



Edible Cities Network – Integrating Edible City Solutions for social, resilient and sustainably productive Cities

# EdiCitNet

Deliverable D 5.2

## Guidelines for participatory impact monitoring including Citizen Science



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# 1. Executive Summary

In this document we give recommendations for implementing monitoring protocols, with a strong focus on participatory methods and tools. The document is part of Work Package 5 – “Monitoring and Documentation”, and it was developed in close collaboration with and for many project partners.

The document language and length are meant to be understood by a wide range of people, with or without scientific knowledge in monitoring, as it is the intention that this document is an operational tool for anyone who aims to monitor ECS performance.

The document is structured in four main sections: The first section sets out basic knowledge and questions that seem essential when considering to implement a monitoring protocol. What, how and when to consider a monitoring protocol is introduced, too.

The following two sections, “Plan your monitoring” and “How to collect you own data” are meant to be used as look-up sections, with clear to-

pics to consider, recommendations and examples of common methods used in monitoring protocols, in particular when considering participatory methods.

The last section is an illustration of the implementation of such protocols in the Living Lab of the City of Oslo – one of the Front-Runner Cities in the project. This section should be read as an example of a possible application of the principles outlined in the document and is not necessarily representative of the real situation, as the selection of indicators and appropriate methods is still under development.

## 2. Introduction

### Background in EdiCitNet

The EdiCitNet project aims to make cities around the world better places to live through the implementation of Edible City Solutions (ECS). ECS are naturebased solutions that focus on urban food production, distribution and use. ECS may increase social welfare, enhance social cohesion, support local green economies, reduce the carbon footprint associated with food, improve conditions for biodiversity, and improve sustainability through wise water management and recycling of local raw materials.

Different ECS and different cities may have different primary goals. Common to all is a need to assess whether their ECS are providing the benefits that they are intended to provide. Measuring progress towards goals requires monitoring. Defining monitoring protocols and procedures for selected indicators guarantees that the data collected is reliable and can be used for assessing the performance and impacts of certain ECS, decision making or to transfer knowledge to external parties. Therefore, this document aims to provide an accessible background to the principles of monitoring and documentation, and to identify key resources that can be used. While the aim is to combine the ease of use with scientifically sound outputs, the list of resources is adjusted to the needs of the project partners and is by no means exhaustive (see Deliverable 5.1 from EdiCitNet for more detail). This document is complementary to other documents produced by the WP5 Documentation and Monitoring team, from the EdiCitNet project, and builds upon the selection and prioritization of a set of indicators for the city partners.

### What is monitoring?

Monitoring is gathering information on aspects of a system using a systematic, standardised and well-documented approach that can be reliably repeated, so that status and changes can be compared from time to time and place to place. Monitoring is the establishment of an assessment process that provides stakeholders with information on the development and results of a certain

aspect of interest. It has the aim to support decision making and adaptive learning, planning and management.

Specific objectives of monitoring are:

- Provide baseline and ongoing data to local teams and stakeholders;
- Systematically track performance across processes or activities;
- Ease documentation and reporting of outputs and results.

### Why we do monitoring in EdiCitNet

In the context of EdiCitNet, monitoring is done to provide supporting information which allows city partners to discuss and select measures fitting their aims. Although monitoring costs time and money, it may also save costs in the long run by highlighting initiatives that are proven to be effective and successful in relation to city goals. This may help in channelling funding to the most effective initiatives. It also enables cities to learn from one another by following the best examples and avoiding ECS models that are not successful. Monitoring can thus be a powerful tool to promote social, environmental and political changes.

Using monitoring in an appropriate and structured way can provide reliable and vital knowledge of key aspects that could otherwise be difficult to grasp or make visible. A sound monitoring system in the EdiCitNet project can help to:

- Assess and demonstrate the effectiveness of implemented activities (ECS);
- Improve internal discussion and decision-making by providing reliable information on ECS;
- Empower and engage stakeholders and citizens in ECS activities;
- Raise awareness;
- Ensure accountability and enable knowledge-based allocation of responsibilities (in processes / activities?);
- Influence political decision-making, with evidencebased information;
- Facilitate the adoption/exchange of experiences with... of successful ECS by other cities.



### Key issues to consider

In EdiCitNet, ECS are generally not managed directly by the city administration. Most ECS are managed by volunteers, some by Small or Medium Enterprises (SMEs), some through sheltered employment programmes, some are partly subsidized by the city. This immediately raises several questions, for example:

1. What are the aims of the city and of those hosting the ECS?
2. What is relevant information?
3. Who does the monitoring?

Establishing a monitoring scheme is a complex task, and answering the above questions can be difficult. In a “normal” order, one would first define the aims of the ECS, and then determine what information is needed to measure progress towards these goals. Based on the information needed, the final step would be to determine who will do the monitoring. However, answering any one of these questions might have implications for the others.

For example, a city might aim to increase biodiversity and decide to involve citizens to collect information on the species present. However, if there are no citizens willing to collect the data, the city might have to revise their idea of what is relevant information. Perhaps the best they can achieve is to measure the area of green ECS in the city. Thus, the availability of people and resources may have a strong influence on what can be monitored.

Frequently the identification of available resources, and also resource limitations, determines the success of implementing a monitoring strategy. This report aims to address these issues. As a starting point, we would like to describe some situations that we encountered when discussing the implementation of a monitoring procedure with our partners in their cities:

- It could seem that the people most closely involved in the ECS are also the most likely candidates to conduct data collection for monitoring. They are most certain to have a vested interest in the performance of the ECS. For city-to-city exchange to work, the city should have at least a partial interest in the performance of the ECS. It is obvious that the monitoring responsibility is a two-way negotiation – between the city and the people who run the day-to-day business of the ECS.
- The choice of indicators to be monitored is a two-way negotiation – ideally, both the people running the ECS and the hosting city should be interested in, and see the usefulness of the monitoring information. Those running the ECS may want a higher level of detail, while the city administration or external stakeholders may prefer more simplified summary information. Therefore, it is relevant to make use of the initial steps to clarify goals and expectations of all stakeholders.
- To ensure relevance of the information for exchange between cities a so-called minimum indicator list is useful. We suggest to monitor at least one indicator from each dimension: social, environmental, and economic. This is the most likely to be of interest to all parties involved.

### 3. Plan your monitoring (step-by-step guideline)

This section aims to introduce a methodology to implement monitoring procedures in ECS. This „step-by-step guideline” was developed for the EdiCitNet project and together with the project partners, therefore appropriate adjustments should be considered to better adapt to each local situation. We suggest a robust protocol to identify, collect, process and analyse relevant data for ECS monitoring. We recommend that the following sections are all considered in the implementation of a new monitoring plan and, whenever possible, in the order that they are presented in this document. The adoption of a methodical protocol can assure that results are well documented and supported for better decision making.

Monitoring should serve a purpose, i.e. a good monitoring scheme should provide data to answer specific questions or measure progress towards specified goals. Therefore, it is important to start the process by identifying the goals to be attained or questions to be asked, and listing the activities that can be implemented to achieve the goals.

and, whenever possible, define concrete goals to be achieved expressed in such a way that it can be measured.

- Develop a plan that includes activities that will help reach the identified priorities.
- Identify key indicators that can evaluate the performance of each activity, i.e. measure the degree to which goals are reached.
- Build a data collection structure and evaluation procedure.
- Continuously evaluate the performance of activities and assess the results in regard to the ECS aims.

The more detailed the plan is, the easier it will be to identify a large set of indicators that provides a strong base for a performance assessment. Bear in mind that this plan is not fixed but is a working document and will also be subject to continuous revision to further perfect the plan and adjust/select the indicators.

#### Establishing priorities

#	Recommendations
1	Set up an Implementation plan and identify activities to achieve the proposed goals

#### #1 Implementation plan and identify activities to achieve the proposed goals

The monitoring should enable the city to determine whether the activities are effective or not. Therefore, the kind of data to be collected to calculate indicators of success will be dependent both on the aims and on the specific activities chosen to fulfil the aims. Therefore, having an understanding from the beginning of the steps needed to implement a monitoring scheme is critical (for example, when defining activities). These are the main five steps in implementing a monitoring scheme:

- Identify priorities that need to be addressed

## Selecting indicators

#	Recommendations
1	Identify representative indicators to measure ECS performance
2	Ordinary vs participatory methods

### #1 Identify representative indicators to measure ECS performance

As soon as activities are clearly identified one can choose indicators to assess the ECS. There are already available plenty of indicators which can make selecting an adequate indicator for your ECS a difficult task. In our project, we have developed and selected a range of indicators with our partners that can match their goals (see Deliverable 5.1). The following checklist (ref.1) of questions can help you in the selection of the most relevant indicators:

#### Targeted

- Element of change: What is changing?
- Target group: Who is involved in the change?
- Location: Where is the change located?
- Timeframe: Over which period is the change expected to happen

#### Measurable

- Specific unit(s) of measurement to be used: What will be measured, counted, weighed or scored?
- Reference to a baseline/benchmark for comparison: What was the measurement at the starting point?
- Qualities are defined: Words like “effective, appropriate, successful,” are defined clearly. Qualitative indicators can use methods such as a Likert Scale. It is very important to clearly define terminology and keep the consistency for later processing the data.
- What is the scale of the indicator? Local, neighborhood, city, regional or national? For example, a good national indicator might not be suitable to interpret a local scale because of the lack of resolution/ detail.

#### Reliable

- Quality of the information is credible.
- Assumptions are minimal, or at least clearly stated.
- Connection between the indicator and what you are trying to prove is direct.
- Everyone collecting the information will measure the same thing and achieve the same results.

#### Feasible

- Means of verification is viable and doable.
- Information can be obtained.

#### Utility in decision-making

- The information is linked to key decisions.
- The information has major importance in the decision.

### #2 Ordinary vs. participatory methods

It is important to reflect on the choice of ordinary and/or participatory methods. Ordinary methods can be interpreted as methods that use standard protocols to obtain data and that are normally the responsibility of one person or a small group of people. Participatory methods are becoming more frequent in urban studies as they use a larger number of people to either collect, organize or provide data for a specific question. The participatory methods can be successful in engaging local citizens but can create challenges to control data quality. Another aspect that should be considered is the use of qualitative or quantitative indicators. Using quantitative indicators can help to assess the impacts of certain measures. Qualitative indicators however, can provide more information about the context and about subjective matters. While the first aims to provide data and support decision making with numerical information, the latter is suited for the understanding of processes and organizational change. Using qualitative indicators can be a bigger challenge to define a consistent methodology, ensuring unambiguous interpretation.



Qualitative indicators can also allow to promote awareness as they often require direct interaction with stakeholders (interviews, questionnaires).

### Determination of methods

#	Recommendations
1	Assessing data and tools needed
2	Identifying databases and existing data sources
3	Creating data templates

#### #1 Assessing data and tools needed

The development of a monitoring project should plan a preliminary report defining key data aspects (metadata) and tools needed to collect the data. Documenting this information will guarantee the reproducibility of the monitoring procedure within the organization and simplify the data sharing with external stakeholders. Representativeness and comparability of the quantitative data should be defined in the preliminary report.

#### #2 Identifying databases and existing data sources

The preliminary report should identify existing data sources and databases that can be used to collect data for the indicators (internal and external sources). Considering doing an inventory of the data available at an earlier stage can help also so select the indicators (previous step).

#### #3 Creating data templates

Data templates are essential to ensure the same data is collected at each site/activity, and that data parameters remain consistent over time. Data templates should be prepared to facilitate the data collection – consider multiple platforms and solutions to optimize data collection, for each activity. For example, development of surveys for qualitative type of indicators.

### Involving people in monitoring

#	Recommendations
1	Discussing the motives for involving people
2	Allocating monitoring responsibilities
3	Involving people as data collectors

#### #1 Discussing the motives for involving people

There may be many motives for involving people in monitoring, for example:

- to raise awareness about issues of sustainability
- to teach about specific topics, such as climate change, biodiversity, soil quality etc.
- to teach practical scientific skills such as measuring and recording
- to build social cohesion in a neighbourhood
- to provide employment
- to provide meaningful activities for vulnerable people
- to empower ECS participants to improve their ECS
- to engage society in building more sustainable cities and others

Often, several motives will hold simultaneously. In practice, due to limited resources, the voluntary involvement of engaged citizens may be the only way a city (or an ECS) is able to gather monitoring data, as it happens in some small cities with few human or technical capacities. Sometimes, the goals of raising awareness or bringing people together may be considered more important than acquiring high quality monitoring data. It is important that different stakeholders discuss these issues. They do not necessarily need to share the same motivation, but it can be helpful to recognise that other stakeholders may have different reasons for involving people in monitoring.

## #2 Allocating monitoring responsibility

Depending on the motives for monitoring and the types of activities selected, one can decide to involve people either directly in the implementation of the monitoring or more indirectly, for example as informants. Therefore, it is important to define responsibilities and roles for the people involved in each activity. The roles could be for example: (1) coordination team; (2) Data collectors; (3) monitoring supervisors; (4) key stakeholders, (5) ECS participants and (6) ECS visitors (for example, people visiting an ECS once).

The definition of roles and responsibilities can help to ensure that the data collection runs smoothly, and quality is ensured.

## #3 Involving people as data collectors

Citizen science projects make use of a large number of people to collect (normally large-scale data) that otherwise could be difficult to obtain. These projects may rely heavily on technology, such as mobile apps for recording data. Or they may be low-tech, typically when a group of citizens are supervised by an expert who is responsible for further management of the data. Thus, the level of involvement of the citizens may vary considerably from project to project. Data quality can then be an issue, since the people carrying out the recording are generally not experts and different people may be involved from one round of recording to the next.

### INFO BOX – PEOPLE AS DATA

Many ECS have social goals, such as engaging people, increasing social cohesion and improving well-being. Therefore, people themselves may often be the focus of monitoring activities. Perhaps one of the most used indicators for monitoring ECS is “participation”. This may simply involve counting the number of people taking part in ECS activities. Often characteristics of the people may also be included, such as sex, age, nationality and maybe even socioeconomic status. The more detailed the information desired, the greater the degree of involvement of the participants.

For example, if wanting to monitor the effects of ECS on mental health, questionnaires or interviews may be needed. In such cases, an ECS participant may be a “Data Collector”, carrying out questionnaires or interviewing fellow ECS participants, who are then the research subjects. Whenever people are the subjects of the monitoring, great care must be taken to respect personal privacy and protect sensitive data. It is critically important that Data Collectors appreciate this, receive appropriate training and sign confidentiality statements. If wanting to monitor longterm effects on individuals, it may be desirable to repeat questionnaires or do follow-up interviews with the same individual over time, necessitating the storage of personal information. This also demands great care and attention to data storage, such as anonymising data and restricting access to the key that links individuals with their answers. See Deliverable D7.3 for more about managing sensitive.

A good planning prior to the implementation of the indicator is key to minimize data quality issues, including the preparation of thorough instructions and, ideally, some training or supervision of the monitoring activities. Care should be taken to make the methods and the monitored quantity as reproducible (“person-independent”) as possible. To provide a trivial example: using weight in grams rather than light and heavy.

**INFO BOX – PEOPLE AS DATA**

In addition to monitoring the outcomes of ECS, it can be extremely useful to document the processes of establishing and running ECS. This may include recording:

- who has the initial idea for the ECS? (e.g. private individual, NGO, municipal representative)
- how is the idea spread to others?
- how is agreement reached and disagreement solved?
- how are challenges identified and overcome?
- what activities are involved in establishing the ECS?
- who is involved in the activities, how are they recruited?
- do the people involved in initiating the project continue to be involved in running it?

This information can be collected during the process using anonymous feedback from participants, and/or by an independent observer if available. The information can be summarised as process indicators such as transparency, procedural fairness, inclusiveness, openness and level of ownership over decisions. By linking these characteristics to the outcomes of the ECS, it may be possible to improve future ECS design and implementation processes and avoid the mistakes of earlier endeavours. Simply asking people to reflect regularly over their motivations, actions and interactions with others may help to encourage more open and inclusive processes and increase the chances of establishing successful ECS.

For further information, we recommend the UrbanByNature Webinars available on Youtube:

„The Value of Reflexive Monitoring for Nature-based Solutions Projects“

[www.youtube.com/watch?v=kviAZHtUMNA&t=26s](http://www.youtube.com/watch?v=kviAZHtUMNA&t=26s) –

„How Reflexive Monitoring for Nature-based Solutions Works in Practice“

[www.youtube.com/watch?v=yyhG2Po-\\_4o](http://www.youtube.com/watch?v=yyhG2Po-_4o)

„Process Indicators for Nature-based Solutions“:

[www.youtube.com/watch?v=KmRnD3FIMTE](http://www.youtube.com/watch?v=KmRnD3FIMTE)

**Data documentation**

#	Recommendations
1	Verifying precision and accuracy

**#1 Verifying precision and accuracy**

The development of a detailed data template is essential to facilitate data recording and less likely to have precision, frequency and accuracy errors. Precision can be understood as the standard deviation of the output values, i.e. understand how far are the values between themselves. On the other hand, accuracy is the distance of the outputs to the real value (if known), i.e. understand if the output values can represent the real situation. Frequency is the interval of data points in time (important to make sure that data is collected in a regular basis).

If the data recording is expected to be collected by multiple people involved in the activity, data collection protocols and training should be considered to avoid errors in data recording. This issue is particularly important in citizen science data collection methods.

Two main questions to be considered are: (1) are temporal scale measurements being properly met (is the frequency of data collection consistent)? And (2) is the data recorded reflective of its true value (according the expected values)?

## Data recording

#	Recommendations
1	Recording data in an appropriate database

### #1 Recording data in an appropriate database

All data should be recorded in an appropriate database, such as an excel sheet, to enable data processing and calculation of indicators. To design a database that is “appropriate”, think carefully about the information that you want to extract. For example, if you are interested in monitoring participation, is it enough to know the total number of people participating, or would you also like to track changes in male/female participation? If you have a goal to increase multi-ethnic participation you will also need a column in the database to record ethnicity. And if you want to find out the types of activities that attract people, then you should also record the type of activity in the database. Often it is a good idea to record as detailed information as possible. Detailed data can be simplified and aggregated in different ways, maybe even allowing you to answer new questions that you had not thought to ask at the start of the monitoring. On the other hand, the data must be manageable. Make sure that you can easily extract the most important information.

Handwritten data (e.g. surveys or questionnaires) should be digitised and processed as soon as possible by the data collector to avoid misinterpretation or data loss.

Data recording should respect the Data Privacy regulations in place.

## Data analysis

#	Recommendations
1	Data completeness and interpretation

### #1 Data completeness and interpretation

Before analysing the data (in particular, quantitative data), consider whether it will be usable. For example, if there are significant data gaps then it may be difficult to draw any conclusions.

Incomplete data may still provide some indication of trends, but it is important to point out any weaknesses in the data that reduce its reliability. Assessing data completeness regularly may also enable action to improve the situation, by making extra effort to record the missing data. Alternatively, if some data prove chronically difficult to collect, it may be better to accept the situation rather than wasting resources trying to gather data that cannot be interpreted.

The most detailed information that you have recorded in your database is referred to as “raw data”. This must be summarised in some way to be effectively communicated to others. Usually this involves aggregating (e.g. reporting an annual figure based on data from multiple events) and simplifying the data (e.g. grouping data into a couple of categories, rather than providing all the details). You will have to decide on what level of aggregation and simplification is appropriate for your data and your purposes. For example, if you have a goal to increase the participation of women in ECS, you will probably have recorded the number of men and women taking part in various activities at an ECS throughout the year. The simplest indicator from this data would be to calculate the percentage male/female participation over the whole year. This is a figure that you could compare from one ECS to another, to see which has the highest female participation. Or you might just want one aggregated figure for all ECS in the city that you can compare from year to year.

To find possible explanations for your results, you will probably need to break down your data and try analysing it in different ways. For example, a single figure of male/female participation in all ECS in the city, might hide big differences between the ECS. To try to understand WHY there are differences, you might want to explore the data more, e.g. by classifying the activities into certain types to see whether some activities attract more women than men.

Be aware, though, that the more you break down your data, and the fewer observation you have in each category, the more likely your results are to be influenced by chance and the harder to draw conclusions. For example, if there was one activity that was only attended by women, it could be a popular activity for women and not for men, but it might also be that – by chance – only women heard that the activity was going to take place.

- A few simple numbers are often easiest to communicate, especially to policy-makers. These may be referred to as “headline indicators”.
- To explore the trends behind the headline indicators, you probably need to do more detailed analysis.
- Be aware that small datasets can be easily influenced by chance and random effects.
- The more variation there is between results, the more observations you need to identify trends.
- A correlation between two variables does not necessarily indicate a cause/effect relationship, e.g. there could be a third variable influencing both.
- For a proper deep analysis of your data, it is probably wise to seek advice from a statistician!

### Data management

#	Recommendations
1	Data Management Plan

#### #1 Data Management Plan

Data protection is very important, especially when using personal data or data collected by small groups of citizens. Most countries and cities have their own regulations, which must be followed. The EdiCitNet project has a separated delivery named “Data Management Plan” that addresses how the project is dealing and storing data (D.7.3). Please consult this document for more information and details on how to manage Data in your own project.



## 4. How to collect your own data own data

Data collection is the process to systematically gather quantitative and/or qualitative data, for the purpose of monitor, evaluate and/or learning. Most data collection is used to reveal whether the ECS is on track or if the expected results are yet to be achieved.

There are many different methods to collect data. This section illustrates some examples of methods that can be used depending on your individual case. These examples are not exhaustive and focus on identifying their key aspects why they should/shouldn't be considered for your ECS. The detailed implementation of each method is not listed in this section. In next section (Section 5), we illustrate how some of these methods are being implemented in one of EdiCitNet partners (City of Oslo).

### Field Survey

<b>Description</b>	Collecting specific information according to detailed instructions, and using a structured, standardised recording sheet that ensures data completeness. Normally uses direct observation and recording at the ECS location and is common to be used to acquire quantitative data
<b>What it is used for</b>	To record status and track any changes of a specific indicator. It can be used to assess the performance and/or impact of ECS activities on the factor of interest, for decision support and comparison with other internal or external data
<b>Benefits</b>	When based on scientifically sound methodologies, it is a ro-bust and reliable method
<b>Negatives</b>	May demand expert knowledge, requiring external expertise that can be costly. May be weather-dependent. Storage, database for qualitative recordings and interpretation is expert depending
<b>Examples</b>	Recording plants or animals Soil characteristics (ref.2) Metropolis (ref.3) Participation

### Citizen Science

<b>Description</b>	Citizen Science is a scientific method that uses or is conducted partially by people with no scientific background. The method can use other methods to collect data (e.g. surveys), however, it is considered a scientific method per se because it requires a more complex planning to set up (for data quality purposes). It can be collected any type of data (quantitative or qualitative)
<b>What it is used for</b>	Collect large data on specific indicators that would be difficult otherwise, for example, due to spatial scale feasibility
<b>Benefits</b>	Fast to apply and can contribute to public awareness on specific topics
<b>Negatives</b>	If not properly structured, information and reliability can become useless
<b>Examples</b>	iNaturalist (ref.4) Zooniverse (ref.5)

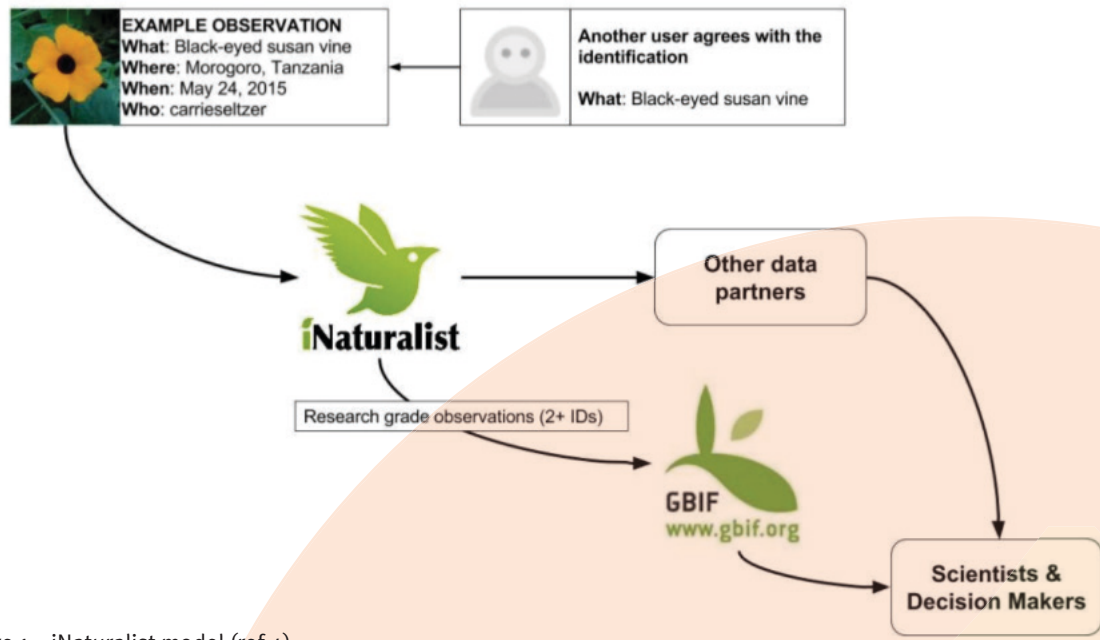


Figure 1 – iNaturalist model (ref.4)

### Surveys and interviews

<p><b>Description</b></p>	<p>Surveys and interviews are methods extensively used in Social Sciences (and beyond) that are extensively prepared to collect information directly from people, via direct interaction (interview) or with paper (surveys)                  Surveys are a set of questions (closed to open) that can be send out to any recipients through different channels. Interviews are also setting of questions but the answers are collected by interviewers that contact the interviewees. Data can be quantitative or qualitative, however these methods are used to get a better understanding of context (qualitative data). It can be performed via direct/online surveys or direct/phone interviews with specific people</p>
<p><b>What it is used for</b></p>	<p>Utilized to collect, analyse and interpret the views of a group of people from a target population and gain knowledge of other people perceptions and interpretations</p>
<p><b>Benefits</b></p>	<p>Great insights on data (e.g. sensible/critical data) that can difficult to collect with other methods</p>
<p><b>Negatives</b></p>	<p>If not properly structured, information and interpretation can become difficult to analyse. This does not necessarily mean that experts have to be involved, but those designing the surveys must think carefully about what information they intend to extract and should always test the survey in a realistic setting to uncover ambiguities and test that the data will be useable. This is time-consuming. Who is going to be interviewed?</p>
<p><b>Examples</b></p>	<p>Dutch Census (ref.6)                  Farming Concrete project (ref.7)</p>

# PARTICIPATION BY TASK



Garden: \_\_\_\_\_ Contact: \_\_\_\_\_ Phone/Email: \_\_\_\_\_

Tally up the time spent on each task, based on the cards in your mailbox.

Start date: \_\_\_\_\_ End date: \_\_\_\_\_

<p><b>TIDYING UP</b> Hours: _____</p>	<p><b>COMPOSTING</b> Hours: _____</p>	<p><b>WATERING</b> Hours: _____</p>
<p><b>BUILDING / FIXING</b> Hours: _____</p>	<p><b>WEEDING / PRUNING</b> Hours: _____</p>	<p><b>PLANTING / SEEDING</b> Hours: _____</p>
<p><b>COORDINATING</b> Hours: _____</p>	<p><b>OPEN HOURS</b> Hours: _____</p>	<p><b>OTHER TASKS</b> Hours: _____</p>
<p>Total hours: _____</p>		

Figure 2 - Data collection toolkit by Farming Concrete project (ref.7)

## Focus groups

<b>Description</b>	Similar to interviews (see Surveys and Interviews) but for large groups, generally arranged in the form of focus workshops. While Surveys and Interviews focus on personal insights on one indicator, Focus Groups can be used to learn about Group behaviour and dynamics changing (e.g. public awareness on a specific topic)
<b>What it is used for</b>	Utilized to collect, analyse and interpret the views of a group of people from a target population and gain knowledge of other people perceptions and interpretations
<b>Benefits</b>	Great insights on data that can be difficult to collect with other methods
<b>Negatives</b>	If not properly structured, information and interpretation can become difficult to analyse
<b>Examples</b>	PeriUrban project (ref.8)



Figure 3 – Example of a focus group model. The Five Stage Stakeholder Engagement Framework (ref.9)

## 5. Monitoring in action (the case of Oslo)

### The context

The city of Oslo, Norway, is part of the EdiCitNet project as a Front Runner City (FRC). It has joined with the intention to implement a living lab (LL) that focuses on food production in the city as a tool to benefit neighbourhoods with social risks. The main aim of the LL is to create cohesive neighbourhoods and to empower vulnerable communities to participate, expand their network and gain entrepreneurial skills. Implementing a monitoring protocol in the Oslo LL will help the city to measure the impacts of their activities in their overall goals.

### The process

While the process in Oslo is still underway, the initial steps have been taken considering the steps described in the previous section. The first step, “Establishing priorities” has been a corner stone in the process, has it been seen as a success factor for the ECS to integrate several stakeholders and build a strong community initiative. These

was been developed through the implementation of a core City Team that meets regularly and discusses priorities and activities to be developed. Currently, the City of Oslo ECS is in the second step “Selecting indicators”. The project team with responsibilities in supporting the City Team, as then worked together with them to select and prioritize indicators that are feasible to implement in the city. Table 1 is the working document that is being used to worked together with the City of Oslo to link the ECS goals and relevant indicators. This table has been very useful to establish a causal linkage between ECS goals and monitoring indicators. The team that is responsible for implementing the LL in Oslo has specified the main activities to be developed for achieving its goals and further identified a set of indicators to measure the performance of each activity. Due to restraints in resources the city has reached out to several educational institutions to obtain support in defining methods for data collection and conducting the research. This process is currently underway.

**Table 1 –Living Lab ECS, activities and respective indicators**

LL Objective	Related subgoals	Activities	Economic indicators	Social indicators	Environmental indicators
Entrepreneurship, Empowerment	Facilitate entrepreneurial skills	Facilitate infrastructure as well as training and courses through existing entrepreneurs (Gruten, Stadsbruk)	Training and education ID 117 Ownership and agency ID 103	Participation. No. of people interested; no. of people starting, ... ID 191	
Entrepreneurship	Create jobs, job opportunities Establish new ECS, new businesses	Provide summer jobs for youth (connect to local schools) and other vulnerable groups (Salvation Army) connect to marked channels (REKO)	No. of businesses /ESC established ID 206 Jobs created that are directly linked to ECS ID 3 Amount of in-come generated	Identity ID 104 Ownership ID 103	
Participation, Cooperation	Ensure plant/animal biodiversity and create valuable partnerships	Establish a wild flower meadow with UiO and Nature Management School		Cooperation ID 89	Plant Biodiversity Animal biodiversity (pollinators) ID 136, 137



Participation, Cooperation, Closed-loop ECS	Create a closed-cycle system  Experiment with development of new products through cooperation between stakeholders	Establish different composting techniques  Test recycling of spent coffee ground from mushroom production for soil improvement	No. of businesses /ECS established ID 206	Participation: No. of participants engaged ID 191	Amount of compost inserted Amount of soil generated ID 189
Participation, Empowerment	Establish new ECS  Facilitate participation for marginalized community members  Create a social meeting platform	Establish a CSA with local, motivated community members  Sponsor shares for low-income families and NGOs  CSA as social meeting place, events, activities, knowledge transfer, courses	Training and education ID 117  Jobs created that are directly linked to ECS ID 3	Participation: No. of shareholders, no. ID 191  Volunteering ID 302  Physical Activeness ID 23  Local food consumption ID 99  Neighbourhood and local identity ID 104  Ownership and agency ID 103  Feeling part of your community ID 300	Plant Biodiversity Animal biodiversity (pollinators) ID 136, 137
Sales channels	Provide access to low-threshold market channels	Establish sales through REKO channels, establish sales through annual marked days	Market sales of ECS produce ID 198		

### Indicators selected and methods to collect data

While the selection of indicators is still not completed, we can only illustrate a sample of how some indicators have been recommended and considered to be implemented in the City of Oslo soon. The selection of indicators has prioritized a selection of methods that can easily be implemented and that are meaningful for the goals of the LL. Please note that each indicator name is followed by an ID number, which is an internal project reference.

#### Economic indicators

##### • Training and Education (ID117)

*Description:* The implementation of ECS that promote entrepreneurial skills have the intention to make knowledge available to a number of people that otherwise would not have access to certain training. Therefore, it is important to record the

number of events that are offered through the ECS.

*Definition:* Number of training and educational events.

*Strengths of the indicator:* easy to define and communicate.

*Weaknesses of the indicator:* frequency can be scarce.

*Measurement procedure:* Data should be collected by the city team and stored in a local database. Data can be collected from the ECS responsible to organize and plan the events.

Temporal scale: annually.

Scale of measurement: ECS.

Data input type: quantitative.

*Temporal scale:* annually.

*Scale of measurement:* ECS.

*Data input type:* quantitative.

- **Business attracted (ID206)**

*Description:* The implementation of new ECS can lead to the improvement in the economic, physical and social conditions in the neighbourhoods. As such, the development of new businesses from the activities developed in the ECS is a relevant indicator to consider.

*Definition:* Number of new ECS or businesses / ECS or businesses established.

*Strengths of the indicator:* easy to define and communicate.

*Weaknesses of the indicator:* can be difficult to collect data systematically and agree on definition boundaries (e.g. what counts as businesses).

*Measurement procedure:* Data should be collected by the city team and stored in a local database. Data can be collected from surveys from participants in the ECS.

*Temporal scale:* monthly.

*Scale of measurement:* ECS.

*Data input type:* quantitative.

## **Social Indicators**

- **Participation (ID191)**

*Description:* The implementation of ECS that promote community building, participation in community or integration is relevant if those are able to attract a significant number of people within the target group. Therefore, it is important to record the number of people participating in the activities and verify if participation trends are reaching the objectives.

*Definition:* Number of participants in ECS activities.

*Strengths of the indicator:* easy to define and communicate.

*Weaknesses of the indicator:* could be difficult to interpret the trends (for example, reason for participation to decrease in the trends).

*Measurement procedure:* Data should be collected by the city team and stored in a local database. Data can be collected from the activity's subscription forms. Take in consideration personal data privacy and issues.

*Temporal scale:* monthly.

*Scale of measurement:* ECS.

*Data input type:* quantitative.

- **Ownership and agency (ID103)**

*Description:* It is the intention that local activities lead to a feeling of identity and agency within the community and ownership of the established ECS, which lead to community engagement, empowerment of vulnerable community members and social cohesion. As such, it is relevant to understand if participants change their perception of their role within the community.

*Definition:* Extent to which the ECS project and associated activities serve to promote empowerment of vulnerable communities.

*Strengths of the indicator:* useful data to assess the impact of ECS on the community.

*Weaknesses of the indicator:* data collection might be challenging.

*Measurement procedure:* Many options can be used to collect data (digital, interviews or paper). We recommend that the question is treated with a Likert scale (qualitative scale), ranging from 0 ("no feeling of ownership/agency") to 5 ("strong feeling of ownership/agency"). Care must be taken to define the concepts clearly for the participants.

*Temporal scale:* annually/activity.

*Scale of measurement:* ECS.

*Data input type:* qualitative.

### **Environmental indicators**

- **Amount of food/garden waste composted (ID189)**

*Description:* The implementation of ECS is also an opportunity to improve environmental habits in the community. Therefore, it is important to collect data that can provide an accurate picture of the environmental impact. Composting majorly contributes for improving soil quality, replace the need of fertilizers, nutrient recycling and water infiltration.

*Definition:* Amount of food/waste composted in the ECS.

*Strengths of the indicator:* useful data to assess the impact of ECS in the local environment.

*Weaknesses of the indicator:* data collection needs to be systematically collected and responsibilities well organized.

*Measurement procedure:* Weighting the amount of food/waste that is been placed in the composts. Responsibilities to collect that data should be clear (for example, requesting that every participant that places waste in the compost to weight it before they do so and register the value in a spread sheet).

*Temporal scale:* monthly.

*Scale of measurement:* ECS.

*Data input type:* quantitative.

## Reference links

**Ref.1 – DM&E Manual: Designing for Results: Integrating Monitoring and Evaluation in Conflict Transformation Programs**  
<https://www.sfcg.org/Documents/dmechapter4.pdf>

**Ref.2 – FAO Soil Portal**  
<http://www.fao.org/soils-portal/en/>

**Ref.3 – Metropolis project**  
<https://www.metropolis.org/projects/metropolitan-indicators>

**Ref.4 – iNaturalist**  
<https://www.inaturalist.org/>

**Ref.5 – Zooniverse**  
<https://www.zooniverse.org/>

**Ref.6 – Dutch Census**  
<https://www.cbs.nl/en-gb/publication/2014/47/dutch-census-2011>

**Ref. 7 – Framing Concrete Project**  
<https://farmingconcrete.org/toolkit/>

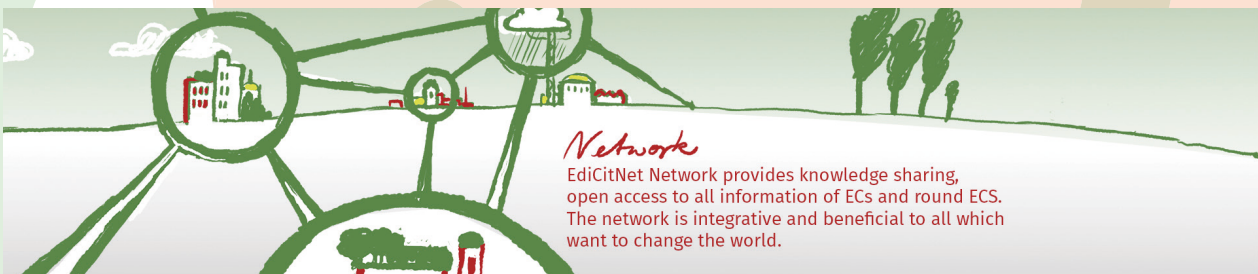
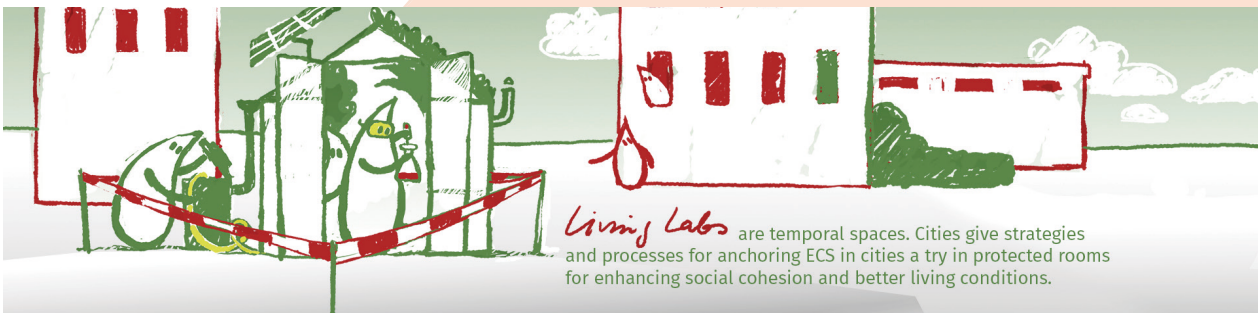
# Glossary

Abbreviation	Description
ECS	Edible City Solutions
EdiCitNet	Edible City Network
FRC	Front-Runner City
LL	Living Lab



## About the EdiCitNet project

EdiCitNet is demonstrating innovative Nature-Based Solutions (NBS). Edible City Solutions (ECS) are going one step further: We include the whole chain of urban food production, distribution and utilisation for inclusive urban regeneration and address societal challenges such as mass urbanisation, social inequality and climate change and resource protection in cities





Thank you!



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