parking App, Bike-Sharing and E-Bikes	Created manually with the data and knowledge provided by the sources of each measure	Indicators developed to evaluate measures	Processed data delivered from different measures by City of Cologne, Cambio, KVB, Ampido and RheinEnergie	Metadata will automatically be associated and stored in the data collection of every partner	Manual	To be determined in the first sheet of excel file
Big Consolidated Urban Platform; Traffic Data	Automatic programming interface from the traffic data system from the City of Cologne	The data quality will probably lead to some restriction which we can specify more precisely during the monitoring phase	Processed data delivered by the City of Cologne's traffic management system	Different types.	Automatic programming interface from the traffic data	Stored on azure cloud
1b. Raw data Barcelona						
Technical raw data - building refurbishing Barcelona	Produced and visualized by IREC using Schneider's Resource Advisor tool.	Indicators (according to KTH plan) computed via formulas that IREC passes to Schneider tool.	IREC/Schneider The urban ontology created by BSC-CNS.	n/a	Automated generation by tool based on manually fed formula.	n/a
Technical data - building refurbishment GNF						
Photovoltaic installations						
Sustainable hub						
MSC / Smart CT						
Mobility measures	Created manually with the data and knowledge provided by the sources of each measure	Indicators developed to evaluate measures	Processed data delivered from different measures.	Mostly from GrowSmarter platform and other sources	Manual	To be determined
Urban ontology	Created manually with input from domain specialists (IREC, CENIT)	Top down (domain specialists) and bottom-up (query based)	Created by BSC-CNS	n/a	Manual	W3C (OWL, RDF, URI), http, JSON, etc
1c. Raw data Stockholm						
Energy efficient refurbishment - of the building Valla Torg	Created manually with the data and knowledge provided by the sources of each measure	Indicators developed to evaluate measures	Processed data delivered by City of Stockholm, Stockholmshem, Skanska, Veolia, Fortum		Manual	To be determined in the first sheet of excel file
Energy efficient refurbishment - of the building Årstakrönet						

Energy efficient refurbishment - of the building Slakthus area						
Construction logistics center	Created manually with the data and knowledge provided by the sources of each measure	Indicators developed to evaluate measures	Processed data delivered by Carrier		Manual	To be determined in the first sheet of excel file
Energy Saving tenants	Data points will be collected by smart plugs measuring the power consumption of individual appliances		Metadata will be assigned manually to the homes.	Metadata will automatically be associated and stored in Fortum data collection infrastructure		
Virtual Power Plant BRF Årstakrönet	Created manually with the data and knowledge provided by the sources of each measure	Indicators developed to evaluate measures	Processed data delivered by Veolia		Manual	To be determined in the first sheet of excel file
Smart LED-lighting	Electric meters are accessed through web interface where reports are exported	To be determined	n/a	n/a	Web interface provides functions for data collection in pre-set formats	To be determined
Open district heating	Created manually with the data and knowledge provided by the sources of each measure	Indicators developed to evaluate measures	Processed data delivered by Fortum Värme		Manual	To be determined in the first sheet of excel file
Smart Waste handling	Created manually with the data and knowledge provided by the sources of each measure	Indicators developed to evaluate measures	Processed data delivered by Envac		Manual	To be determined in the first sheet of excel file
Delivery boxes	Created manually with the data and knowledge provided by the sources of each measure	Indicators developed to evaluate measures	Processed data delivered by Carrier		Manual	To be determined in the first sheet of excel file
Mobility Management	Created manually with the data and knowledge provided by the partners	Indicators developed to evaluate measures	Processed data delivered from different measures by Audi and Swarco	Metadata will automatically be associated and stored in our data collection infrastructure	Automatic	To be determined in the first sheet of excel file
Electric Charging	Created manually with the data and knowledge provided by the sources of each measure	Indicators developed to evaluate measures	Processed data delivered by Fortum Markets		Manual	To be determined in the first sheet of excel file
Renewable fuel stations	Created manually with the data and knowledge provided by the sources of each measure	Indicators developed to evaluate measures	Processed data delivered by City of Stockholm		Manual	To be determined in the first sheet of excel file

Electrical car pool	Created manually with the data and knowledge provided by the sources of each measure	Indicators developed to evaluate measures	Processed data delivered by Stockholmshem		Manual	To be determined in the first sheet of excel file
Electrical and Cargo bike pool	Created manually with the data and knowledge provided by the sources of each measure	Indicators developed to evaluate measures	Processed data delivered by Stockholmshem		Manual	To be determined in the first sheet of excel file
2. Technical Research Data	Processed data delivered from partners	Where applicable, existing standard methods have been used for data collection	Processed (meta)data delivered from partners	Delivered by the data providers	Processing of data in most cases requires manual intervention into the raw data.	According to the evaluation plan
3. Economic Research Data	The data is collected through an Excel template sent to each industrial partner in the project. After receiving it we will validate the specific information and if there is nothing wrong or dubious we will upload it to the general spreadsheet to track the economic and financial evolution of each measure	The criteria for the data selection is based on economic and financial literature for business analysis				
4. Smart City Data - Cologne	The raw data is either created by sensors or manually in a first step. Refined data is generated automatically	Where applicable, existing standard methods have been used for data collection	Processed (meta)data delivered from partners	Delivered by the data providers	In some cases automatically created data will be collected and in some cases manually	RESTful Web services, .json, https, .tbc
5. Smart city Data – Barcelona	Each data set is collected from its origin source and allocated into the normalized data model	Dedicated process for each data set: depending on the information provided in the data source template	n/a	n/a	n/a	n/a
6. Smart City Data – Stockholm	The raw data is collected from sensors by subcontractors. The data is then cleared from unwanted data, quality assured and anonymized This “cleaned” data is distributed to the Blue Mix Platform delivered by IBM where it is analyzed against other data sources (e.g. weather). In this platform the data can also be used for developing applications	To be determined	To be determined	To be determined	To be determined	To be determined

7. SCC1 Touch Screen	Information was collected in the template provided and submitted to Fraunhofer					
8. Webinars	Presentations developed by GrowSmarter partners and other experts.		Records kept on webinar attendance			
9. Fact sheets	Factsheets developed by GrowSmarter partners, and edited by ICLEI		Plan to track downloads of factsheets			
10. Data on dissemination activities	Data collected from all GrowSmarter partners by ICLEI					
11. Documentation data	All documents are created within the projects different WPs	The design of templates is created by ICLEI				

4 DATA SHARING

Chapter 4 describes how data will be shared, including access procedures, outlines of technical mechanisms for dissemination and necessary software and other tools for enabling re-use, and definition of whether access will be widely open or restricted to specific groups. Furthermore this chapter will show the identification of the repository where data will be stored- if already existing and identified and there will be an indication of particular types of repository (institutional, standard repository for the discipline, etc.). In case the dataset cannot be shared, a reason will be given (e.g. ethical, rules of personal data, intellectual property, commercial reasons, privacy-related, security-related).

Data set	Data sharing*			Access procedure		
	Sharing method used	Dissemination of method	Press strategy	Platform used	Tech. mechanisms: required software	Tech. mechanisms: required system (specification)
1. Raw data specified further per Smart city below	Contact the partner responsible for the measure		GrowSmarter communication and dissemination plan WP-leader ICLEI	Different for different Partners	Excel	Computer with internet access
1a. Raw data Cologne						
Energy efficient refurbishment of the building: Siedlungsmanagement – balancing demand with supply Home Energy Management Systems/ SmartHome, SmartMeter Charging Infrastructure	Uploading most of the evaluation-data to the GrowSmarter data		To be determined	GrowSmarter Project Place	To be determined	Computer with internet access
Energy consumption data from individual appliances in households	Currently only internal use of the raw data planned	AGT provides a large data-set on energy data (similar to the data collected in GrowSmarter) for research projects under hobbit.agtinternational.com		AGT's internal data collection infrastructure	Data analytic software	Computer with internet access

Mobility measures (11.1, 12.3 and 12.4): Car-Sharing at the City of Cologne Mobility Stations in the Mülheim district, including E-Cars, Parking App, Bike-Sharing and E-Bikes	Uploading most of the evaluation-data to the GrowSmarter data	Documents and deliverables	Press documents	GrowSmarter ProjectPlace	.xlsx	n/a
Big Consolidated Urban Platform; Traffic Data	Data is used on the Urban Cockpit for Monitoring and decision support. Other sharing methods are not planned	Documents and deliverables	Press documents	GrowSmarter, Urban Cockpit	Computer with web browser	Computer with internet access
1b. Raw data Barcelona						
Technical raw data - building refurbishing Barcelona	Metadata available via GrowSmarter M8.4 platform	Deliverables	To be determined	GrowSmarter Measure 8.4 platform + semantic access	Any software that can access a REST API. Any user /app that uses the Web tool to access data semantically	Independent of platforms and programming language
Technical data - building refurbishment GNF	Aggregated data available via GrowSmarter M8.4 platform		To be determined	GrowSmarter Measure 8.4 platform + semantic access	Any software that can access a REST API. Any user /app that uses the Web tool to access data semantically	Independent of platforms and programming language
Photovoltaic installations	Upload to GrowSmarter M8.4 platform (electricity production data)	Deliverables	To be determined	GrowSmarter Measure 8.4 platform + semantic access	Any software that can access a REST API. Any user /app that uses the Web tool to access data semantically	Independent of platforms and programming language
Sustainable hub	Upload to GrowSmarter M8.4platform	n/a	n/a	GrowSmarter Measure 8.4 platform + semantic access	n/a	n/a
MSC / Smart CT	Upload to GrowSmarter M8.4 platform	n/a	n/a	GrowSmarter Measure 8.4 platform + semantic access	n/a	n/a
Mobility measures	Uploading most of the data to the GrowSmarter data	Documents and deliverables	CENIT website, press documents	GrowSmarter Measure 8.4 platform + semantic access	n/a	n/a
Urban ontology	Access via exploration tool, also direct access to ontology file if needed	Documents and deliverables	BSC web site	BSC toolset	Web access to exploration tool (Chrome, Firefox), protégé to explore ontology manually if needed	n/a
1c. Raw data Stockholm						

Energy efficient refurbishment - of the building Valla Torg	Uploading most of the evaluation-data to the GrowSmarter data	Documents and deliverables	Press documents	GrowSmarter ProjectPlace	.xlsx	n/a
Energy efficient refurbishment - of the building Årstakrönet						
Energy efficient refurbishment - of the building Slakthus area						
Construction logistics center	Uploading most of the evaluation-data to the GrowSmarter data	Documents and deliverables	Press documents	GrowSmarter ProjectPlace	.xlsx	n/a
Energy Saving tenants	Currently only internal use of the raw data planned	Documents and deliverables		Fortum's internal data collection infrastructure	Data analytic software	Computer with internet access
Virtual Power Plant BRF Årstakrönet	Uploading most of the evaluation-data to the GrowSmarter data	Documents and deliverables	Press documents	GrowSmarter ProjectPlace	.xlsx	n/a
Smart LED-lighting	Only internal use at the moment, no analysis or results yet	To be determined	To be determined	To be determined	Web interface, Excel, Access	Computer with internet access
Open district heating	Uploading most of the evaluation-data to the GrowSmarter data	Documents and deliverables	Press documents	GrowSmarter ProjectPlace	.xlsx	n/a
Smart Waste handling	Uploading most of the evaluation-data to the GrowSmarter data	Documents and deliverables	Press documents	GrowSmarter ProjectPlace	.xlsx	n/a
Delivery boxes	Uploading most of the evaluation-data to the GrowSmarter data	Documents and deliverables	Press documents	GrowSmarter ProjectPlace	.xlsx	n/a
Mobility Management	Will be shared between Audi and Insero based on test plan.	Will not be disseminated	GrowSmarter communication and dissemination plan WP-leader ICLEI	Different for different Partners	Excel	Computer with internet access
Electric Charging	Uploading most of the evaluation-data to the GrowSmarter data	Documents and deliverables	Press documents	GrowSmarter ProjectPlace	.xlsx	n/a
Renewable fuel stations	Uploading most of the evaluation-data to the GrowSmarter data	Documents and deliverables	Press documents	GrowSmarter ProjectPlace	.xlsx	n/a
Electrical car pool	Uploading most of the evaluation-data to the GrowSmarter data	Documents and deliverables	Press documents	GrowSmarter ProjectPlace	.xlsx	n/a

Electrical and Cargo bike pool						
2. Technical Research Data	Data which can be shared will be accessible through the GrowSmarter web site	WP5 report on results	GrowSmarter communication partners + IESE's communication department	Through the GrowSmarter web site	Excel	Computer with internet access
3. Economic Research Data		Documents and deliverables	GrowSmarter communication partners + IESE's communication department		Excel (.xlsx) or software able to read .csv files	
4. Smart City Data - Cologne	Via standardized interfaces and protocols	Documents and deliverables	GrowSmarter communication	[ui!] UrbanPulse	Every software that can support the open standards	Independent of platforms and programming language
5. Smart city Data – Barcelona	WP2-WP4 Barcelona data sets are accessible by APIs.	Website, documents	Website, twitter, press notes (to be determined)	Measure 8.4 Data Integrated Platform	Web access, set of API REST methods.	Recommended Chrome & Firefox for the web portal applications.
6. Smart City Data – Stockholm	To be determined	To be determined	To be determined	IBM Blue Mix	To be determined	To be determined
7. SCC1 Touch Screen	Available to all SCC1 partners via cloud.	Use at external events	n/a	Easire launcher (java enabled software)		PC, & touch screen is required. Min. 10 touches PCAP or INGLAS Touch sensor
8. Webinars	Attendance by registration. Presentations available online	Invitations to GrowSmarter partners, City Interest Group, and other SCC01 projects. Advertised through website	Each webinar advertised through project website	Presentations available on GrowSmarter website	n/a	n/a
9. Fact sheets	Publicly available	Via website, press, social media	Via website, press, social media	Factsheets available on GrowSmarter website	n/a	n/a
10. Data on dissemination activities	Internal project data					
11. Documentation data	Contact City of Stockholm, Environment and Health, Registry		Project reports to Environmental Board is sent out for public knowledge	Ecos	.pdf	Computer with internet access and e-mail address
		Embargo period*	Accessibility*			Restriction specifications*

Data set	Date	Restrictions	Mode of restrictions	Restricted groups	Reasons to restrict
1. Raw data specified further per Smart city below	Not Applicable	Up to each partner to describe according to the Grant Agreement	Up to each partner to describe according to the Grant Agreement	Up to each partner to describe according to the Grant Agreement	Protect results, confidentiality obligations, security obligations, obligations to protect personal data or if the achievement of the action would be jeopardized
1a. Raw data Cologne					
Energy efficient refurbishment of the building: Siedlungsmanagement – balancing demand with supply Home Energy Management Systems/SmartHome, SmartMeter Charging Infrastructure	To be determined	Only accessible for GrowSmarter	To be determined	To be determined	To be determined
Energy consumption data from individual appliances in households	n/a	AGT internal	Data is kept according to the German Data Protection Law in AGT's internal data warehouse	AGT Internal	Data is highly personal data that needs to be protected
Mobility measures (11.1, 12.3 and 12.4): Car-Sharing at the City of Cologne Mobility Stations in the Mülheim district, including E-Cars, Parking App, Bike-Sharing and E-Bikes	Aggregated data – no embargo	Only accessible for GrowSmarter	To be determined	To be determined	To be determined
Big Consolidated Urban Platform; Traffic Data	2016	View of representation	User Accounts	Only accessible for GrowSmarter Partners	Protect results, confidentiality obligations, security obligations
1b. Raw data Barcelona					
Technical raw data - building refurbishing Barcelona	None for shared data	Same as GrowSmarter M8.4 platform accessibility	To be determined	To be determined	n/a
Technical data - building refurbishment GNF	Aggregated data – no embargo	Same as GrowSmarter M8.4 platform accessibility	To be determined	To be determined	To be determined
Photovoltaic installations	No embargo (electricity production data)	Same as GrowSmarter M8.4 platform accessibility	To be determined	To be determined	To be determined
Sustainable hub	n/a	n/a	n/a	n/a	n/a

MSC / Smart CT	n/a	n/a	n/a	n/a	n/a
Mobility measures	To be determined	To be determined	To be determined	To be determined	To be determined
Urban ontology	n/a	No restriction to the urban ontology. To be determined for toolset	To be determined	To be determined	To be determined
1c. Raw data Stockholm					
Energy efficient refurbishment - of the building Valla Torg	To be determined	Only accessible for GrowSmarter	To be determined	To be determined	To be determined
Energy efficient refurbishment - of the building Årstakrönet					
Energy efficient refurbishment - of the building Slakthus area					
Construction logistics center	To be determined	Only accessible for GrowSmarter	To be determined	To be determined	To be determined
Energy Saving tenants	To be determined	Only accessible for GrowSmarter	To be determined	To be determined	To be determined
Virtual Power Plant BRF Årstakrönet	To be determined	Only accessible for GrowSmarter	To be determined	To be determined	To be determined
Smart LED-lighting	To be determined	Only accessible for GrowSmarter	To be determined	To be determined	To be determined
Open district heating	To be determined	Only accessible for GrowSmarter	To be determined	To be determined	To be determined
Smart Waste handling	To be determined	Only accessible for GrowSmarter	To be determined	To be determined	To be determined
Delivery boxes	To be determined	Only accessible for GrowSmarter	To be determined	To be determined	To be determined
Mobility Management	To be determined	Only accessible for GrowSmarter	To be determined	To be determined	To be determined
Electric Charging	To be determined	Only accessible for GrowSmarter	To be determined	To be determined	To be determined
Renewable fuel stations	To be determined	Only accessible for GrowSmarter	To be determined	To be determined	To be determined
Electrical car pool	To be determined	Only accessible for GrowSmarter	To be determined	To be determined	To be determined

Electrical and Cargo bike pool	To be determined	Only accessible for GrowSmarter	To be determined	To be determined	To be determined
2. Technical Research Data	None for data which is shared	None foreseen	n/a	n/a	Privacy issues, if any
3. Economic Research Data	Until the end of the project				
4. Smart City Data - Cologne	2016 - 2018	View of representation, technical restrictions	User Accounts, restricted IP ranges	Colognes GrowSmarter project partners	Data must be evaluated on confidentiality obligations, security obligations and afterwards decisions will be made to drop restrictions
5. Smart city Data – Barcelona	To be determined	According the indications of each data owner.	Authentication & authorization methods	To be determined	To be determined
6. Smart City Data – Stockholm	To be determined	To be determined	To be determined	To be determined	To be determined
7. SCC1 Touch Screen	n/a	Only available for use by SCC1 projects at events	Authentication & Authorization methods	SCC1 projects	Early stage of development. Next step foresees making the information available online. However this is pending approval.
8. Webinars	None	Webinar attendance via registration No restrictions to presentations	Registration process	Priority attendees: GrowSmarter Follower Cities and other partners, City Interest Group, other SCC01 partners. If space remaining, webinar advertised more widely	Keep small group size to allow discussions
9. Fact sheets	None	No restrictions			
10. Data on dissemination activities	Internal project data	n/a	n/a	n/a	n/a
11. Documentation data	n/a	No restrictions			

5 ARCHIVING AND PRESERVATION

Chapter 5 describes the procedures that will be used for the long-term storing and preservation of data. There will be an indication of how long time the data should be stored, the approximate time span and volume of data, and the associated costs.

Primary data will be archived for a minimum of five years by the partners generating the data. The Royal Institute of Technology and IESE Business School will archive the results for a minimum of five years. The City of Stockholm, the coordinator organization, will keep records on all publications, reports and communication material digitally forever.

Data set	Repository*			Resources	
	Storage location	Type of repository	Reasons to use this repository	Associated/additional costs	Additional specialist expertise required
1. Raw data specified further per Smart city below	Stored by each partner	Different types			
1a. Raw data Cologne					
Energy efficient refurbishment of the building: Siedlungsmanagement – balancing demand with supply Home Energy Management Systems/ SmartHome, SmartMeter Charging Infrastructure	RheinEnergie	Server (with backup)	Standard procedure	To be determined	To be determined
Energy consumption data from individual appliances in households	AGT's internal data warehouse	Database	Reliable data storage according to German Data Protection Laws	AWS hosting	
Mobility measures (11.1, 12.3 and 12.4): Car-Sharing at the City of Cologne Mobility Stations in the Mülheim district, including E-Cars, Parking App, Bike-Sharing and E-Bikes	GrowSmarter platform and also KVB and Cambio	Server (with backup)	Standard procedure	To be determined	To be determined
Big Consolidated Urban Platform; Traffic Data	Urban Platform	Protected cloud	City platform implementation	To be determined	To be determined
1b. Raw data Barcelona					
Technical raw data - building refurbishing Barcelona	Cellnex platform (Sentilo & GrowSmarter Measure 8.4)	City hall storage solutions (Sentilo). Standard big	This is the city platform implementation	To be determined	To be determined

Technical data - building refurbishment GNF	GrowSmarter Measure 8.4 Platform	data repository (Measure 8.4) Standard big data repository	This is the city platform implementation	To be determined	To be determined
Photovoltaic installations	To be determined	Standard big data repository	This is the city platform implementation	To be determined	To be determined
Sustainable hub	Endesa platform	.xlsx	Accessible save repository	n/a	n/a
MSC / Smart CT	Endesa platform	.xlsx	Accessible save repository	n/a	n/a
Mobility measures	GrowSmarter platform and also, Sentilo (Barcelona's platform)	To be determined	Accessible save repository	To be determined	To be determined
Urban ontology	BSC-CNS server	n/a	n/a	None	To be determined
1c. Raw data Stockholm					
Energy efficient refurbishment - of the building Valla Torg	Stored by each partner	Server (with backup)	Standard procedure	To be determined	To be determined
Energy efficient refurbishment - of the building Årstakrönet					
Energy efficient refurbishment - of the building Slakthus area					
Construction logistics center	Stored by each partner	Server (with backup)	Standard procedure	To be determined	To be determined
Energy Saving tenants	Stored by each partner	Server (with backup)	Standard procedure	To be determined	To be determined
Virtual Power Plant BRF Årstakrönet	Stored by each partner	Server (with backup)	Standard procedure	To be determined	To be determined
Smart LED-lighting	Stored by each partner	Server (with backup)	Standard procedure	To be determined	To be determined
Open district heating	Stored by each partner	Server (with backup)	Standard procedure	To be determined	To be determined
Smart Waste handling	Stored by each partner	Server (with backup)	Standard procedure	To be determined	To be determined
Delivery boxes	Stored by each partner	Server (with backup)	Standard procedure	To be determined	To be determined
Mobility Management	Stored by each partner	Server (with backup)	Standard procedure	To be determined	To be determined
Electric Charging	Stored by each partner	Server (with backup)	Standard procedure	To be determined	To be determined
Renewable fuel stations	Stored by each partner	Server (with backup)	Standard procedure	To be determined	To be determined

	Electrical car pool	Stored by each partner	Server (with backup)	Standard procedure	To be determined	To be determined
	Electrical and Cargo bike pool	Stored by each partner	Server (with backup)	Standard procedure	To be determined	To be determined
2.	Technical Research Data	KTH server	Server	Secure and open	Low	Low
3.	Economic Research Data	IESE's Dropbox account	Cloud	Secure and allows accessibility from all kinds of sources	None	To be determined
4.	Smart City Data - Cologne	MS Azure, ProjectPlace	Cloud	UrbanPulse is based on MS Azure	To be determined	To be determined
5.	Smart city Data – Barcelona	Cellnex CPD (Spain)	Standard repository	Current storage Cellnex solution	To be determined	To be determined
6.	Smart City Data – Stockholm	To be determined	To be determined	To be determined	To be determined	To be determined
7.	SCC1 Touch Screen	Frauenhofer server	Server	Secure and allows accessibility from external events	None	n/a
8.	Webinars	ICLEI server	Server (with backup)	Standard procedure	None	None
9.	Fact sheets	ICLEI server	Server (with backup)	Standard procedure	None	None
10.	Data on dissemination activities	ICLEI server	Server (with backup)	Standard procedure	None	None
11.	Documentation data	City of Stockholm, Ecos	Registry	This is used for registration of all operations by the Environment and health administration	Registry staff and system payed by the City of Stockholm	To be determined

Data set	Long-term preservation plan*			
	Time period for storing after project end	Approximated end volume	Storage repository	Associated costs for preservation
1. Raw data specified further per Smart city below	To be determined	To be determined	Different	To be determined
1a. Raw data Cologne				
Energy efficient refurbishment of the building: Siedlungsmanagement – balancing demand with supply	Not defined yet	To be determined	To be determined	To be determined
Home Energy Management Systems/ SmartHome, SmartMeter				
Charging Infrastructure				
Energy consumption data from individual appliances in households	Data will be stored for at least 5 years after project end	Several GBs	AGT's internal data warehouse	AWS hosting
Mobility measures (11.1, 12.3 and 12.4): Car-Sharing at the City of Cologne Mobility Stations in the Mülheim district, including E-Cars, Parking App, Bike-Sharing and E-Bikes	Five years	An estimated 5 GB	To be determined	To be determined
Big Consolidated Urban Platform; Traffic Data	To be determined	To be determined	To be determined	To be determined
1b. Raw data Barcelona				
Technical raw data - building refurbishing Barcelona	Five years	To be determined	To be determined	To be determined
Technical data - building refurbishment GNF	Five years	To be determined	To be determined	To be determined
Photovoltaic installations	To be determined	To be determined	To be determined	To be determined
Sustainable hub	To be determined	To be determined	To be determined	To be determined
MSC / Smart CT	To be determined	To be determined	To be determined	To be determined
Mobility measures	Not defined yet	To be determined	CENIT server	To be determined
Urban ontology	10 years	n/a	n/a	n/a
1c. Raw data Stockholm	Missing			

Energy efficient refurbishment - of the building Valla Torg	Five years	To be determined	To be determined	To be determined
Energy efficient refurbishment - of the building Årstakrönet				
Energy efficient refurbishment - of the building Slakthus area				
Construction logistics center	Five years	To be determined	To be determined	To be determined
Energy Saving tenants	Five years	To be determined	To be determined	To be determined
Virtual Power Plant BRF Årstakrönet	Five years	To be determined	To be determined	To be determined
Smart LED-lighting	To be determined	700 000 data points and reports	To be determined	To be determined
Open district heating	Five years	To be determined	To be determined	To be determined
Smart Waste handling	Five years	To be determined	To be determined	To be determined
Delivery boxes	Five years	To be determined	To be determined	To be determined
Mobility Management	Five years	To be determined	To be determined	To be determined
Electric Charging	Five years	To be determined	To be determined	To be determined
Renewable fuel stations	Five years	To be determined	To be determined	To be determined
Electrical car pool	Five years	To be determined	To be determined	To be determined
Electrical and Cargo bike pool	Five years	To be determined	To be determined	To be determined
2. Technical Research Data	At least five years	10 GB	GrowSmarter repository	Low
3. Economic Research Data	Five years	To be determined	IESE's Dropbox account	0
4. Smart City Data - Cologne	About 5-10 years	5 – 100 GB (depends on how fast the traffic data can be connected)	Cloud	To be determined
5. Smart city Data – Barcelona	Five years	To be determined	To be determined	To be determined
6. Smart City Data – Stockholm	To be determined	To be determined	To be determined	To be determined
7. SCC1 Touch Screen	To be determined	To be determined	To be determined	To be determined

8. Webinars	Five years	To be determined	ICLEI server (with backup)	None
9. Fact sheets	Five years	To be determined	ICLEI server (with backup)	None
10. Data on dissemination activities	Five years	Insignificant	ICLEI server (with backup)	None
11. Documentation data	Forever	To be determined	Ecos	Registry staff and system payed by the City of Stockholm

About GrowSmarter

GrowSmarter (www.grow-smarter.eu) brings together cities and industry to integrate, demonstrate and stimulate the uptake of '12 smart city solutions' in energy, infrastructure and transport, to provide other European cities with insights and create a ready market to support the transition to a smart, sustainable Europe.

GrowSmarter project partners



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no 646456. The sole responsibility for the content of this document lies with the author and in no way reflects the views of the European Union.