SiEUGreen
Sino-European innovative green and smart cities

D7.1 Quality Assurance and Risk Management Plan

SiEUGreen Project

NMBU

Co-funded by the Horizon 2020 programme of the European Union

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SiEUGreen

The project has received funding from the European Union's Horizon 2020 Research, and Innovation program, 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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1.1	27.03.2018	Draft	Circulation of 2nd version for final review (2nd level check)	NMBU, with the support of VILABS
1.2	29.03.2018	Final	3rd level check – Ready for submission	NMBU

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1 Executive summary

This document presents the quality assurance and risk management plan of the project SiEUGreen (Sino-European innovative green and smart cities). It describes and analyses the components of the project implementation as well as the respective procedures that will ensure the highest possible quality of project execution and the effective management of risks that might appear during the project implementation. Additionally, it presents the project innovation management strategy and process.

According to the American Society for Quality (ASQ), Quality Assurance is "The planned and systematic activities implemented in a quality system so that quality requirements for a product or service will be fulfilled."[1] Risk management in turn refers to the process of identifying, analyzing and mitigating unexpected events or conditions (i.e. risks) which create uncertainty about the project as they affect it either positively or negatively.[2] Last, innovation management refers to the establishment of procedures which ensure the management of the entire innovation process, from the generation of a novel idea to product development.

The document, first, integrates quality assurance, risk management and innovation management within the overall structure and organization of project management to illustrate how each part of project management interacts with the core of it and with each other. In the following sections, the quality assurance, risk management and innovation management processes are analysed. Last, a draft letter to the Advisory Board members is presented.

[1] https://www.project-management-skills.com/what-is-quality-assurance.html
[2] https://www.projecttimes.com/articles/commonsensical-project-risk-definition.html

2 Introduction

This document is critical because it aims to ensure project quality, identify potential risks and provide an approach for innovation management. The scope of the document extends to the project management structure, as this plays a significant role in the implementation of the proposed approaches and methodologies and especially for identifying deviations from the established time plan and quality objectives and tackle them early on.

2.1 Audience of the document

The Quality Assurance and Risk Management Plan shall be used as a reference by:

- The Project Coordinator,
- The Risk and Quality Manager of SiEUGreen
- The Innovation Manager of the project
- All Consortium Partners of SiEUGreen
- The European Commission (EC) project officer
- The Advisory Board (AB)

2.2 Document outline

The next chapter begins with an overview of the SiEUGreen project, while chapter 4 continues with the approach to project management, including the structure and the allocation of responsibilities. Chapter 5 describes the three key elements of the quality assurance procedures: (a) performance management, (b) deliverables management and (c) corrective measures. Chapter 6 introduces the risk management procedures to be implemented by the project to identify and mitigate all the possible risks that might have an impact on the project results. Chapter 7 proposes an effective approach to innovation management. In Annex A a draft letter for the invitation of experts to join the Advisory Board is presented.

3 Overview of the project

SiEUGreen aims to promote urban agriculture with the purpose to contribute towards the diffusion of smart, green and inclusive cities in Europe and China. The need to promote urban agriculture is based on the rationale that food security cannot rely only on traditional agriculture and in order for cities to have enough food to feed a growing population, urban agriculture schemes must be devised and deployed. Even more that cities are currently net producers of waste, which must be minimised through a course of action which brings about the circular economy.

To achieve its objectives, SiEUGreen will implement the following activities:

- Identification of the main processes, institutional and governance frameworks and other structural elements which can contribute towards the diffusion of urban agriculture (WP1)
- Verification and pilot testing of the technologies identified by the project (blue, green and yellow technology) (WP2) in order to prepare for the showcases (WP3)
- Organization and deployment of the showcases in Europe and in China with the purpose to demonstrate on the ground the benefits of urban agriculture (WP3)
- Creation of an enabling framework for the transfer of knowledge on the deployment of urban agriculture at the international level (WP4)
- Planning for the commercialization and sustainability of the project results through innovative business models and mapping of market needs in Europe and in China (WP5)

SiEUGreen is expected to generate the following benefits:

- Diffusion of technologies for the promotion of food security, resource efficiency and smart, sustainable and resilient cities
- Water and energy efficiency, continuous production and waste minimization
- Improved knowledge of innovative business models which can lead to the adoption of urban agriculture by city residents, public authorities and the private sector
- Knowledge transfer and increased collaboration between Europe and China
- Social empowerment via the participation of end-users in the co-design and via the co-ownership of urban agriculture schemes

4 Project management

4.1 Project management structure

Overall, the goal of project management (technical, financial, ethical and administrative supervision of the project activities) is to ensure an effective implementation of SiEUGreen and the development of high quality outputs. In order to manage a project of the size and complexity of SiEUGreen, a structured approach to management is proposed. This will be complemented with flexibility when necessary and with transparency.

The project management structure of SiEUGreen is based on the Grant Agreement of the project, and is slightly differentiated following a rigorous assessment of the existing modalities.

The project management structure delineates the main management components, which are closely connected to the quality management aspects of the project, to risk identification and mitigation and to innovation management.

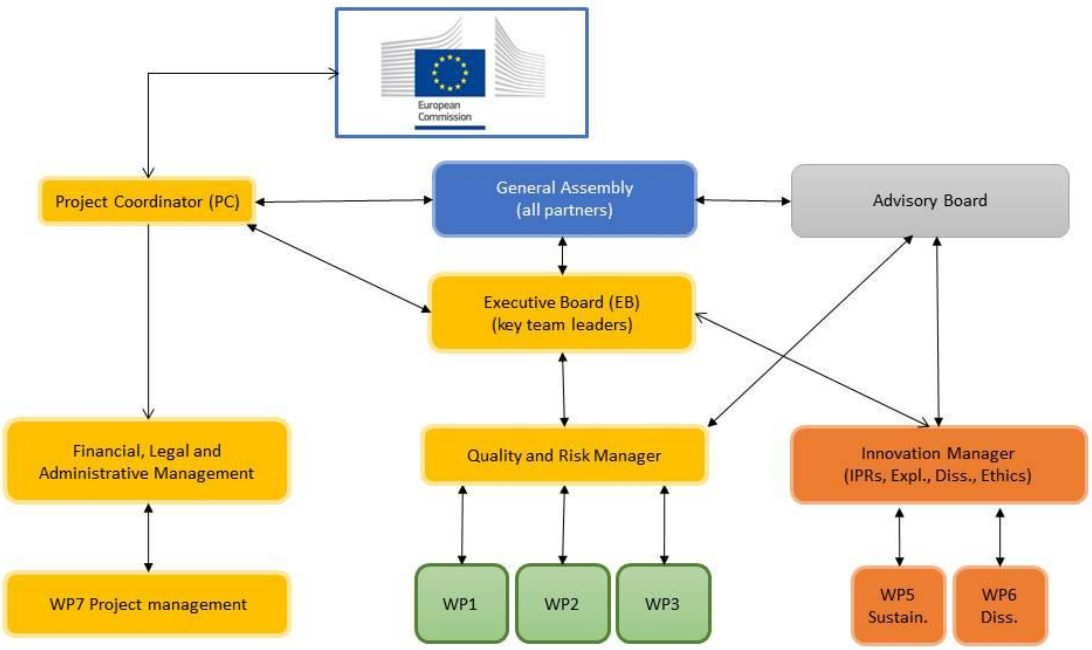

Figure 1 – Project management structure

The SiEUGreen project management structure positioned above is comprised of:

- The Project Coordinator (PC).
- The Executive Board (EB) consisted of the PC and the Work Package Leaders (WPL) (among which the Risk and Quality Manager (RQM) and the Innovation Manager (IM)).
- The project's Financial, Legal and Administrative Management personnel, who are under the guidance of the Coordinator.
- The General Assembly (GA), comprised of one representative of each partner organisation and chaired by the PC.
- An external expert Advisory Board (AB), consisting of key experts in the field of urban agriculture.

4.2 Roles and Responsibilities

Within the context of project coordination

The Project Coordinator (NMBU) will be responsible for the overall management of the project. NMBU will set up a Project Coordination Team to manage the SiEUGreen project. This team will be led by Professor Petter D.Jenssen , Project Coordinator, and supported by Project Manager and Quality and Risk Manager Dr. Manoj Kumar Pandey, Financial Manager, Christel Nguyen and Ethical Advisor, Professor Deborah Oughton. The faculty dean will also follow up the project closely. During the project lifetime, other NMBU staff members might be involved depending on the needs of the project implementation. The Project Coordination team will be responsible for the following tasks:

Technical coordination:

- Chairing project meetings and proposing decisions to be made based on the suggestions from the WP leaders regarding the strategic direction of the project, the allocation of resources and consortium management
- Monitoring how WPs accomplish the project objectives
- Implementing monthly tele-conferences with partners (Go-To-Meeting platform) to assess progress
- Liaising with the European Commission
- Developing the Consortium Agreement (CA) establishing the reporting, and payment arrangements
- Signing the Grant Agreement and ensuring all partners adhere to this Agreement within the schedule set by the European Commission

Financial matters:

- Acting as the financial coordinator of the project, receiving the EC funding and distributing it according to the Grant Agreement and the Consortium Agreement
- Establishing appropriate reporting and monitoring tools and following up with the partners to ensure proper financial reporting in line with the project budget
- Developing the periodic reports, providing an overview of the progress of the project, of the achievement of the objectives and of possible delays and actions to tackle them

Finally, the Project Coordinator is responsible to intervene at all the components of the structure of project management and at any time when the timely and successful implementation of the project is at risk. More specifically, in situations where:

- The WPLs or the task leaders take decisions which have wider repercussions or contradict the Description of Action (DoA)
- Delays, overruns or lack of progress towards the achievement of the objectives occur
- Conflicts emerge which cannot be solved by the WPLs

Within the context of decision-making

The General Assembly (GA), is the central decision making body of the project. Each partner is represented by one member/ one vote in the GA, which is chaired by the Project Coordinator. Its main responsibility is project governance. It monitors and assesses the actual progress and orientation of the project and the achievement the of project objectives. It is responsible for the use of resources and for possible costs. Possible modifications of the work plan, any important technical and financial decisions together with the periodic and final reports will be delivered to the GA for approval, including without limitation, decisions regarding: (a) the broader communication and dissemination efforts of the project, (b) modifications to the description of work and allocation of efforts, (c) issues about the agreement which might emerge with the EC, (d) financial planning and management and other administrative modalities (for example the entry of a new partner in the project, and the exclusion of an existing one and conflict resolution).

The members of the GA will oversee the execution of the project and the achievement of the objectives. The GA will take decisions on the strategic direction and activities of the project, including scientific and practical matters. Such decisions will be formulated based on decisions at the meetings within the consortium and from input by the Advisory Board, which will meet with the GA at least once per year and also communicate with it via conference calls.

General Assembly		
Name	**Partner organisation**	**Email**
Prof. Petter Jenssen	NMBU (Coordinator)	Petter.jenssen@nmbu.no
Dr. Jihong Liu-Clarke	NIBIO	Jihong.liu-clarke@nibio.no
Dimitrios Petalios	CREVIS	Petalios@crevis.be
Dr. Karen Refsgaard	Nordregio	Karen.refsgaard@nordregio.se
Stavros Matzanakis	Emetris	sm@emetris.gr
Pernille Thormann Villessen	Aarhus	pv@aarhus.dk
Vasiliki Moumtzi	VILABS	mova@vilabs.eu
Kostas Nasias	OKYS	knasias@okys.eu
Tao Huang	A-aqua	thu@a-aqua.no
Omer Faruk Celebi	Hatay	Celebihatay@gmail.com
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Dr. Johannes Heeb	Seecon	Johannes.heeb@seecon.ch
Prof. George Eckhard	IGZ	george@igzev.de
Prof. Weijie Jiang	CAAS	jiangweijie@caas.cn
Prof. Hongzhi Cui	CASS	yuhongjun@caas.cn
Jun Liu	BAESIU	645539231@qq.com
Guiquin Zhang	BGVS	zhangguiqin0405@sina.com
Dr. Luo Wenlian	HHEPSTI	luowenlian@139.com
Mojun Li	Photon	mojun.li@photoncn.com

Within the context of project implementation

The Executive Board (EB) is the main implementation body, chaired by the PC and comprised of the Work Package (WP) leaders. Its mission is to propose amendments to the Grant Agreement, if needed, in accordance to the project evolution. It is responsible for the planning, execution and control of the project, regarding both scientific and technical matters. WP leaders are responsible for the co-ordination of the individual WPs, with a mission to ensure that the tasks in each WP are implemented effectively. WPLs

have as well the responsibility to plan and carry out the respective activities and deliver on time the deliverables of their WPs, ensuring that the objectives of each WP are met. Additionally, WP leaders are responsible for the reporting and for the high quality and timely implementation of each WP and for participating in the meetings of the EB. In every Work Package, experts from each partner organisation will join forces to ensure the highest possible quality of activities and deliverables.

Work Package Leaders			
Work Package	**Organisation**	**Name**	**Email**
WP1 Institutional and Social structures for creating resilient cities with UA	Nordregio	Karen Refsgaard	Karen.refsgaard@nordregio.se
WP2 Development of sustainable and circular urban farming systems	NIBIO	Jihong Liu-Clarke	Jihong.liu-clarke@nibio.no
WP3 Showcase deployment	Vilabs	Vasiliki Moumtzi	mova@vilabs.eu
WP4 International knowledge transfer	NIBIO	Jihong Liu-Clarke?	
WP5 Business modeling and sustainability	Crevis	Dimitrios Petalios	petalios@crevis.be
WP6 Communication and dissemination	Emetris	Stavros Matzanakis	sm@emetris.gr
WP7 Project management	NMBU	Petter D.Jenssen	Petter.jenssen@nmbu.no

Additional roles are assigned to two members of the Executive Board:

- Risk and Quality Manager (RQM): His/her responsibility will be to map potential risks, assess their impact on the project, come up with mitigation actions and oversee their implementation together with the Project Coordinator. Additionally, he/she will ensure the scientific and technical quality of the project activities and results. The risk and quality manager will also administer the project (Project manager). The role will be assigned to Dr Manoj Kumar Pandey (NMBU).
- Innovation Manager (IM): His/her role will be to manage effectively any new innovations developed by SiEUGreen, in order to ensure the implementation of innovative ideas for the diffusion of urban agriculture in the context of greener, smarter and more inclusive cities. The role will be assigned to Mr. Georg Finsrud from A-aqua.

Within the context of expert advice

An Advisory Board (AB) will undertake key responsibilities for the quality management of the project, carrying out peer review and ensuring that the deliverables of the project properly integrate the current state of art and advance it further. The Advisory Board will consist of 4-5 members, at least one of whom will be a representative from China. The Advisory Board activities/contributions will be coordinated by the Norwegian University of Life Sciences. The experts have been invited and until now the following have confirmed:

- Mr. Thore Vestby (Former member of Norwegian parliament)
- Pr.Dr.Ir Grietje Zeemann (Professor at Wageningen University, The Netherlands)

Advisory Board responsibilities

The table below displays the type of contributions that we will request from the Advisory Board. We expect that the AB members will either review deliverables or participate in physical meetings, including the project conferences.

Activities of the Advisory Board			
#	Action	Type	Date
1	Provide feedback to the project report titled: “Maps of quantitative and qualitative data for each of the showcase locations“ (D1.1)	Review report	June 2018
2	Provide feedback to the project report titled “Baseline study including key indicators and development of a typology” (D1.2)	Review report	December 2018
3	Provide feedback to the project report titled “Whitepaper with best practices” (D1.3)	Review report	February 2019

4	Participation in the project mid-term conference	Participation in meeting	October 2019 (date tentative - to be defined at the Dissemination Plan)
5	Provide feedback to the project report titled "Mid-term showcase deployment report" (D3.1)	Review report	June 2020
6	Participation at the project final conference	Participation in meeting	July 2021 (date tentative – to be defined at the Dissemination Plan)
7	Provide feedback to the project report "Social awareness and acceptance report" (D2.6)	Review report	September 2021
8	Provide feedback to the project report titled "Recommendation document for nutrient and energy supply in each showcase" (D2.5)	Review report	September 2021
9	Provide feedback to the project report titled "Final Showcase deployment report" (D3.4)	Review report	September 2021
10	Provide feedback to the project report titled "City benchmarking" (D3.5)	Review report	October 2021
11	Provide feedback to the project report titled "Policy recommendations" (D6.4)	Review report	December 2021

Reimbursement of Advisory Board members' travelling expenses

The travelling expenses of the Advisory Board members when they will participate in the project events and activities will be reimbursed based on the invoices that they will provide, while a maximum amount per event will be established. The following provisions shall apply:

1. NMBU will refund all actual direct expenses in accordance with the Norwegian accounting principles and in compliance with both Norwegian and EUs relevant applicable laws.
2. The AB member will be reimbursed on condition that he/she will provide a report of travelling expenses, which will include the invoices/receipts of the expenses and their bank account information.
3. The invoices/receipts will be issued in the name of the respective member of the AB.
4. NMBU will reimburse the AB member by transferring the respective amount to his/her bank account.

5 Quality Management

5.1 Scope of quality management and responsibilities

The project quality management procedures are a critical part of project management, because they provide the solid basis for the timely, effective and high quality implementation of the project. In this chapter, we determine the quality objectives and the quality management process which will be implemented in order to ensure that the project outputs are developed according to highest possible quality standards.

The quality of the project refers to the following:

- Quality of project management
- Quality of deliverables
- Quality of events and activities

Quality management aims:

- To ensure that the SiEUGreen project meets the objective of enabling the diffusion of urban agriculture within the context of smarter, greener and more inclusive cities
- To meet the quality standards of the European Commission
- To assure effective collaboration between the partners and among the partners, the stakeholders and the end-users
- To implement an effective and efficient monitoring and evaluation system
- To deliver the Project in line with agreed scope
- To deliver the Project in line with agreed costs
- To deliver the Project in line with agreed time-plan
- To identify deviations from the quality standards as early as possible and to apply appropriate, efficient and cost-effective corrective measures

The quality management procedures defined in this document place refer to the following:

- Performance management: Regular assessment of the progress of the work
- Deliverables management: Establishment of a process of development, review and consignment of a deliverable.
- Corrective measures: Definition of measures and responsibilities to implement them

Quality management is divided into quality assurance and control.

- Quality assurance identifies the actions to be carried out in order to ensure that the project and its deliverables conform to the quality standards.
- Quality control refers to all the processes and measures which are put in place in order to tackle instances where quality standards are not met.

The SiEUGreen quality management procedures stipulate that all consortium members are responsible to develop high quality outputs.

The Risk and Quality Manager (RQM), in turn, will be responsible for the following:

- Enforce the quality assurance procedures with the cooperation of a member from each partner organisation.
- Ensure that activities and deliverables are accomplished to a high quality.
- Review deliverables.
- Assess whether the deliverables are developed within time-plan.
- Act pro-actively in order to anticipate occasions of non-conformance.
- Help the PC with the EC audits

Last, the Work Package leaders will support the Risk and Quality Manager (RQM) and will ensure that their WP activities conform to the quality assurance procedures and that the RQM is informed duly should any problems occur.

5.2 Management of performance

The first element of the quality assurance procedures is to manage the performance of the partners with regard to the project milestones and objectives. To this end, a set of indicators have been defined already at the stage of the proposal in order to evaluate to what extent the partners meet the objectives of the project in accordance with the milestones. These indicators will be constantly assessed and updated.

Performance assessment will be implemented on the following occasions:

- At the project annual internal reviews
- For the periodic and final reviews

The results of performance assessment will be integrated in the project reports, submitted to the EC.

The table below displays the current project indicators.

Project indicators			
Objective	Indicator	Target	Milestone /Deliverable
Objective 1: Improve resilience of urban centers in Europe and China and increase food security.	Amount of secure (FAO) food produced (WP3) in relation to the amount of food produced without the project.	> 50% increase Minimum: 12000kg	D3.3 D3.4
	Engagement and behaviour change workshops (T3.2)	2 in each showcase	MS6

	Number of unemployed involved in the activities	> 500	MS6
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)	5	MS6 MS7 MS8
	Unused land reused	> 20ha	MS8
	Individuals involved in showcases	> 5000	MS8
	Households involved in showcases	> 750	MS8
	Balcony gardens	90	MS8
	Organic rooftop Restaurants	2	MS8
	Reduction of the water and energy footprints	90% 1270m3 methane/year converts to electricity; 3190 kWh/year, heat; 9580 kWh/year, CO2 for the greenhouse use: 1550 m3/year	MS8
Objective 3: Create a "bridge" of shared knowledge and best practices between Europe and China, through the collaboration of scientists, communities and policy-makers at both continents	High-scale International meetings	> 4	MS10
	Agreements signed	> 2	MS10
Objective 4: Create an active trans-disciplinary community of multiple actors: researchers/technology	Involvement at the resident level / households	Over 1000 individuals in each of 5 geographical areas	MS13

providers, public authorities, private actors, residents, local communities, SMEs	Involvement at the Municipalities/ Communities level	Over 50K active community members will benefit from the project	MS13
	Involvement of International stakeholders	Policy-makers, SMEs and researchers from China (showcase), Turkey (showcase), Greece (awareness), Denmark (showcase), Norway (showcase)	MS10
Objective 5: Create new value chains and develop sustainable business models that can be replicable across regions and countries	Negotiations with investors valued	> 100M€	D5.5
Objective 6: Develop evaluation methods to measure the economic, environmental and social impacts of urban farming and its value chains on the urban communities	Assess the contribution of urban farming systems and value chains to cities' food security	The success of this objective will be assessed on the basis of the success of the project's aim to promote green – smart – inclusive cities	D1.5
	Compare cost-effectiveness of various peri-urban and rural-urban farming systems		
	Measure the social impact through "on-the-ground" research and engagement with the urban communities		

	Use innovative tools and measurement procedures (WP6 and T1.4)		
Objective 7: Raise awareness, communicate the results and promote the adoption of the "green – smart – inclusive city" model	Target audience for awareness-raising activities on resilience and food literacy (T6.1)	> 10000	MS13 MS14

The SiEUGreen key priority is to ensure that deviations from the project targets are identified early on and delays and their repercussions are documented. To this end, we are going to apply a reporting and monitoring procedure. The RQM and the WP leaders will be informed about the results of monitoring in order to take the appropriate corrective measures.

Internal reports will be prepared every 6 months, whereas the two Project Periodic Reports (M18, M36), which will present overall progress, will be submitted to the EC.

The Periodic Reports will be developed within 30 days after the end of each reporting period and will include the following:

- The achieved progress of activities within each WP
- The deliverables submitted and the milestones met
- The title of each publication and other details (author, journal/ conference proceeding, date)
- The presentations at Conferences (date, location, participant names, topics covered and conclusions)
- The meetings that took place during the respective period (agenda, participants, location, date)
- The travelling that took place during the period (name, objective of the trip, location, date)
- The overview of the respective management level on the activities which have been implemented
- The problems which emerged and the actions that were taken to face them

NMBU will be responsible to produce the periodic and the final report and each partner will contribute.

The internal reports will include the following:

- The outcomes accomplished during the respective period (WP leaders will give information about this)

- The activities carried out by the partners (each project partner will give information about this)
- The financial outcome (by each project partner)
- The efforts undertaken (the PMs utilised by each project partner)
- An update of the project risks (WP leaders will provide information on this)

5.3 Management of deliverables

The SiEUGreen DoA includes all the deliverables to be developed by the project during the project. Each deliverable has to be submitted to the European Commission, to be approved in the first instance by the Project Officer. The ultimate approval of deliverables will take place at the review meetings. Deliverables are crucial so that the EC assesses the project progress, since they illustrate and analyse the project results. Therefore, producing deliverables of high quality is key for the SiEUGreen success.

The quality of the deliverables will be assessed on the basis of **content** and **appearance**. As regards the former quality refers to structure, completeness, accuracy, relevance and language. As regards the latter, a template will be developed in the context of the Dissemination Plan.

To ensure the highest possible quality of the deliverables a development and review process has been decided upon. For each deliverable there will be a main author who will coordinate the development of the deliverable, and initiate communications with the contributors. The main author is an expert from the partner organisation to which the deliverable has been assigned. The following steps shall be taken by the main author.

- He/she will develop the outline of the document.
- He/she will define the contributions expected from the partners.
- He/she will propose a schedule for conference calls with the partners contributing.

When these steps have been taken, the deliverable will be developed and the main author will integrate all contributions into the document. To ensure the highest possible quality three levels of control in the production of the deliverables have been defined:

- **1st level control**: The deliverables will be submitted to all the partners 3 weeks before the deadline for the submission. The partners will have 1 week to submit their feedback.
- **2nd level control**: The main author will integrate the comments into a second draft, which will be delivered to the WP leader. The deliverable will be approved at this level both as regards content and as regards revisions. If the main author is also the respective WP leader then the second review will be implemented by the project coordinator or by a partner with relevant expertise.

- **3rd level control:** Following this step, the main author will send the final version to the RQM at least 1 week before the date of submission. The RQM will crosscheck the deliverable not entering into the technical details, but assessing the overall contents so that he/she will ensure that the quality standards are met and that the deliverable can be submitted to the EC.

As a last step, the PC will send the deliverable to the Commission.

This schedule might be modified depending on the complexity of the deliverable and on other contractual obligations but this should be agreed upon by all the partners. Following its delivery to the EC, and as long as there are any updates, the deliverable will be modified and resubmitted.

5.4 Corrective measures

As part of quality control, instances of non-conformance to the quality standards and procedures shall be identified and corrected. All project partners may identify such cases and report them to the Project Coordinator who will refer the case to the General Assembly. The GA will be the body to decide and act upon the corrective measure.

Corrective measures shall ensure that:

- The cause of non-conformance will be investigated
- All instances of non-conformance will be reported
- The most appropriate corrective action is taken to address the cause of non-conformance
- The corrective measure is implemented duly
- Preventive actions are implemented to prevent the instances of a similar type of non-conformance in the future

The following types of corrective measures shall be implemented:

- Assignment of a deliverable which does not meet the project quality standards to a different author
- Co-organization of an activity together with a more experienced partner
- Matching of the deliverable with the person of the implementation team who has the most relevant expertise

6 Risk Management

6.1 Scope of risk management

SiEUGreen is a dynamic, complex and ambitious project which brings together organisations from different countries to carry out an extensive programme of activities. To ensure that the strategic direction, the operational management, the results and the budget of the project remain on track, risk management is essential. The purpose of risk management is to establish processes and methods to assess and mitigate risks via an anticipatory approach.

Risk management is often overlooked. However, external circumstances may influence the delivery of the project. Therefore risk management is a core component of the project and not just a secondary one.

The benefits of risk management are difficult to quantify. However, without risk management, the risk of failure is aggravated.

In order to develop and implement the risk management strategy of the project we need to reply to the following questions:

- What elements of project risk management are essential for our consortium to implement?
- How do we balance the requirements and controls of a risk management programme with efficient and streamlined project execution?
- Are our current project risk management procedures effective at mitigating project risks?

6.2 Risk management process and responsibilities

The risk management strategy defines the process through which risk management takes place and allocates roles and responsibilities to the partners.

First it should be noted that risk management is a continuous process which takes place throughout the duration of the project, starting from the planning stage and continuing until the project conclusion.

Second, the risk management process of the project is comprised of four steps: risk identification, risk analysis, risk management, and risk mitigation. More specifically, this involves the identification of a risk, the evaluation of how critical it is and the assessment of whether the risk level/impact is higher than what could be acceptable by the project. In case a risk goes beyond the levels which are acceptable, a risk analysis process will take place which will determine the actions to be taken in order to bring the risk within acceptable levels. Additionally, risk management involves defining a contingency plan and actions, possibly restructuring resources, evaluating the results of this process, and ensuring that no other similar risks emerge.

Third, as regards the distribution of roles and responsibilities, these are shared between the Project Coordinator, the RQM and the Work Package leaders. The RQM will be responsible to identify and assess risks, whereas the Project Coordinator will be responsible to enforce the actions towards their mitigation. Work Package leaders in turn will be responsible to share their concerns about potential risks with the RQM so that he/she will help them identify critical risks. WPLs together with the RQM will be responsible to come up with appropriate mitigation strategies. All the above-mentioned partners and individuals should be open to include risks identified by others, such as the implementation team of each partner organisation or a member of the Advisory Board or even end-users.

The kinds of risks that may appear in SiEUGreen include:

- **Partnership risks**: In the implementation of the Work Packages, risks pertaining to the inclusion of new partners or exclusion of existing ones are possible.
- **Skill risks**: Partners should decide as early as possible upon the staff members with the necessary expertise to carry out a task and assign to them sufficient time to implement it effectively.
- **Risks related to the development of deliverables** (e.g. content-and-schedule-wise or quality-wise).
- **Risks related to time**: The WP leaders together with the RQM should anticipate any modification of schedule or delay in developing the deliverables and the effects of such delays on the overall project progress and define steps to take to mitigate the effects of the delays.
- **Risks related to budget**: When a contingency plan is applied to mitigate the risks identified, the PC should evaluate the effects on the budget of the respective WP and on project budget and should propose a solution to be decided upon by the GA.
- **Dissemination and exploitation risks:** Risks related to a possible low interest in the materials and outputs resulting from SiEUGreen and not reaching the expected visibility.

6.3 Risk registry

The risk management process defines that all risks identified prior to the project's start date will be included in the present deliverable. Relevant contingency plans will also be developed to tackle each of the identified risks. Regarding the monitoring of risks, as well as updates, this will take place on an ad-hoc basis (when a new risk is identified) or once every six months. For every new major risk identified, the respective WPLs will prepare a contingency plan to address the risk appropriately. All contingency plans will be incorporated into the overall project work plan and will include the partner responsibilities to handle them.

To facilitate this process the consortium will maintain a Risk Log File to include all identified risks. To add a risk to this file, a risk analysis will be, first, carried out, which will have both a qualitative and a quantitative component. The qualitative analysis will describe the risk, assign it to one of the partners, determine proactive measures and suggest whether the resolution

is pending or accomplished. The quantitative analysis will assess the potential impact and the probability that the risk materialises.

All the partners will be responsible to update to the Risk Log File. The risks which have already been addressed will not be deleted but will be maintained in the Risk Log File in order to provide an accurate and complete overview of all the risks encountered by the project. The initial list of risks has been identified at the proposal level and is presented in the following table. As the project evolves, and when the partners identify new risks, these will be added to the Risk Log File.

Identified risks of SiEUGreen							
#	**Partner responsible**	**WP**	**Description**	**Impact level**	**Likelihood**	**Current situation**	**Proactive measures**
1	Nordregio	1	Difficulties to gather information about Hatay showcase due to political instability	High The conflict may affect the resources of Hatay Municipality to deliver the required information and our ability to visit and carry out studies 'in loco'.	Likely	Active It is not recommended to visit Hatay at the moment	Nordregio included in the SiEUGreen team a member who has Turkish background. This has helped to understand the situation and communicate with Hatay Municipality; Use digital media to get knowledge: - interviews; via skype with stakeholders involved in the showcases- planners, target groups, UA practitioners, etc. - videos and photos are being used to better understand Hatay context Considering finding another showcase in addition to Hatay

2	Nordregio	1	Lack or uneven information on the different aspects in the showcases. It can jeopardise the consistency in the description/analysis of the European and Chinese showcases	Low	Likely	Active	Nordregio has a team member who is Chinese which easies the communication. Keep a good relationship and dialogue with the Chinese partners; Use alternative means (e.g. qualitative instead of quantitative) to describe the same 'aspect' in different cases
3	NIBIO	2	Chinese partners do not receive funding from MOST for SiEuGreen	Low / Medium	Uncertain	Active	Inform EU project officer and project leader at NMBU. Carry out necessary ajustement to fulfill the WP2
4	NIBIO	2	Communication and data sharing problems between EU-Kina	Low-medium	Likely	Inactive	A close follow up is planned and WP2 leader Dr JL Clarke keeps project leaders and NIBIO partners updated
5	NIBIO	2	Lack of enough data or process failures from laboratory tests prevents up scaling and implementation of suggested technology in the showcases	Low	Unlikely	Inactive	Good planning of experiments with relevant parameters and conditions. If failure include alternative tests or technology with less risk. Include relevant information from litterature.

6	NIBIO	2	Lack of acceptance of suggested technology among residents and public admimistration in the showcases	Medium	Likely	Inactive	Residents will be informed and involved during the process of implementation. Options for alternative technologies with less risk to be included during testing and in showcases during testing and after the project period.
7	NIBIO	2	Delay of showcases give short time to evaluate technology and social acceptance of residents.	Low	Unlikely	Inactive	Good planning of showcases. Flexibility to change/adapt evaluation methods for existing situation. Include relevant information from other showcases with same design.
8	NIBIO	2	Technologies to be allowed to implement in Chinese showcases according to China's regulation	Medium	Likely	Inactive	Communicate with the responsible persons in Chinese showcases in early 2019 Make necessary compromise without causing problem for the project plan
9	NIBIO	2	Problems to achieve good "cycles" producing attractive urban food production systems	Medium	Likely	Inactive	Make a good plan B as soon as possible. Identify several possible solutions in the start

			based on local waste resources				
10	ViLabs	3	Resistance to test innovative urban agriculture techniques	Medium	Likely	Inactive	Continuous information of involved stakeholders about the benefits and potential risks. (b) Best practices sharing among showcases.
11	ViLabs	3	Infrastructure not in place on time in particular in Fredrikstad and Changsha	Low	Unlikely	Inactive	The construction might take more time than anticipated. Expedite the process through close contact with the developers.
12	NIBIO	4	Knowledge transfer problem due to the different laws in EU and China	High	Likely	Inactive	A good IPR agreement is the fundation for WP4 Understand Chinese IPR law and regulations Good and regular communication with Chinese partner
13	NIBIO	4	Lack a well defined IPR agreement between European and Chinese partners	Medium	Unlikely	Inactive	Contact the Chinese IPR responsible partner Prepare a thorough IPR agreement asap Assure EU and Chinese laws are followed

14	NIBIO	4	Disagreement on particular IPR and technology sharing	Medium	Likely	Inactive	European and Chinese partners must be open and inform each other when technologies across country board is used and generates impact
15	NIBIO	4	Misinterpretation of legal IPR agreement due to the lack of background	Medium	Likely	Inactive	Seek for help from Maria Johnson or ARD TTO office for Norwegian partners and Chinese TTO at CAAS for Chinese partners
16	CREVIS	5	Difficulties in technology transfer from Pilot cases to targeted communities, stakeholders and new markets	Medium / High	Likely	Inactive	SiEUGreen partners have the needed experience and are focused in the market delivery of SiEUGreen technologies. Continuous information to key stakeholders about SiEUGreen technologies
17	CREVIS	5	Inadequate maturation and willingness to adoption/use of SiEUGreen solutions in the target market	Medium	Likely	Inactive	Continuous information about the Pilot activities and innovative SiEUGreen solutions utilised as enabler for market acceptance.
18	Emetris	6	Difficulties in stakeholder engagement; (Low participation of stakeholders in the	High	Unlikely	Inactive	Initiate measures to build trust and enable expert participation.

			codesign of the project results)				Contact experts and stakeholders through existing networks
19	NMBU	7	Financial risk (Emerging challenges and uncertainty as regards the evolution of the project could incur an impact on the project costs)	Medium	Unlikely	Inactive	The administrative/ financial management besides reporting will focus on the anticipatory monitoring of financial issues in order to be able to investigate and assess instances of deviation early on
20	NMBU	7	Modifications in the implementation team	Medium	Likely	Inactive	Identify possible changes as soon as possible. Partners should include in their teams members with similar expertise.

6.4 Contingency planning

Contingency planning refers to the development of a plan in case a risk emerges. The RQM will be responsible to develop such plans and the Project Coordinator to enforce their implementation.

The SiEUGreen contingency plans will include the following elements:

First, the description of the actions, which will be carried out in order to address the risk

Second, the assignment of the responsibility to the respective partner

Third, a time-plan for execution of the respective actions

Fourth, the definition of the resources to be used to carry out the respective actions and mitigate the risk

7 Innovation Management

" Invention is the creation of a new idea or concept, and innovation is turning the new concept into commercial success or widespread use"[3]

SiEUGreen is an Innovation Action; therefore its ultimate goal is to generate innovation outputs which will promote the diffusion of urban agriculture in Europe and in China. In particular SiEUGreen aims to develop resource-efficient production systems for UA by providing solutions through the cooperation among different disciplines and through the integration of different techniques. This goal requires the establishment of specific procedure for the management of the entire innovation ecosystem of the project.

7.1 Innovation management strategy and process

The SiEUGreen innovation management strategy aims to define the goal of innovation management, to identify the potential benefits and to elaborate a time-plan of actions.

The strategic goal of innovation management in SiEUGreen is the development of an innovation ecosystem which allows for the generation of novel ideas, for their organization in a comprehensive system and for the development of innovative products, services or processes in the field of urban agriculture (i.e. the customized solutions of the project).

In the context of SiEUGreen, innovation management refers to the management of three interrelated domains:

First, interface management: This refers to the analysis of the science, technology and business realms to identify new knowledge crucial for the project.

Second, idea management: In this context we will identify new ideas, share them with the entire project team and organise them in the innovation management system.

Third, product development : In this process we will translate the ideas/knowledge/science of the project into the specific technological solutions.

SiEUGreen is quite specific already at the proposal phase about what technologies we aim to develop and how. However, we need to ensure that new ideas will also be integrated in the development of these technologies.

The scope of innovation management is the entire innovation chain, i.e. the route from basic research to market uptake.

However, innovation management does not specify how the marketisation will take place. This will be specified in the exploitation plan and in the respective business plans.

As regards the benefits of innovation management, these refer, first, to effective organization of the development of the project solutions and, second, to the development of new skills both by the project participants and by the end-users and stakeholders.

[3] http://www.hksq.org/HKSTP-HKSQ-InnoMS-Seminar-20150124-Lotto.pdf

Time-wise, innovation management will be a process which will take place throughout the duration of the project. The following process be implemented according to the specified time-plan.

Innovation management actions			
	Step	**Responsibility**	**By when**
1	Establishment of the innovation management system and tools	Innovation manager (IM)	M6
2	Elaboration of novel ideas and discussion with their WPLs	All team members	Throughout the duration of the project
3	Exchanging views about the novelty of new ideas and establishing a process for their integration in the development of the project solutions	IM with WPLs	Once a month
4	Organizing the new ideas in the innovation management system	IM	Within 10 days after the end of the previous month
5	Exchanging views about the development of the project solutions and notifying the IM	The responsible WPLs with their team-members	Once every three months
6	Assessing the process of the development of the project solutions	IM	Once every three months

7.2 Innovation management tools and system

In order to ensure the accomplishment of the strategy a set of innovation management tools and processes are proposed. These range from the organization of brainstorming or mind-mapping sessions to the use of more complex and sophisticated tools, such as virtual prototyping and product life-cycle management. Each of the proposed tools is best suited for a different stage in technology development.

The innovation management system to be used by SiEUGreen will be the Teamwork (https://www.teamwork.com/) integrated in the project for the development of an open innovation ecosystem where the project solutions will be co-developed with the end-users and stakeholders. The decision about which crowdsourcing platform to use will be taken by the Executive Board, following a suggestion by the IM, by Month 6 of the project. Other processes to ensure the integration of the end-users feedback into the project solutions will be implemented too, such as questionnaires and interviews.

7.3 Key factor of success: Innovation culture

In order to ensure the successful implementation of innovation management activities, the project Coordinator and the Work Package Leaders will instill the value of innovation among the project participants. This will be accomplished via the integration of new norms and ways of thinking among the members of the implementation team, whereby the generation of novel ideas and the development of the project solutions will be at the core of the execution of the project activities.

SiEUGreen

Sino-European innovative green and smart cities

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