SiEUGreen
Sino-European innovative green and smart cities

Sino-European Innovative Green and Smart Cities

Deliverable 3.2

Common implementation framework

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Disclaimer

SiEUGreen

The project has received funding from the European Union's Horizon 2020 Research, and Innovation programme, under grant Agreement N 774233 and from the Chinese Ministry of Science and Technology.

Throughout SiEUGreen's implementation, EU and China will share technologies and experiences, thus contributing to the future developments of urban agriculture and urban resilience in both continents.

The project SiEUGreen aspires to enhance the EU-China cooperation in promoting urban agriculture for food security, resource efficiency and smart, resilient cities.

The project contributes to the preparation, deployment and evaluation of showcases in 5 selected European and Chinese urban and peri-urban areas: a previous hospital site in Norway, community gardens in Denmark, previously unused municipal areas with dense refugee population in Turkey, big urban community farms in Beijing and new green urban development in Changsha Central China.

A sustainable business model allowing SiEUGreen to live beyond the project period is planned by joining forces of private investors, governmental policy makers, communities of citizens, academia and technology providers.

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Technical References

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[1] **PU** = Public
PP = Restricted to other programme participants (including the Commission Services)
RE = Restricted to a group specified by the consortium (including the Commission Services)
CO = Confidential, only for members of the consortium (including the Commission Services)

Document History			
Version	**Date**	**Author - Partner**	**Summary of Changes**
1.0	30/09/2018	VILABS	Initial Draft
2.0	15/01/2019	VILABS	Draft circulated in the partners involved in showcases
2.8	26/04/2019	VILABS	Final Version sent to coordinator (including the contribution received from NMBU, NIBIO, CAAS, AAKS, HHEPSTI, CASS, HATAY)
3.0	30/04/2019	VILABS - NMBU	Final Version and submission

Executive Summary

Deliverable D3.2 aims to facilitate the deployment of the SiEUGreen project showcases. It is based on an in-depth analysis of the showcase deployment plans delivered by each showcase team to the WP3 leader. The purpose of this analysis is to illustrate the shared and diversified elements in the showcases' vision, objectives and Key Performance Indicators (KPIs). The latter are those foreseen by the Grant Agreement (GA), but also additional ones elaborated by each showcase for their areas of intervention.

Additionally it presents the Community of stakeholders in each and every showcase (which is more diversified among the showcases), and the engagement strategy for which the showcases plan to use several communication tools foreseen by the project, but also other means and activities relevant for each showcase.

Furthermore the deliverable presents the technology deployment complementarities and a time-plan of technology deployment activities. Risks have been identified and contingency plans have been elaborated, while a reporting tool has been developed to measure the accomplishment of the KPIs and guidelines for implementation are provided to the showcase teams. The deliverable includes the showcase deployment plans (Annex A) and the reporting tools (Annex B and C).

The deliverable demonstrates that the SiEUGreen partners work in an efficient manner towards the accomplishment of the project objectives, among which the successful deployment of the showcases is one of the most crucial.

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List of abbreviations

CIF ..... Common Implementation Framework

EC ..... European Commission

GA ..... Grant Agreement

GDPR ..... General Data Protection Regulation

GHG ..... Greenhouse Gas

IPR ..... Intellectual Property Rights

KPI ..... Key Performance Indicator

n/a ..... not applicable

SDP ..... Showcase Deployment Plans

SiEUGreen ..... Sino-European Innovative Green and Smart Cities

TRL ..... Technology Readiness Level

UA ..... Urban Agriculture

1. Introduction

1.1 Overall objectives

This deliverable presents the Common Implementation Framework (CIF) for the execution of the SiEUGreen project showcases. This framework includes the requirements of each showcase such as the vision and objectives, the showcase team members, users and stakeholders and the technologies to be deployed, following the approach which has been prescribed in the Deliverable D3.1 "Requirement Plans for each of the Showcase Locations", submitted in M12 of the project.

In particular, the Common Implementation Framework brings together and presents in an aggregated way the implementation plans devised by the showcase teams. Besides the implementation plans, it also includes the time-line of activities and guidelines for implementation.

1.2 The process

Development of the deliverable took place in an iterative process under the lead of VILABS, the WP3 leader. VILABS 1) presented the requirements of D3.1, 2) provided the showcase leaders with the relevant templates to fill in information about their vision, community, engagement strategy, technologies and some practical issues, 3) gave them detailed instructions on how to do so, 4) received and evaluated the filled in templates, 5) coordinated with the showcase leaders about the KPIs to measure and 6) integrated the information in the deliverable in an aggregate way. The Coordinator was duly consulted during this period.

1.3 Structure

Chapter 0 introduces the deliverable and outlines its scope and the approach of developing it.

Chapter 2 presents the overall showcase aims in the context of the project.

Chapter 3 looks at common aspects of the showcases in an aggregated way. In particular, in the first sub-section, it presents the visions of the showcases also in relation to the SIEUGreen vision stated in the Grant Agreement. In the second sub-section, it presents the

specific objectives of each showcase, grouped under four categories, which have been first elaborated in Deliverable D1.1 “Maps of Quantitative and Qualitative Data for each of the Showcase Locations” and second in Deliverable D3.1. These categories are: land use, food security, resource efficiency and societal inclusion. The third sub-section presents the Key Performance Indicators that the showcases objectives will be measured against to assess their accomplishment.

Chapter 4 focuses on the showcase communities and in particular stakeholders to be involved in the activities of each showcase.

Chapter 1 provides an overview on the technologies to be deployed in the SiEUGreen showcases.

Chapter 0 examines key risks and presents corresponding contingency plans.

Chapter 0 presents the reporting methodology so that the showcases report their progress in order for WP3 leader to develop the mid-term and final showcase reports.

Chapter 8 summarizes guidelines for the successful showcase implementation.

Chapter 9 (Annex A) presents detailed deployment plans for each of the showcases.

Chapter 10 (Annex B) provides the monitoring and reporting tool that will be used to monitor the progress in the accomplishment of the KPIs by the showcases.

Chapter 11 (Annex C) provides the progress report tool (Power Point template) which the showcases will be filling in once a month.

1.4 Intended audience

The deliverable is addressed to 1) the project partners in order to be informed about the requirements of each showcase and to collaborate, 2) the Showcase Deployment Leader in order to monitor the implementation progress, 3) the European Commission (EC) to be informed about the showcases’ requirements and 4) the general public to provide cities which are interested to endorse such technologies, with the SiEUGreen examples.

2. Showcases purpose and deployment approach

Purpose

The purpose of the SiEUGreen showcases is first and foremost to demonstrate the technologies and social innovations of the project in real-world environment to deliver socio-economic and environmental impacts with regard to Urban Agriculture (UA) in each location. In this context, the showcases will contribute towards raising the Technology Readiness Levels (TRLs) of the SiEUGreen technologies (through a process which will be specified in Deliverables D2.1 "Green Technology (T1) Ready" and D2.2 "Evaluation of Crop Techniques"), which will be achieved through adaptation and customization of the technologies by the responsible partners.

Deployment Approach

To successfully deploy SiEUGreen technologies and social innovations, the showcase teams have been supported by the WP3 leader who is responsible for 1) establishing the requirements that each showcase should meet (D3.1), 2) elaborating the Common Implementation Framework (D3.2 "Common Implementation Framework"), 3) providing guidelines for implementation (D3.2) and 4) overseeing the implementation with a reporting tool (D3.2) that each showcase will use to report the progress in the implementation of its activities and in the accomplishment of its specific objectives (D3.4 "Final Showcase Deployment Report" and D3.5 "City Benchmarking").

The approach for the common showcase requirements analysis has been presented in a set of requirements established in D3.1 and an approach tailored to the conditions of each city/ urban agglomeration, as elaborated in the Showcase Deployment Plans (SDP).

For example, in Aarhus where urban agriculture initiatives are numerous the focus will be on social innovation. In the other showcases the focus will be on both technical and social innovation.

3. Showcases' vision, objectives and KPIs

In this chapter we present the elements regarding the vision, the objectives and the Key Performance Indicators of the showcases that are shared among the different showcases and some elements that diversify each one from the others.

3.1 Vision

In D3.1 the showcase teams were asked to elaborate a vision for each showcase which would be based on the common SiEUGreen vision as established in the Grant Agreement (GA). In the table below the shared elements among the showcases' visions are presented. Each separate vision is presented in the Annex A, sub-sections 9.1-9.5.

Keywords	Norway, Fredrikstad	Turkey, Hatay	China, Beijing	China Changsha	Denmark, Arhus
Resilience	X				
Environmental sustainability	X			X	X
Circularity	X		X	X	X
Societal inclusion		X	X		X
Climate friendliness	X		X		
Resource efficiency	X	X	X	X	X

Table 1 - Vision complementarities

From the aspects of the vision of SiEUGreen it seems that resource efficiency features on all showcases, demonstrating its importance for the project. Circularity features among four showcases, even though there are overlaps with resource efficiency, and the application of the technologies will increase circularity in all cases. Environmental sustainability is shared by three showcases and the same applies to social inclusion. The latter demonstrates that the project has - to a great extent - the ambition to bring people together in their neighbourhoods to grow food in different environments, to make people happier and increase societal engagement with city activities. Lowering Greenhouse Gas emissions (GHGs) is part of the vision of two showcases. The choice of the wording aside, protecting the environment in the city or urban agglomeration is the highest priority for all showcases. Last, only in Fredrikstad does the showcase team use the term resilience, which does not mean that technical and social innovations will not increase resilience in all cases, but only that this term is more rarely used in urban agriculture.

Figure 1 - Keywords of showcases visions

3.2 Objectives

Following the establishment of their visions, the showcases were asked to specify their objectives, grouped under four pillars: Land use, Food security, Resource efficiency and Societal inclusion. These objectives grouped under the four pillars are presented in the table below:

Objectives	Norway, Fredrikstad	Turkey, Hatay	China, Beijing	China Changsha	Denmark, Arhus
Pillar 1: Land use					
Use of balconies	**X**		**X**	**X**	
Include UA in comprehensive plans and strategies	**X**				
Promote technologies for more efficient use of land for UA. Increase the land used for UA.	**X**				**X**
Pillar 2: Food Security					
Increase the possibilities of cultivating edible crops, among other things by supporting the establishment of new urban gardens and edible urban spaces.					**X**
Increase the quantity of food produced locally	**X**	**X**			
Facilitate access to healthier and more fresh food (pesticides-free, consumed within a few days after harvesting)	**X**	**X**	**X**	**X**	
Develop sprouting vegetable varieties with stronger functions			**X**		
Identify and promote the most appropriate plant growing techniques for each location in their cities / metropolitan areas in cold climate	**X**				

Pillar 3: Resource efficiency					
Reduce, reuse, recycle waste: Establish **circularity**	X	X			X
Research on the Decrement and Resource Utilization Mode of Kitchen Waste. Reduce waste and resource utilization of kitchen waste, reduce urban pollution and save resources			X		
Prudent use of natural resources, energy and agricultural inputs	X	X		X	
Lower GHGs emissions	X				
Pillar 4: Societal inclusion					
Contribute to changing perceptions and attitudes towards the use of land for UA	X			X	X
Make use of UA as an integration strategy for refugees and migrants.		X			
Improve the way residents enjoy urban entertainment through the reduction of kitchen waste and centralized treatment demonstration			X		
Residents' happy small vegetable garden demonstration, enrich urban residents' spare time, improve children's health food knowledge			X		
Increase understanding of the social and economic potentials of Urban Agriculture		X			
Increase knowledge of organic gardening practices		X			
Training of disadvantage women (Syrian refugees and local women)		X			
Citizens master the technique of planting vegetables on papers expertly.			X		
Other					
Urban Agricultural Technology Integration and Demonstration			X		
Screening of matrix formulations suitable for leafy vegetables and fruit vegetables			X		
Automatically planting vegetables on paper on the balcony comes true.			X		
Technology transfer		X			

Table 2 - Objectives complementarities

The most prevalent objective of the showcases, as presented in the table above is to facilitate access to healthier food. Indeed, urban agriculture, by establishing short supply chains, is expected to have this effect, benefiting on several levels the urban population. This

depends to some extent on whether the food produced is distributed to the population in commercial (e.g. local markets or super-markets) or non-commercial terms.

Prudent use of natural resources, energy and inputs together with circularity feature next in the priorities of the showcases. As we said above there is significant overlap between resource efficiency and circularity; thus all showcases will be effective on both. Food security (increasing the quantity of food produced locally) and behavioural change (changing the perceptions and attitudes towards urban agriculture) come next among the objectives of the showcases. Last, showcase-specific objectives, amongst them also technology-related ones are presented too.

The most outstanding objective is the increase of the happiness of the city dwellers who are occupied with urban agriculture. It is also an ambitious objective, which is more difficult to measure compared to others.

3.3 Key Performance Indicators (KPIs)

The Key Performance Indicators are measurements that are used to assess the accomplishment of the objectives of each showcase. Each KPI consists of its description and a target value. The KPIs of the showcases are presented in an aggregated format in the Excel file that accompanies the current deliverable (See Annex B).

4. Showcases' community

4.1 Stakeholders

Engaging the relevant community segments is essential for the success of SiEUGreen, as it will enable the proliferation of UA projects in the cities and urban agglomerations of the project and has the potential to promote UA in other cities in Europe and in China. The relevant stakeholder categories for each and every showcase are presented below.

Stakeholder category	Norway, Fredrikstad	Turkey, Hatay	China, Beijing	China Changsha	Denmark, Arhus
Government / policy makers	X	X	X		
Community / residents / neighbours	X	X	X	X	X
Services industry			X		
Suppliers of equipment and / or technology	X		X	X	
Welfare organisations			X		
Local authorities	X				
Civil society / NGOs	X	X	X		

Table 3 - Stakeholder categories targeted by the showcases

All the SiEUGreen showcases aim to involve urban dwellers in their activities. This focus has the potential to create or expand UA. Without the support and active involvement of the urban communities UA has lower possibilities to expand, let alone be implemented with new technologies and techniques that promote sustainability, resilience, circularity and the other objectives set out in the visions of each city/ urban agglomeration. Thus the commitment of the community is the backbone of SiEUGreen.

In the Chinese showcases, the engagement of the industry and technology suppliers is the highest priority, whereas in the European ones, other stakeholders feature higher on the agendas, such as local authorities, policy-makers and NGOs. Indeed, the attempt to influence policy is important to the SiEUGreen endeavor. Policies such as those related to land-use, to the safe and effective production of food in urban settings, to the use of manure and compost as fertilizer, to the adoption and implementation of novel techniques such as aquaponics are key for the proliferation of UA in all its facets (urban greenhouses, balcony and rooftop food production and cultivation of food on public gardens and other public spaces).

4.2 Engagement tools and activities

In order to involve the community, the showcases will use several tools and activities which are presented in the table below.

Stakeholder engagement activities	Norway, Fredrikstad	Turkey, Hatay	China, Beijing	China Changsha	Denmark, Arhus
Workshops	X	X	X	X	X
Networking					X
Commurban App	X	X	X	X	X
Food events	X				
Public hearings / public consultation	X				
Showroom	X				
Events organized with other stakeholders or at third party events	X				
Trainings			X		
Gardening activities			X		
Other promotional activities				X	
Meetings with stakeholders		X			
Social media		X			

Table 4 - Stakeholder engagement activities

As regards the strategies for the engagement of the different categories of stakeholders, these are diverse and tailored to each showcase. The use of the Commurban App is shared by all showcases. This will be particularly the case for the engagement of the community.

Commurban is an interactive tool, which allows the sharing of experiences of users with UA, including sharing photos of their projects, discussing with each other the challenges they face and resolve them in a community setting. It is expected that the wide use of Commurban will raise awareness about urban agriculture projects in the cities / urban agglomerations of the consortium and will encourage more city dwellers to join the other activities foreseen, such as workshops, networking events and food events.

Last, training the city dwellers in urban agriculture techniques is deemed as essential for the project and the showcase leader will discuss with the rest of the showcases about the need to organise such activities too.

4.3 Engagement activities time-plan

In the following Gantt charts the time-plans of the engagement activities of the showcases are presented.

4.3.1 Fredrikstad (Norway) engagement activities time-frame

Fredrikstad showcase time-frame		Year 2												Year 3												Year 4											
		M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36	M37	M38	M39	M40	M41	M42	M43	M44	M45	M46	M47	M48
	Community engagement activities																																				
1	Showcase promotion by Commurban app																																				
2	Organize events – eg. Specialized food event in roof top gardens																																				
3	Public hearings /public consultation meeting																																				
4	Workshops																																				
5	Events organized in association with municipality																																				
6	Showroom at CiCignon Park																																				
7	Present Cicignon park during the Moon festival																																				
8	Engagement of the local forum for UA																																				

4.3.2 Hatay (Turkey) engagement activities time-frame

Hatay showcase time-frame		Year Year 2												Year 3												Year 4											
		M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36	M37	M38	M39	M40	M41	M42	M43	M44	M45	M46	M47	M48
	Community engagement activities																																				
1	Start-up dissemination and promotion meeting																																				
2	Try to reach as many as possible stakeholders to get involved in this project (started in 2018)																																				
3	Meeting with related stakeholders regularly (according to the needs)																																				
4	For the promotion we are using the social media account of the municipality (started in 2018)																																				
5	Promotion of activities through the Commurban App																																				

4.3.3 Beijing (China) engagement activities time-frame

Beijing showcase time-frame		Year 2												Year 3												Year 4											
		M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36	M37	M38	M39	M40	M41	M42	M43	M44	M45	M46	M47	M48
	Community engagement activities																																				
1	Contact with contact people of relevant departments, carry out skill training, and the planting experts of the enterprise make on-site introduction and explanation with products (took place in 2018)																																				
2	Carry out uniform training and study and technical guidance face to face (took place in 2018)																																				
3	Contact with responsible people of the community and the residential district, and experts conduct experiential planting training.																																				
4	The government leads and organizes women for reemployment and training on entrepreneurial skills																																				
5	Activities open to the public																																				
6	Educational activities such as training and interactive workshops																																				
7	Promotion of activities through the Commurban App																																				

4.3.4 Changsha (China) engagement activities time-frame

Changsha showcase time-frame		Year 2												Year 3												Year 4											
		M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36	M37	M38	M39	M40	M41	M42	M43	M44	M45	M46	M47	M48
	Community engagement activities																																				
1	Showcase promotion by Commurban app																																				
2	Public hearings /public consultation meeting																																				
3	Workshops																																				
4	Technology sharing session																																				

4.3.5 Aarhus (Denmark) engagement activities time-frame

	Aarhus showcase time-frame	Year 2												Year 3												Year 4											
		M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36	M37	M38	M39	M40	M41	M42	M43	M44	M45	M46	M47	M48
	Community engagement activities																																				
1	The making of the toilet facilities in Fællesgartneriet																																				
2	Implementation of the toilet and education to the community about use, maintenance and cycle of waste.																																				
3	Workshop on the collected waste for communities																																				
4	Event on circular compostation																																				
5	Workshop and start-up for the gardens																																				
6	Harvest - feast																																				
7	Vinterseason-workshop																																				
8	Start-up new season																																				
9	Promotion of Commurban web-app																																				

5. Showcases' technology

5.1 Technologies to be deployed

The deployment of the SiEUGreen technologies is the core of the implementation of the showcases. Through the technologies, the showcases will be able to exploit in an optimal way natural resources, saving water and energy and using lower external inputs. Increased production of food is also expected to be the outcome of the deployment of the technologies. Thus technical innovation in SiEUGreen is associated with both environmental and socioeconomic gains.

Technology	Norway, Fredrikstad	Turkey, Hatay	China, Beijing	China Changsha	Denmark, Arhus
Green technologies					
1.Innovative greenhouse technology using special insulation, solar heat storage, and biogas for light CO2 and heat	X				
2. Greenhouse technology, traditional			X		X
3. Polytunnels					X
4. Mobile gardens					X
5. Soil-based traditional plant growing	X	X	X	X	X
6. Water-based hydroponic culture	X	X	X	X	
7. Aquaponic cultures (plant fish fully recycling technology)		X	X		
8. Paper-based plant growing technology	X	X	X	X	X
9. Balcony gardens	X		X	X	
Blue technologies					
1. Biogas production from Antec Biogas pilot scale reactor	X				
2. Treatment of Biogas digestate by biofiltration	X				
3. Struvite precipitation from biofilter percolate	X			X	
4. Use of organic waste product for the production of insects in connection of aquaponic system	X	X			
5. Biofiltration of urine	X				
6. Co-composting of organic house hold waste /greenwaste and solar dry toilet residue	X				X

1. Vacuum- /low flush toilets	X			X	
2. Urine diverting toilets	X				
3. Solar dry toilet	X				X
4. Greywater treatment using a Biofilter/Filterbed treatment system	X			X	
5. Greywater treatment using a biomembrane system	X			X	
6. Green wall for greywater treatment	X				
1. Green roof light weight aggregate (LWA) for water retention				X	
2. Green wall for water retention	X				
3. Wetland/pond system for stormwater disposal	X			X	
4. Wetland/infiltration system for stormwater disposal	X			X	
Yellow technologies					
1.Borehole thermal energy storage (BTHS)	X				
2. Ground source heat pumps (GSHP)	X				
3. Photovoltaic panels (PV)	X	X		X	
4. Solar collectors for heating water	X			X	
5. Combined heat and power (CHP) from biogas	X				

Table 5: Technology Complementarity table

This aggregate presentation of the technology deployment complementarities among the showcases shows that the most technology-intensive showcase is Fredrikstad and the less intensive is Hatay and then Aarhus. Specifically, Fredrikstad aims to create an integrated system, which uses most of the waste in a circular model, whereas Aarhus and Hatay attempt to refine existing systems of urban agriculture; thus fewer technical innovations are needed.

5.2 Technologies' deployment time-plans

In the following Gantt charts the time-plans of the technology deployment activities in each showcase are presented.

5.2.1 Fredrikstad (Norway) technology deployment time-frame

Fredrikstad showcase time-frame		Year 2												Year 3												Year 4											
		M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36	M37	M38	M39	M40	M41	M42	M43	M44	M45	M46	M47	M48
	Technology deployment activities																																				
Green technologies																																					
1	Innovative Greenhouse Technology																																				
2	Balcony Gardens																																				
3	Paper based plant growing technology																																				
4	Soil based traditional plant growing																																				
5	Water based hydroponic culture																																				
Blue technologies																																					
1	Biogas production from biogas pilot scale reactor																																				
2	Treatment of biogas digestate by biofiltration																																				
3	Struvite precipitation from biogas digestate																																				
4	Co-composting of organic house hold waste /greenwaste and solar dry toilet residue – (Pending)																																				
5	Vaccum low flush toilets																																				
6	Urin Diversion toilets (Pending)																																				
7	Solar dry toilet (Pending developers decision)																																				
8	Greywater treatment using a biofilter/filterbed treatment system																																				
9	Wetland /pond system for stormwater disposal																																				
10	Wetland/infiltration system for stormwater disposal																																				
Yellow technologies																																					
1	Borehole thermal energy storage (Pending hydrogeological assessment)																																				
2	Ground source heatpumps (Pending hydrogeological assessment)																																				
3	Photovoltic panels																																				
4	Solar collectors for heating water (Pending developers decision)																																				
5	Combine heat and power from biogas (Using thermo-electric generator)																																				

5.2.2 Hatay (Turkey) technology deployment time-frame

	Hatay showcase time-frame	Year Year 2												Year 3												Year 4											
		M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36	M37	M38	M39	M40	M41	M42	M43	M44	M45	M46	M47	M48
	Technology deployment activities																																				
	Green technologies																																				
1	Soil-based traditional plant growing (started before the beginning of the project)																																				
2	Greenhouse technology, traditional (started before the beginning of the project)																																				
3	Water-based hydroponic culture																																				
4	Aquaponic cultures (plant fish fully recycling technology)																																				
5	Paper-based plant growing technology																																				
	Blue technologies																																				
1	Use of organic waste product for the production in connection of aquaponic system																																				
	Yellow technologies																																				
1	Photovoltaic panels (PV)																																				

5.2.3 Beijing (China) technology deployment time-frame

	Beijing showcase time-frame	Year 2												Year 3												Year 4											
		M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36	M37	M38	M39	M40	M41	M42	M43	M44	M45	M46	M47	M48
	Technology deployment activities																																				
	Green technologies																																				
1	Greenhouse technology, traditional																																				
2	Soil-based traditional plant growing																																				
3	Greenhouse technology																																				
4	Soil-based traditional plant growth																																				
5	Aquaponic culture																																				
6	Balcony garden																																				

5.2.4 Changsha (China) technology deployment time-frame

	Changsha showcase time-frame	Year 2												Year 3												Year 4											
		M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36	M37	M38	M39	M40	M41	M42	M43	M44	M45	M46	M47	M48
	Technology deployment activities																																				
	Green technologies																																				
1	Water-based hydroponic culture // Technology deployment duration																																				
2	Paper-based plant growing technology // Technology deployment duration																																				
3	Balcony gardens // Technology deployment duration																																				
4	Soil-based traditional plant growing // Technology deployment duration																																				
	Blue technologies																																				
1	Struvite precipitation from biofilter percolate // Technology deployment duration																																				
2	Low flush toilets // Technology deployment duration																																				
3	Greywater treatment using a Biofilter/ Filterbed treatment system // Technology deployment duration																																				
4	Greywater treatment using a biomembrane system // Technology deployment duration																																				
5	Green roof light weight aggregate (LWA) for water retention // Technology deployment duration																																				
6	Wetland/pond system for stormwater disposal // Technology deployment duration																																				
7	Wetland/infiltration system for stormwater disposal // Technology deployment duration																																				
	Yellow technologies																																				
1	Photovoltaic panels (PV) // Technology deployment duration																																				
2	Solar collectors for heating water // Technology deployment duration																																				

5.2.5 Aarhus (Denmark) technology deployment time-frame

	Aarhus showcase time-frame	Year 2												Year 3												Year 4											
		M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36	M37	M38	M39	M40	M41	M42	M43	M44	M45	M46	M47	M48
	Technology deployment activities																																				
	Green technologies																																				
1	Greenhouse Technology, traditional (started before the project																																				
2	Polytunnels																																				
3	Soil-based traditional plant-growing (started before the project)																																				
	Blue technologies																																				
1	Co-composting of organic house hold waste/greenwaste and solar dry toilet residue (not measured in the context of the project																																				
2	Solar dry toilet																																				

6. Showcases' risks and contingency plans

The showcase teams have identified the risks regarding the successful deployment of each showcase and have established contingency plans for the management of each risk. The risks are both human- and technology-induced and the contingency measures are in accordance with them. Throughout the deployment of the showcases WP3 leader will assess together with the showcase teams whether new risks have emerged and how they can be tackled. The identified risks and contingency plans are presented in the table below.

Showcase	Risk	Contingency plans
All showcases	One of the project leaders might get sick or leave the project	**Keep in close contact and ask for another person on site to be co-pilot.**
Aarhus	We can not get building permission	**We use our network in the municipality to get the shared understanding of the project.**
Aarhus	We experience violence in the projects against the greenhouses	**We communicate through local channels in the established societies. We do NOT communicate as the municipality.**
Aarhus	We experience, that people do not want to use the solar-driven toilet and they do not want to be engaged in the process where we test the outcome	**Communication through our local project leader Marie on the site. Experts from the university come out to ensure, that everything goes as planned.**
Beijing / Changsha	Personal safety risks	**Use special protection gear**
Beijing / Changsha	Equipment operation failure risk	**Backup municipal drainage network**
Changsha	Sampling explosion risk	**No fireworks around the area**
Fredrikstad	Building permits not on time	**Encourage developer to speed up the implementation if possible**
Fredrikstad	Unfavorable natural conditions restrict use of certain technologies	**Select other technical options**
Fredrikstad	Current laws may restrict some of the suggested technology	**Apply for exception from current laws as part of the demonstration project**
Fredrikstad	Equipment operation failure at risk (e.g. failure of equipment such as biogas reactor or greywater treatment)	**Backup municipal drainage network**
All showcases	Showcase communities become disengaged with and disrupt the project.	**Illustrate the immediate benefits for the community / Maintain communication links to discern early signs of disengagement**
All showcases	Key stakeholders become disengaged with project and disregard project communications	**Communicate with them in more direct ways (e.g. personal invitations to events)**
All showcases	Key stakeholders are combative to	**Organize an open consultation to**

	the project or there is a disagreement over project issues.	**discuss divergent views**
All showcases	Showcase community members develop inaccurate expectations towards the showcase deployment	**Maintain open communication links with the communities to ensure expectations are realistic**
All showcases	Key stakeholders have a negative attitude towards the project and wish to see it fail	**Work with different stakeholders**
All showcases	Dependencies impact the project schedule and costs	**A careful plan of activities has been formulated and will be updated if delays occur. As regards costs, the reallocation of resources between different activities will be sought.**
All showcases	Decision delays impact project	**Establish a procedure of efficient decision making in all showcases.**
All showcases	Low quality or no response to request for proposal (RFP) from vendors	**The equipment needed is available on the market. The RFPs will be published extensively.**
All showcases	Failure to negotiate reasonable prices for contracts	**Investigate the reallocation of resources or to initiate a new procurement process.**
All showcases	Vendor components fail to meet requirements	**Insert an insurance clause in the contract that in case of failure the contractor will be held responsible.**
All showcases	Delays to procurement processes impact the project	**A new plan will be formulated to accommodate delays without impacting other project activities.**
All showcases	Force Majeure (e.g. act of nature) impacts project	**Local rules of compensation for property loss due to natural disasters will apply. Extra funding and extension of duration will be sought from the EC to reestablish the project.**

7. Reporting methodology

The reporting of the progress of the showcases will be implemented with the use of two tools.

First, through the progress webinars:

The webinars will take place **once a month**.

In these webinars the showcase teams will be reporting on the accomplishment of their time-plan, potential delays and mitigation actions, any new risks and mitigation actions, obstacles/difficulties and solutions and lessons learnt that are worth to be shared with the other showcases.

The showcase teams will **fill in this information in the Power Point template** which accompanies the present deliverable (Annex C) and will present them in each webinar.

Second, through the KPIs reporting tool:

The reporting of the progress in the accomplishment of the KPIs will take place **once every seven months**, to fit the time-plan for the development of the showcase mid-term and final reports.

To report on the KPI progress, the showcase teams will **fill in the values in the work-sheet of the Excel file** that accompanies this deliverable (Annex B) that is named according to the showcase name.

8. Guidelines for implementation

Based on the showcase deployment plans, an initial assessment has been carried out by the WP3 leader, who has concluded that the planning of the showcases is according to the requirements established in D3.1. Therefore, there is a sound basis for the showcase implementation.

In order to prevent issues from emerging, the following steps should be implemented by the showcase teams:

First, they should follow duly the time-plan of implementation.

Second, they should report the progress according to the instructions in Chapter 7 of this deliverable "Reporting Methodology" and especially as regards the measurements of the KPIs.

Third, they should inform the WP3 leader and project manager in case of deviations from the plan or in case new risks emerge.

Fourth, they should establish together with the WP3 leader a new plan that complies with the Grant Agreement and in case of new risks they will establish contingency measures.

9. Annex A. Showcase deployment plans

9.1 Fredrikstad (Norway) Deployment Plan

Vision, objectives and KPIs

Vision:	**To demonstrate Fredrikstad as a resilient, climate, environment and human friendly urban development with near zero emissions, circular economy, low climate and water footprint.**
Objective No1:	Contribute to changing perceptions and attitudes towards the use of land for UA
Objective No2:	Promote technologies for more efficient use of land for UA. Increase the land used for UA
Objective No3:	Identify and promote the most appropriate plant growing techniques for each location in their cities / metropolitan areas in cold climate
Objective No4:	Include UA in comprehensive plans and strategies
Objective No5:	Facilitate access to healthier and more fresh food (pesticides-free, consumed within a few days after harvesting)
Objective No6:	Increase the quantity of food produced locally
Objective No7:	Reduce, reuse, recycle waste: Establish circularity. Reduce water consumption and recycle resources from the households (blackwater and organic household waste) to UA and for production of biogas
Objective No8:	Prudent use of natural resources, energy and agricultural inputs
Objective No9:	Lower GHGs emissions

KPI description	**Target value**	**Related objective**
Unused land to be used (phase 1) (Total land in CiCignon park is 3.5 ha)	3.5 ha	Obective 1
Land dedicated to UA as percentage of land	5%	Obective 1 and Objective 2
Amount of secure (FAO) food produced (WP3) in relation to the amount of food produced without the project.	Quantity: 4250 duration of the project Percentage of increase: 100%	Objective 3; Objective 4; Objective 6
Population active in UA	100	Objective 4; Objective 6
Land under organic management as percentage of total land used for UA	100%	Objective 5; Objective 7
Individuals involved in showcases. (Individuals in the CiCignon park area)	2000	Objective 1; Objective 3
Reduction of the water and energy footprints.	Reduction of water use by: 90% Reduction of heat cost by :	Objective 7; Objective 8; Objective 9

	25%	
Reduction of Green house gas emission	Reduction by 70%	Objective 9

Additional KPIs

KPI description	Target	Relevant objective
Biogas conversion from blackwater (Wastewater) m3 methane/year	1270 **(This amount of methan is expected to be produced from the biogas reactor installed in Fredrikstad)**	Resource efficiency (Objectives 7,8,9)
Methane converted to -> electricity/year (m3)	3190	Resource efficiency (Objectives 7,8,9)
Methane converted to -> heat (kWh/year)	9580	Resource efficiency (Objectives 7,8,9)
-> CO2 for the greenhouse use (m3/year)	1550	Resource efficiency (Objectives 7,8,9)

The showcase team

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Title and Name SURNAME:	Cao Kan
Role in the showcase:	Developer – ccc park
Profession:	Business man - Real Estate Development
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Skype:	Information not available due to GDPR

Mapping of stakeholders

Name of organisation and website	Stakeholder Category	Target No: to engage	Contact person name	Contact person Email	Contact person Telephone number
Residents of the Cicignon park phase 1 (68 apartments in first Phase)	Catogory 1	135	-	Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR
Neighbors (Local home owners organization)	Category 2	1000		Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR
Fredrikstad municipality (Planners and Poltician)	Category 3	20	Hege Marie Edvardsen	Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR
Local UA forum from Fredrikstad (They will help promote and activate people from the showcase and also the Cicignon/Old town area.).	Category 4	Can engage this institution: link		Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR

Engagement strategy per category of stakeholder

Please, fill in the table below with details about developing the engagement strategy towards those organisations (from the total number mapped in the previous section) that you have chosen to engage.

Stakeholder Category No 1; 2 3 and 4

Target number of organisations to engage:	See above

Names of selected organisations:	See above	
Needs and interests of the organisations:	See above	
Types of activities to engage them	a/a	
	1	Showcase promotion by Commurban app
	2	Organize events – eg. Specialized food event in roof top gardens
	3	Public hearings /public consultation meeting
	4	Workshops
	5	Events organized in association with municipality
	6	Showroom at CiCignon Park
	7.	Present Cicignon park during the Moon festival

The engagement activities above are applicable to all the categories of stakeholders.

Engagement strategy time-table

a/a	Description of activity	Deadline
1	Engagement of Category 1 and Category 2 stakeholders after M25	M25-M48
2	Category 3 – Planners and politicians are already engaged – M2 (First meeting)	
3	Category -4 M28	M28-M48

Existing and extended technologies

Existing technology	Extended through SiEUGreen
Green technologies	
1.	1. Innovative Greenhouse Technology
2.	2. Balcony Gardens
3.	3. Paper based plant growing technology
4.	4. Soil based traditional plant growing
5.	5. Water based hydroponic culture
Blue technologies	
1. Conventional water and wastewater technology	1. Biogas production from pilot scale reactor
2.	2. Treatment of biogas digestate by biofiltration
3.	3.Struvite precipitation from biogas digestate
4.	4.Use of organic waste product for the production of insects in connection of aquaponic system Pending- have not received confirmation from Bente (NIBIO)?
5	5.Biofiltration of Urine – Lab scale testing
6.	6.Co-composting of organic house hold

	waste /greenwaste and solar dry toilet residue – (Pending devlopers decision)
7	7. Vaccum low flush toilets
8	8.Urin Diversion toilets (Pending developers decision)
9	9.Solar dry toilet (Pending developers decision)
10	10. Greywater treatment using a biofilter/filterbed treatment system
11	11. Greywater treatment using biomembrane system (Lab scale only)
12	12.Green wall for greywater treatment (Not applicable)
13	13. Wetland /pond system for stormwater disposal
14	14. Wetland/infiltration system for stormwater disposal
Yellow technologies	
1.	1.Borehole thermal energy storage (Pending hydrogeological assessment)
2.	2. Ground source heatpumps (Pending hydrogeological assessment)
3.	3. Photovoltic panels
4.	4. Solar collectors for heating water (Pending developers decision)
5.	5. Combine heat and power from biogas (Using thermo-electric generator)

Technology deployment time-plan

a/a	Technology	Start of set-up of infrastructure (Month of the project)	Start of deployment (Month of the project)	End of deployment (Month of the project)
	Green technologies	M 20	M 24	
1.	Innovative Greenhouse Technology	M 28	M 24	M48
2.	Balcony Gardens	M 28	M 24	M48
3.	Paper based plant growing technology	M 29	M 24	M48
4.	Soil based traditional plant growing	M 29	M 24	M48
5.	Water based hydroponic culture	M 29	M 24	M48
Blue technologies				
1.	Biogas production from biogas pilot scale reactor (Biogas technology			M48

	implementation consists of two Phase: a. Testing of Biogas reactor at NMBU (prior to installation in Fredrikstad) for three months. The reason for this testing is to document the energy yield, nutrient supply and hygienization in order to justify the installation in Fredrikstad) b. Installation in Fredrikstad	M19 M25	M25 M30	 M48
2.	Treatment of biogas digestate by biofiltration	M28	M28	M48
3.	Struvite precipitation from biogas digestate	M28	M28	M48
4.	Co-composting of organic house hold waste /greenwaste and solar dry toilet residue – (Pending developers decision)			
5.	Vaccum low flush toilets	M22	M24	M48
6.	Urin Diversion toilets (Pending developers decision- Probably it won't be installed)			
7.	Solar dry toilet (Pending developers decision)			
8.	Greywater treatment using a biofilter/filterbed treatment system	M22	M24	M48
9.	Wetland /pond system for stormwater disposal	M19	M24	M48
10	Wetland/infiltration system for stormwater disposal	M19	M24	M48
Yellow technologies				
1.	Borehole thermal energy storage (Pending hydrogeological assessment)			
2.	Ground source heatpumps (Pending hydrogeological assessment)			
3.	3. Photovoltic panels	M22	M22	M48
4.	Solar collectors for heating water (Pending developers decision)			
5.	5. Combine heat and power from biogas (Using thermo-electric generator)	M24	M28	M48

Infrastructure / equipment procurement

Infrastructure and / or equipment needed	Procurement method	Deadline for procurement (Month of the project)
Green technologies		
Infrastructure for Extension of Greenhouse Technology		
Innovative Greenhouse Technology	Bidding	M28
Infrastructure for Paper based plant growing technology		M28
Infrastructure for Soil based traditional plant growing		
Balcony Gardens	Will be part of building construction project	M28
Blue technologies		
Infrastructure needed for Source separation of wastewater and waste		
1. Vaccum low flush toilets	Bidding	M22
2. Pipe line installation for carrying blackwater from Vaccum toilets and Greywater from bathrooms and kitchen	Bidding	M22
Infrastructure for processing of waste for recyling		
1. Biogas reactor	Renting	M25
Infrastructure for Greywater handling		
Greywater treatment system using a biofilter/filterbed treatment system	Payment against Invoice received from the developer	M22
Infrastructure for stormwater handling		
Wetland /pond system for stormwater disposal	Payment against Invoice received from the developer	M19
Wetland/infiltration system for stormwater disposal	Payment against Invoice received from the developer	M19
Yellow technologies		
Infrastructure for borehole thermal energy storage (Pending hydrogeological assessment)		
Ground source heatpumps (Pending hydrogeological assessment)		
Photovoltic panels	Payment against Invoice received from the developer	M22
Infrastructure for biogas production from waste resources		
Combine heat and power generator	Bidding	M22

IPR requirements

Existing technology	Is it protected by IPRs? (YES/NO)	Will we protect it? (YES/NO)	Relevant IPR instrument (probably patent[1])	Actions
The IPR requirements will be investigated by M20				

Regulatory requirements

Requirement	Laws/rules/best practices that apply	Implications and actions to fulfill the requirement
Safe application of pesticides	Øistein	Information to be verified by M20
Building safety	Have been outlined in : Plan og bygningsloven – (we will extract the applicable regulations)	Information to be verified by M20
Food safety	Have been outline in : Mattilsynet (we will extract the applicable regulations)	Information to be verified by M20
Engagement of volunteers	Not applicable	Information to be verified by M20
Domestic waste management	Have been outline in– Forurensningsloven- (we will extract the applicable regulations)	Information to be verified by M20

[1] Other IPR instruments are Copyright and Trade-marks and informal ones are the Confidential Business Information / Trade secrets. See European IPR Helpdesk, Factsheet: How to manage confidential business information, June 2015, https://www.iprhelpdesk.eu/sites/default/files/newsdocuments/Fact-Sheet-How-to-Manage-Confidential-Business-Information.pdf (accessed 23 October2018)

9.2 Hatay (Turkey) Deployment Plan

Vision, objectives and KPIs

As Hatay Metropolitan Municipality, with this project instead of traditional cultivation Hydroponics and Aquaponics cultivation systems will be applied in our greenhouses. With these alternative high technology cultivation systems we can increase efficiency.

With this study, which can be applied directly or indirectly to urban life and is also an educational project, our Syrian guests and disadvantaged citizens will be provided with the opportunity to grow their own healthy and organic foods in their back gardens.

Vision:	See below
Objective No1:	Facilitate access to healthier and more fresh food
Objective No2:	Increase the quantity of food produced
Objective No3:	Prudent use of natural resources, energy and agricultural inputs
Objective No 4:	Establish circularity by reduce, reuse, recycle waste
Objective No 5:	Increase understanding of the social and economic potentials of Urban Agriculture
Objective No 6:	Increase knowledge of organic gardening practices
Objective No 7:	Technology transfer
Objective No 8:	Training of disadvantage women (Syrian refugees and local women)

KPI description	**Target value**	**Related objective**
Training of disadvantage women	200	Objective 5
Local organic certificate		Objective 6
Greenhouse	2000 m2	Objective 1, 2, 3, 4, 7
Production of vegetables and fish	5000-7000 kg.	Objective 2, 6
Total land	10ha	Land use
Unemployed to be involved in the activities	370	Societal inclusion
Workshops	2	Societal inclusion
Individuals involved in the showcases	1000	Societal inclusion
Households involved in the showcases	100	Societal inclusion

The showcase team

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Mapping of stakeholders

Name of organisation and website	**Stakeholder Category**	**Contact person name**	**Contact person Email**	**Contact person Telephone number**
Ladin Botanic	NGO	Nidal özdemir	Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR
Hatay Metropolitan Municipality	Policy- makers	Çise Emirleroğlu	Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR
Hatay Metropolitan Municipality	Policy- makers	İhsan Çakar	Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR
T.R. Eastern Mediterranean Development Agency	Policy- makers	Erdal İlbay	Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR

Engagement strategy per category of stakeholder

Stakeholder Category No 1: NGO's related with nature and agriculture, refugee organizations

Target number of organisations to engage:	Not available yet
Names of selected organisations:	Not available yet

Needs and interests of the organisations:	Educational practices, healthier food, environmental friendly, create new opportunities	
Types of activities to engage them	a/a	
	1	Start-up meeting in municipality building
	2	Get in contact with potential stakeholders
	3	Meeting with related stakeholders
	4	Promotion through social media

Engagement strategy time-table

a/a	Description of activity	Deadline
1	Start-up dissemination and promotion meeting	February 2019
2	Try to reach as many as possible stakeholders to get involved in this project	2018- 2021
3	Meeting with related stakeholders regularly	According to need
4	For the promotion we are using the social media account of municipality	2018-2021

Existing and extended technologies

Existing technology	Extended through SiEUGreen
Green technologies	
1. Soil-based traditional plant growing	1. Water-based hydroponic culture
2. Greenhouse technology, traditional	2. Aquaponic cultures (plant fish fully recycling technology)
3.	3. Paper-based plant growing technology
Blue technologies	
1.	1. Use of organic waste product for the production in connection of aquaponic system
Yellow technologies	
1.	1. Photovoltaic panels (PV)

Technology deployment time-plan

a/a	Technology	Start of set-up of infrastructure (Month of the project)	Start of deployment (Month of the project)	End of deployment (Month of the project)
Green technologies				
1	Greenhouse technology, traditional	N/A	Before the start of the project	48th month
2	Soil-based plant	N/A	Before the start of	48th month

	growing technique		the project	
3	Aquaponic cultures	12th month	14th month	48th month
4	Hydroponic Culture	12th month	14th month	48th month
Blue technologies				
1	Use of organic waste product for the production in connection of aquaponic system	12th month	14-15th month	48th month
Yellow technologies				
1	Photovoltaic panels (PV)	14th month	15th month	48th month

IPR requirements

N/A

Regulatory requirements

Requirement	Laws/rules/best practices that apply	Implications and actions to fulfill the requirement
Safe application of pesticides	Turkish Food Codex Regulation on Maximum Residual Limits of Pesticides EC 396/2005	The usage amounts will be calculated in such a way that the sampling and measurement processes will be followed and within the permitted limits according to the product to be grown. Using personal protective equipment
Building safety	Occupational Health and Safety Law Regulation on Fire Protection of Buildings Regulation on Emergency Situations at Workplaces Electrical Internal Facilities Regulation Health and Safety Regulation for Construction Work Implementing Regulation on Health and Safety Measures for Working with Chemical Substances Implementing Regulation on Health and Safety Measures to be Taken in Workplace Buildings and Additions	All measures to be taken in the workplace under the relevant laws and regulations
Food safety	Law on the Acceptance of	All measures to be taken in the

	Changes in the Law on the Production, Consumption and Audit of Food Turkish Food Codex Regulation on Maximum Residual Limits of Pesticides Implementing Regulation on Health and Safety Measures for Working with Chemical Substances	workplace under the relevant laws and regulations
Engagement of volunteers	Best Practices	
Domestic waste management	Environmental Law Regulation on Waste Management Solid Waste Control Regulation	All measures to be taken in the workplace under the relevant laws and regulations

9.3 Beijing (China) Deployment Plan

Vision, objectives and KPIs

Vision:	To be specified by M20
Objective No1:	Research on the Decrement and Resource Utilization Mode of Kitchen Waste. Reduce waste and resource utilization of kitchen waste, reduce urban pollution and save resources
Objective No2:	Urban Agricultural Technology Integration and Demonstration
Objective No3:	Residents' happy small vegetable garden demonstration, enrich urban residents' spare time, improve children's health food knowledge
Objective No4:	Improve the way residents enjoy urban entertainment through the reduction of kitchen waste and centralized treatment demonstration
Objective No5:	Increase access to healthier food
Objective No6:	Use of balconies
Objective No7:	Automatically planting vegetables on paper on the balcony comes true.
Objective No8:	Citizens master the technique of planting vegetables on papers expertly.
Objective No9:	Develop sprouting vegetable varieties with stronger functions
Objective No10:	Screening of matrix formulations suitable for leafy vegetables and fruit vegetables

KPI description	**Target value**	**Related objective**
Equipment that can automatically manage sprouting vegetables planted on papers	3 sets of automatic spraying equipment	Technology development
Screen seeds specially used for sprouting vegetable varieties	6 sprouting vegetable varieties	
Demonstration of planting vegetables on paper on the balcony	300 households	Social inclusion and Land use
Balcony garden equipment's involved in showcases	300 sets	Land use
Application proof	Demonstration of 100 balcony vegetable gardens in Urumqi	Land use
Research on Household Food Waste Reduction and Recycling Model	3 kitchen waste treatment technologies, 2 procedures, 1 standard; 4 articles published; 80% reduction of household kitchen waste in the demonstration community; 300 demonstration households, 80% reuse rate	
Urban Agricultural Technology Integration and Demonstration	3 fish and vegetable symbiosis techniques, 2	

	procedures, 1 standard; demonstration area 60 square meters	
Urban Vegetable Garden Circular Agriculture Comprehensive Demonstration Base	3 circular agricultural technologies, 2 procedures, 1 standard	

Additional KPIs

KPI description	Target value	Relevant objective
Amount of secure (FAO) food produced (WP3) in relation to the amount of food produced without the project	Quantity:5500/year Percentage of increase:25%	Food security
Unused land to be used	0.48ha	Land use
Number of unemployed to be involved in the activities	150	Societal inclusion
Individuals involved in the showcase	1100 households (on average 3 people, so 3000 people)	Societal inclusion
Engagement workshops	3	Societal inclusion
Methane per year converted to -> CO2 for the greenhouse use (m3/year)	400	Resource efficiency

The showcase team

Title and Name SURNAME:	Zhang Guiqin/ General manager
Role in the showcase:	General manager
Profession:	
Address:	Information not available due to GDPR
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR
Skype:	Information not available due to GDPR

Title and Name SURNAME:	Li mojun(General Manager)
Role in the showcase:	Project Backbone
Profession:	Operation Management
Address:	Information not available due to GDPR
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR
Skype:	Information not available due to GDPR

Title and Name SURNAME:	Zhang xiaowei(Commercial Manager)
Role in the showcase:	Project Backbone
Profession:	Operation Management
Address:	Information not available due to GDPR
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR
Skype:	Information not available due to GDPR

Title and Name SURNAME:	Zhao yuping(R&D Manager)
Role in the showcase:	Project Backbone
Profession:	Technical Talented
Address:	Information not available due to GDPR
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR
Skype:	Information not available due to GDPR

Title and Name SURNAME:	Professor, Yong QIN
Role in the showcase:	Organization of the extension in Urumqi
Profession:	Teacher
Address:	Information not available due to GDPR
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR
Skype:	Information not available due to GDPR

Title and Name SURNAME:	Vice Professor, Hui WU
Role in the showcase:	Selection of matrix formulation and vegetable varieties
Profession:	Teacher
Address:	Information not available due to GDPR
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR
Skype:	Information not available due to GDPR

Title and Name SURNAME:	Lecturer, Hong-jun XU
Role in the showcase:	Equipment installation and data collection
Profession:	Teacher
Address:	Information not available due to GDPR
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR
Skype:	Information not available due to GDPR

Title and Name SURNAME:	Dr. Hui-zhuan YAN
Role in the showcase:	Management of vegetable cultivation

Profession:	Teacher
Address:	Information not available due to GDPR
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR
Skype:	Information not available due to GDPR

Name and position:	Jun Liu
Role:	Creative Alliance Sanyuan Farm Project Demonstration Leader
Occupation:	Secretary General, Beijing Eco Creative Agriculture Service Alliance
Address:	Information not available due to GDPR
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR

Mapping of stakeholders

Name of organisation and website	Stakeholder Category	Contact person name	Contact person Email	Contact person Telephone number
Labor Union of Ecological Environment Bureau of Fengtai District, Beijing	Government	Section Chief Yin	Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR
Shuangyi Occupational Rehabilitation Labor Station for Disabled people, Huairou District, Beijing	Services institution	Chen Xiaozhong	Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR
Dalin Zhihua Voluntary Services Center, Xicheng District, Beijing	Services institution	Wang Yan	Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR
Guanzhuang Township People's Government, Chaoyang District, Beijing	Government	Xu Yao		Not available in this deliverable due to GDPR
Beijing Wucaitianyuan Planting	Enterprise	Zhang Xifen	Not available in this	Not available in this deliverable due to GDPR

Professional Cooperative			deliverable due to GDPR	
Labor Union of Quality and Technology Supervision Bureau of Chaoyang District, Beijing	Government	Liu Xin	Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR
Beijing Yichuan Social Work Services Center	Services institution	Ren Yanqing		Not available in this deliverable due to GDPR
Beijing Women's Federation	Government	Shi Hongxia	Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR
Women's Federation of Pinggu District, Beijing	Government	Zhang Xiaolin	Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR
Lugou Bridge Subdistrict Office of People's Government of Fengtai District, Beijing	Government	Li Yan	Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR
Community (The name is not sure)	Community		Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR
Kitchen waste	Equipment		Not	Not available in

production technical support side	and technology supplier		available in this deliverable due to GDPR	this deliverable due to GDPR
Propaganda party	Public welfare organizations, associations		Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR
Beijing Sanyuan Agriculture Co., Ltd.	Test demonstration on site, Technology supplier		Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR

Engagement strategy per category of stakeholder

Stakeholder Category No 1: Equipment and technology suppliers

Number of organizations involved	5	
the name of the selected organization	Kitchen waste disposal enterprise	
Organizational needs and interests	Equipment and technology supply	
Type of activities involved	a/a	Using business to promote display
	1	Kitchen waste equipment supply
	2	Technical guidance on the use of kitchen waste equipment

Stakeholder Category No 1: Technology and equipment suppliers

Number of organizations involved	14

the name of the selected organization	Beijing Sanyuan Agriculture Co., Ltd.	
Organizational needs and interests	Test demonstration site, Technology supplier	
Type of activities involved	a/a	Activities open to the public
	1	observation of Demonstration site
	2	Technical display

Stakeholder Category No 2: Government / NGOs

Target number of organisations to engage:	4	
Names of selected organisations:	Labor Union of Ecological Environment Bureau of Fengtai District, Beijing Shuangyi Occupational Rehabilitation Labor Station for Disabled people, Huairou District, Beijing Dalin Zhihua Voluntary Services Center, Xicheng District, Beijing Labor Union of Quality and Technology Supervision Bureau of Chaoyang District, Beijing	
Needs and interests of the organisations:	Enrich the lives of residents, improve the happiness index of residents and strengthen the vocational skills of disabled people	
Types of activities to engage them	a/a	
	1	Training on staff's planting techniques
	2	Skill training for disabled people
	3	Residents in the community planting vegetables on the balcony
	4	Training on women's entrepreneurial skills

Stakeholder Category No 1: Technology suppliers

Number of organizations involved	5	
the name of the selected organization	Company name	
Organizational needs and interests	Providing kitchen waste, demonstration fish and vegetable symbiosis system equipment	
Type of activities involved	a/a	Activities open to the public
	1	Kitchen waste supply
	2	Centralized implementer
	3	Consumer

Stakeholder Category No 2: Government

Number of organizations involved	10	
the name of the selected organization	Project propaganda party	
Organizational needs and interests	Positive energy propaganda, driving social effects	
Type of activities involved	a/a	Educational activities such as training and interactive workshops

	1	Food waste reduction, resource utilization promotion
	2	Community promotion
	3	Proof of demonstration

Stakeholder Category No 3: Universities

Number of organizational goals involved	10	
the name of the selected organization	educators: Professor name or university, research institution	
Organizational needs and interests	Training, technical support, article publishing	
Type of activities involved	a/a	Educational activities such as training and interactive workshops
	1	Community resident training
	2	Technical Guidance of Urban Vegetable Garden Circular Agriculture
	3	technical guidance of Operating procedures
	4	technical support of Standard release

Engagement strategy time-table

a/a	Description of activity	Deadline
1	Contact with contact people of relevant departments, carry out skill training, and the planting experts of the enterprise make on-site introduction and explanation with products.	2018
2	Carry out uniform training and study and technical guidance face to face	2018
3	Contact with responsible people of the community and the residential district, and experts conduct experiential planting training.	2019
4	The government leads and organizes women for reemployment and training on entrepreneurial skills	2019
5	Promotion of the activities through the Commurban app	2019.06-2021
6	Establishment of a balcony garden in 20 households, planting of balcony leafy vegetables and fruit and vegetables.(Urumqi)	December 2019
7	Establishment of a balcony garden in 30 households, planting of balcony leafy vegetables and fruit and vegetables.(Urumqi)	December 2020
8	Establishment of a balcony garden in 50 households, planting of balcony leafy vegetables and fruit and vegetables.(Urumqi)	December 2021
9	1）Develop a small greenhouse, Optimize the fish and vegetable symbiosis system 2）Carry out residents' happy little vegetable garden	January-December 2019
10	1）Explore the pattern of waste reduction and resource utilization of kitchen waste2）Construction of small	January-December 2020

	greenhouses, construction of fish and vegetables symbiosis 3） 3) Demonstrate the demonstration of residents' happy small vegetable garden and the demonstration of fish and vegetable symbiosis. 4） Published 2 papers.	
11	1）Application methods of matured kitchen waste fermentation products in urban soils and soilless cultivated crops. 2）Operation of kitchen waste reduction and resource optimization utilization mode 3）Demonstration of the symbiosis effect of fish and vegetables. 4）There are 300 households in the urban small vegetable garden circular agriculture comprehensive demonstration, totaling 800-1000 households. 5)Published 4 papers.	January-December 2021

Existing and extended technologies

Existing technology	Extended through SiEUGreen
Green technologies	
1.Application and demonstration of the technique of planting sprouting vegetables on papers on the balcony	1.Develop functional products that utilize the technique of planting sprouting vegetables on papers on the balcony
2.Paper-based plant growing technology	2.
3.Balcony gardens	3.
4. Soil-based traditional plant growing	4.
5. Greenhouse technology, traditional	5.
6.Aquaponic cultures	6. plant fish fully recycling technology
7.Water-based hydroponic culture	
Add more lines if needed	Add more lines if needed

Technology deployment time-plan

a/a	Technology	Start of set-up of infrastructure (Month of the project)	Start of deployment (Month of the project)	End of deployment
Green technologies				
1	Develop three-dimensional equipment for planting and automatically managing the sprouting vegetables to realize automatic light supplement, automatic irrigation and automatic supersonic-fog-planting in the process of cultivating the sprouting vegetables	January, 2019	December, 2019	December 2021
2	1. Popularize three-dimensional	January, 2020	December,	

	equipments for planting and automatically managing the sprouting vegetables. 2. Develop sprouting vegetable planting resources; carry out breeding selection of seeds specially used for sprouting vegetable varieties; deeply explore the functions of sprouting vegetables and develop sprouting vegetable seed varieties with stronger functions (varieties with less sensitizing factor and with high protein and stronger functions) 3. Select 200 households in Beijing, Changsha and Urumqi to build vegetable garden on the balcony. Allocate equipments for planting sprouting vegetables to each household, and provide these households with corresponding guidance on planting and management techniques to enable residents eat reliable vegetable and make the balcony full of green scenery at the same time, and in this way, the environment is beautified and purified.		2020	
3	1. Develop sprouting vegetable planting resources; carry out breeding selection of seeds specially used for sprouting vegetable varieties; deeply explore the functions of sprouting vegetables and develop sprouting vegetable seed varieties with stronger functions (varieties with less sensitizing factor and with high protein and stronger functions) 2. Select 100 households in Beijing, Changsha and Urumqi to build vegetable garden on the balcony, and the number of demonstration households reaches 300. Allocate equipment for planting sprouting vegetables to each household, and provide these households with corresponding guidance on planting and management techniques to enable residents eat reliable vegetable and make the balcony full	January, 2021	December, 2021	

	of green scenery at the same time, and in this way, the environment is beautified and purified.			
4	Greenhouse technology, traditional	January, 2020	January , 2021	December, 2021
5	Soil-based traditional plant growing	January, 2019	January, 2020	December, 2021
6	Greenhouse technology	January 2019	Before the project	December, 2021
7	Soil-based traditional plant growth		January 2019	December, 2021
8	Aquatic culture		January 2020	December, 2021
9	Balcony garden		January 2019	December, 2021

Infrastructure / equipment procurement

Infrastructure and / or equipment needed	Procurement method	Deadline for procurement (Month of the project)
Green technologies		
Fruit and vegetable planter	Independent research and development	2019. 12
Paper plant automatic sprinkler	Independent research and development	2019. 12
Kitchen waste disposal	Independent research and development	2019. 12
Edible fungus incubator	Independent research and development	2019. 12
Succulent planter	Independent research and development	2019. 12

IPR requirements

Existing technology	Is it protected by IPRs? (YES/NO)	Will we protect it? (YES/NO)	Relevant IPR instrument (probably patent[2])
A kind of beverage made of selenium-enriched wheat sprout juice and its preparation method	Yes	Yes	Invention Patent
Nutrient paper for cultivating sprouting vegetables and its method to improve the content of rutin in the sprouting vegetables	Yes	Yes	Invention Patent

Regulatory requirements

Requirement	Laws/rules/best practices that apply	Implications and actions to fulfill the requirement
Safe application of pesticides	national standards of People's Republic of China: Rational use guidelines for pesticides 8(GB/T 8321.8-2007)	The safe use of pesticides refers to the safe and rational use of pesticides to prevent and control the pollution of agricultural products and the environment. Standards set for the protection of human health and the promotion of agricultural production. The standard stipulates the usual doses of pesticides in different dosage forms, the maximum dosage, the method of application, the maximum number of applications, and the number of days from the last application (safety interval). It is suitable for pesticides used to control pests and diseases of crops, including crops such as grain, cotton,

[2] Other IPR instruments are Copyright and Trade-marks and informal ones are the Confidential Business Information / Trade secrets. See European IPR Helpdesk, Factsheet: How to manage confidential business information, June 2015, https://www.iprhelpdesk.eu/sites/default/files/newsdocuments/Fact-Sheet-How-to-Manage-Confidential-Business-Information.pdf (accessed 23 October2018)

		vegetables, fruit trees, tobacco, tea and pasture.
Building safety	Regulations on Safety Production Management of Construction Projects	Protecting the personal safety and environment of the greenhouse during the construction process
Food safety	Regulations of the People's Republic of China on Food Safety Law, Food Safety Law of the People's Republic of China	Food production and operation operators shall engage in production and business activities in accordance with laws, regulations and food safety standards, establish and improve food safety management systems, and adopt effective management measures to ensure food safety. Food production operators are responsible for the food safety of their production and management, responsible to the society and the public, and assume social responsibility.
Engagement of volunteers	Residents	[recruitment requirements] 1.Individuals or organizations that are passionate about environmental protection; 2. Volunteers can participate in the event on time after confirming their participation in the event. 3. Accept the unified arrangement of our unit and be able to earnestly and continuously perform the promised affairs; 4. We also welcome enterprises, institutions and social organizations to contact us to customize the targeted “garbage classification, kitchen waste composting, organic planting, and property exchange” activities.
Domestic waste management	Management and Treatment Technology of Domestic Waste, Beijing Municipal Kitchen Waste Management	Faced with the shortage of cultivated land and food shortage in China, the current situation of large

	Measures	quantities of imported foodstuffs is needed. The rational use of kitchen waste is an effective way to increase resource utilization and solve China's food problems to a certain extent. Moreover, such utilization, in line with the characteristics of reduction, reuse, and resource utilization, is a vivid example of developing a circular economy.

Other activities

Activity description	Duration
Training on staff's planting techniques	2019.01-2020.12
Greenhouse technology	2019.03-2021.12
Establishment of a balcony garden in 300 households, planting of balcony leafy vegetables and fruit and vegetables.	2019.03-2021.12
Promote paper-based plant growing technology	2020.01-2021.12
Promote balcony gardens	2020.01-2021.12

Risks and contingency plans

Risk	Contingency plans
Personal safety risks of pilot	Separate protection
Equipment operation failure risk	Backup municipal drainage network

9.4 Changsha (China) Deployment Plan

Vision:	To demonstrate Changsha showcase as a resource efficient, intelligent and sustainable urban development with reduction, reuse and recycling of waste, suppling secure food and effective utilization of solar energy.		
Objective No1:	Reduce water consumption, replace mineral with organic fertilizer		
Objective No2:	Increase access to healthier food		
Objective No3:	Use of balconies		
KPI description		**Target value**	**Related objective**
Reduce water consumption		Save up to 90%	Resource efficiency
Reclaim N&P from black water		Reclaim up to 90%	Resource efficiency
Green roof		50 m^2	Land use
Balcony garden		100 households	Land use
Engagement and behaviour change workshops		2 workshops	Social inclusion
Households to be involved in the showcase about Water & Waste management		17 households	Social inclusion

Additional KPIs

KPI	Target value	Related objective
Amount of secure (FAO) food produced (WP3) in relation to the amount of food produced without the project	**Quantity: 2000kg** **Percentage of increase: 25%** There are 100 households balcony garden in Changsha showcase. From 2020 to 2021, the output of vegetables per household is 20kg.	Food security
Unused land to be used	Number of ha: 420 m^2 There are 100 households balcony garden in Changsha showcase.The area of each balcony is 3m^2. The green roof covers an area of 50 m^2 and the area of gray water treatment room is 70 m^2.the treated water will be used for urban agricultural irrigation.	Land use
Number of unemployed to be involved in the activities	**Number of unemployed: 135.** Pre-construction of the house and the renovation of the pipeline provided more than 50 jobs. About 80 people can participate from balcony gardens. Daily operation of wastewater plant can supply 5 jobs	Societal inclusion
Households involved in showcases	Number of households: 100 households. The treatment of Waste water :17	Societal inclusion

	households. Balcony garden: 100 households(including 17 households of waste water treatment)	
Individuals involved in the showcases	**Number of individuals: 960 people** Balcony garden(including 17 households of waste water treatment): 300 people (100 households, average 3 persons per household) ; Project participants: 60 people (including project builders and practitioners) Promotion meeting participants:600 people.	Societal inclusion

The showcase team

Title and Name SURNAME:	Chief Engineer, Wenlian Luo
Role in the showcase:	Leader
Profession:	Ecology (Phd)
Address:	Zhu Yun Road 68, High Technology Zone, Changsha, Hunan, China
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR
Skype:	Information not available due to GDPR

Title and Name SURNAME:	Chief Technology Officer, Hanjun Xing
Role in the showcase:	Deputy leader
Profession:	Environmental engineering
Address:	Information not available due to GDPR
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR
Skype:	Information not available due to GDPR

Title and Name SURNAME:	Director of Design Institute, Bibo Zhang
Role in the showcase:	Technology deployment and infrastructure
Profession:	Environmental engineering
Address:	Information not available due to GDPR
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR
Skype:	Information not available due to GDPR

Title and Name SURNAME:	Vice Director of the Research Institute, Jing Li

Role in the showcase:	Technology deployment and infrastructure
Profession:	Environmental engineering
Address:	Information not available due to GDPR
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR
Skype:	Information not available due to GDPR

Title and Name SURNAME:	R&D Engineer, Meijuan Kuang
Role in the showcase:	Technology deployment and infrastructure
Profession:	Soil science
Address:	Information not available due to GDPR
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR
Skype:	Information not available due to GDPR

Title and Name SURNAME:	R&D Engineer, Liqun Wang
Role in the showcase:	Technology deployment and infrastructure
Profession:	Environmental engineering
Address:	Information not available due to GDPR
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR
Skype:	Information not available due to GDPR

Title and Name SURNAME:	Process Engineer, Rong Tan
Role in the showcase:	Technology deployment and infrastructure
Profession:	Environmental engineering
Address:	Information not available due to GDPR
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR
Skype:	Information not available due to GDPR

Title and Name SURNAME:	Engineer, Fang Nie
Role in the showcase:	Dissemination and engagement of users and stakeholders
Profession:	Environmental engineering
Address:	Information not available due to GDPR
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR
Skype:	Information not available due to GDPR

Mapping of stakeholders

Name of organisation and website	Stakeholder Category	Contact person name	Contact person Email	Contact person Telephone number
Hunan Hengkai Environmental Protection Science & Technology Investment Co. Ltd http://www.cnhengkai.com	Technology providers	Jing Li	Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR
Hunan Qingzhuhu Urban and Rural Construction Co. Ltd. http://www.qzhjs.com	Infrastructure providers	Fang Hu	Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR
Hunan FuTian XingYe Investment Corporation http://www.ftxyjt.com	Infrastructure providers	Xi Guo	Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR
Yangzhou Henglong Optoelectronic New Energy Co. Ltd. http://www.yzhlgd.com	solar panel producer	Mrs.Chen	Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR
Four Seasons Muge Technology Group Co. Ltd. http://www.micoe.com/	Solar water heater manufacturer	Director.Wei	Not available in this deliverable due to GDPR	Not available in this deliverable due to GDPR

Engagement strategy per category of stakeholder

Stakeholder Category No 1: Equipment and technology suppliers

Target number of organisations to engage:	5
Names of selected organisations:	Hunan Hengkai Environmental Protection Science & Technology Investment Co. Ltd Hunan Qingzhuhu Urban and Rural Construction Co. Ltd Hunan FuTian XingYe Investment Corporation Yangzhou Henglong Optoelectronic New Energy Co. Ltd Four Seasons Muge Technology Group Co. Ltd.

Needs and interests of the organisations:	Provide infrastructures of water waste treatment; Promote the sales of their equipments.	
Types of activities to engage them	a/a	**Technology and infrastructure providers**
	1	Water waste treatment
	2	Solar collectors for heating water
	3	Solar collectors for electricity
	4	
	5	

Categories of stakeholders	**Number of organisations**	**Type of activity**
Residents	1	Public hearings /public consultation meeting/ Workshops
School	1	Workshops
government	1	Technology sharing session
companies	5	Technology sharing session

Engagement strategy time-table

Activity	**Duration (Month_X – Month_Y) or if they are specific events, the month of delivery**
Showcase promotion by Commurban app	M18-M48
Public hearings /public consultation meeting	M28,M34,M40,M46
Workshops	M30, M42
Technology sharing session	M32,M42,M48

Other activities time-table

a/a	**Description of activity**	**Deadline**
1	Promote soil-based traditional plant growing	2021.12
2	Promote water-based hydroponic culture	2021.12
3	Promote paper-based plant growing technology	2021.12
4	Promote balcony gardens	2021.12
5	Struvite precipitation from biofilter percolate	2021.06
6	Vacuum- /low flush toilets	2021.12
7	Greywater treatment using a Biofilter/Filterbed treatment system	2021.12
8	Greywater treatment using a biomembrane system	2021.12
9	Green roof light weight aggregate (LWA) for water retention	2021.12
10	Wetland/pond system for stormwater disposal	2021.12
11	Wetland/infiltration system for stormwater disposal	2021.12
12	Photovoltaic panels (PV)	2021.12
13	Solar collectors for heating water	2021.12

Existing and extended technologies

Existing technology	Extended through SiEUGreen
Green technologies	
1.Residential green	1.Water-based hydroponic culture
2.Soil-based traditional plant growing	2.Paper-based plant growing technology
3.	3.Balcony gardens
Add more lines if needed	Add more lines if needed
Blue technologies	
1.Toilets, traditional	1.Struvite precipitation from biofiter percolate
2.Bilge well, storm drainage system	2.Low flush toilets
3.Black water pre-sedimentation system	3.Greywater treatment using a Biofliter/ Filterbed treatment system
4.	4.Greywater treatment using a biomembrane system
5.	5.Green roof light weight aggregate (LWA) for water retention
6.	6.Wetland/pond system for stormwater disposal
7.	7.Wetland/infiltration system for stormwater disposal
Yellow technologies	
1.Municipal power supply	1.Photovoltaic panels (PV)
2.	2.Solar collectors for heating water

Technology deployment time-plan

a/a	Technology	Start of set-up of infrastructure (Month of the project)	Start of deployment (Month of the project)	End of deployment (Month of the project
Green technologies				
1	Water-based hydroponic culture	2019.01	2020.01	2021.12
2	Paper-based plant growing technology	2019.01	2020.01	2021.12
3	Balcony gardens	2019.01	2020.01	2021.12
Blue technologies				
1	Struvite precipitation from biofilter percolate	2019.01	2021.03	2021.12
2	Low flush toilets	2019.06	2020.04	2021.12
3	Greywater treatment using a Biofilter/ Filterbed treatment system	2019.11	2021.01	2021.12
4	Greywater treatment using a biomembrane system	2019.11	2021.01	2021.12
5	Green roof light weight aggregate (LWA) for water retention	2020.01	2020.05	2021.12

6	Wetland/pond system for stormwater disposal	2019.06	2020.06	2021.12
7	Wetland/infiltration system for stormwater disposal	2019.06	2020.06	2021.12
Yellow technologies				
1	Photovoltaic panels (PV)	2019.08	2020.04	2021.12
2	Solar collectors for heating water	2020.04	2021.01	2021.12

Infrastructure / equipment procurement

Infrastructure and / or equipment needed	**Procurement method**	**Deadline for procurement (Month of the project)**
Green technologies		
Leaf vegetable planter	Supplied by cooperation companies	2020.12
Succulent plant curing equipment	Supplied by cooperation companies	2020.12
Edible fungus culture equipment	Supplied by cooperation companies	2020.12
Sprout planting equipment	Supplied by cooperation companies	2020.12
Blue technologies		
Low flush toilets	direct purchase	2020.04
oil separation tank	Buy accessories and assemble them by ourselves	2020.04
Floatation tank	Buy accessories and assemble them by ourselves	2020.04
Integrated biological processing equipment	Buy accessories and assemble them by ourselves	2020.04
Ultraviolet disinfection	Buy accessories and assemble them by ourselves	2020.04
Reverse osmosis	Buy accessories and assemble them by ourselves	2020.04
Yellow technologies		
Photovoltaic panels (PV)	direct purchase	2020.04
Solar collectors for heating water	direct purchase	2020.04

IPR requirements

N/A

Regulatory requirements

Requirement	Laws/rules/best practices that apply	Implications and actions to fulfill the requirement
Safe application of pesticides	To be specified by M20	To be specified by M20
Building safety	1.Structural design code for special structures of water supply and waste water engineering. 2.Structural design code for pipelines of water supply and waste water engineering. 3.Code for electrical design of civil buildings. 4.Technical specification of constructed wetlands for wastewater treatment engineering.	
Food safety	Regulations of the People's Republic of China on Food Safety Law, Food Safety Law of the People's Republic of China	Food production and operation operators shall engage in production and business activities in accordance with laws, regulations and food safety standards, establish and improve food safety management systems, and adopt effective management measures to ensure food safety. Food production operators are responsible for the food safety of their production and management, responsible to the society and the public, and assume social responsibility.
Engagement of volunteers	Residents	[recruitment requirements] 1. Individuals or organizations that are passionate about environmental protection; 2. Volunteers can participate in the event on time after confirming their participation in the event. 3. Accept the unified arrangement of our unit and be able to earnestly and continuously perform the promised affairs; 4. We also welcome

		enterprises, institutions and social organizations to contact us to customize the targeted "garbage classification, kitchen waste composting, organic planting, and property exchange" activities.
Water safety	Drinking water sanitary standard （GB5749—2006）	1. Facilities and processing requirements shall be in accordance with laws, regulations and drinking water sanitary standards. 2. The flocculation, coagulation aid, disinfection, oxidation, adsorption, pH regulation, rust prevention, scale inhibition and other chemical treatment agents used in the treatment of domestic drinking water shall not pollute the domestic drinking water and shall meet the accordant requirements.
Water safety	Water quality standard for landscape entertainment (GB12941-91)	The waste water containing toxic and harmful pollutants shall not be discharged into the water area for landscape and recreational use. The general industrial waste water and domestic sewage shall not be discharged directly into the water area of landscape entertainment. The wastewater must be treated and its receiving water must meet the water standards before it can be discharged into landscape entertainment.
Fertilizers safety	Slow-release fertilizers standard (GB/T 23348-2009)	In the process of fertilizer production, fertilizer manufacturers should strictly follow this standard to regulate the production behavior and ensure the safety and fertility of slow-release fertilizers.

Additional activities

Please fill in the table below with activities you plan to organise, beyond community engagement, if any. Add the duration (Start-Month and End-Month)

Activity description	Duration
Promote soil-based traditional plant growing	2020.01-2021.12
Promote water-based hydroponic culture	2020.01-2021.12
Promote paper-based plant growing technology	2020.01-2021.12
Promote balcony gardens	2020.01-2021.12
Struvite precipitation from biofilter percolate	2019.01-2021.06
Vacuum- /low flush toilets	2019.06-2021.12
Greywater treatment using a Biofilter/Filterbed treatment system	2019.11-2021.12
Greywater treatment using a biomembrane system	2019.11-2021.12
Green roof light weight aggregate (LWA) for water retention	2020.01-2021.12
Wetland/pond system for stormwater disposal	2019.06-2021.12
Wetland/infiltration system for stormwater disposal	2019.06-2021.12
Photovoltaic panels (PV)	2019.08-2021.12
Solar collectors for heating water	2020.04-2021.12

Risks and contingency plans

The table below includes possible risks of the pilot and the corresponding contingency plans.

Risk	Contingency plans
Sampling explosion risk	No fireworks around the sampling area
Equipment operation failure risk	Backup municipal drainage network
Personal safety risks of pilot	Separate protection

9.5 Aarhus (Denmark) Deployment Plan

Vision, Objectives, KPIs

Vision:	City of Aarhus creates a more socially inclusive and sustainable community through promotion of urban agriculture.
Objective No1:	Increase the possibilities of cultivating edible crops in Aarhus Municipality, among other things by supporting the establishment of new urban gardens and edible urban spaces.
Objective No2:	Contribute to changing perceptions and attitudes towards the use of land for UA
Objective No3:	Promote technologies for more efficient use of land for UA. Increase the land used for UA
Objective No4:	Facilitate access to healthier and more fresh food (pesticides-free, consumed within a few days after harvesting)
Objective No5:	Increase the quantity of food produced locally
Objective No6:	Reduce, reuse, recycle waste: Establish **circularity**
Objective No7:	Make use of UA as an integration strategy for refugees and migrants.

KPI description	**Target value**	**Related objective**
Unused land to be used in UA	0.02 ha	Objective 2; Objective 3
Share of women active in UA	60%	Objective 7
Land under organic management as percentage of total land used for UA	100%	Objective 4
Active community members from the case study cities including marginalized groups such as refugees, elderly, excluded groups etc. will involved in the project	50 unemployed	Objective 7

The showcase team

Title and Name SURNAME:	Pernille Thormann Villesen
Role in the showcase:	Showcase leader (overall responsibility)
Profession:	Landscape architecht
Address:	Aarhus Municipality
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR
Skype:	Information not available due to GDPR

Title and Name SURNAME:	Ms Marie Kirstine Pilegaard
Role in the showcase:	Responsible for introducing Solar Dry toilet in Common/Community/ garden (Fællesgartneriet)
Profession:	Architect

Address:	Information not available due to GDPR
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR
Skype:	Information not available due to GDPR

Title and Name SURNAME:	Elin Kyhl Svendsen
Role in the showcase:	Responsible for Polytunnel in World garden (Verdenhaverne)
Profession:	Biologist
Address:	Information not available due to GDPR
Phone:	Information not available due to GDPR
Email:	Information not available due to GDPR
Skype:	Information not available due to GDPR

Engagement strategy per category of stakeholder

Stakeholder Category No 1: City dwellers

Target number of organisations to engage:	The people we are interested in, are not engaged in anything. They are unengaged.	
Names of selected organisations:	We go for individuals, not organizations	
Needs and interests of the organisations:	The people we want to attract are interested in: education, socially activities and network, the right to make decisions and get a voice in the process	
Types of activities to engage them	a/a	
	1	Workshops
	2	Networking
	3	Showcase promotion by COMMURBAN App (being developed by CREVIS and OKYS)

Engagement strategy time-table

a/a	Description of activity in Fællesgartneriet	Deadline
1	The making of the toilet facilities in Fællesgartneriet	M18
2	Implementation of the toilet and education to the community about use, maintenance and cycle of waste.	M22
3	A workshop where we educate and communicate about what we collect in the toilet and how it is handled.	M32
4	Event on composting	M34

a/a	Description of activity in Verdenshaverne	Deadline
1	Building on-site greenhouses	M18

2	Workshop and start-up for the gardens	M18
3	Harvest - feast	M20
4	Vinterseason-workshop	M25
5	Start-up new season	M28

Existing and extended technologies

Existing technology	Extended through SiEUGreen
Green technologies	
1.Greenhouse Technology, traditional	1. Greenhouse Technology, traditional
2.	2. Polytunnels
3. Mobile gardens	3. Mobile Gardens
4. Soil-based traditional plant growing	4. Soil-based traditional plant growing
5.	5. Paper based plant growing technology
Blue technologies	
1.	1. Co-composting of organic house hold waste/Green waste and solar dry toilet residue
2.	2. Solar dry toilet

Technology deployment time-plan

a/a	Technology	Start of set-up of infrastructure (Month of the project)	Start of deployment (Month of the project)	End of deployment (Month of the project0
Green technologies				
1	Greenhouse Technology, traditional	Before the start of the project		M48 (and continuing after the end of the project)
2	Polytunnels	M18	M18	M48 (and continuing after the end of the project)
3	Soil-based traditional plant growing	Before the start of the project		M48 (and continuing after the end of the project)
Blue technologies				
1	Co-composting of organic house hold waste/greenwaste and solar dry toilet residue	Before the start of the project	Month 22	M48 (and continuing after the end of the project)
2	Solar dry toilet	Month 17	Month 18	M48 (and

				continuing after the end of the project)

Intellectual Property Rights (IPR) requirements

N/A

Regulatory requirements

Requirement	Laws/rules/best practices that apply	Implications and actions to fulfill the requirement
Safe application of pesticides	UA in Aarhus is done only on the basis of organic methods	N/A
Building safety	N/A	N/A
Food safety	National laws apply	Guidelines from the municipality on its website
Engagement of volunteers	N/A	The citizens engage in the activities in the gardens during their spare time
Domestic waste management	N/A	N/A

Risks and contingency plans

The table below includes possible risks of the showcases and the corresponding contingency plans.

Risk	Contingency plans
One of the project leaders can get sick	**Keep in close contact and ask for another person on site to be co-pilot**
We can not get building permission	**We use our network in the municipality to get the shared understanding of the project**
We experience violence in the projects against the greenhouses	**We communicate through local canals in the established societies. We do NOT communicate as the municipality**
We experience, that people do not want to use the solar-driven toilet and they do not want to be engaged in the process where we test the outcome	**Communication through our local project leader Marie on the site. Experts from the university come out to insure, that everything goes as planned**

10. Annex B. Monitoring and reporting tool (Excel template)

Showcase: Fredrikstad (Norway) monitoring and reporting tool

Showcase: Fredrikstad									
KPI description	**GA Target**	**Plan Target**	**Current status**	M20	M27	M30	M34	M41	M45
	Number	**Number**	**Description**						
Objective 1: Improve resilience of urban centers in Europe and China and increase food security.									
Amount of secure (FAO) food produced in relation to the amount of food produced without the project.	**> 50%**	**100**							
	12000kg	**4250**							
Engagement and behaviour change workshops (T3.2)	**10**	**4**							
Number of unemployed involved in the activities	**500**	**70**							
Objective 2: Develop and showcase novel resource efficient systems for horticultural production in urban and peri-urban environments in China and Europe.									
Number of large scale demonstrators (showcases). Target: 5; Unused land reused. Target: 20ha (WP3)	**5**								
	20ha	3.5	Freder: Unused land to be used (phase 1) - (Total land in CiCignon park is 3.5 ha) Beijing: fish and vegetable symbiosis demonstration area 60 square meters						
Individuals involved in showcases	**5000**	2000	Fredr. (Individuals in the CiCignon park area)						
Households involved in showcases	**750**								
Balcony gardens	**90**								
Organic (rooftop) restaurants	**2**								
Reduction of the water and energy footprints	**90%**	80%	Fredr. Reduction of water use by: 25% Reduction of heat cost by : 25%						
methane/year (m3) converts to ->	**1270**	1270							
-> electricity/year (m3)	**3190**	3190							
heat (kWh/year)	**9580**	5760							
CO2 for the greenhouse use (m3/year)	**1550**	1550	Fredr. Reduction by 50%						
Other Objectives									
Reduction of heat cost	N/A	**25%**							

Showcase: Hatay (Turkey) monitoring and reporting tool

Showcase: Hatay									
KPI description	**GA Target Number**	**Plan Target Number**	**Current status Description**	**M20**	**M27**	**M30**	**M34**	**M41**	**M45**
Objective 1: Improve resilience of urban centers in Europe and China and increase food security.									
Amount of secure (FAO) food produced in relation to the amount of food produced without the project.	**> 50%**								
	12000kg	5000	Production of vegetables and fish // Target value: 5000-7000kg						
Engagement and behaviour change workshops (T3.2)	**10**	**2**							
Number of unemployed involved in the activities	**500**	**370**							
Objective 2: Develop and showcase novel resource efficient systems for horticultural production in urban and peri-urban environments in China and Europe.									
Unused land reused	**20ha**	10							
Individuals involved in showcases	**5000**	1000							
Households involved in showcases	**750**	100							
Balcony gardens	**90**								
Organic (rooftop) restaurants	**2**								
Reduction of the water and energy footprints	**90%**								
methane/year (m3) converts to ->	**1270**								
-> electricity/year (m3)	**3190**								
heat (kWh/year)	**9580**								
CO2 for the greenhouse use (m3/year)	**1550**								

Showcase: Beijing (China) monitoring and reporting tool

Showcase: Beijing									
KPI description	**GA Target**	**Plan Target**	**Current status**	M20	M27	M30	M34	M41	M45
	Number	**Number**	**Description**						
Objective 1: Improve resilience of urban centers in Europe and China and increase food security.									
Amount of secure (FAO) food produced in relation to the amount of food produced without the project.	**> 50%**	**25%**							
	12000kg	5500							
Engagement and behaviour change workshops (T3.2)	**10**	**3**							
Number of unemployed involved in the activities	**500**	**150**							
Objective 2: Develop and showcase novel resource efficient systems for horticultural production in urban and peri-urban environments in China and Europe.									
Unused land reused	**20ha**	0.48							
Individuals involved in showcases	**5000**	3000	Estimated for 1100 households						
Households involved in showcases	**750**	300							
Balcony gardens	**90**	300							
Organic (rooftop) restaurants	**2**								
Reduction of the water and energy footprints	**90%**								
methane/year (m3) converts to ->	**1270**								
-> electricity/year (m3)	**3190**								
heat (kWh/year)	**9580**								
CO2 for the greenhouse use (m3/year)	**1550**								
Other objectives									
Equipments that can automatically manage sprouting vegetables planted on papers	**N/A**	**3 sets**							
Screen seeds specially used for sprouting vegetable varieties	**N/A**	**6 sprouting varieties**							
Balcony garden equipments involved in showcases	**N/A**	**300 sets**							
Demonstration of planting vegetables on paper on the balcony	**N/A**	**300 households**							
Research on Household Food Waste Reduction and Recycling Model	**N/A**	**3 kitchen waste treatment technologies, 2 procedures, 1 standard; 4 articles published; 80% reduction of household kitchen waste in the demonstration community; 300 demonstration households, 80% reuse rate**							
Urban Agricultural Technology Integration and Demonstration	**N/A**	**3 fish and vegetable symbiosis techniques, 2 procedures, 1 standard; demonstration area 60 square meters**							
Urban Vegetable Garden Circular Agriculture Comprehensive Demonstration Base	**N/A**	**3 circular agricultural technologies, 2 procedures, 1 standard**							

Showcase: Changsa (China) monitoring and reporting tool

Showcase: Changsha									
KPI description	**GA Target**	**Plan Target**	**Current status**	**M20**	**M27**	**M30**	**M34**	**M41**	**M45**
	Number	**Number**	**Description**						
Objective 1: Improve resilience of urban centers in Europe and China and increase food security.									
Amount of secure (FAO) food produced in relation to the amount of	**> 50%**	**25%**							
food produced without the project.	**12000kg**	2000							
Engagement and behaviour change workshops (T3.2)	**10**	**2**							
Number of unemployed involved in the activities	**500**	**135**							
Objective 2: Develop and showcase novel resource efficient systems for horticultural production in urban and peri-urban environments in China and Europe.									
Unused land reused	**20ha**	0.042							
Individuals involved in showcases	**5000**	960							
Households involved in showcases	**750**	100							
Balcony gardens	**90**	100							
Organic (rooftop) restaurants	**2**								
Reduction of the water and energy footprints	**90%**	90%							
methane/year (m3) converts to ->	**1270**								
-> electricity/year (m3)	**3190**								
heat (kWh/year)	**9580**								
CO2 for the greenhouse use (m3/year)	**1550**								

Showcase: Aarhus (Denmark) monitoring and reporting tool

Showcase: Aarhus									
KPI description	**GA Target**	**Plan Target**	**Current status**	**M20**	**M27**	**M30**	**M34**	**M41**	**M45**
	Number	**Number**	**Description**						
Objective 1: Improve resilience of urban centers in Europe and China and increase food security.									
Amount of secure (FAO) food produced in relation to the amount of	**> 50%**								
food produced without the project.	**12000kg**								
Engagement and behaviour change workshops (T3.2)	**10**								
Number of unemployed involved in the activities	**500**	**50**							
Objective 2: Develop and showcase novel resource efficient systems for horticultural production in urban and peri-urban environments in China and Europe.									
Unused land reused	**20ha**	0.02							
Individuals involved in showcases	**5000**	750							
Households involved in showcases	**750**								
Balcony gardens	**90**								
Organic (rooftop) restaurants	**2**								
Reduction of the water and energy footprints	**90%**								
methane/year (m3) converts to ->	**1270**								
-> electricity/year (m3)	**3190**								
heat (kWh/year)	**9580**								
CO2 for the greenhouse use (m3/year)	**1550**								

11. Annex C. Progress report tool (PowerPoint template)

The pictures below are screenshots from the PowerPoint template that has been circulated to the showcase teams to prepare for the monthly webinar.

Technology-related activities

SiEUGreen Sino-European innovative green and smart cities

Please describe the technology-related activities ***that have already started and (if any) finished****.*

Activity	Start Month	End Month / Ongoing

Community-related activities

SiEUGreen Sino-European innovative green and smart cities

Please describe the community-related activities ***that have already started and (if any) finished****.*

Activity	Start Month	End Month / Ongoing

Organisational issues & infrastructure for technology deployment

SiEUGreen Sino-European innovative green and smart cities

- Which organisational issues to deploy the showcases have been concluded so far and which are pending?
  - Organizational issues concluded:
  - Pending issues:
- Have you set up the necessary infrastructure? Is there any pending issue?
  - Infrastructure in place:
  - Pending issues:

Time-plan and delays

- *Are there any delays? In which activities?*

Delayed activity	Planned start and end Month / Ongoing	Actual start and end Month / Ongoing

Time-plan and delays

- *Could you, please, describe the reasons for the delay and actions you took to limit it?*

Delayed activity	Reason	Mitigation action

Next steps (technology related)

*Please present in detail the next steps **until September 2019** in relation to **technology deployment**.*

Next steps	Start Month	End Month
Step 1:		
Step 2:		
Step 3:		
Step 4:		
Step 5:		
Step 6:		

Next steps (community related)

SiEUGreen Sino-European innovative green and smart cities

*Please present in detail the next steps **until September 2019** in relation to **community actions**.*

Next steps	Start Month	End Month
Step 1:		
Step 2:		
Step 3:		
Step 4:		
Step 5:		
Step 6:		

Progress in KPIs

SiEUGreen Sino-European innovative green and smart cities

Please present the progress in the accomplishment of the KPIs

KPI description	Target value	Current measurement

New risks

SiEUGreen Sino-European innovative green and smart cities

Please describe any new risks that have emerged (if at all).

Risk	Mitigation action

Obstacles faced and mitigating actions

SiEUGreen Sino-European innovative green and smart cities

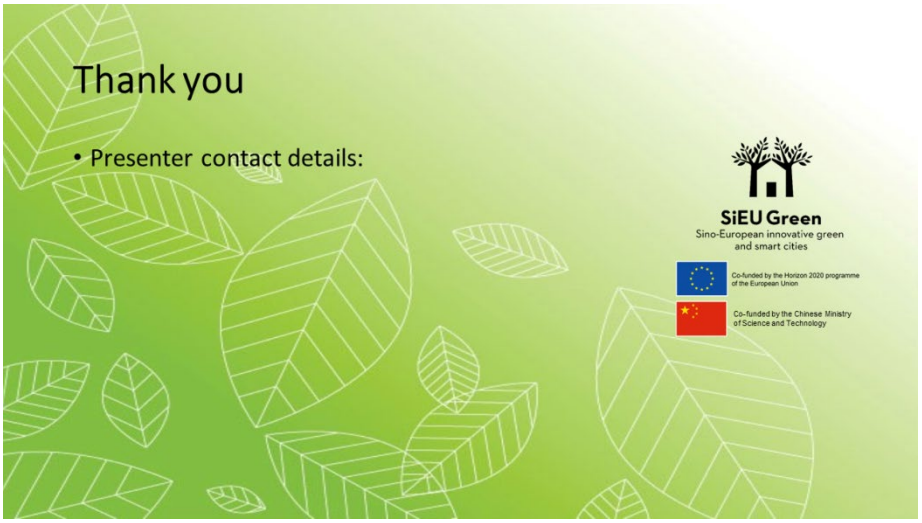
- *Share with the consortium any problems you have faced during the showcase preparation and what steps did you follow to find a solution.*

Problem / Obstacle	Solution

Lessons learnt

SiEUGreen Sino-European innovative green and smart cities

- *Share with the consortium any important lessons you have learnt during the showcase preparation*
  - *Lesson 1:*
  - *Lesson 2:*
  - *Lesson 3:*
  - *Etc.*



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