Deliverable Proof – Reports resulting from the finalisation of a project task, work package, project stage, project as a whole - EIT-BP2020

Name of KIC project the report results from that contributed to/ resulted in the deliverable	System and sustainable Approach to virTuous interaction of Urban and Rural LaNdscapes - SATURN
Name of report	200231-D03 Release of Toolbox and common framework progress report
Summary/brief description of report	Within SATURN, 10 pilot projects have been selected for new solutions that can be shared and provide input to a common framework. The report is a summary of best practices and tools derived from the project. These reflect ways to achieve sustainable land use models reconnecting cities to their surrounding areas in terms of supporting local economic development, e.g. job creation, urban resilience, decreased segregation, increased biodiversity, reduced carbon emissions etc.
Date of report	31/12/2020

Supporting Documents: Detailed report is attached and Annexes DEL03_1 (Tools) and DEL03_2 (Best Practices)

TOOLBOX AND FRAMEWORK PROGRESS REPORT

Version 1.0

Responsible partner:

Authors: Anna Ternell, PE, Gothenburg Hub

Date: 31/12/2020

Executive Summary

One of the objectives of WP2 is to build a comprehensive and adaptive common framework and to test and improve the framework in an iterative process. This report corresponds to Deliverable 3 in the SATURN project. It is the second version of the Common Framework and toolbox.

A toolbox is being developed and tools from each pilot case mentioned above are being developed. In all, 10 tools are being developed and described. The tools are generic in nature and with the potential of inspiring other parts of Europe and globally. The aim is to enable the upscaling of the pilot cases as to work towards system innovation. The toolbox also includes tools from other projects and initiatives other than the pilot cases, these are referred to as best practices. A total of 11 best practices are being described in the toolbox.

The purpose of the Common Framework is to provide the underlying theory of the project. In this way we can place our pilot cases in a framework to support the implementation and development of the cases.

In this report we summarize the Common Framework and summarise the tools and best practices.

Contents

Introduction

The mission of the SATURN project is to i) Establish a strong narrative with public and private stakeholders to reconnect them with landscape identity and geographical features, ii) Build up a comprehensive and flexible framework to guide cities in implementing multi-functional projects, taking into account land use assets and cultural identity in their surrounding landscape. It will include tools and metrics to support decision making, iii) Financially sustain and scale-up initiatives through funding scouting actions and the creation of comprehensive tools and initiatives for capacity building.

One of the objectives of WP2 of the SATURN project is to build a comprehensive and adaptive common framework and to test and improve the framework in an iterative process. The work entails to map best practices regarding sustainable land use models reconnecting cities to their surrounding areas and to create a toolbox of models, tools and strategies that can be replicable and scalable.

This report corresponds to Deliverable 3 in the SATURN project. It is the second version of the Common Framework. The project runs from 2019-2021 and this report reflects the second year of 2020. In the report we refer to different terms illustrated in Figure 1 and shortly explained in the following part of the introduction.

The SATURN project includes three hubs in Europe: Trento in Italy, Birmingham in the United Kingdom and Gothenburg in Sweden. Each hub has selected three to five **pilot cases** which they will actively be involved with during the three years of the project. The pilot cases all include innovative ways of connecting the rural and the urban landscape.

Each pilot case includes several **tools** that are generic in nature and with the potential of inspiring other parts of Europe and globally. During the project, these tools have been collected in a **toolbox** comprising of a series of booklets which will be communicated to our networks. The aim is to enable the upscaling of the pilot cases as to work towards system innovation. The toolbox also includes tools from other projects and initiatives other than the pilot cases, these are referred to as **best practices**.

The purpose of the **Common Framework** is to provide the underlying theory of the project. In this way we can place our pilot cases in a framework to support the implementation and development of the cases.

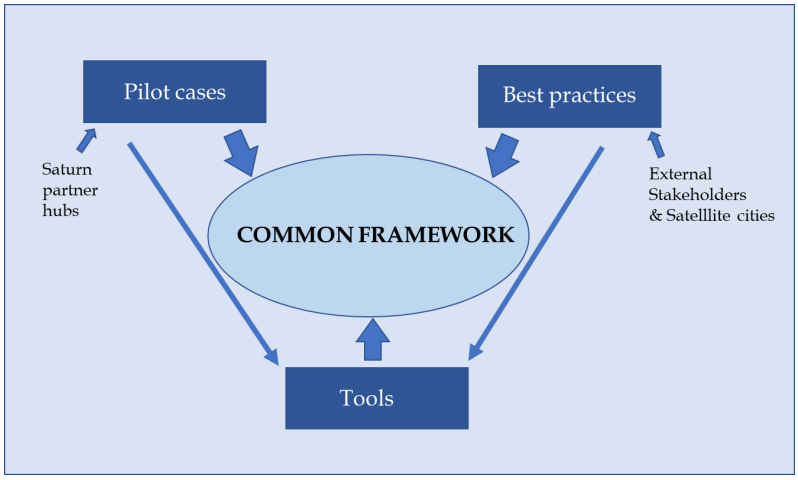

Figure 1. The figure illustrates how the different terms in the SATURN project relate to each other.

Common Framework

The SATURN project aims to reintegrate the natural assets within the city climate change impact strategy and to expand and feed its model by creating a wider initiative. This chapter summarises the content of the common framework; pilot cases, best practices and tools.

Common indicators make the foundation of the pilot cases and best practices. These indicators are partly taken from the Carl model developed by EIT Climate KIC and to international agenda (such as SDGs). The objective and activities of the CARL programme is to support cities in their delivery of climate and SDG targets by developing a city-rural coalition and a programme to help cities exchange, synergize and implement concrete solutions. The tentative framework of CARL includes the following four areas; enhance ecosystem services and resilience, Use innovative metrics & finance, Boost local production and Ensure socio-economic development

SATURN indicators are listed below.:

Indicators	Context
Enhance ecosystem services and resilience	• Ecosystem services can involve carbon storage, ecosystem preservation and human health.
Use innovative metrics and finance	• Metrics incl. ecosystem services and natural capital accounting to support decision making (incl. local carbon market)
Ensure social development and job creation	• Social wellness through e.g. job creation, health and safety
Boost local production and markets	• Foster rural areas economic development with innovative and small scale business models (entrepreneurship) such as e.g. food, agroforestry or biomass.
Local transport and logistic systems	• Smart logistics and climate friendly transport systems
Governance models	• Public private partnerships, and new innovative public involvements.
SDGs/ Broader Environmental Aspects	• Responses to international agenda (ELC/ SDG's IPCC, COP) • SDGs addressed • Environmental Awareness Methodology

Strategic Vision and International Agenda	• Development of a mapped strategic vision • Evidence of productive connections to/from strategic vision • Connection to/from region/city's strategies (national pilots) • Integrated and holistic approach to the project (cross disciplinary, cross sectoral)

The common framework includes a toolbox. The toolbox comprises a series of booklet series.

The best practices are presented in the red series; SATURN: Best Practices for Sustainable Urban-Rural Landscape.

The tools are presented in the blue series; SATURN: Toolbox Series of Sustainable Urban-Rural Landscape. The tools are generic in nature and with the potential of inspiring other parts of Europe and globally.

Full description of the tools (Annex DEL03_1) and best practices (Annex DEL03_2) are attached to this report.

Best Practices

Best practices are projects and initiatives other than the pilot cases that are considered of value for developing SATURN. The best practices have been selected by the three hubs and involve work on how to make better use of surrounding areas to the cities to create local economic development, job creation, urban resilience, decrease segregation, biodiversity, mitigate carbon emissions etcetera. They are described below with a motivation on how they correlate to the prerequisites and thematic contents of SATURN.

The SATURN: Best Practices for Sustainable Urban-Rural Landscape present the best practices as listed below:

- Falkenberg – Live your dream (Sweden)
- Hong Kong Wetland Park Project (Hong Kong)
- LAB190 (Sweden)
- Landscape Metropolis (Italy)
- Landscape Observatory of Catalonia (Spain)
- LOS_DAMA! (Germany, Slovenia, France, Austria, Italy)
- Oslo Strategy for Urban Agriculture (Norway)
- Room for the River (UK)

- Strength2Food (France, Hungary, Italy, Norway, Poland, United Kingdom, Vietnam)
- The case of Wroclaw (Poland)

Today, the fragmented landscape management governance leads to uncomplete climate strategies where cities are analysed independently from their natural landscape. This leads to a poor management of the city surrounding lands which have good carbon sequestration, food and biomass production and risk mitigation potential.

The work entails to map best practices regarding sustainable land use models reconnecting cities to their surrounding areas and to create a toolbox of models and strategies that can be replicable and scalable. Best practises mainly come from the satellite cities to the project, but also other practices are included.

Tools

The aim of the tools, in the toolbox, is to provide concrete guidance on how to implement a certain project or an aspect of a project relevant to the SATURN project. The tools can be derived from the pilot cases of the SATURN project or from best practices collected or from our satellite cities. The tools vary in format and content but have in common that they address ways to enhance sustainable rural-urban landscape. They can be concrete guidance in the form of a guide, handbook, or similar and they are generic in nature and with the potential of inspiring other parts of Europe and globally.

The Toolbox Series of Sustainable Urban-Rural Landscape presents the tools as listed below.

- Handbook in model farming, (Gothenburg)
- Fostering small scale vegetable farming on municipal land using testbeds (Gothenburg)
- Guide for capacity building for green entrepreneurs (Gothenburg)
- Mapping of abandoned/unused land (Gothenburg)
- Rural-Urban Metabolism (RUM) (Trento)
- Governance model - eco|socio|digital aspects (Trento)
- Youth engagement and mentoring for business development (Trento)
- Capacity building tool/approach (Birmingham)
- Visual tool (maps) (Birmingham)
- Stakeholder mapping (Birmingham)

Conclusion

The selection of best practices has continued during 2020 and the list represents a good complement to Saturn pilot cases to understand the development of sustainable urban rural landscape. The work on developing the tools has advanced considerably during 2020. Some tools still need to be further developed but this is planned for the final year of the project 2021.

SATURN: Best Practices for
Sustainable Urban-Rural Landscape

Room for the River

Climate adaptation, water management and wetlands

Birmingham hub

A Toolbox Series of sustainable urban-rural landscape:

Name(s), University or company

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Room for the River

Best Practice details

Title: Room for the River

Objective: Climate adaptation, water management and wetlands

Geography:

Organisation:

Financing:

Time:

Link:

What Room for the River do

It is a climate adaptation programme which looks at landscape and environmental strategies. The goal of the Dutch Room for the River Programme is to give the river more room to be able to manage higher water levels. At more than 30 locations, measures are taken to give the river space to flood safely. Moreover, the measures are designed in such a way that they improve the quality of the immediate surroundings.

Through a mechanism the Room for the River has developed specific frameworks, policies and laws for the Netherlands in order to address water safety and spatial quality in a new way of seeing and acting. It is considered an impactful example on visioning landscape at a strategic scale and therefore it is relevant for this case study.

Relevance to SATURN

Enhance ecosystem services and resilience

This project has been a pioneer strategic programme for the Netherlands and has initiated new methods, new ways of thinking and acting for water safety, resilience and future proofing of the Dutch landscape and economy. It is an example where SATURN can draw upon to explore how different cities and countries have dealt with the issues of resilience and ecosystem resulting to an innovative project that has received awards.

Use innovative metrics and finance

There were several structural models and finance, but the exploration of this business model can be part of the research for SATURN.

Ensure socio-economic development

As this is a completed project, the processes, mapped data and frameworks are mostly available for SATURN to assess the value of this case study.

Local transport systems and markets

The Room for the River has built upon local infrastructure and improve local transport methods. However due to the already pioneer approach of the Dutch transport system and the strong cycling ethos, it is considered possible that SATURN can use some of these methods and test them throughout the project. However, SATURN is not set to build any new local infrastructure, but to propose and create a vision and framework for such elements.

Governance models

The Room for the River had strong governance models and the creation of law and policy in the Dutch parliament in order to succeed. Similar approaches can be examined and evaluated for the SATURN case studies.

Strategic Vision and International Agenda

Strong strategic vision has been demonstrated by the Room for the River, since it deals with four different rivers and on a scale of the whole Netherlands. Being a climate adaptation project and focusing on water safety and spatial quality offers a strong response to the international agenda.

SDGc/ Broader Environmental Aspects

For the reasons mentioned above, the project has a strong environmental ethos and aligns with several SDGs making it a good example to evaluate in comparison to the Tame Valley case study and other SATURN pilot cases.

SATURN: Best Practices for
Sustainable Urban-Rural Landscape

Strength 2 Food

Strengthening European Food chain Sustainability by Quality and Procurement Policy

Mattia Andreola, Alessandro Betta, Alessandro Gretter,
Angelica Pianegonda

A Toolbox Series of sustainable urban-rural landscape:

Mattia Andreola, Alessandro Betta, Alessandro Gretter, Angelica Pianegonda

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Strength 2 Food

Best Practice details

Title: Strength2Food

Objective: Quantitative assessment of economic, social and environmental sustainability of short food supply chains and impact on rural territories

Geography: France, Hungary, Italy, Norway, Poland, United Kingdom, Vietnam

Organisation: Warsaw University of Life Sciences (SGGW)

Financing: European Union's Horizon 2020

Time: 2019

Link: https://www.strength2food.eu

What Strength 2 Food do

The issue of sustainable development is becoming increasingly central to political agendas around the world, along with a growing awareness of the threats associated with the intensive exploitation of natural resources. The pursuit of well-being and the satisfaction of people's material needs cannot overlook the importance of the natural environment and the social issues involved.

As parts of the debate on sustainability, food production and distribution is one of the most relevant issues. This has led to the development of alternative supply methods to those provided by large-scale retailers. This has often coincided with a revival of traditional direct sales production methods. It is widely believed that the agricultural methods of the “Short Food Supply Chain” are more sustainable and healthy, as they address the environmental and ethical problems of food systems. In this perspective, they ensure greater added value for producers, contribute to local development and are more environmentally friendly. However, the scientific literature has not yet provided sufficient quantitative evidence on the impact of different types of food supply chains. The aim of the examined study was to fill this gap in the literature and try to quantify the economic, social and environmental sustainability of short food supply chains on the basis of empirical measurement.

There are many types of initiatives that are created with the aim of taking market niches away from large-scale retailers and at the same time establishing specific relationships with customer groups. This suggests that social, ethical and environmental factors are becoming increasingly important in consumer choices. Nevertheless, conventional supply chains still maintain a dominant position in the market and, at the same time, try to regain those niches by adopting more socially and environmentally oriented policies, as exemplified by the diffusion of organic products also among large retailers.
In this study, 10 types of supply chains were selected (6 of them short and 4 long) based on the parameters of geographical proximity and organisational arrangements. The sustainability assessment was carried out on the basis of a set of economic, social and environmental indicators estimated in case studies conducted in seven countries: France, Hungary, Italy, Norway, Poland, the United Kingdom and Vietnam. The sample consisted of 208 food producers, mainly farmers, who participated in 486 short and long food chains.

The research, therefore, started from the observation that individual producers participate simultaneously in several food chains, short and long. This feature further enhances the hybridity of these realities. Producers combine different production methods, different distribution channels and also different supply chains. This also allows producers to fulfil different consumer expectations and needs. This conclusion applies to all short distribution channels, all product categories and all countries. Nevertheless, the deduction of distribution costs has made some chains less profitable from an economic point of view, as in the case of farmers' markets. Despite this, the research also shows that producers are quite satisfied with this new equilibrium: selling through the short-chain requires more effort in distribution, but the resulting payoff is judged positively on average. Self-assessment questions also allowed the analysis of social sustainability: it emerged that producers in the long supply chain are less satisfied than those in the short supply chain and complain about a lack of bargaining power. Nevertheless, there are advantages in long supply chains that cannot be ignored, such as a greater possibility to establish long-term contracts and a greater possibility to sell large quantities.

As regards other social sustainability indicators, short supply chains seem to generate positive effects on employment, especially for women.

Moving on to the environmental sustainability dimension, the results of the study indicate that short supply chains are characterised by a higher carbon footprint and thus higher negative environmental externalities which are yet balanced with the relative impact of short supply chain farmers on the overall carbon footprint of the agricultural sector.

Relevance to SATURN

The SATURN team is working on a research project about rural-urban metabolism and it aims to analyse the flows involved in the production and consumption of agricultural commodities and food in the territories between urban and rural areas of Trentino, in order to understand and measure the advantages and disadvantages that distinguish the different actors in the local supply chain.

The Deliverable 7.2 "Strengthening European Food Chain Sustainability by Quality and Procurement Policy'' developed by the Strength2Food team proved to be innovative since it produced a methodology that could be replicated in the territory covered by SATURN. The contact between the two teams also allowed the sharing of the questionnaire used in the data collection for a more rapid elaboration and application in the Trentino context.

Enhance ecosystem services and resilience

In spite of not being the main research topic of the project, the study which has been developed could effectively support the enhancement of local ecosystem services and resilience. Evaluating the different types of the food supply chain can help to identify the most sustainable business models in an interdisciplinary perspective focusing not only on ecological aspects but also on social or economic ones. Therefore, the results of the project could guide future development of sectoral plans or initiatives.

Use innovative metrics and finance

The project adopted an analytical framework mostly focused on investigating the different supply chains and their impacts. Therefore, no innovative metrics or finance models have been suggested, but only existent models have been investigated.

Ensure socio-economic development and job creation

Short food supply chains have proven to be more effective in contributing to boost local development through the creation of skilled jobs and the support to the introduction of innovative tools in the farming sector. The study of the different short supply chain methods allowed to measure the objective benefits of such chains. In particular, the advantages connected with higher payoffs and equity in the relations between different actors of the supply chain. An effective positive impact on quantity and quality of jobs and occupational rates has been demonstrated.

Boost local production and markets

New initiatives or business models that better fit local markets and conditions could arise thanks to the accurate evaluation of the sustainability of the different supply chains and therefore to the capacity of adapting production and distribution processes to maximise their sustainability.

Local transport and logistic systems

Sustainability is a multi-layered concept that includes not only ecological aspects but also social and economic ones. Finding the most efficient and globally sustainable methods to produce, distribute and

transport food at the local level is therefore fundamental to reach a higher degree of territorial sustainability. This model allows us to focus on the true effective practices to be supported and to avoid focusing on the less sustainable models.

Governance models

The research project's design did not include a specific focus on governance.

Strategic Vision and International Agenda

The main purpose is to identify the types of food supply chain that are most sustainable from an environmental, economic and social point of view. This approach is consistent with some of the goals of the International Agenda, in particular, Goal 8 and Goal 12 of the Sustainable Development Goals, namely "Decent work and economic growth" and "Responsible consumption and production" respectively.

SDGs/ Broader Environmental Aspects

8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value
11.A Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning
12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses
12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature

STATUS ON IMPLEMENTATION

The project is still ongoing, yet the specific questionnaire and work package has been developed in 2019. Therefore, the structure and the results will be discussed within the Trentino context and possibly a panel of farmers will be chosen to investigate the short and long food supply chains in the Trentino territory.

SATURN: Best Practices for
Sustainable Urban-Rural Landscape

The case of Wroclaw

The implementation of Environmental Carrying Capacity into spatial management

Mattia Andreola, Alessandro Betta, Marco Ciolli, Sara Favargiotti,
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The implementation of Environmental Carrying Capacity into spatial management

Best Practice details

Title: The implementation of Environmental Carrying Capacity into spatial management

Objective: Sustainable development

Geography: Wroclaw - Poland

Organisation: Wrocław University

Financing: own funding of the Wroclaw Research Team

Time: 1 October 2015 - 30 September 2019

Link: https://upwr.edu.pl/en/

https://www.researchgate.net/project/The-implementation-of-Environmental-Carrying-Capacity-into-spatial-management

What Wroclaw do

In recent decades, cities all around the world face challenging issues related to uncontrolled urban development which led to the destruction of agricultural lands and natural resources. Therefore, sustainable spatial management of cities should take into account the actual use of resources compared to the availability of resources within surrounding areas. Nowadays, spatial planning does not take into account the ecological services offered by natural areas and the biophysical limits to growth resulting in a degradation of the environment. The gap between natural resources consumption and production could be taken into account in spatial planning through the Environmental Carrying Capacity (ECC) parameter, which is not currently included in territorial management plans. Researchers and organizations in the field of sustainability development call for a major consideration of the environmental aspects in the spatial management system and, therefore, for the implementation of ecological footprint and biocapacity calculation to assess the local environmental state.
Nowadays, the estimation of ecological footprints is carried out at a global, national or regional level and few pieces of research are focused on a local (i.e., urban) level. The study conducted by the Wroclaw research team bridges this gap by developing a methodology that adapts the most common EF estimations at a local level. The research mixes EF's components from a top-down approach, with the standard top-down EF approach creating a 'hybrid' approach. The analysis focuses on the assessment of household consumptions which are considered one of the main drivers responsible for Ecological Footprint.
Lastly, the research recommends a tool to specify the geographical area of food supply: the foodshed, determined by the balance between the areas of food production and its consumption.
Therefore, the foodshed extension for the city of Wroclaw was identified, approximately 56 km, including 98 places of food origin, 448 products and 115 types of products. This allowed presenting a framework for integrating the topic of food production and consumption to the analysis of the sustainability of a city in the context of spatial management of a city in a more sustainable way.

Relevance to SATURN

The case study of Wroclaw has been a reference for the application of the ECC concept (along with the calculation of EF and BC) in spatial management and planning at a local level, i.e., for cities. The ECC concept evaluates the resources (offered and demanded) and the environmental conditions of a given territory unit. The final aim is to verify the sustainability of the development of a defined area towards futures spatial management plans.

The content analysis defines spatial management and the concept of ECC and adapts the approach from a global/regional level to a city/local one in Wroclaw as an example.

The methodological approach of the research proved to be innovative and worthwhile to be replicated in the analysis of the areas observed by the SATURN team.

Enhance ecosystem services and resilience

The ECC analytical tool could be useful for sustainable spatial development and management.

Use innovative metrics and finance

The project adopted an analytical framework mostly focused on estimating ecological indicators of a territory. Therefore, no innovative metrics or finance models have been suggested.

Ensure socio-economic development and job creation

The aim of the research is to analyse the development' sustainability of a given territory. The administrations, considering the results, have the chance to arrange sustainable development agendas, both from an environmental and socio-economic point of view.

Boost local production and markets

The accurate evaluation of the sustainability of local supply chains supports potential development of more sustainable business models. Moreover, a precise determination of the territorial biocapacity is of great importance to understand how and where to implement new agricultural areas in order to maximize their ecological effectiveness.

Local transport and logistic systems

The research showed that the largest pollutant component of household consumptions is transport. This provides an opportunity to reflect on the improvements needed for the whole system and to find new solutions to reduce emissions.

Governance models

The research project's design did not include a specific focus on governance.

Strategic Vision and International Agenda

The main purpose is to analyse the sustainability of the territorial development from an environmental, economic and social point of view. This approach is consistent with some of the goals of the International Agenda, in particular, Goal 11, Goal 12, and Goal 15 of the Sustainable Development Goals, namely "Sustainable Cities and Communities", "Responsible Consumption and Production" and "Life on Land" respectively.

SDGs/ Broader Environmental Aspects

11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries

11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

11.a Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning

12.2 By 2030, achieve the sustainable management and efficient use of natural resources

15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements

STATUS ON IMPLEMENTATION

The research is still ongoing, yet some contacts have already been established to strengthen the connections with the SATURN project.

SATURN: Best Practices for
Sustainable Urban-Rural Landscape

Strategy for Urban Agriculture in Oslo

A place for Everyone in the City's Green Meeting Places

Gothenburg hub

A Toolbox Series of sustainable urban-rural landscape:

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Strategy for Urban Agriculture in Oslo

Best Practice details

Title: Strategy for Urban Agriculture in Oslo

Objective: A place for Everyone in the City´s Green Meeting Places

Geography: The inner city and peri urban areas of Oslo municipality.

Organisation: The strategy is managed by the Agency for Urban Environment.

Financing: City of Oslo

Time: Initiated 2019 - 2030

Link:

What Strategy for Urban Agriculture in Oslo do

Oslo city council will work towards establishing itself at the international forefront in urban agriculture through the implementation of urban agricultural activities. The guiding principles for activities include “green”, “warm” and “creative”. The strategy includes a number of goals that will be followed up by a detailed action plan including the creation of green pockets of activity within the municipality enhancing nature and recreational qualities as well as interlocking with policies for health, inclusion, education, innovation and job creation. Since 2017, the city of Oslo has provided financial support for organisations, companies and citizens planning to carry out projects or start green businesses.

The strategy will ensure that this work will continue in the long term. The strategy consists of five targets. **Target one: A greener city.** Focus on enhancing green qualities by identifying and developing unused space as well as focusing on smart and multifunctional use of urban space and protecting high value green areas. **Target two: Local food production**. Developing food production within the city in order to increase food security, developing models for the recycling of nutrients and supporting local food culture. **Target three: Green meeting places.** Developing places for social interaction and integration, fostering inclusion and community across the divisions of age, class and cultural background. **Target four: Green Arenas of Education.** School gardens have historically given countless children valuable insights and experiences of growing and using local produce as well as providing direct and tangible understanding of ecology and nature. The strategy seeks to turn the downward trend of school gardens and redevelop this resource as a backbone of education and sustainability. **Target five: A city of knowledge and cooperation.** The city will focus on increasing green knowledge and innovation. By way of implementing food production within the urban fabric, general awareness will increase but also provide breeding ground for new and innovative urban agricultural practices and ultimately offer solutions that can have global impact.

Relevance to SATURN

Enhance ecosystem services and resilience

The strategy promotes diversified farming practises and the protection of ecosystems within the city. The diversification of agricultural practises contributes to more resilient and robust ecosystem services. The attention to environmental effects is high and the goal is to increase closed loop nutrient recycling as well as developing multi-functional designs including for instance better control of surface water flows.

Use innovative metrics and finance

The strategy has strong focus on innovation and job creation. The expressed intent is that green businesses should be economically viable as well as environmentally sustainable. This is to be accomplished through supporting entrepreneurs in various ways including cross sectoral educational and financial support.

Ensure socio-economic development and job creation

The strategy is geared towards creating socially inclusive developments that not only provide job-making but also foster integration, knowledge production across social divides and targeting areas of segregation.

Boost local production and markets

The strategy gives tools and means for supporting and developing local food production on a long-term basis, thus removing some of the barriers for new businesses. Also, green meeting places provide suitable environments for trade in local markets.

Local transport and logistic systems

Given that the attention to reducing harmful ecological effects are high in the strategy, this naturally will include ways of minimising the harmful effects of transport and logistics. Oslo has a progressive environmental policy for sustainable transportation focusing on the curbing of fossil fuel consumption and developing new and environmentally sound transportation systems.

Governance models

The strategy is based in the Agency for Urban Environment and the project of "Spirende Oslo" (English: Sprouting Oslo) but the aspirations are cross sectoral in nature and relying on strong support from the Mayors office and relevant agencies in cooperation. There is hope that the goals expressed in the policy will have value across the political horizon, thereby ensuring long term support.

Strategic Vision and International Agenda

The strategy precedes a newly initiated process of developing a national strategy of urban agriculture which is led by the Norwegian ministry of Agriculture. This local strategy will provide valuable input in the path toward creating the national strategy. Also, inspiring other cities and other countries and creating international impact is emphasized as a goal within one of the targets.

SDGs/ Broader Environmental Aspects

The strategy adopts a comprehensive understanding of the complexity of environmental aspects and thus touches upon several sustainable development goals, including Quality Education, Sustainable Cities and Communities, Responsible Consumption and Production as well as Life on Land

STATUS ON IMPLEMENTATION

The strategy was adopted by the city council in August 2019 and runs until 2030 and although very early in the period, there is already many projects and developments in place due to the earlier work of the Agency for Urban Environment.

SATURN: Best Practices for
Sustainable Urban-Rural Landscape

Falkenberg – Live your dream

Creating a living countryside

Gothenburg hub

A Toolbox Series of sustainable urban-rural landscape:

Name(s), City of Gothenburg, VGR

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Falkenberg – Live your dream

Best Practice details

Title: Falkenberg – Live your dream

Objective: Creating a living countryside

Geography: The Falkenberg municipality, Halland, Sweden

Organisation: Falkenberg Municipality

Financing: Within budget of municipality

Time:2017-ongoing

Link: http://www.levdindromfbg.se/

What Live Your Dream do

Falkenberg Municipality runs a project called "Live your dream" which aims to create good opportunities for living rural areas. Part of the project is to take advantage of uninhabited houses in the countryside.

They started by making a list of houses that had sewage but no one registered as living on the address. They managed to put together a list of 1300 houses. Not all were uninhabited, some were used as summer cottages, but there were abandoned houses, farms and others that could be saved.

Since then, they have tried to broke houses that can be rented out or sold. They have collaborated with brokers and with the television that made a major national impact.

They have until April 2019 managed to list about 50 properties ready to shift owners or to bet let. About 30 of these have got new owners or have been rented out and they have a list of another 20 which they try to match against a list of 120 contractors interested in moving out in the countryside of Falkenberg Municipality and start business.

Falkenberg have succeeded in showing that the value of living in the countryside has become higher and that it has contributed to e mental change and a positive price trend.

The main focus has been on finding abandoned houses. The surrounded farmland has been less of interest.

Relevance to SATURN

Strategic Vision and International Agenda

On a national level the Swedish government sees the importance of growth, not only in cities, but also on the countryside. Both in economical and social terms and in population growth.

SDGc/ Broader Environmental Aspects

SDG 11: The project supports positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning

Enhance ecosystem services and resilience

A way to create more diversified food production in rural areas

Use innovative metrics and finance

Innovative mapping and partnership in order to match make abandoned land/houses and people that want to move to the countryside

Ensure socio-economic development

Create opportunities for a new generation to get access to the countryside and an make it easier for new green entrepreneurs. An increase in population also leads to greater audience/revenues for local services.

Local transport systems and markets

Create opportunities in the long run to increase SME businesses in the close proximity on the Falkenberg countryside. This strengthens business models for local sustainable distribution and transport.

SATURN: Best Practices for
Sustainable Urban-Rural Landscape

Hong Kong Wetland Park project

Designed as a world-class tourism, conservation and education facility

Birmingham hub

A Toolbox Series of sustainable urban-rural landscape:

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Hong Kong Wetland Park project

Best Practice details

Title: Hong Kong Wetland Park project

Objective: Create a visitor attraction

Geography: Hong Kong

Organisation:

Financing:

Time:

Link:

What Hong Kong Wetland Park project do

The Hong Kong Wetland Park is designed as a world-class tourism, conservation and education facility, and is one of the millennium capital works projects being implemented by the Government. The Park is located in the southern side of Deep Bay, south of the Tsim Bei Tsui Peninsula and northeast of the Tin Shui Wai New Town. It is approximately 64 hectares in size and located entirely on unleased government land. It is built upon an Ecological Mitigation Area (EMA) created for compensating the loss of natural habitats arising from the development of the Tin Shui Wai New Town.

The mission of the HKWP is to foster public awareness, knowledge and understanding of the inherent values of wetlands throughout the East Asian region and beyond, and to marshal public support and action for their conservation.

The primary objective of the HKWP is to create a visitor attraction of international status, catering both for the general public and visitors, and also for those with special interest in wildlife and ecology. Other objectives such as demonstrating the diversity of Hong Kong, education and awareness opportunities are very much aligned with the objectives of the Tame Valley Wetlands Partnership and therefore it is considered an important approach for this case study.

The governmental land and decision making on this project are areas that are significant and necessary to be researched in order to extract best practices on this.

Relevance to SATURN

Enhance ecosystem services and resilience

This project has been designed as a world class example of environmental and touristic elements. The strong focus on wetlands has many similarities with the Tame Valley case study and several common points with the concepts of resilience and ecosystem services. Due to its success and focus on the value of wetlands as well as public awareness it is selected as a best approach for this case study.

Use innovative metrics and finance

Not much information to date on the business plan and finance of this practice, but the aim is to be explored further during the SATURN project.

Ensure socio-economic development

As this is a completed project, the processes, mapped data and frameworks can be researched and evaluated by SATURN. The focus on awareness and socio – development is significant, however we might need to interview some of the key people on its development which considering the current political situation might prove challenging.

Local transport systems and markets

This has a focus on biodiversity, wetlands and nature. It needs to be examined if it has enhanced local transport systems.

Governance models

Being a governmental project being built in public land and with the aim of awareness and education, there are significant governance models that SATURN can explore and evaluate as part of this case study. This will probably unveil relevant and less helpful information, based on the differences on processes, governance and decision making from Asia to Europe.

Strategic Vision and International Agenda

The Honk Kong Wetland Park, provide a response to the international agenda on climate emergency, water safety and water management as well as education and awareness. It has a strategic vision for the whole city and it will be a good example to analyse processes and assess its methods in relation to the Tame Valley case study.

SDGc/ Broader Environmental Aspects

For the reasons mentioned above, the project has a strong environmental ethos and aligns with several SDGs making it a good example to evaluate in comparison to the Tame Valley case study and other SATURN pilot cases.

SATURN: Best Practices for
Sustainable Urban-Rural Landscape

LAB190

Create a model area for sustainable development

Anders M. Nilsson

A Toolbox Series of sustainable urban-rural landscape:

Anders M. Nilsson, Västra Götalandsregionen

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LAB190

Best Practice details

Title: LAB190

Objective: Create a model area for sustainable development

Geography: West Sweden, four municipalities along road 190

Organisation: LAB190 is organised as a cooperation platform were the stakeholders, 4 municipalities, County administrative board, Göteborg region and Region Västra Götaland/Västarvet all have signed a letter of intent where they agree to take part of and carry out work to fulfil their obligations.

Financing: Regional and municipal financing

Time: 2013 – continuous

Link: https://www.vastarvet.se/tjanster_och_projekt/aktuella-projekt/lab190/

What LAB190 do

LAB190 was established in 2013 after an initiative by Västarvet/Region Västra Götaland. It aims to connect urban and rural areas by using green industries, tourism industry and infrastructure as a driving force and contribute with an arena and a network for this.

LAB190 is a long-term collaboration platform along road 190 from Gothenburg city to the countryside and the small municipality Nossebro, aiming at creating a model for sustainable regional development using nature and cultural heritage as a driving force in rural areas. One objective with LAB190 is to be on the cutting edge when it comes to inclusive, sustainable and innovation-driven development issues.

LAB190 manages several initiatives and projects promoting sustainable land use models connecting cities with their surrounding areas. Examples include promoting collaboration for green businesses by developing business improvement district (BID), promoting peri-urban food production, developing models for flood prevention through nature based solutions.

LAB190

LAB 190 constitutes both a best practice and a pilot case within the Gothenburg hub in SATURN. By its historic process of creating a governance model for a collaboration of different municipalities and different regional public organisations together with local private stakeholders in order to form a model area for sustainable development alongside road 190 it is a best practice. Although, by the focused work of extending the implications of the three pilot cases in the Angered area, and thereby creating opportunities for revitalising the farmland from the urban area out in the countryside it is also a pilot case of its own.

Introduction (as best practice)

LAB190 is a functioning collaboration platform and model area for sustainable development, where the collaboration between four municipalities, region, municipal federations and County Administrative Board is included. An inter-municipal collaborative platform with a common goal and on a common political foundation for the long-term and sustainable development of a geographical area based on three strong thematic areas: Food, Tourism and Infrastructure.

Relevance to SATURN

Enhance ecosystem services and resilience

LAB190 has together with Göteborg region, been a part of an education project about what ecosystem services is and how municipalities can bring them into spatial planning. Officials from several municipalities have attended the education during 2018 and 2019. Politicians in the same municipalities will be offered a short version during 2019. The implementation of including ecosystem services in the municipal planning has started.

The education program is easily replicated.

Use innovative metrics and finance

Description: LAB190 has together with the sustainability consultant PE developed two projects with Climate KIC, with the aim to create a business model to facilitate the possibility to use nature-based solutions to reduce the risk of flooding and draught.

Highlights for the toolbox: The business model should be replicable with local adjustments to suite legislation and other regulations in each country.

Ensure socio-economic development

Description: Through LAB190 there are good opportunities to meet the generational shifts that take place in the countryside in the green industries and to introduce new growers/farmers into a larger cohesive agricultural and forestry context. This may involve new forms of land use models.

Boost local production

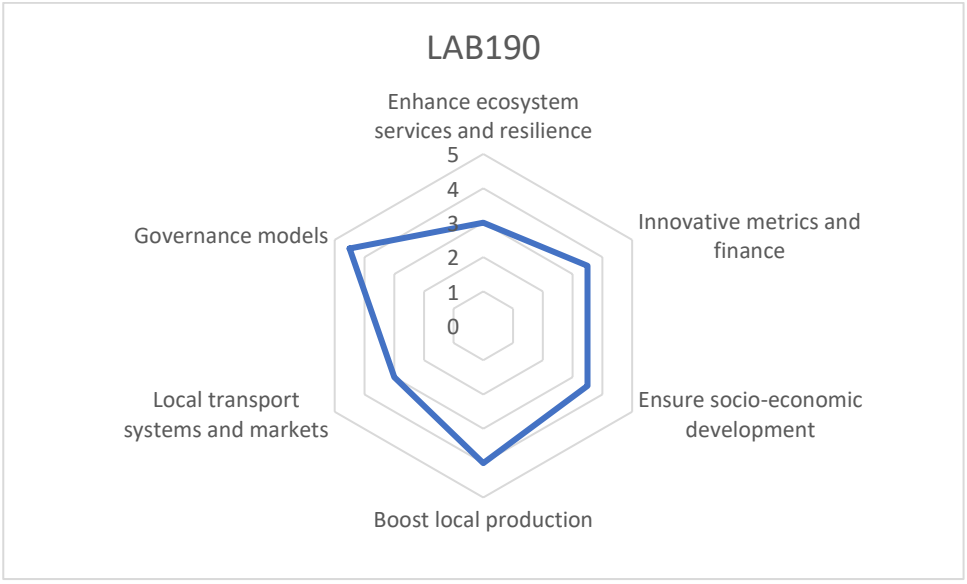
Description: By trying to bring together green industry stakeholders, such as landowners, it will be possible to boost the interest for cooperation among the customer segment in the urban areas.

Governance models

Description: By organising the process with a steering committee with politicians make the over all idea easier to get accepted in the municipal organisation. The steering committee has a specific mission described in the development plan for LAB190. The plan is revised yearly. LAB190 also has a coordination group responsible for the day to day work. The members can also be part of sub projects with external financing.

Description: The learning process have been that it has taken time to establish a sound organisation and cooperation platform among public and private stakeholders. However, when having reach a functioning organisation, it has been very successful for implementing long term sustainable development matters in the area.

The organisation model of LAB190 can be a good contribution to future initiatives.



SATURN: Best Practices for
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Landscape Metropolis

Italy – Province of Ferrara

Mattia Andreola, Alessandro Betta, Sara Favargiotti,
Alessandro Gretter, Angelica Pianegonda

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Landscape Metropolis

Best Practice details

Title: Landscape Metropolis

Objective: Enhance sustainable mobility and valorize water or agricultural landscape of the Ferrara province

Geography: Peri-urban areas / Humid areas

Organisation: Agenzia per l'Energia e lo Sviluppo Sostenibile (AESS) – Modena (ente coordinatore); Agenzia per la Mobilità e gli Impianti (AMI) – Ferrara; Sipro Agenzia per lo Sviluppo – Ferrara; ICOOR Interuniversity Consortium for Optimization and Operation Research – consorzio interuniversitario; Città della Cultura | Cultura della Città società cooperativa – Ferrara; Dedagroup Public Services s.r.l. – Trento; Fondazione Bruno Kessler (FBK) – Trento

Financing: EIT Climate KIC and other local funds

Time: 06.2019 - 06.2022

Link: https://www.metropolidipaesaggio.it/#tophttp://www.levdindromfbg.se/

What Landscape Metropolis do

Landscape Metropolis is a territorial policy born three years ago by a group of stakeholders, that aims to enhance the landscape as an infrastructure and promote the regeneration of depopulated areas. It is a pilot case on inland waterways that underlie a replicable and scalable strategy. Furthermore, the strategy is trying to provide positive changes and impacts in the society as well as positive behaviours and lifestyles through participatory approaches and employ awareness campaigns. The environmental heritage acts as an infrastructure to develop a widespread network of paths providing access to most marginal areas. The system includes four transport layers: bikes, boats, buses and trains. The project aims to reactivate existing infrastructure to build an intermodal network that will contribute to sustainable alternative models of transportation as a prerequisite for territorial regeneration, enhancing the transformative value of areas close to the network.

Other relevant issues and related results will also be addressed. Some problems that could be investigated are: integrating strategy into planning tools, management model, potential new market of e-bikes, touristic dimension of the network, new private and community based services and facilities supporting the mobility network. Landscape Metropolis wants to prove that a strategic vision for the sustainable mobility could be conceived as an holistic system which could generate several positive by-processes: from the regeneration of unused areas to climate sustainability; from transport safety to better territorial marketing; from environmental monitoring to heritage enhancement; from the recovery of communities' sense of belonging to the generation of circular economies).

Finally, the project will assess its impacts through more reliable tools, using mobility data, already developed and available to be capitalized by previous EIT Climate-KIC projects.

Relevance to SATURN

Landscape Metropolis caught some topics that are of absolute relevance to SATURN in spite of not being the core of the pilot cases' aims.. In particular it refers to mobility, big data, refurbishment of unused buildings, and not lastly capacity to generate policy implementation on multi-level scale. Furtherly its dimension of relationship between urban and rural is another peculiarity that recalls at least two of the involved hubs.

During 2020 two workshops with local stakeholders took place in the Trentino Hub. In both cases the sustainability of the local infrastructures and mobility-related issues were main concerns for local stakeholders. For this reason, the Landscape Metropolis pilot case could be a fundamental reference.

Enhance ecosystem services and resilience

A better connection of the infrastructure network, along with their optimization, can be and actually is also functional for ecological reconnection, in particular with the restoration of unused waterways and agricultural land. This allows for better resilience at the local level.

Use innovative metrics and finance

Big data - related to the mobility of citizens, vehicles and goods - are collected through different tools following a variety of approaches. Data collection aims to improve local services and infrastructures by analysing critical issues and identifying potential opportunities. The selected approach is meant to be

replicated in other territories. The collection of data could attract new investments, for instance through project financing, i.e. the support of private resources.

Ensure socio-economic development and job creation

Open spaces in peri-urban areas are brought closer to the city thanks to the improvement of the sustainable mobility network. These areas offer different ecological services to citizens, i.e. recreational activities or tourist attractions. Moreover, the removal of mobility barriers removal could create new employment opportunities by reinforcing the economic structure better connecting production and distribution of goods and services

Boost local production and markets

Most of the new jobs could be generated both in the mobility and production/recreation sector. Regarding the first one, new investments in creating and managing itineraries could be needed. The proximity of peri-urban and rural areas could increase the local agriculture production and food transformation. Unused plots and buildings can be activated/refurbished hosting space for locals (through inter-generational management) or for innovative sustainable tourism activities.

Local transport and logistic systems

This project aims to enhance the infrastructures through the creation of an intermodal mobility network. Metropolitan Landscape aims to create sustainable paths and to provide access also to marginal areas. This action may bring new values to peripheries.

Governance models

The governance model tries to create a holistic vision for sustainable mobility that also takes advantage of waterways. A second purpose is to reduce inequalities caused by the territorial marginalisation by repairing and rehabilitating existing infrastructures.

Strategic Vision and International Agenda

The main purpose is to develop the sustainable mobility of the city of Ferrara and the surrounding areas. This vision for the landscape is consistent with some objectives of the International Agenda, in particular with the Goal 9 and the Goal 11 of the Sustainable Development Goals, respectively “Industry, innovation and infrastructures” and “Sustainable cities and communities”.

SDGs/ Broader Environmental Aspects

9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all

9.1.1 Proportion of the rural population who live within 2 km of an all-season road

11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries

11.A Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning

STATUS ON IMPLEMENTATION

Ongoing - will finish on june 2022

SATURN: Best Practices for
Sustainable Urban-Rural Landscape

Landscape Observatory of Catalonia

Governance, policy, awareness

Birmingham hub

A Toolbox Series of sustainable urban-rural landscape:

Name(s), University or company

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The tools are presented in the blue series; SATURN: Toolbox Series of Sustainable Urban-Rural Landscape. The tools are generic in nature and with the potential of inspiring other parts of Europe and globally.

The SATURN: Best Practices for Sustainable Urban-Rural Landscape present the best practices as listed below.

- Falkenberg – Live your dream
- Hong Kong Wetland Park Project
- LAB190
- Landscape Metropolis
- Landscape Observatory of Catalonia
- LOS_DAMA!
- Oslo Strategy for Urban Agriculture
- Room for the River
- Strength2food
- Wroclaw - The implementation of Environmental Carrying Capacity into spatial management

Summary Best Practices

Today, the fragmented landscape management governance leads to uncomplete climate strategies where cities are analysed independently from their natural landscape. This leads to a poor management of the city surrounding lands which have good carbon sequestration, food and biomass production and risk mitigation potential.

The mission of the SATURN project is to i) Establish a strong narrative with public and private stakeholders to reconnect them with landscape identity and geographical features, ii) Build up a comprehensive and flexible framework to guide cities in implementing multi-functional projects, taking into account land use assets and cultural identity in their surrounding landscape. It will include tools and metrics to support decision making, iii) Financially sustain and scale-up initiatives through funding scouting actions and the creation of comprehensive tools and initiatives for capacity building.

The work entails to map best practices regarding sustainable land use models reconnecting cities to their surrounding areas and to create a toolbox of models and strategies that can be replicable and scalable. Best practises mainly come from the satellite cities to the project, but also other practices are included.

Landscape Observatory of Catalonia

Best Practice details

Title: Landscape Observatory of Catalonia

Objective:

Geography:

Organisation:

Financing:

Time:

Link:

What Landscape Observatory of Catalonia do

The Landscape Observatory of Catalonia is an advisory body of the Government of Catalonia and Catalan society in general on matters of landscape. Its creation responds to the need to study the landscape, prepare proposals and sensitise Catalan society to the need for better protection, management and planning of the Catalan landscape in the framework of sustainable development.

One of the main purposes of the Landscape Observatory is to increase knowledge of Catalan landscapes among Catalan society and to support the application in Catalonia of the European Landscape Convention (ELC). In this sense, the Landscape Observatory will be the meeting point between the Government of Catalonia, local authorities, universities, professional groups and Catalan society in general, in everything referring to the management and preservation of the landscape.

The Landscape Observatory, therefore, seeks to become a centre for the study and monitoring of the evolution of landscape in Catalonia and the factors conditioning change. It also aspires to become a point of reference for scientific and technical research in matters of landscape. The Landscape Observatory, in short, is conceived as a centre of ideas and action in relation to the landscape.

The significance and the impact of the Landscape Observatory in landscape awareness, public engagement, decision making and policies are considered relevant to this case study with important lessons learned after careful examination of its process.

Relevance to SATURN

Enhance ecosystem services and resilience

The Landscape Observatory is selected for its strong concepts on landscape awareness and governance. It has developed methods on resilience and ecosystem services, but other areas will have a stronger outcome for this project.

Use innovative metrics and finance

Not much information to date on the business plan and finance of this practice, but the aim is to be explored further during the SATURN project.

Ensure socio-economic development

The Landscape Observatory has a very strong outcome and several outputs on socio-economic development, public awareness, education and other policy methods and frameworks. Based on the ELC and having been very successful in Catalonia it is an innovative institution to look at in terms of landscape awareness, governance and policy.

Local transport systems and markets

The Landscape Observatory provides information on the landscape that can support on local transport, however it is not involved in the creation of such systems.

Governance models

The significance of this practices lies upon its governmental models, decision making processes, policy, frameworks and the way it has managed to form governance in the Catalan parliament supporting a law about the landscape. The Landscape Observatory is an innovative approach that based on the ELC has managed to create new governance and education models in Catalonia and do it in 10 years from its creation. It is suggested as a great model to explore for the SATURN purposes.

Strategic Vision and International Agenda

As it is based in the European Landscape Convention responds from the outset to the European Agenda. In addition its success has made it a great example across the world with many other institutions to receive support and guidance by the Landscape Observatory of Catalonia.

SDGc/ Broader Environmental Aspects

The Landscape Observatory aligns with several SDGs especially in governance and education.

SATURN: Best Practices for
Sustainable Urban-Rural Landscape

LOS_DAMA!

Landscape and Open Space Development of Alpine Metropolitan Areas

Alessandro Betta, Marco Ciolli, Sara Favargiotti, Alessandro Gretter, Angelica Pianegonda

A Toolbox Series of sustainable urban-rural landscape:

Alessandro Betta, Marco Ciolli, Sara Favargiotti, Alessandro Gretter, Angelica Pianegonda

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The mission of the SATURN project is to i) Establish a strong narrative with public and private stakeholders to reconnect them with landscape identity and geographical features, ii) Build up a comprehensive and flexible framework to guide cities in implementing multi-functional projects, taking into account land use assets and cultural identity in their surrounding landscape. It will include tools and metrics to support decision making, iii) Financially sustain and scale-up initiatives through funding scouting actions and the creation of comprehensive tools and initiatives for capacity building.

The work entails to map best practices regarding sustainable land use models reconnecting cities to their surrounding areas and to create a toolbox of models and strategies that can be replicable and scalable. Best practises mainly come from the satellite cities to the project, but also other practices are included.

LOS_DAMA!

Best Practice details

Title: LOS_DAMA! - Landscape and Open Space Development of Alpine Metropolitan Areas

Objective:

Geography: Alpine Metropolitan Areas

Organisation: City of Munich (LP), City of Trento, City of Wien, Regione Piemonte, Metropolitan city of Grenoble, Urban planning Institute Salzburg Land, Urban planning Institute of the Republic of Slovenia, Technical University Munich, Eberhard Karls University Tubingen, Universitè Grenoble-Alpes

Financing: ERDF Interreg Alpine Space (85%)

Time: 11.2016 - 12.2019

Link: https://www.alpine-space.eu/projects/los_dama/en/home

What LOS_DAMA! do

The globally attractive Alpine Space cities face common challenges through growing land use pressure. LOS_DAMA! (Landscape and Open Space Development in Alpine Metropolitan Areas) focuses on the `unspectacular´Alpine landscapes surrounding urban areas. These open spaces are particularly valuable because, in spite of being located at the margins of main urban centres, intensive farming areas or valuable protected parks, they represent reserves of biodiversity and ecosystem services for the inhabitants. These valuable green spaces in and around our cities are exposed to heavy pressures and a variety of demands. LOS_DAMA aims to protect liveable open spaces while connecting people and green spaces throughout the Alpine region. This goal is pursued through the improvement of governance models and planning tools to better focus on Green Infrastructure development and more balanced relations between urban and rural areas. Tools and strategies are focused on negotiation, mediation, and action phases of the planning processes. Each of the partners developed specific pilot actions tailored to the local context and needs which have been then exchanged and collected within a toolbox to be shared among practitioners and decision makers.

Relevance to SATURN

The relevance to SATURN is connected to both the focus on similar territories and to the approach and tools adopted by the project. One of the pilot cases of the project has been the city of Trento which is included also in the Trentino hub of SATURN project. Moreover, other pilot areas of the LOS_Dama project focused their actions on peri-urban territories as SATURN hubs are doing. In this sense, the SATURN project represents a way to widen the scope, extend its territorial focus and test some of the tools proposed by the LOS_Dama! project. The network of Alpine cities developed within LOS_Dama! could be interesting to strengthen further collaborations of Climate-KIC with other cities within the Alps (notably Wien, Grenoble, Zurich, Lijubliana).

Enhance ecosystem services and resilience

The LOS_DAMA! project contributed to develop a committed network of cities which are experimenting different ways to enhance ecosystem services and resilience practices at metropolitan level with a specific focus on peri-urban systems. The innovative experiences developed by each partner have been gathered, clustered and shared among the network to foster systemic thinking of practitioners in Green Infrastructure development. Pilot actions were focused mostly on the improvement of agricultural land in terms of multi-functionality and on the enhancement of the recreation potential of peri-urban open spaces. A multi-level communication strategy contributed to spreading the results both among practitioners and the general public.

Use innovative metrics and finance

During the project none innovative metrics nor finance have emerged. Metrics and financial models were not some of the relevant topics on which the project was built, yet the work done could give the possibility to explore and generate further activities in particular in relation with current projects like Nutrire Trento and interest from the private sector for green financing (mostly in German-speaking countries).

Ensure socio-economic development and job creation

Peri-urban spaces are fragmented and a wide variety of functions and stakeholders is present, therefore making such areas complex to plan and manage for policy makers, economic stakeholders, or NGOs. In order to foster effective development of Green Infrastructures also through innovative businesses in agriculture, landscape, or circular economy sectors. Through investigating and developing tools to connect policy-makers, local stakeholders, public administrations, the LOS_DAMA! project offers a set of possible planning and governance approaches to enhance management of peri-urban areas and consequently release their potential as dynamic socio-economic territory where to experiment new forms of landuse and business.

Boost local production and markets

Throughout the entire project partners sought cooperation and exchange with local farmers and consumers to enhance the multi-functional potential of peri-urban areas. A better planning and perception of such areas proved to be effective in fostering the implementation of local economic cycles related to food production and tourist activities.

Local transport and logistic systems

Although the project was not specifically focused on local transport or logistic chains some partners such as the city of Trento developed extensive mappings and analysis of the pathways and rural roads network to be used as preliminary design tool for the implementation of a slow mobility strategy enhancing not only recreational services, but also fostering sustainable everyday means of transport.

Governance models

One WP (T3) was entirely dedicated to the development of governance models and planning tools for effective management and design of peri-urban spaces. In this sense pilot actions were focused on closing the gap between EU and local policies, and between existing sectoral policies.

Strategic Vision and International Agenda

The project consortium has worked in very close cooperation with EUSALP (the European strategy for the Alps) and with working groups of the EU Urban Agenda. Awarded at the “Regiostars award 2019” it has a documented impact on the agenda of the above-mentioned international working groups. Broader strategic vision of the project is related with the need for a radical change in perception and management of peri-urban open spaces. Several are the SDGs’ sub-targets that are interacted by LOS_DAMA!

SDGs/ Broader Environmental Aspects

2.4.1 Proportion of agricultural area under productive and sustainable agriculture

9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all

9.1.1 Proportion of the rural population who live within 2 km of an all-season road

11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries

11.4 Strengthen efforts to protect and safeguard the world’s cultural and natural heritage

11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities

11.A Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning

12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature

15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements

Status on implementation

The project ended on 31.12.2019 but some of the stakeholders involved in the Trento case are still active within the SATURN project. Final deliverables of the project included a comprehensive toolbox with indication on the positive and negative aspects in their implementation according to the experience of the project partners that were involved (https://www.alpine-space.eu/projects/los_dama/en/this-is-how-we-do-it/outputs-and-results/toolbox). The already mentioned network of committed cities has been structured around a Memorandum of Understanding (https://www.alpine-space.eu/projects/los_dama/en/this-is-how-we-do-it/outputs-and-results/city-network) and through exchanges between practitioners from different cities (https://www.alpine-space.eu/projects/los_dama/en/let-s-come-together/job-shadowing/summary). A specific work package investigated the existing policies at European, national and local level and offered an analytical framework together with suggestions on how to improve the policy framework to foster Green Infrastructure planning and implementation in Alpine peri-urban contexts (https://www.alpine-space.eu/projects/los_dama/en/this-is-how-we-do-it/outputs-and-results/policy-recommendations). Finally, in order to support capacity building among younger generations, an autumn school where students and young practitioners from across Europe have been invited to reflect and design possible GI solutions in different peri-urban contexts has been organized (https://www.alpine-space.eu/projects/los_dama/en/this-is-how-we-do-it/autumn-school/autumn-school-overview).

SATURN: Toolbox Series of
Sustainable Urban-Rural Landscape

Youth Engagement and Mentoring for Business Development

Problem and Goals Identification and stakeholder management process

Mattia Andreola, Gian Antonio Battistel, Alessandro Betta, Milena Bigatto, Alessandro Gretter, Elisa Morganti, Angelica Pianegonda

A Toolbox Series of sustainable urban-rural landscape:

Mattia Andreola, Gian Antonio Battistel, Alessandro Betta, Milena Bigatto, Alessandro Gretter, Elisa Morganti, Angelica Pianegonda

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SATURN: Toolbox Series of Sustainable Urban-Rural Landscape present the tools as listed below. The tools are generic in nature and with the potential of inspiring other parts of Europe and globally.

- Fostering on Municipal Land using testbeds, Gothenburg
- Farming incubator tool, Gothenburg
- Mapping underutilized and abandoned farmland and farms, Gothenburg
- Market Gardening Manual, Gothenburg
- Governance model - eco I socio I digital aspects, Trento
- Rural Urban Metabolism (RUM), Trento
- Youth engagement and mentoring for business development, Trento
- Stakeholder Engagement tool, Birmingham
- Capacity building tool, Birmingham
- Visioning tool, Birmingham

Summary Tools

SATURN project has an objective to build a comprehensive and adaptive common framework and to test and improve the framework in an iterative process. The work entails to map best practices regarding sustainable land use models reconnecting cities to their surrounding areas and to create a toolbox of models and strategies that can be replicable and scalable. The toolbox includes several tools that can be used by city planners, facilitators, developers and practitioners. The aim of the tools is to provide concrete guidance on how to implement a certain project or an aspect of a project relevant to the SATURN project. The tools can be derived from the pilot cases of the SATURN project or from best practices collected or from our satellite cities. The tools vary in format and content but have in common that they address ways to enhance sustainable rural-urban landscape.

Youth Engagement and mentoring for business development

Tool details

Title: Youth engagement and mentoring for business development

Objective: Problem and Goals Identification and stakeholder management process

Geography: Trento

Organisation:

Financing: SATURN project

Time: 2020

Link:

Introduction: purpose and general Info

The “Youth Engagement” tool, implemented by Trentino Hub, aims to involve groups of young citizens of the engaged territories in developing ‘exercises of future’ to cast their visions on the territorial development of the next decades. Based on these exercises, youth groups will then be guided in developing their ideas through specific action plans and supported in participating in calls or in creating innovative business models. The general aim of the activity is to support students or young entrepreneurs in developing a better-framed vision on their expectations also in relation to social, environmental and economic changes and in being part of the change. Moreover, they will be involved in the process of moving from the idea to the writing of a project proposal (or concept note, or whitepaper, or actions)

Background: Building on previous experiences

Depopulation and ageing are quite common phenomena not only in the Alpine area of the Trentino Hub but also across Europe. Imbalances in terms of job opportunities and services supplied are found across the continent especially linked to small-scale farming businesses or rural-urban territories.

Technological and organizational innovations can promote and enhance traditional practices and make them evolve into more advanced and sustainable ones. Systemic problems and opportunities have to be anticipated, identified and managed in advance. Within such a framework, young (15-34 years) people are key groups to be involved. Creating opportunities for such people to settle in certain areas is fundamental to reduce the 'brain gain' of young professionals and creative people from rural and inner areas in favour of main urban centres (see EUSALP ARPAF Project AlpJobs).

EIT Climate-KIC has supported through the year several initiatives capable of activating the young generations in relation to climate. They are related to educational activities as the Master and PhD Labels, run by selected Universities in Europe, the Journey, an immersive summer school for innovation and entrepreneurship to address climate change, the Catapult, a school dedicated to PhD students aiming to create interdisciplinary innovation, and Young Innovators the only challenge-led programme in Europe, supporting climate innovation through a wide set of partnerships with schools, cities, governments and industry. Other opportunities are more related to professional sectors as Pioneers into Practice, giving the opportunity to exchange competencies, or to generate new ideas as with Climathon, a global 24-hour climate change hackathon that every year is run in more than 100 cities globally, the ClimateLaunchpad the world's largest green business idea competition and, when identified ideas are more structured, the Accelerator programme. In particular, one of these has been located in Trentino, by Manifattura district in Rovereto and managed in collaboration with HIT.

Besides the ones mentioned above, different other approaches are available to foster youth engagement in climate and landscape topics. In spite some of them have been applied in the area connected to Trentino Hub but not directly within the SATURN project, we report them anyway to offer multiple possibilities of testing the methods.

Engagement topics

Climate

Besides the presence at the local level of global movement as the Friday4Futures or Extinction Rebellion, in Trentino, there is a quite recent, but very active, series of initiatives connected to the topic of climate change.

Supported at the institutional level by the Climate Observatory of the Autonomous Province of Trento, in preparation for each COP meeting, it has been launched some initiatives in order to raise the attention on the climate-related topics (notably preparing specific reporting or communication materials) by a Journalistic Agency formed by youth locals (Agenzia di Stampa Giovanile - ASG) and a more broad project as “Visto Climatico”. This project aims to inform young people (students from age of 14 until 25 years old) about climate change and the impact of human activities (food, forestry, energy…) focussing both on global and local issues. “Visto climatico” is organised as a series of education/dissemination modules to be presented during school time and in some specific participatory meetings supported by young professionals in the role of facilitators. In a further stage, some representatives, both from Highschool and University courses, are selected and create the group that will draw some position documents to be deepened with the active participation in the preCOP and COP activities (mostly with the support of the above mentioned ASG and regional delegates). Besides the initial aim of education and training young people to be professionally involved in climate topics, another key element is the dissemination. In fact, the documents containing also the final reflections on the COP experience, are presented locally at other peers and promoted to local media.

With a direct connection to the climate issue, in particular to extreme events generated by climate change, it is important to cite the case of VAIAwood. It is a team of young people determined to reach a new business model, in order to go beyond the idea of “sustainable consumption”. Their entrepreneurial idea was born from the question they asked themselves after the Vaia Storm of October 2018 (which fell down 50 million trees in the Italian Eastern Alps), «perhaps there is another way instead of impoverishing within productions. What would be the benefits if we’d restore the natural resources?». Relying on the fallen wood and the expertise of local artisans, they created a design item called “Vaia cube” which is a natural amplifier for smartphones, a clear example of the circular economy. The aim of the company is also connected to both ecological (replanting at least 50.000 trees each year) and social (educating young generations and involving local communities in their project) targets. Another further result deriving from the activities of the company is to raise awareness about mountain territories, their people and resources and what are the effects of global change to them.

Landscape governance

Peculiarity and richness of the Trentino alpine landscape have been widely recognized at national and international level. More than 30% of the overall territory is protected with more or less severe restrictions and part of the region is included in the UNESCO heritage site of the Dolomites. Therefore, the management of such landscapes requires the introduction of innovative and more effective management practices. The 'Rete delle Riserve' (RdR) is one of those; they have been introduced in 2007 thanks to provincial law. Yet, a strong input to the process has been given by the EU-funded project called Life-T.E.N. (Trentino Ecological Network) which ended in 2017.

The Rete delle Riserve system is an innovative management and enhancement scheme based on a bottom-up networking approach. The scheme translates into the policy framework the concept of ecological network enhancing the connections between the different protected areas reducing fragmentation. Moreover, this new management scheme is focused on local participation and on a broader vision compared to focus solely on nature protection. Young citizens and associations are involved in the development of the project and dissemination actions across the territory and the Rete delle Riserve scheme seeks to support the involvement of young entrepreneurs in the farming sector to actively manage the alpine landscape through the re-establishment of grasslands and pastures or highly biodiverse meadows, orchards and croplands.

The case of Camposaz is strongly linked with the Eastern part of the region, close to the Primiero Dolomites area. Back in 2013, a group of young professionals which were already involved in the organization of a 'mountain music festival' decided to organize a self-construction workshop using the wood collected from the area in order to experiment the realization of a physical project on one side and to involve the community in regenerating a public space of one of the villages of the area. Since then, this community of young engaged people has grown to include more than one hundred of people from 55 countries and public spaces have been regenerated through more than twenty workshops in Italy and other European countries (Romania, Portugal, Belgium, Netherlands to name a few).

Community regeneration

"*Piani di zona*" could represent a tool for public administrations to read, plan and guide the development of the local community. At the same time, it represents a service to people to become aware of the opportunities offered in their territory.

The main goals are:

- the analysis of the community's needs;
- collect professional and personal opportunities;
- check and evaluate the offered services and opportunities.

Young people, who are often the weakest part of the community, can be the main beneficiaries of “Zone plans”. Moreover, this service could offer support for the implementation of new individual and collective projects towards the improvement of the independence of the involved actors.

Different ways to engage youth and make them count

Initiatives of young engagement and creation of an entrepreneurial mindset have been designed and tested at different levels, in Trentino. The focus of the actions reported below was on the management of electronic waste, but the concept underneath can be easily exported to other sectors and circumstances since they have a transversal pedagogical value. Some of the actions should be planned with the right timing to be embedded in school programs, others are asynchronous and can be for example included in existing initiatives or organized as stand-alone events.

- Young people as testimonials of change

High school students experience a high sense of belonging and the desire to act for change. Classes can be a good laboratory for new ideas and experiences to introduce young people to the importance of landscape and methods to sustainably manage it.
The tested method foresees a mix of frontal lessons, hands-on-activities, visits on facilities and labs focused on both scientific and entrepreneurial aspects. Education contents are erogated directly by experts and researchers. Group work and active engagement are encouraged through a contest in which the students compete in the realization of awareness campaigns among peers. The final prize can have educational content (like an educational journey).
If the proposed theme has social relevance, it can trigger the sense of belonging of young students, and the prize goes in a second plan with respect to the value proposition for the participants.

- Young people at the service of the community

Repair cafè are laboratories in which voluntary people make themselves available to repair broken (electronic) devices. The experience offers a double level of involvement: young people offering a service for the community and becoming knowledgeable users and consumers.
The successful model of Repair cafè can be adapted to other challenges and needs, like for example farming. In order for this initiative to have success, different stakeholders should be actively involved in the organization, delivery and follow up, also to guarantee the sustainability of the network of volunteers

- Role model and peer learning

An innovative way of transferring knowledge and engaging young people is to use university students trained by field experts, as role models. The students work with high school teachers to create ad hoc interdisciplinary programs to increase the awareness and the commitment of younger to sensitive themes.
The University students have the opportunity to present themselves as experts and to direct impact on the education and growth of youngers. For teachers, this is an occasion to experiment with new programs that go behind their specialization and stimulate students towards science-based experiences, such as the organization of awareness campaigns inside their school.
The success factors of this approach are the role models and the possibility for students to experiment engagement and peer learning in a safe environment, where adults manage group dynamics.

- Engage young people to solve actual challenges

Innovation challenges are a knowledge transfer tool often promoted by innovation agencies to help match the problems of SMEs, public bodies or large corporations with possible solutions devised by researchers, university students and citizens. Challenges can be a powerful tool complementing civil planning actions, involving those parts directly touched by the problem and affected by decisions.
The challenge owners may benefit from this direct involvement and can have the possibility to get suggestions and enlarged visions that go behind the expertise of singles.
A challenge usually includes a problem seeking exercise, a sharing and revision with experts, a validation with final users to check the feasibility of original ideas.
Challenges can have creative, inclusive and pedagogical value if well designed and managed.
Prior to the beginning of the SATURN project, an urban challenge supported by EIT Climate-KIC Italy was held in Trento in 2017 with the aim to involve young and innovative researchers and entrepreneurs in offering their proposals for the enhancement of blue and green infrastructures in the city.
The challenge is a potentially very effective tool to involve young professionals who can offer all their competencies and support local administrations in developing projects.

Analysing the need: the Questionnaire

Given that the pandemic moment has slowed down progress in the involvement of stakeholders, especially the younger ones, the SATURN team decided to collect an overview on the current activities in the field of youth engagement and entrepreneurship by a series of actors in the area. The questionnaire focused on the activities carried out by these actors on the topic of climate change and sustainable development.

The first part of the questionnaire investigates the organised activities and events, the target audience and the media used to reach them, the methods adopted in these activities and also those considered most effective. A second part focuses on the obstacles and opportunities perceived by the actors, as well as on previous experiences considered particularly significant. Finally, the last part tries to understand if it is possible and how to collaborate and support these realities.

The questionnaire is still in the data collection phase, but a preliminary analysis of the 14 answers received so far reveals the following details:

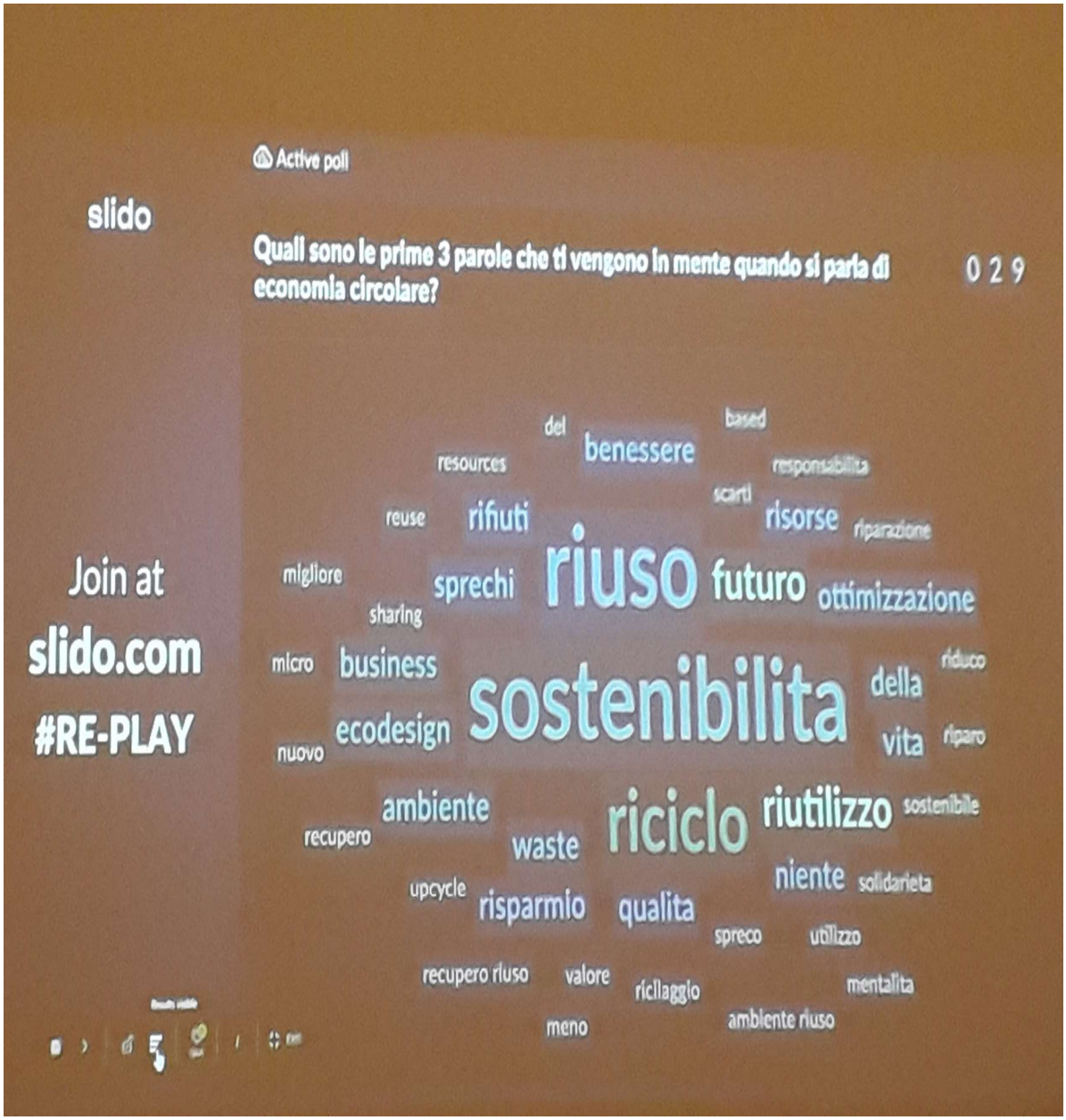
- The question concerning the target audience allowed for multiple answers. In this regard, four organisations stated that they target pre-school children, three target primary school students, seven target secondary school students, six target university students, five target families, four target young entrepreneurs and professionals and one target the general population.
- When asked about the methods used to promote events or to invite participants, thirteen out of fourteen respondents stated that they use their social network accounts, eleven use their own website, nine use institutional websites, seven use newspapers, twelve use informal channels, nine use printed media such as flyers, seven use newsletters and one uses e-mail. Among these methods, the one indicated as most effective is the medium of social networks.
- Regarding organised activities, the most frequently mentioned are training courses, indicated nine times. The other answers are recreational/cultural events (mentioned eight times), thematic events (seven times), practical workshops (six times), activities in the field and natural areas (four times), conference cycles (three times) and markets/fairs (two times).
- The main difficulties and barriers encountered in organising the activity are related to funding and involvement of the public, but also to finding the right professionals in charge of the activities.
- The main results observed, on the other hand, relate to the creation of new networks and the exchange of knowledge.
- The activities in which respondents are most likely to collaborate in the future include the organisation of dissemination events (mentioned eleven times), practical activities

such as field experiences (eight times) and, finally, didactics and support in project writing (both mentioned seven times).

Structure of the process

The proposed activities are divided between introductory meetings and further co-design events. Prior it should be identified which would be the subjects active in the (sub) area of interest. Most likely the first information and contacts are given by the local public authorities of reference and an introductory meeting with the responsibility of the youth service (if existing) has to be planned. Otherwise, the process of gathering information and contacts should be done via a mapping using repositories of youth initiatives or social media. In order to promote effective actions, the youth engagement activities of SATURN, in any case, should analyse and map specific activities and opportunities that could arise in the territory, both for preparing initial actions and to drive further initiatives.

In the first meetings, ideas and visions are shared and discussed under the guidance of experts and through the use of specific tools developed under the disciplinary field known as future studies. Interactive tools such as the online Mentimeter' poll are used to enhance and facilitate knowledge among participants and share their background. After the first phase, people are engaged in discussing a set of questions related to their idea of how the territory could and should be developed.


Active poll
slido
Quali sono le prime 3 parole che ti vengono in mente quando si parla di economia circolare?
0 2 9
Join at
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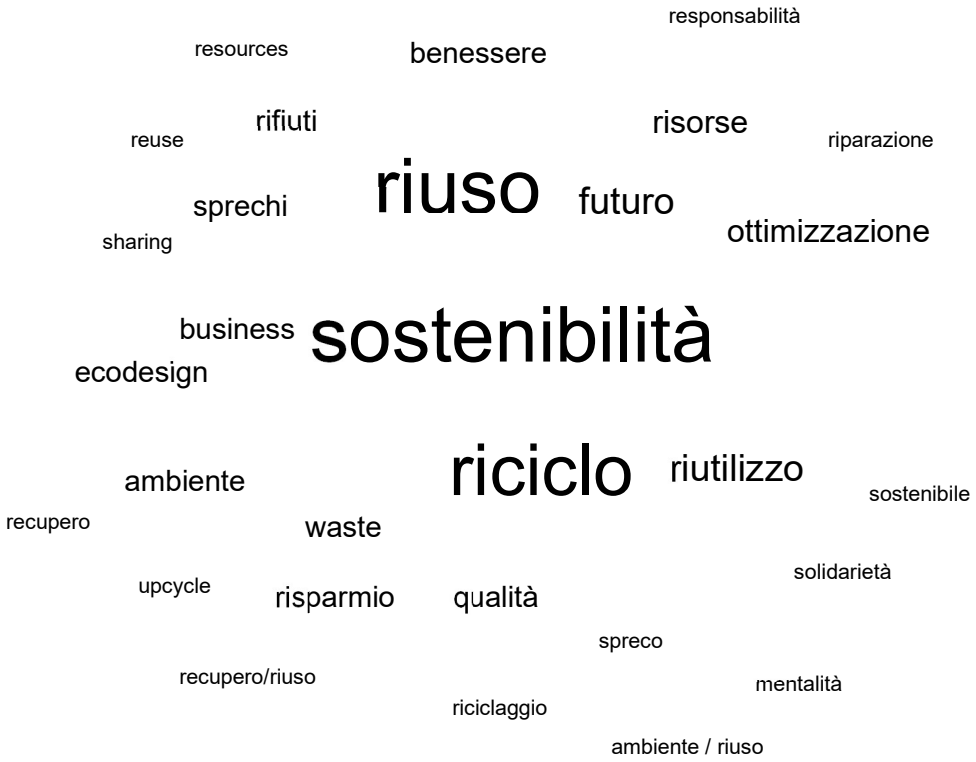
niente
solidarieta
upcycle
risparmio
qualita
spreco
utilizzo
recupero riuso
valore
riciclaggio
mentalita
meno
ambiente riuso

Quali sono le prime tre parole che ti vengono in mente quando si parla di economia circolare?



Other methods and approaches, as presented in the Tools mainly related to the WP1 “Stakeholder Engagement”, could be used or adapted to the specific context, helping the participants in particular to define their visions.

During the co-design meetings, active youth are guided in structuring their ideas or visions into feasible and applicable projects and are supported in writing a project proposal (with the due competencies and knowledge required) to be presented in competitive calls mainly at the local level or to be included in some “white road-mapping paper” that should be adopted and co-created by the local institutions (public and private)

Outcomes and hindering factors

The activities are strictly dependent on the possibility to organize ‘physical’ events where participants are present and brought together. Virtual events are not equally effective as they are not equally engaging for the people considering competencies and age gaps. Moreover, especially when there are no already established youth NGOs or structured collaboration organizations, it is extremely difficult to keep constant attention on the process and a high level

of involvement of people. Therefore we suggest monitoring in advance ongoing project or funding calls in order to 'be ready' to propose a possible application of their ideas. Meetings and events should also be concentrated in a relatively limited amount of time again with the scope to keep a high level of attention among participants.

In Trentino during the last decade, several initiatives have been settled in order to support the creation of "green business" and, not lastly, the involvement of young people. In traditional sectors, like agriculture, the generational transition is supported by local funds addressed to the creation of young-led business-units. Usually, this process is also accompanied by mandatory training courses and activities. The transformative capacity of young people is also shown with, in reference to the primary sector, adoption of different approaches and methods and the instalment of multi-functional companies (including also other services).

The formation of a network of innovative projects should be promoted and, whether possible, aggregated within a "transformation hub". By monitoring original initiatives, contests, startup, and innovation practices, links for the creation of new sustainable entrepreneurship led by young people could arise. The stakeholder engagement process (see above-mentioned tools) could be the starting point for the mapping of the most interesting projects and therefore, for the development of a network. Institutions could be the promoters and the subjects who have the task to monitor the territory to promote the development of start-ups or transforming businesses.

SATURN: Toolbox Series of
Sustainable Urban-Rural Landscape

Capacity Building Tool

Vision, stakeholder engagement and capacity building

Prof Kathryn Moore, Dr Anastasia Nikologianni, Nick Grayson

A Toolbox Series of sustainable urban-rural landscape:

Professor Kathryn Moore, CATiD – Birmingham City University, UK

Dr Anastasia Nikologianni, CATiD – Birmingham City University, UK

Nick Grayson, Birmingham City Council, UK

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The contributions of all the members of the consortium in helping to shape these tools are gratefully acknowledged.

Contents

Background

The SATURN project aims to reintegrate the natural assets within the city climate change impact strategy and to expand and feed its model by creating a wider initiative. Each territory has a number of pilot cases being part of the three year's project (2019-2021). The pilot cases all include innovative ways of connecting the rural and the urban landscape. The aim is to enable the upscaling of the pilot cases as to work towards system innovation.

As part of the work, several tools are developed from the pilot cases as well as from other best practices within sustainable urban-rural landscape. The pilot cases are presented in the green series; SATURN: Pilot Cases for Sustainable Urban-Rural Landscape.

The best practices are presented in the pink series; SATURN: Best Practices for Sustainable Urban-Rural Landscape

SATURN: Toolbox Series of Sustainable Urban-Rural Landscape present the tools as listed below. The tools are generic in nature and with the potential of inspiring other parts of Europe and globally.

- Fostering on Municipal Land using testbeds, Gothenburg
- Farming incubator tool, Gothenburg
- Mapping underutilized and abandoned farmland and farms, Gothenburg
- Market Gardening Manual, Gothenburg
- Governance model - eco I socio I digital aspects, Trento
- Rural Urban Metabolism (RUM), Trento
- Youth engagement and mentoring for business development, Trento
- Stakeholder Engagement tool, Birmingham
- Capacity building tool, Birmingham
- Visioning tool, Birmingham

Summary Tools

SATURN project has an objective to build a comprehensive and adaptive common framework and to test and improve the framework in an iterative process. The work entails to map best practices regarding sustainable land use models reconnecting cities to their surrounding areas and to create a toolbox of models and strategies that can be replicable and scalable. The toolbox includes several tools that can be used by city planners, facilitators, developers and practitioners. The aim of the tools is to provide concrete guidance on how to implement a certain project or an aspect of a project relevant to the SATURN project. The tools can be derived from the pilot cases of the SATURN project or from best practices collected or from our satellite cities. The tools vary in format and content but have in common that they address ways to enhance sustainable rural-urban landscape.

Capacity building tool

Tool details

Title: Capacity Building tool

Objective: Building capacity internally and externally, developing skills, training

Geography: UK

Organisation: BCC & CATiD BCU

Financing: SATURN project

Time: 2020

Link: TBC

SATURN –Work Package 1: Stakeholder Engagement and regional design (WP1A) and Capacity Building (WP1B) LOGIC MODEL- TOOL

Project: (HUB locality or place to be entered)

Project Context

Policy context- Expansion of urbanized areas heavily changed cultural landscape features in many European countries. This process has turned natural, semi-natural or cultivated areas into the very spaces into which infrastructures, productive and commercial units or houses, have been located. This has caused several impacts on the natural, socio-cultural and economic fluxes between urban and rural territories. With the increasing effects of climate change, this relationship has now become of paramount importance. For example 75% of natural resources are consumed in cities, which also account for 80% of global greenhouse emissions. Figures that call for a series of interventions that should target urban settlements and their surroundings. In fact the nearby territories act not only as a provider of commodities (food, wood, fibre, water) but for services granted by ecosystems such as flood protection and control of pests and pathogens. Additionally to a large extent citizens are able to live their lives in urban settlements with little interaction with the rural areas.

Regional context-
The problem SATURN is trying to solve is one of governance of nature and landscapes and the regional scale. Currently the human approach to the management of land is determined by ownership and often from the interests of a single sector. Leading to a fragmented landscape with equally fragmented governance and therefore funding and people engagement. Leading to a fragmented approach to climate change.

What needs to be in place for change to occur? – SATURN WP1 puts in place a three tiered mechanism to re-understand the regional landscape through a holistic vision, look to assess both the hidden natural value in that landscape and its hidden stakeholders, then reveal those through a capacity building process. It is from here with this renewed capacity identified that the necessary 'Step-Change' required to meet the 21st century global challenges of environmental restoration and climate change. This approach then allows you to undertake a totally different assessment of 'value'- by noting all the inter-dependencies of social, economic and planetary wellbeing with nature and landscapes.

Programme objectives: This project stands at the intersection between CKIC- Impact Goals 2,5, and 6.

- **Impact Goal 2-** How can natural assets be valued in the urban context of "Create Green, Resilient Cities"(Impact Gcal 2). The so called Nature Based Solutions (NBS) have been designed by looking at how agriculture was using ecosystem services and by adapting this approach to the city context;
- **Impact Goal 5 -**The food production "Transform Food System" -is the most important value chain that the project aims to re-localise. Closing the distance between the production and the consumption has a high mitigation potential, not only by reducing the transport, but also by limiting the externalities of the citizen consumption on climate on the other side of the world where agricultural practices are less regulated.
- **Impact Goal 6** –"Nurture Forest in Integrated Landscape" is at the core of the project. The integrated landscape approaches has been set up to have a better systemic understanding of deforestation and land degradation issues.

Rationale

- To address the over-riding challenge of fragmented regional landscapes, **SATURN WP1 brings a holistic vision practice** to re-imagine the future of your region- in how it needs to respond to the 21st century global challenges of climate and ecological emergencies.
- To address the identified challenge of under-valuing landscape the **SATURN WP1 brings a stakeholder engagement practice** based around ecosystem services and natural capital.
- To address the challenge of fragmented governance and policy and resourcing, the **SATURN WP1 brings a capacity building practice**, that connects the hidden beneficiaries and key regional stakeholders to local governance and circular economy models.

Inputs

- **A regional spatial vision workshop**: Outlines the critical potential impact of taking a visionary approach to regional landscapes and design;
- **A comprehensive stakeholder mapping workshop:** Outlines the potential benefits of establishing unseen values through both ecosystems and stakeholders;
- **A capacity building workshop**: Outlines the connections between values, stakeholders and capacity; linking to governance and circular economy models.

Activities

- **A regional spatial vision exercise**: Takes the group from individual visions, to future generational spatial visions for their region/place;
- **A comprehensive stakeholder mapping exercise**: A systematic series of challenges and steps that enable identification of value and key stakeholders;
- **A capacity building exercise**: Connects the key stakeholders to the local governance and economic context to determine future critical pathways to growing organisational capacity.

Outputs

- **A regional spatial vision:** To be described and shown through a series of worked diagrams, drawings and revised maps; contained in a summary report
- **A stakeholder engagement process, analysis and mapping:** To be described and depicted through CKIC tools on MIRO boards; contained in a summary report
- **A capacity building exercise:** To be described and captured through CKIC tools on MIRO boards; contained in a summary report

Intended impacts

- ***A new regional spatial vision and regional design methodology:***
- ***A new stakeholder engagement analysis methodology:***
- ***A new capacity building analysis methodology:***

Intended outcomes

A new regional spatial vision and regional design:

A holistic spatial vision for the region looking ahead at least a generation.
An integrated vision of landscape but also of culture, of heritage, of historic connection.
The vision must consider the social dimensions about families, access to nature, recreation.
The vision must also consider the policy and political and governance questions.
The vision must consider economic aspects, of productivity, infrastructure and growth.
The vision must consider how the region is seen in the future both internally and externally.
The vision process must end with a series of next step challenges to be picked up below.

A new stakeholder engagement analysis:

To complete a pentagonal challenge resulting in defined aims and goals for the region.
Against these goals and the created vision, research your key stakeholders.
Map these stakeholders on a 'Universe' Board as an expression of current engagement.
Match your key stakeholders to your vision themes.
Cluster these stakeholder groupings back on the 'Universe' Board; and pick leads.
Identify the critical players for accelerating change.

A new capacity building analysis:

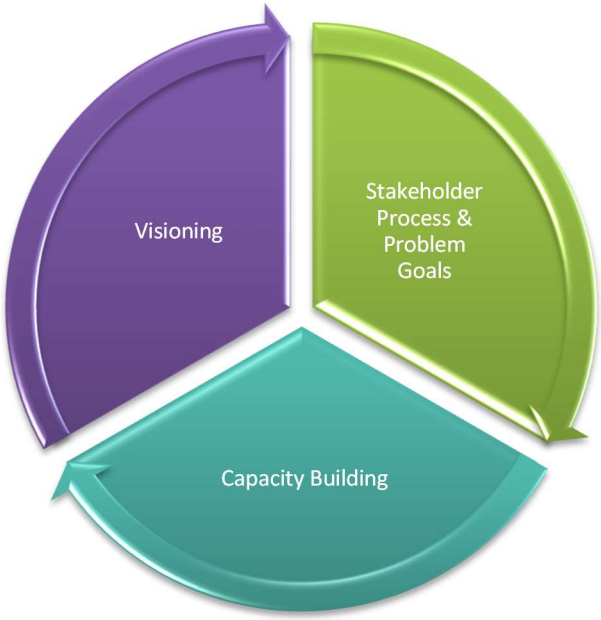
The lead organisations or stakeholders need to be mapped against their corporate outcomes.
Using systems mapping link the strategic outcomes to key regional policy goals.
Connect your project aims, with the policy goals and the stakeholder outcomes.
Understand the inter-dependencies across the region.
Examine the regional landscape design implementation plans and timetable.
Connect the landscape vision and timetable to the other regional strategic timetables.
Connect and calculate the added value of synergistic working.
Submit to the regional strategic governance and circular economic decision-makers.

Climate-KIC is supported by the EIT, a body of the European Union

Project details

SATURN WP1 brings in three key processes which are interrelated. They can work as individual tools, but the results are stronger when these tools interact with one another and shape the outcomes.

a. The Holistic Vision practises
b. The Stakeholder Engagement practises
c. The Capacity Building Practises



The Capacity Building Tool

A critical step in accelerating a project or programme is that of capacity building. A measure of success as to whether you have done this right will be whether this capacity continues to grow over time; that is what you are seeking as your main outcome. The scale of the climate challenge is such that an increasing co-ordinated effort will be required from all sectors of society. This can be derived through a well planned and executed capacity building activity. This tool explains how.

Capacity Building Practice	
How Many	3-10 people per group
How Long	A series of 4 workshops (90mins/per workshop)
What You Get	A clear understanding of who your key stakeholders are and what roles they can play
What You Need	An agreed challenge, an established list of stakeholders, an open mindset, a facilitator/trainer, a lot of energy

Difficulty	Medium High
Important Ingredient	The Climate-KIC Visual Toolbox for system innovation and the MOTION Concept
What is next	You will have a plan to approach your key decision-makers and clear arguments and evidence and who are your strongest allies. Your MOTION graph provides a series of next steps.

What it is

Capacity building is an essential tool in your armoury to tackle climate change effectively; it means it is not all down to you;

What to use

At a significant change point or intervention point, such as a new programme or strategy. So a clear opportunity to influence change where you are locally or regionally.

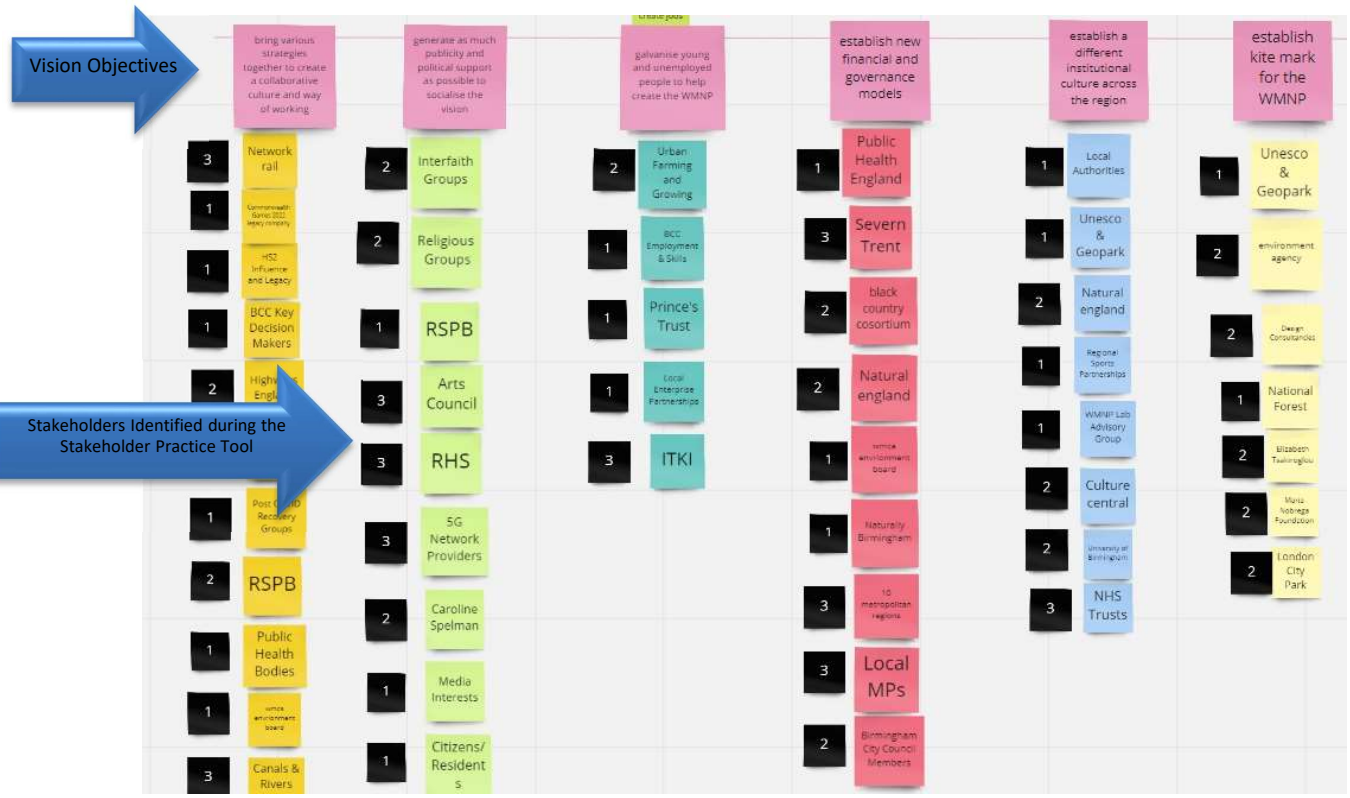
Why it is useful

Because the step-change required to address climate change requires the co-ordinated engagement of many actors. This tool will assemble the best team for your vision outcomes.

Step 1. Re-understanding your stakeholders

The critical part building capacity is making sure you have identified all your potential stakeholders (see Stakeholder Engagement/Cooking Recipe Challenge Tool). What can emerge from this process are previously 'hidden' stakeholders. They will have been identified through a policy or interest connection that you might not have originally thought of.

A process that might help test this out further is re-aligning all your identified stakeholders against each of your vision objectives (See Vision Practice Tool). This is where the visioning process really shows its importance; as you can re-think the potential role any stakeholder might play in helping you unlock or create each one of your vision objectives. This is another way of breaking existing silos; or obvious boxes or categories you put stakeholders into.



If you have not undertaken a vision exercise it is also possible to achieve similar ends by undertaking a systems mapping exercise (The Climate-KIC Visual Toolbox for system innovation or our Birmingham Visioning Tool) at this point to identify the key connections through policy commitments or strategy outcomes- that your stakeholders or potential stakeholders have declared. Again you can then form interest groups of stakeholders around specific topics- that are important to your programme.

So at the end of step 1 you will have all of your stakeholders now re-arranged under each of your vision objectives or under each of your interest categories if you have used system mapping.

Step. 2. Introducing the MOTION graph

The purpose of the MOTION graph is to demonstrate how in order to bring about change- you are not asking your stakeholders to 'do more' on top of their current workload. This is often the real resistance barrier within organisations to any change process.

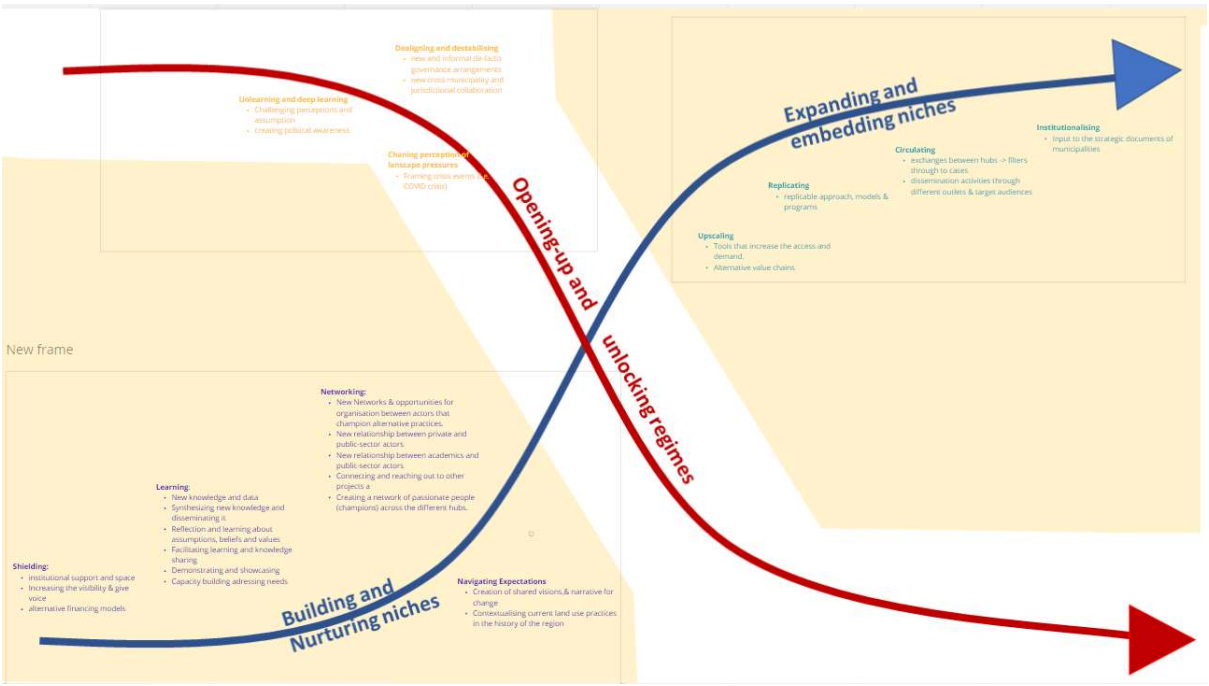
What the MOTION graph shows are two opposing axes. One axis represents the current business as usual approach, and so the task is to identify where and how you can unlock this.

The second axis demonstrates the change process you are wanting to introduce so identifies steps of nurturing and building- new practices.

Step 2 is to take your vision objectives and position each one at the most appropriate point on each of the 2 axes. So questioning at which part of the breakdown of the existing system or the rebuilding of the new system does each step best fit.

Carefully position one of your vision objectives on the red axis- representing the existing system- at the point where you think it is being blocked; label this Objective 1.

At the end of Step 2 you will have identified where your most critical barrier to change is and labelled objective 1.



Step 3. Prioritisation

Go back to your re-aligned stakeholders nested under each vision objective heading or systems mapping grouping.

Under each heading now look to group those stakeholders according to their importance in achieving your objective. Create up to 3 sub-groups; for each vision objective.

You may find that some stakeholders span more than one objective- that is fine. What you might also find is that against each of these objectives the same stakeholder might not be so important each time. This is an important finding. What you are refining is the role each stakeholder needs to play in your future vision, at each stage, according to each objective.

Clearly identify the sub-groups of stakeholders under the objective 1 barrier from Step 2.

At the end of Step 3 you will have grouped all stakeholders by importance against each vision objective (sub-groups 1,2,3); and highlighted the sub-groups under objective 1.

Example of stakeholders categorised in Group 1, Group 2 and Group 3

Step 4. Re-defining your Stakeholder Universe.

Pick a fresh Stakeholder Universe canvas (Find in CKIC Visual Toolbox page 54) and change the axes headings to:-

Influence for the X axis and

Adaptability for the Y axis.

Now take your numbered grouping and arrange them on this new universe to show how that sub-group collection of stakeholders relate to influencing change; and how adaptable are they.

Through Step 2 you will have identified your biggest barrier to achieving your vision objectives, you will have labelled this objective 1. Your prioritisation exercise will have categorised how each of your stakeholders under that specific objective heading could be grouped according to their importance.

Note now where these sub-groupings (1,2,3) are on your new universe; probably 1 = high in influence but low in adaptability.

Note where all the other vision objective numbered sub-groups appear on the new universe.

What was consistent for us was that the sub-group 1's were nearly always of greatest influence but low in adaptability; leaving the sub-group 2's as higher in adaptability but less influential.

At the end of Step 4 what you will have understood is who your critical stakeholders are for greatest influence for change and which stakeholder groups are the most adaptable to change and are early adopters of change processes.

Step 5. Capacity building strategy

Steps 1-4 have got you to an important point in your capacity building exercise. You now know who are the most important stakeholders you wish to influence; but who may well be the least adaptable, or ready to change; and how they all relate to your vision objectives.

You also know who are your stakeholders who are most ready to change and ready to build a new path, and how they relate to each of your visi9on objectives.

Step 5 is now about planning your next move, your strategy.

You have identified which the group of stakeholders are of greatest influence and over specifically which area of your vision, objective 1. They represent your key barrier.

The good thing is you have also identified why you want to engage them- that is your vision objective; and from earlier stakeholder engagement you will have understood what it is about them that could incentivise them to engage with you.

You also now know from steps 1-4 which sub-groups of stakeholders might be your natural allies – probably your sub-group 2's.

You now need to build alliances with those sub-group 2's to build the business case to approach the Objective 1 barrier group with; to help persuade them that now is the right time to engage.

You may find you have to build these alliances for a while; slowly progressing up the MOTION blue axis, from nurturing to building. In order to be able to demonstrate to the barrier group some successes from this alternative approach.

At the end of Step 5 you will have mapped a strategy and formed new alliances.

You will not feel down-hearted because you have a clear plan and are able to map your progress.

Step 6. Converting good intent into change

Here you go back to your vision (see Vision Practice), to select the vision objective that represented the highest point on the MOTION graph blue axis- the introduction of new working methods.

This vision objective represents the furthest you can get or what you feel closest represents embedded change.

For our SATURN Birmingham HUB worked example was an Accreditation Criteria for our Regional National Park.

For your chosen vision criteria, draft what this would look like as a worked up proposition- as if it were to be implemented or tested.

At the end of Step 6 you will have worked up draft of your vision objective

Step 7. Cross- checking all references

Having drawn up your draft proposal; now you have to cross-check this with other regional or local policy or critical policy context in which your proposition must be seen as viable.

You will not achieve the buy-in you need and support for capacity building if your proposition makes wrong local assumptions or works against current policy. It can of course advance local policy but not run counter to it.

Also review this chosen outcome against each and everyone of your other vision objectives to again check that it's implementation will facilitate all possible progress with each element of your own vision.

Then revise your proposition in the light of these studies.

At the end of Step 7 you will have an agreed proposition.

Step 8. Presenting your ideas for adoption

In order to get that barrier to change to lift you have to present your now worked up viable proposition to a key decision-making body- made up of those institutions you previously identified; through steps 1-5.

Be very careful with the choice of this decision-making body to ensure it has the power to agree to your proposition.

Don't forget you have built many alliances and demonstrated the effectiveness of your whole vision through trial steps; as shown in Step 5.

Be bold and ask for the adoption of your proposition based on your evidence. This will lock for vision into all the regional delivery plans so unlock tremendous capacity to support your work.

At the end of Step 8 your vision idea will be adopted by a critical decision-making body.

Step 9. Normalising your vision

Having got the vision idea or metric adopted what now needs to be done is normalise that idea. You achieve this through systematic change of procurement and contractual agreements. Having your vision criteria built into the performance management and operational procedures of the regional structures, local governments and agencies.

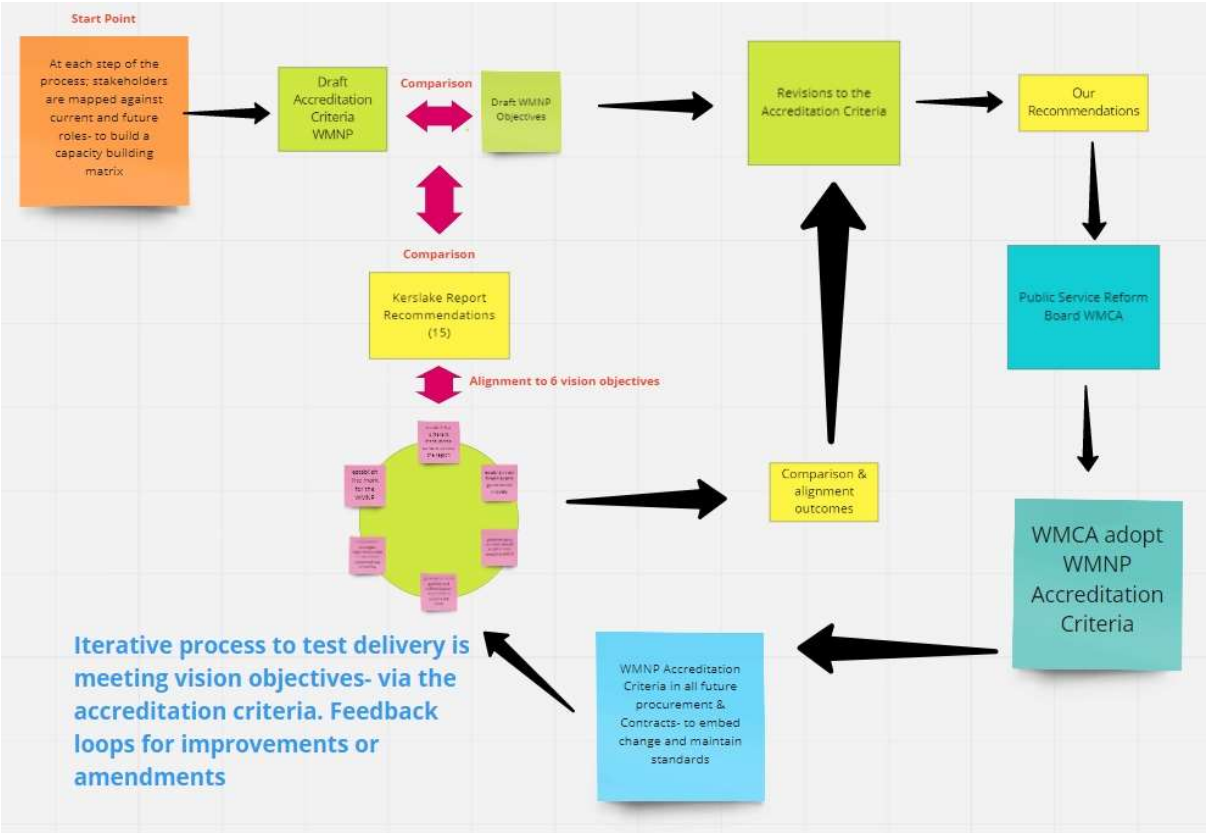
At the end of Step 9 your capacity building process is complete.

Step 10. Reflection & review.

Now that your vision idea has been mainstreamed what is vital is to closely monitor its implementation and effectiveness. Be ready to accept potential amendments or improvements to what you proposed through the work of others; whilst maintaining a critical performance threshold- to ensure your vision is not watered down; or that the new capacity begins to diminish.

At the end of Step 10 you will be at the top end of the blue MOTION graph.

The combination of these three tools- the vision, the stakeholder engagement and the capacity building have together helped build a new methodology of delivering change that we would recommend to you all.



Above is a worked example from one case study for the implementation of a West Midlands (Regional) National Park in the UK; through a primary vision lever of the adoption of a critical kite mark- the accreditation criteria. The process flow is outlined through to the iterative revisions.

SATURN: Toolbox Series of
Sustainable Urban-Rural Landscape

Farming Incubator Tool

Support green entrepreneurs start their farming business and achieve long-term success

Cyrille Gaubert, Saba Nazarian

A Toolbox Series of sustainable urban-rural landscape:

Cyrille Gaubert, Saba Nazarian, Xenofilia

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As part of the work, several tools are developed from the pilot cases as well as from other best practices within sustainable urban-rural landscape. The pilot cases are presented in the green series; SATURN: Pilot Cases for Sustainable Urban-Rural Landscape.

The best practices are presented in the pink series; SATURN: Best Practices for Sustainable Urban-Rural Landscape

SATURN: Toolbox Series of Sustainable Urban-Rural Landscape present the tools as listed below. The tools are generic in nature and with the potential of inspiring other parts of Europe and globally.

- Fostering on Municipal Land using testbeds, Gothenburg
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- Capacity building tool, Birmingham
- Visioning tool, Birmingham

Summary Tools

SATURN project has an objective to build a comprehensive and adaptive common framework and to test and improve the framework in an iterative process. The work entails to map best practices regarding sustainable land use models reconnecting cities to their surrounding areas and to create a toolbox of models and strategies that can be replicable and scalable. The toolbox includes several tools that can be used by city planners, facilitators, developers and practitioners. The aim of the tools is to provide concrete guidance on how to implement a certain project or an aspect of a project relevant to the SATURN project. The tools can be derived from the pilot cases of the SATURN project or from best practices collected or from our satellite cities. The tools vary in format and content but have in common that they address ways to enhance sustainable rural-urban landscape.

Farming Incubator Tool

Tool details

Title: Farming Incubator Tool

Objective: Stadsbruk offers a solution for cities to create an ecosystem for entrepreneurs interested in starting their own farming enterprise

Geography: Gothenburg area

Organisation: City of Gothenburg

Financing: Saturn project

Time: 2019-2021

Link:

Introduction

As the demand for locally and ecologically grown food is on the rise, the necessity of bringing food production closer to cities has become more evident. Not only do we need more people growing food for the demand, but we also need more platforms to train new entrepreneurs in small scale farming.

What farming entrepreneurs need is strategic assistance to help them kickstart their farming enterprises, accelerate their growth, scale their businesses, and achieve long-term success.

The problem

The incubator was initially created as an attempt to solve a recurring problem that emerged from the first iteration. The original idea was focused on making land available for farmers to farm. This meant that cities working with Stadsbruk had two focuses:

1) Identifying land & making it available for farmers (infrastructure, contracts…)
2) Finding people who wanted to farm the land according to ecological and small-scale principles

Over the course of the first three years, multiple hectares of land was made available for many to start a farm on. However, the majority of farms closed down after one or two seasons, as the lack of income couldn't balance the amount of time, energy and investment needed to run a farming operation.

Missing The Pink Elephant in The Room: What was missing in the focus of the initial approach was that an urban farmer is not just a farmer in the city who sells vegetables. ***An urban farmer is an entrepreneur whose core activity is to grow vegetables.***

Meaning that an urban farmer will face very similar challenges as other entrepreneurs in any other field. An urban farmer needs to think as an entrepreneur to succeed, not only as a farmer. They should only think as a farmer when they plan for the farm, but when it comes to thinking about their business model, sales and marketing strategies, they should be able to wear their entrepreneurs' hat.

Since the mission of Stadsbruk is to create a sustainable new business branch, this issue became a priority to solve, and it is in that context that the creation of Europe's first urban farming incubator was decided.

WHAT IS AN INCUBATOR? | *The gateway to the urban farming eco-system*

An incubator is nothing new and can be found in all forms and shapes across many fields of business. Incubators are usually physical spaces meant to foster networking among entrepreneurs and their coaches, while they are geared toward speeding up the growth and success of start-up companies.

Stadsbruk's incubator uses a lot of the methodologies and strategies already existing in other business incubators with a particular focus and curated content specific to commercial urban farming. This incubator offers workshops that revolve around adopting business models, selling techniques, marketing strategies tailored for entrepreneurs in small scale farming.

Through the educational content a common ground of knowledge is made available for everyone to refer to, which is a strong base to give any group to facilitate collaboration, innovation and success.

In addition to the content delivered through the workshops, the stadsbruk's incubator also offers a place with a high level of motivation for entrepreneurs to network, seek advice and learn from each other.

The goal of the incubator

The main goal is to recruit passionate and driven entrepreneurs who are interested in commercial urban farming and give them the space and tools to succeed in their first year of farming, and also help them gear toward expanding their businesses in the near future. Not to forget that the incubator is not only for newbies, and often existing farmers can also join the program to seek advice and knowledge in improving their farming operations.

How it connects to the ecosystem

The incubator acts as a gateway to the eco-system for many farm entrepreneurs. The idea is that the entrepreneur can start his or her journey by being recruited for the incubator, and then go through the incubator program before being able to start farming or expand an existing farming operation. The

incubator is strongly connected to the test-bed and the farming hub. The knowledge gained through attending the incubator workshops not only can be directly applied on the testbeds but also can help the farmers in long run while they eventually move on to the farming hub for expanding their businesses.

How to build an urban farming incubator

Each incubator will look a bit different as the context and the needs in each city differs from one another. As mentioned earlier a strong aspect of the incubator is the networking and the sense of belonging. Connecting to existing platforms is important as it allows to build the incubator on existing successes. In the beginning it is possible to only focus on ¾ projects and allocate many resources to their success as they will then become role models and inspire more entrepreneurs to start. Kajodlingen in Gothenburg, and Vegostan in Malmö are both great examples.

- **The Physical Format:** Most entrepreneurs either have another job or they study while starting their new businesses. Intensive workshops often require a lot of brain space and energy from the participants, therefore running workshops on the weekends are more suitable making the content more digestible than having them on weekdays.
- **Content:** A big focus is put on raising the awareness of participants to think of themselves as entrepreneurs while acquiring farming knowledge they need in kickstart their farms on the testbed. To do that, good thinking tools, and visibility on challenges they will face need to be provided. A well-balanced program that delivers both theoretical and practical content is highly recommended. Farming is an outdoor activity with specific tools that many might have never seen or used before. Having the opportunity to get on a field and use tools during the incubator time is a big plus in building people's confidence. We recommend having at least 30 percent of the incubator spent on an educational farm. We also suggest participants to volunteer at local farms, is possible to gain confidence and acquire hard skills. The current balance of the contents is 50% business and 50% farming.

Here's an example of the content taught in the 2020's incubator program in Malmö and Gothenburg:

#1 – Yearly debrief + Farm-entrepreneur

We invite farmers from the previous year to talk about their first-year experience. We look into what it means to be a farming entrepreneur.

#2 – Crop planning + Financial planning

Focus on how to crop plan for intensive small-scale farming. Defining financial goals and relating them to the crop planning.

#3 – Microgreens + start a company

Focus on how to start and run a microgreens operation. Lecture about the process to register a sole trader company

#4 – Get the farm started

Workshop with hands on work on how to setup the farm at the beginning of the season plus how to use all the key tools

#5 – Selling, communication and perma-business

Focus on the different selling techniques, channels on communication strategies and on diversifying the business model.

Incubator's timeline

The farming season begins early in the winter with crop planning and pre-selling strategies. It is wise to adjust the timing of the incubator to deliver core knowledge in time for people to use it. Previous experience showed that some content was provided too late in the program, meaning that the entrepreneurs could not use the info in the right time when they needed it.

Recruitment: The target group of the incubator is the one defined by the city and therefore depends on the goals of the city. We see for example two different strategies in Malmö and Gothenburg:

In Malmö the mission given to the incubator by the municipality is to fill up Vintrie Farming HUB with 11 entrepreneurs that will require little to no management by the municipality. Since there is no political mandate to work actively with urban farming, the land management office's focus is to lease land, not to find a new innovative model for using land. Therefore, we use the incubator to only select high performing farmers that will generate enough income to pay for their work and also pay the lease within their second season.

In Gothenburg, there are two missions:

1) To give land access to commercial farming projects
2) To find new models to use the land. This is done within a strategy and a mandate given to the land management office who therefore have the resources to do more than just lease the land.

The effect is that in Gothenburg, the incubator is not mandatory but on volunteer base, meaning that more people start farms in Gothenburg and have more time to reach economical sustainability.

Recruitment process begins with a simple online questionnaire to gather the basic information (name, contact details…) but also the ambition of the individuals' projects. This is the first step in engaging participants into an entrepreneurial mindset. We don't want to know what they will grow; we want to hear about their business idea.

Then an interview is conducted by the facilitator in which the participant's short term and long term goals are addressed and their knowledge of entrepreneurship and farming is evaluated. Then a feedback is given to the municipality while considering the each participants'

- Time availability
- understanding of the difference between an entrepreneur and a farmer
- long term ambition

Then together with the municipality a place is given to the participant in the incubator.

As the season begins, farmers are given access to their testbeds for a given period of time. The facilitators are encouraged to keep in touch with farmers during the season and provide support in their journeys. For more info on facilitator's responsibilities running a testbed, refer to the Testbed document.

The evaluation:

A good evaluation is driven by measurable goals. If the goals are clear, then we can define if we have been successful in reaching them. The evaluation can be observed from the farmers perspective and that of the city's.

For the farmer, we want to evaluate the level of satisfaction and motivation to continue, the amount of time spent on the project, the generated revenues and the physical and mental health. We do this through a common evaluation workshop at the end of the season and through an interview with each participant.

For the city, the evaluation depends on the goal. It is often measured in terms of amount of land leased, number of active project, and indirectly on the feedback given by the farmers to the municipality on their overall experience (incubator + test bed + support).

Our ambition is that entrepreneurs will engage in a second farming season. Currently, participants are only evaluated after their first season but since the goal of Stadsbruk is long term, another module might need to be added to the eco-system to help entrepreneurs in achieving their long term goals.

Challenges of running an incubator

Troubleshooting

The most common reason for "failing" the first season is lack of time spent on the project for new farmers. This might have very little to do with farming, but without putting in the hours needed to get the project off the ground, one cannot expect to achieve much. Lack of farmers' engagement in workshops or attendance to their fields can potentially turn into a big problem on the beginning of the project for facilitators. Therefore a strong focus on time availability needs to be put in during the recruitment process. If a potential candidate lacks time, we recommend them to join another project or to get involved as volunteers to gain some experience.

Urban farming is a value driven business meaning that many people start urban farms as a reaction to a previous job/career where they felt that their sustainability needs were not reached. This can create friction in the beginning as some participants might have built an idealistic plan focused on long term permaculture projects where money has very little place. But our incubator is a business incubator and as much as we support any type of farming projects, we want to see them being built in a profitable and productive manner.

We have learned that participants first need to be able to make money in order to farm long term. This was a quite big challenge in the beginning, but as more and more farms are now active, the general knowledge and understanding on what it takes to run a farm is increasing. We experience less and less projects that haven't put financial sustainability at the heart of their projects.

SATURN: Toolbox Series of
Sustainable Urban-Rural Landscape

Governance model - eco | socio | digital aspects

Implementing an integrated urban food strategy through "guided confrontations"

Mattia Andreola, Alessandro Betta, Francesca Forno,
Alessandro Gretter, Angelica Pianegonda

A Toolbox Series of sustainable urban-rural landscape:

Mattia Andreola, Alessandro Betta, Francesca Forno, Alessandro Gretter, Angelica Pianegonda

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Governance model – eco | socio | digital aspects

Tool details

Title: Governance model – eco I socio I digital aspects

Objective: Creating an integrated food strategy at the local level

Geography: Trento

Organisation:

Financing: SATURN project

Time: 2020-2021

Link:

The Problem

In recent years food has once again become a central topic in political and public debate. Recent food scandals brought people to pay more attention to the healthiness of what is on their plates, and there is a greater awareness of issues linked to the agri-food supply chain. The way in which foods are produced, distributed and consumed has significant consequences for the environment, affecting the fertility of the soil, the quality of the water and air, the state of the climate, and the loss of biodiversity, as well as the impoverishment of the food culture and of the landscape.

Many people have pointed out that food production relies on three great paradoxes which will have to be tackled by future food policies. The first paradox has to do with food waste, an estimated 1.3 billion tons of edible food, equivalent to a third of global food production, is wasted each year. The second paradox is related to the access of adequate food supply for humans. Despite the widespread hunger and malnutrition in the world, a larger percentage of what is grown is used for animal feed or biofuels. The third paradox is linked to increasing inequalities at global level. For every person suffering from malnutrition there are two who are obese or overweight.

While food insecurity was mainly a rural phenomenon during the pre-industrial age, the urbanization process occurred in the last century brought cities and metropolitan areas at the forefront of the issue, with an increasing number of migrants starving in the peri-urban areas at the margin of the growth. For

this reason, cities are an increasingly significant player to be involved in improving the conditions of the various actors in the supply chain, both consumers and workers in the food sector.

The idea for the Feeding Trento (in Italian “Nutrire Trento”) project grew out of this discussion, with the aim of identifying ideas and solutions to these problems that might improve the quality of the food for the city, providing healthy food that adequately remunerates all actors in the food supply chain. At the same time, the project aims to develop and restore a local economy based on new relationships between urban and rural areas and between farmers and consumers.

The project formally began as one of the activities under the UniCittà memorandum of understanding between the Trento City Council and the University of Trento in June 2017 and was preceded by a series of open meetings involving people already working in this area, such as producers, citizen groups and associations (including solidarity purchasing groups - GAS), researchers and administrators.

Nutrire Trento aims to help the relaunch of urban and peri-urban sustainable agriculture by facilitating contact between producers and consumers, through short food supply chains and direct sales. It also aims to become a tool for information and awareness-raising on natural foods and healthy lifestyles, on protecting the health of producers and consumers, and on the possibilities to use quality local products in schools’ canteens or in the tourism sector. Other objectives include the use of currently unfarmed land to create new employment opportunities and to develop an agriculture that values social inclusion, the promotion of community gardens, and educational visits to farms and programs for schools so that students can learn about the role of the farmer as a producer of economic value and as a landscape keeper.

Structuring of the pathway: the process

Creating an integrated food strategy at the local level means enhancing effective participation of the different actors involved in the food system.

2.1 First steps

The initiative began by stimulating a public discussion on key issues related to food and the opportunity to build an urban strategy for food.

The project’s first objective was to set up a multi-stakeholders roundtable to jointly address the challenges of sustainability in agriculture, believing that possible solutions can only be found by involving all the actors in the food system (producers, consumers, retailers, experts, associations etc.). Inspired by the experiences of cities in North America and Europe in recent years, the roundtable’s task is to act as a space to share initiatives and to identify new objectives directly expressed by the various actors in the food system.

To facilitate construction of the roundtable a series of events was organized. The first conference took place on 2 June 2017 at the Festival of Economics, where a debate entitled "Food, Health and City" was presented at the Department of Economics and Management of the University of Trento. It was a reflection on the interactions between food production, health and territory, starting from a comparison between the strategies implemented by some Italian cities to address the issue of their citizens' wellbeing from an integrated perspective. The second conference was held on 3 June at the OltrEconomia Festival in a local public park of Trento. It was a round table entitled "Nutrire Trento. A

virtuous pact between agricultural producers and consumers", a debate with the presentation of the new Trento Consumo Consapevole association promoted by the network of Solidarity Purchasing Groups. Lastly, on the 4th June, a public conference was held to introduce the "Biodistretto di Trento" association in the De Marchi Foundation's 'Aula Magna'.

These initiatives have been aimed to create awareness among the participants, not only about the concerned issues but also on the multiple experiences already existing on the territory. Furthermore, those events were the first activities that involved the Nutrire Trento project and they made possible to recruit the first stakeholders. Since then an open multi-stakeholders meeting takes place monthly.

2.2 Society engagements through multi-stakeholders round table

Convened jointly by the Municipality and the University of Trento, the roundtable is an informal space all interested actors can spontaneously join. The working group currently involves producers, businesses (SMEs), researchers, professionals, schools, and citizen associations and groups, and hopes to expand to include others who are interested. The Round Table has inclusive governance, which allows any interested stakeholder to attend meetings, debate and propose initiatives. '

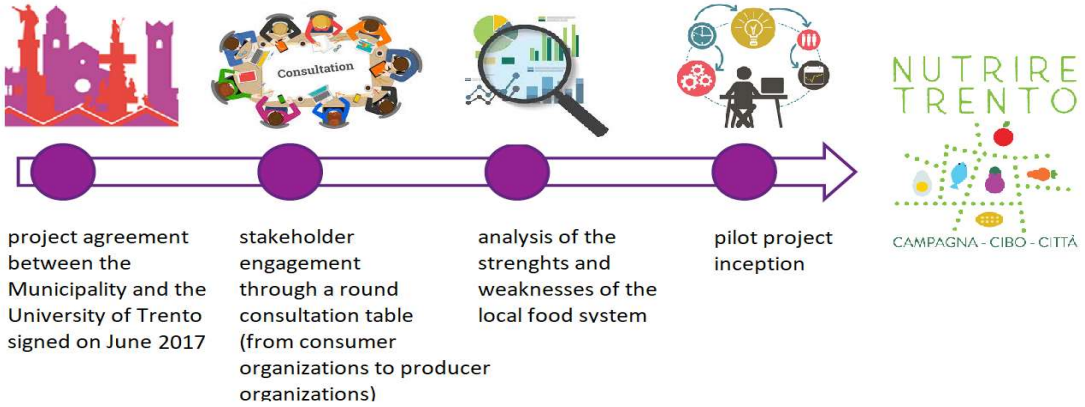
The attempt is to approach as many actors in the local agri-food sector as possible. Therefore, the project partners' institutions decided not to exclude conventional agricultural producers from the platform or other initiatives. This allowed 125 actors - mostly from the Trento area, but also from the whole provincial territory - to participate in the meetings, with a constant flow of new stakeholders. Among the realities approached, it is worth mentioning some major farmers' unions as Coldiretti, CIA (Confederazione Italiana Agricoltori) and Acli Terra, which are the main representative associations for local agricultural producers; Donne in Campo, an association that represents and promotes the activities of women in farming, F.T. Bio, the regional federation for organic and biodynamic agriculture.

In addition to producers, there are several associations involving other actors: Altroconsumo, which represents consumers; "Trento Consumo Consapevole", an association that coordinates the various solidarity purchasing groups in the area; Consolida, a consortium of social cooperatives that also promotes the solidarity-based and sustainable economy; "Trentino Solidale'', a voluntary association that promotes access to food and education and fights food waste by recovering it from large-scale organized distribution and other retailers to provide it to those in need of food assistance and the "Tavolo dell'Economia Solidale", a provincial board that promotes local products in Trentino restaurants.

In addition to the various NGOs, a determined contribution is made by the world of research: besides the University of Trento, there is also the MUSE, (Science Museum of Trento) that carries out research activities on topics related to Nutrire Trento, and Fondazione Edmund Mach, an organization involved in agricultural research and development, as well as business consulting and professional training. This institution collaborates closely with the Table of Nutrire Trento, especially through the researchers involved in the SATURN Project - which also includes other figures from the University - covering a scientific support role.

The team has been responsible for the production of informative and promotional material, but also for many decisions concerning the project, such as the choice of the Nutrire Trento logo - created by the students of a graphic design institute in Trento, the Istituto Artigianelli - and, most importantly, the criteria to become part of the project, which will be explained in the next paragraph.

Fig.1 The creation and development process of Nutrire Trento



2.3 Connecting food actors initiatives through digital participatory mapping

Trento is an active and proactive city and there are already many initiatives around food; what was missing was a coordination that could pull them together and create links among people who are interested in these issues. To coordinate and highlight the visibility of initiatives already underway in the region, the working group has ideated a digital platform that allows people to simultaneously visualize the actors and the places in the Trento short supply chain: producers, markets, shops, cooperative purchasing groups and urban or community vegetable gardens. In order to increase the space for discussion, this virtual tool has been implemented right at the beginning of the process and it is now online at www.nutriretrento.it in order to allow anyone who is interested to sign up or consult the site.

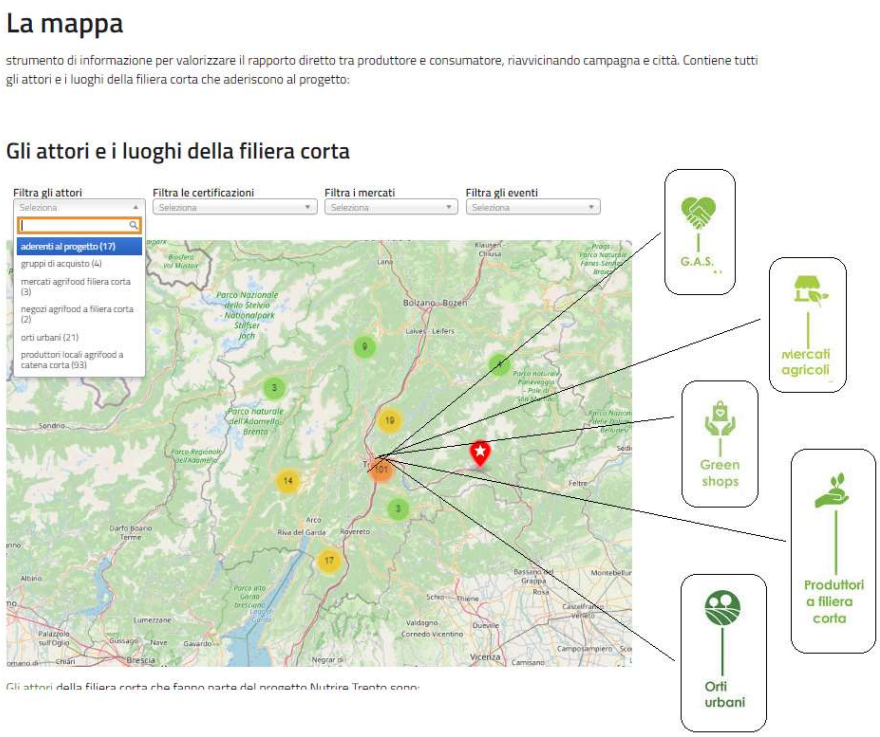
Actors in the local food supply chain can directly indicate on the website their intention to join the project, and can access to the membership requirements' check. As regards the producers, the minimum criteria to be admitted to the platform are the following: they must be registered in the region Trentino-Alto Adige/Südtirol. Secondly, they must have at least one direct sales option in the farm or other locations situated in the Municipality of Trento, in the markets of the Municipality of Trento or through the Solidarity Purchasing Groups of the Municipality of Trento.

As regards the shops, it is sufficient to have the seat in the Municipality of Trento and to have the availability of at least 5 or 7 food products - depending on the size of the shop - from local producers who

participate in Nutrire Trento. Finally, concerning Solidarity Purchasing Groups, it is sufficient to operate in the territory of the Municipality of Trento.

This tool has helped to share contents and ideas both within and amongst actors participating in the roundtable and the external world. This had the aim to favour the continuity of dialogue on the topic stimulating the creation of common narratives and knowledge as well as the adhesion of new subjects.

Fig. 2 The map of Nutrire Trento and its partners



2.4 Building a common vision and identity together

During the process, an important role was given to projects or ideas that spontaneously emerged during the joint monthly discussions. Such discussions have led to the identification of specific actions. All initiatives and actions in the roundtable are discussed and validated by the involved actors, during the monthly roundtable meetings.

Nutrire Trento has participated in several public events, such as the Researchers' Night 2018 and the Biodiversity Festival 2019, but the first major public event organized by Nutrire Trento has been the conference "*Cibo, territorio e sostenibilità. Nuove strategie alimentari e politiche locali per nutrire le città*" (in english: “Food, territory and sustainability. New food strategies and local policies to feed the city”) which was organized on 15th and 16th November 2019. The first session took place in the Faculty of Sociology of the University of Trento, where three round tables were held to discuss issues concerning the macro-themes of production, distribution and consumption. The second session was hosted in Palazzo Geremia, a building belonging to the Municipality of Trento, where the experiences of the Urban Food Policies of Milan, Livorno, Cremona, Bergamo and Trento itself were discussed.

Thanks also to the support provided by the Public Administrations and the local University, this pathway has contributed to the development of new citizens' attention to the values of local agriculture and food included those promoted by the so-called alternative food networks (AFNs). These have contributed to strengthen the relationship between the agricultural sector and the urban community which have become very visible during the first wave of COVID-19 pandemic emergency between March and May 2020.

During the lockdown, Nutrire Trento proposed an experimentation aimed at studying the changes in purchasing methods that have become almost a necessity under pandemic lockdown conditions, as they may become an opportunity to find a sustainable alternative to the traditional food system of large retailers.

The initiative proposed a direct sales channel for local farms to a group of families. The latter were randomly selected among the ones that showed the interest in joining a network bringing together consumers and producers and providing local agricultural products delivered weekly to their homes. In order to reach the interested parties, the institutional partners have officially contacted all Nutrire Trento's producers partners and, in addition, informative articles have been published on the website and on the Municipality of Trento's Facebook profile, as well as in the main local newspapers. Therefore, 15 farms were involved with the aim of offering the widest possible selection of local products (fruit and vegetables, processed foods, bakery products, dairy products, eggs) and 68 families participated in the weekly orders.

The project was coordinated by three members of the Round Table. One coordinator dealt mainly with order assistance and the connection between producers and consumers. A second coordinator drew up and analyzed three questionnaires to investigate the satisfaction of the project participants, as well as to deepen some issues related to consumption and waste during the pandemic. Finally, the third coordinator was responsible for the communication of the project, which led to the creation of a blog and an open discussion group on social media.

The progress of the project was also monitored by the Nutrire Trento Round Table and by the representatives of the institutions involved.

The project and the analysis of the questionnaires allowed to detect some practices that spread during the pandemic, such as better planning of consumption and, therefore, less food waste. Furthermore, the initiative has allowed bringing stakeholders closer together for possible future developments. The Round Table is setting up a more ambitious project: a Community Supported Agriculture (CSA) initiative, where consumers agree from the beginning on the number of products they will buy, allowing producers to effectively plan their crops. The most important factor, however, is risk-sharing: in a CSA consumers are willing to pay a part of their purchases in advance and, in the most developed and well-established realities, they even finance some necessary investments for the farm.

Moreover, other initiatives were implemented to build a common vision and share it with the citizens. For example, three videos were commissioned to tell the story of Nutrire Trento, the actors involved, the objectives that have been pursued, the projects carried out and so on. Furthermore, during Nutrire Trento #Fase 2 it was decided to create a blog to collect informative articles, which were mostly written by the participants of the round table.

Finally, from the Nutrire Trento #Fase 2 project a new initiative called Crown Food has been developed, whose objective is the development, implementation, testing and validation of a digital platform to support sustainable food networks that allows proposing different alternative solutions to put food producers and consumers in direct contact with an innovative, dynamic and sustainable approach.

In order to achieve these objectives, the research group that will follow CrownFood will develop various activities enhanced by its multidisciplinary approach:

- Analysis of the current context and the needs of local food supply chain actors.
- Development of various alternative business models, distribution and sustainable consumption of food products.
- Creation of an online platform/app for testing the different models directly involving local producers and consumers.
- Monitoring of sales and purchasing activities to analyse the impact of the proposed solutions.
- Comparative evaluation of the different models proposed from an economic, environmental and social point of view.

2.5 Supporting Nutrire Trento through reconnaissance and valorisation of land and local resources

Historical, cultural and social peculiarities of the region where the Trentino Hub is located, have to be taken into consideration also when reflecting on new approaches to governance. Since 1946 the region as a whole, including the nearby province of Bolzano/Bozen, has been granted with a high level of autonomy. But the mix of institutions, strategies and policies aiming at preserving the social and cultural fabric and conserving natural resources are rooted in previous centuries. Land property systems, including collective institutions, were pivotal in shaping the landscape and supporting the lives of local rural and peri-urban communities. Still today, almost 60% of the overall surface (around 370,000 hectares) is collective property within the province. This kind of management is rooted in centuries of practice of setting participative bodies within communities and gave the opportunity, at the end of XIX° Century, to generate the “cooperative” movements. Still, nowadays it plays a central role in the socio-economic fabric, with a crucial role in particular in the agricultural and food sector shaping use of land, resources and patterns of consumption.

In recent years, space of opportunities have been generated, in particular, to respond to new specific needs and towards approaches and models in which to activate spaces, use and governance of land and other resources following both national and local social and legislative push. Since 2007, Italy started a process to recognize by the law the concept of ‘common goods’ and to support forms of collective governance on a shared and equal basis between public administrations and citizens or NGOs. This concept has its roots in the article 118 of the Italian Constitution which expressly states that the Italian State supports forms of collective, shared and participatory governance of the territory and the initiatives of citizens to develop initiatives of general interest. Many Italian municipalities have since then adopted specific regulation in order to support citizens and NGOs in their proposals of management and enhancement of common goods. Moreover, in 2017, a specific law on the management of collective properties has been issued. This law is of extreme importance because collectively owned areas are the prominent property system of most of Trentino’s forests and pastures. The city of Trento adopted its own rulebook in 2013 and since about a hundred initiatives have been developed with the cooperation of local associations. Most of the initiatives have been focused on taking care and enhancing public spaces such as gardens, squares or on the development of community vegetable gardens. Other initiatives have been focused on organizing activities for young people or for asylum seekers. Between 2018 and 2019, two calls have been issued to find citizens or associations willing to develop abandoned areas into community vegetable gardens. These two areas will be integrated into the existing network of vegetable gardens of the city which counts on more than 15 areas and two hectares of public land.

This novel approach equally applies also in the rural territories where, notably in the last decade in Italy, several "community cooperatives" have been established in order to pursue the triple objectives of preserving the cultural heritage, conserving landscape features and creating new jobs and economies (in particular for locals and young generations). In Trentino this model has been adopted too in order to valorise used land and buildings of collective properties in some territories where agricultural or tourism sectors are not so relevant. One of the further opportunities, besides the ones already mentioned, is that within the community could be involved other actors that are living in another territory but consider to have a stake or a keen interest in the activities pursued by the cooperative. Thus granting a further support, both in terms of knowledge and (financial) resources.

With the Law number 15 issued in August 2015, the provincial government officially put into place the so-called 'Earth bank' (in Italian "*Banca della Terra*"). This is an inventory of abandoned or underused parcels of land across the territory and is connected with a specific rulebook assessing the criteria and the process to lease that land to citizens and entrepreneurs that would like to start or expand their farming business. Both public and private land can be inserted in the Earth bank and the rulebook gives the public authority a guidance role supervising the leasing process ensuring that both owner and rentier are in line with the requirements. This tool, when appropriately adopted, could be helpful not only to contrast land abandonment but could also support generational change allowing young farmers taking over retired ones. The Earth bank is the meeting point between offer and demand in terms of agricultural land to favour new agricultural businesses or the consolidation of existing ones.

The georeferenced mapping of the abandoned and unused former agricultural areas was carried out using large amounts of data and a specific GIS procedure. This procedure took advantage of large data sets available in the area as well as a set of orthophotographs that was created from the original aerial images and field sampling in the region. We were actively supported in this work by local Municipalities like Pergine Valsugana that provided data, participated in meetings and accompanied us in explorative field trips in the area. In fact, he work carried out in Pergine Valsugana and Trento in order to extensively mapping the unused, abandoned, or previously agricultural land (now covered by shrubs or forest) is considered very useful because it supports the local administration to have a more detailed (and up-to-date) understanding of the available land to be circulated within the interest actors (citizen, farmers, cooperatives, etc.). This can also result in setting up and/or perfectioning a system of subsidize to support the recovery of small disadvantage properties.

Finding innovative solutions through 'guided confrontations'

Over the years, this pathway has shown the difficulties to work through a multi-actors process but also its invaluable potentials to achieve shared goals. All in all, the Nutrire Trento initiative highlights the importance of promoting actions able to:

- facilitate a dialogue between different worlds such as the one among producers and consumers, but also producers, consumer and public administrators;
- facilitate the involvement of different actors, from the least to the most radical ones, in the decision making to bring out all the specific visions and instances;
- overcome the possible resistances or frictions that the breaking of a sectoral approach often generates;

- co-create, explore, experiment and evaluate innovative ideas, scenarios, concepts and technological artefacts.
- formulate new strategies, policies and regulations to create a more just and sustainable food system.

SATURN: Toolbox Series of
Sustainable Urban-Rural Landscape

Mapping underutilised and abandoned farmland and farms

Anders M. Nilsson, Martin Berg

A Toolbox Series of sustainable urban-rural landscape:

Anders M. Nilsson, Västra Götalandsregionen

Martin Berg, City of Gothenburg

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As part of the work, several tools are developed from the pilot cases as well as from other best practices within sustainable urban-rural landscape. The pilot cases are presented in the green series; SATURN: Pilot Cases for Sustainable Urban-Rural Landscape.

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Mapping underutilised and abandoned farmland and farms

Tool details

Title: Mapping underutilised and abandoned farmland and farms

Objective: Connect urban ideas, young green entrepreneurs with the abundance of opportunities in the peri-urban/rural landscape.

Geography: Gothenburg area

Organisation: Västra Götalandsregionen

Financing: Saturn project

Time: 2020-2021

Link:

Introduction

The modern city is an ecologically unsustainable entity. The population density of the city is such that it must rely upon the surrounding region for agricultural produce. Affluent cities, especially in the western world, are however characterised by a far-reaching decentralisation resulting in augmenting use of land per capita. As urbanisation progresses further and the urban sprawl continues to spread, the possibilities of regional self-sufficiency and access to locally produced food decreases.

Gothenburg, like most cities, has a history intimately intertwined with local agriculture. During the 20th century, however, the importance of agriculture gradually declined in and in proximity to the city – explained by efficient fossil-fuel transportation, globalised trade and therefore comparative advantages of agrarian low-wage countries. It could also be related to the redefinition of urban green spaces becoming places of recreation and leisure, and furthermore the separation of urban townscapes and the rural countryside within land use planning and changing attitudes towards the dichotomy of urban vs rural.

There is also another trend were new ideas of how to farm in the future stems from urban oriented communities and we see urban agriculture flourish. Small-scale diverse and intensive farming practices

is trending and just like these types of farming fed the cities vegetable they can do so again. At the same time farms and the agricultural sector in Sweden experience a decline in number of farms and a ageing workforce threatening the future development. Close to cities property and land prises rises and it is not viable to invest in extensive farming such as meat production and cereal farming. A lot of the land lies abandoned or under-utilised, often the grass is cut for fodder to animals. How can we turn that trend? How can we connect urban ideas, young green entrepreneurs with the abundance of opportunities in the peri-urban/rural landscape? The answer is a mapping of under-utilised or abandoned farmland and make it available through match-making to new farmers within the farming ecosystem of Gothenburg.

The Gothenburg Hub, the City of Gothenburg (Property Management Administration), Region Västra Götaland (Västarvet and the Agricultural Colleges), PE and Xenofilia AB, has a strong focus on small-scale urban and peri-urban commercial farm strategies and models. Aiming at strengthening this growing sector. Our four pilot cases the Gothenburg tests and improve a universe constituted by models, educational platforms, networks and land lease strategies focusing on creating career opportunities for new farming entrepreneurs and reconnecting the urban areas of Gothenburg to its countryside and surrounding peri-urban/rural and surrounding municipalities.

Gothenburg has approximately 600 000 inhabitants (municipality) and is situated by the sea on the west coast of Sweden surrounded by a cluster of commuting oriented urban areas situated alongside the main roads and railways in the surrounding municipalities. The city of Gothenburg owns and manage 3000 hectares of farmland.

Background of LAB 190

The area of the cross administrative programme including four municipalities and other public organisations, called LAB 190, is situated along the road 190 that stretches along four municipalities from Gothenburg via Lerum, Alingsås to Essunga. The area encompasses urban to rural landscapes including Gothenburg region's largest continuous agricultural landscape. The area faces big challenges with urban exploitations, underuti-lized farmland and great need of generation change within the agricultural sector. Several farmers along the road have or is about to abandon their farming activities for other jobs. Both large and small farms are thus increasingly abandoned, and the trend is that this will continue unless actions are taken.

By initiate a process and a model among civil servants at the municipalities alongside road 190, the project has been able to collect the present status and future plans for transitions, land leases and other measures for both private and public farmland.

The outcome of this pilot project will be a duplicable model and a first iteration of a map in constant transforamation of available land and its future potentials. This map will be a valuable interface for municipalities, but also private land owners, to make land available to new entrepreneurs within the green sector. Further, a action plan in order to connect green entrepreneurs with suitable land has been developed. The expected results is to stimulate new job opportunities, support a generation gap, increase local food production, increase self-sufficiency in the area, trigger new business models which includes the dynamic between urban-rural and to create a platform for a greater demographical and ethnical/cultural integration in the peri-urban/rural landscape.

Inspiration

Falkenberg Municipality runs a project called "Live your dream" which aims to create good opportunities for living rural areas. Part of the project is to take advantage of uninhabited houses in the countryside.They started by making a list of houses that had sewage but no one registered as living on the address. They managed to put together a list of 1300 houses. Not all were uninhabited, some were used as summer cottages, but there were abandoned houses, farms and others that could be saved.

Since then, they have tried to broke houses that can be rented out or sold. They have collaborated with brokers and with the television that made a major national impact.

They have until April 2019 managed to list about 50 properties ready to shift owners or to bet let. About 30 of these have got new owners or have been rented out and they have a list of another 20 which they try to match against a list of 120 contractors interested in moving out in the countryside of Falkenberg Municipality and start business.

Falkenberg have succeeded in showing that the value of living in the countryside has become higher and that it has contributed to e mental change and a positive price trend.

The main focus has been on finding abandoned houses. The surrounded farmland has been less of interest.

The mapping begins…what to look for?

Its rather complex, finding a generic model for localize underutilized land. There are many ways farmland can be perceived as abandoned or underutilised. There is also a multitude of ways opportunities can arise on these properties such as leases, both from private and public owners, cooperation with present owner and buying the land.

First step is to map the publicly owned farmland and additional houses. Get a list of the leases. Investigate how well it is utilised. Questions that can arise along the road: Can leases be split if its not fully used and could that be something desirable for the current leaseholder? How long are the leases? If the farmland isn't used in a way that fulfils the contract, can it be terminated and filled with new green entrepreneurs? If the house is tied to a leaseholder can the land be separated from the house? Are there other opportunities to find houses for living nearby?

In order to get this information, find your local public servant that works with farmland leases on public land (if there is any).

When finding private underutilised or abandoned farms and farmland start with a roadtrip in your specific area of interest, bring a drone, take pictures, pinpoint the addresses of places that looks deprived or not used. Talk to locals and ask for leads on the specific place or any abandoned places in the close proximity.

Other leads to investigate is if there is an active garbage scheme connected to the estate. If there is none the house is to some degree abandoned. Sometimes abandoned houses and farmland is related to family disputes over heritage and or owner living far away.

It can also be useful to have students connected to this kind of mapping. In our case we had a student from Uppsala University. The student has been working with intervjus among landowners/farmers. To som extent by telephone and to some by paper enquieries. The result of this study is not yet finished but will be early spring 2021.

Modelfarm, Angereds Gård

The ecosystem of farming in the Gothenburg area

The ecosystem of farming opportunities in the Gothenburg area is built around four tools, here is a short summury of them (The mapping of abandoned farmland is excluded):

The Model Farm is a highly productive small-scale farm unit, providing food and education. By showcasing a business model behind a sustainable and successful small-scale farming enterprise run within a municipality, the Model Farm will serve as a driver for the integration of regenerative farming practices in the continuous evolution of urban and rural multifunctional landscapes.

Testbed Angered

The Testbeds, combines low entry levels with essential infrastructure and focus on developing knowledge required to successfully run a commercial business using sustainable farming practises.

The test sites Angered and Skogome were initiated in order to increase urban food production and further green entrepreneurship in and around the city centre. Arable land owned by the municipality is currently underutilized and focus is often on recreation rather than food production. The test sites offer a starting ground for developing small scale agricultural businesses with minimal investment needs and allows for incremental growth within the test sites as well as the possibility of relocating to larger plots of land within the municipality. The test sites offer basic and essential infrastructure including fencing, water distribution and lockable tool sheds. In addition, the city can provide financing for polytunnels and greenhouses with long term payment schedules added to the rent, enabling investments that are especially hard to finance using traditional bank loans among green entrepreneurs. The test sites are one out of three foundations for successful green entrepreneurship, the other being the model farm offering a mix of hands-on examples of best practise and the third the incubator with focus on viable business models.

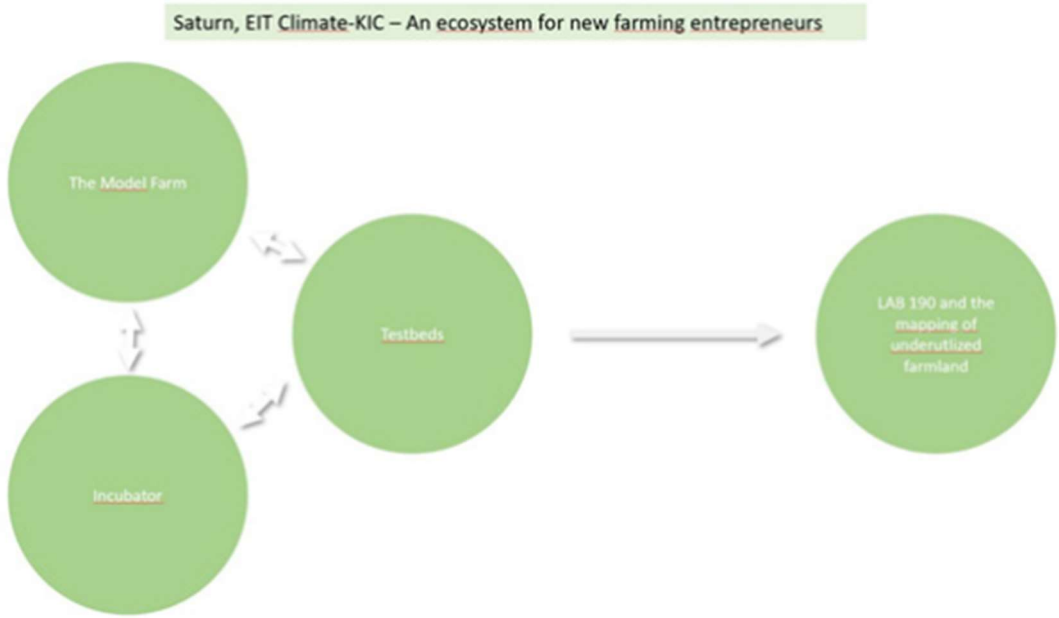
The Farming Incubator aims to increase the number of local/ecological farmers in Swedish Cities. This is done through agripreneurship training (agricultural entrepreneurship) and with a strong collaboration with the Gothenburg municipality who offer access to land.

The aim is achieved by gathering, creating, testing and sharing successful business models relevant to the farmers context: low investment, small surfaces, direct sales and high sustainable values. It consists of a winter training program where 10 new entrepreneurs per year get access to the network, training, workshops and support throughout the farming season. At the end of each season, a feedback is given to the municipality to help in the selection process for land access.

Through increasing number of entrepreneurs, we believe in boosting the number of farmers, make a better use of empty and/or farming land in and outside of the city and contribute to reduced transport

and packaging, furthermore increase consumers knowledge about the environmental impact of the food system.

It can be illustrated like this:



SATURN: Toolbox Series of
Sustainable Urban-Rural Landscape

Market Gardening Manual

Clara Hansson, City of Gothenburg

A Toolbox Series of sustainable urban-rural landscape:

Clara Hansson, City of Gothenburg

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Market Gardening Manual

Tool details

Title:

Objective:

Geography:

Organisation:

Financing:

Time:

Link:

Setting up a Market Garden

When looking for a piece of land to start up a Market Garden, there are a number of factors to take into account. A “perfect” site will be hard to find, but by identifying and balancing different key factors with both personal and business-oriented needs and wants, a much more realistic judgement can be made. The evaluation process takes aim at answering an important question: Is this really the farm for you?

The following chapter outlines the basic key factors, from an economical, ecological and social point of view.

Location - Access to market

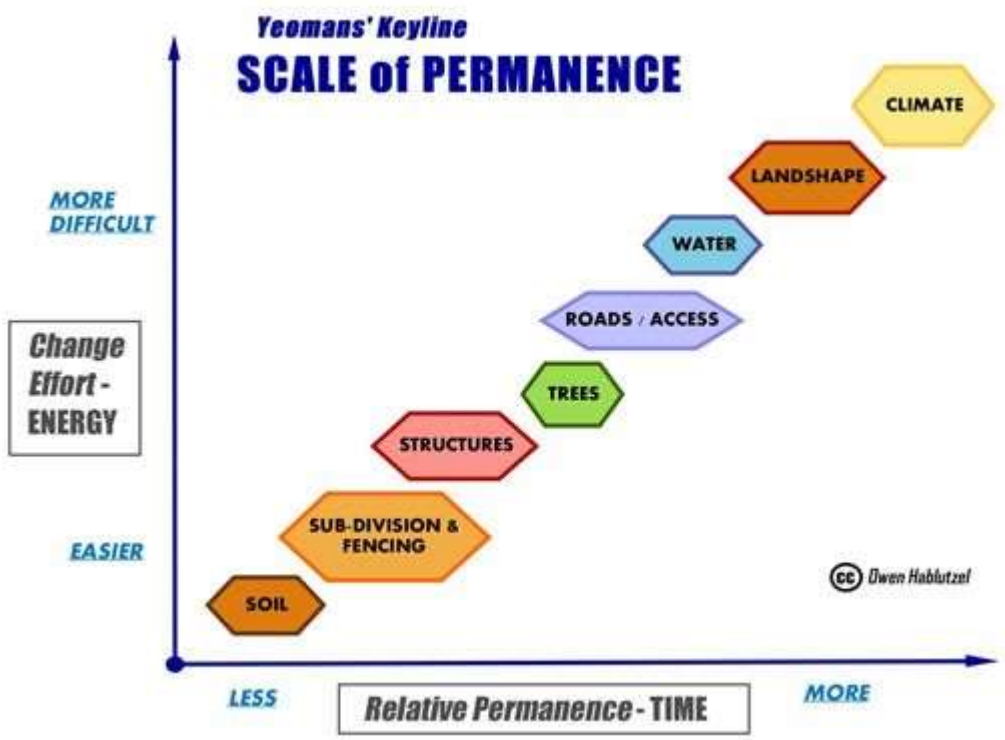
The location of the farmland will influence what types of crop to grow depending on what type of sales and sales channels to expect. Take inventory of the nearby market. Which famers are already selling their produce in this area, and what type of produce are they selling? What sales channels exist? How far away is the farm in relation to different sales points? What customer base can be expected? Put these observations in relation to what kind of logistical set up the farm shall have. Deliveries by car, truck or bike? Deliveries to restaurants, drop-of locations, private homes? On-site sales via a farm stand?

Understanding the market is key since a lot of working hours will be spent harvesting, packing and selling the crops produced. Turning this part of the farm operation into a smooth flow is just as important as having an efficient strategy for the field work. If sales are not working out, the resilience of the farm operation is severely damaged. Finding the right customers, adapting new strategies step by step and building strong relations is what keeps most farms running even during harsher economical circumstances.

This topic is covered in depth in from an entrepreneurial frame of mind in chapter XX, [Cyrille, Saba?]

Location – Site specific factors

When looking for land, consider underlying factors before you move ahead into details. It can be helpful to use Yeoman's Scale of Permanence as a reference to recognize how easy or difficult it will be to change different aspects of the farm over time.



For example, the climate and the topography of the land will not bend to the will of the farmer. Will the site provide enough frost-free growing days in a season? Roads and access to water are costly long-term investments, benefitting from correct placement from the start. What's the status to begin with and where can this type of infrastructure best be integrated? Working with enriching the topsoil can have an impact relatively quickly. What types of organic matter are easily available in the vicinity of the farm? Can the nutrient loops be closed in interaction with the surrounding community and other farmers, or is there a need for long distance inputs?

With Yeoman's scale in mind, identify access to basic but important components: Land, water, roads, buildings or sheds (preferably including a toilet and hand washing station), electricity and fencing (if needed).

If these key infrastructure components are not already in place, it is wise to either make a plan and budget for installing them as soon as possible, or to find another better equipped plot of land. Do not start farming without access to basic farm needs. The stress of not having water for irrigation, a shed or building for tools, a road for vehicle access etc will be too much of a challenge for a serious start-up farming operation. Weather and seasonal shifts alone will be enough to handle.

Farm design for a Market Garden

A Market Garden is based on a human scale, with tools, bed shape etc attuned to the measurements of the human body rather than machinery. A smooth, efficient work-flow is of the essence to ensure the well-being of the farmer, both physically and mentally. The weekly and yearly rhythm of planning, seeding, transplanting, watering, weeding, fertilizing, harvesting, packing, transporting and selling the produce to market thus feeds directly into the layout of the farm. The fewer steps a farmer needs to take each day, the better. Centering the farm design around a functional core infrastructure and bed layout helps building efficiency from scratch.

Allow for the design process to take some time since it will influence the farm in the long term. An easily remembered acronym used to guide this process is SADI: Survey, Analysis, Design, Implementation. First get the facts straight and make a plan, then start digging. Use this a friendly reminder, both when looking at land and when working with the actual design work.

Make sure to sketch a few different versions putting all necessary elements into place: Blocks of permanent beds, pathways, washing and packing station (preferably with a roof), cool harvest storage, vehicle access at pick-up point, tool shed, water access points and irrigation system, compost piles, indoors shelter for breaks and on-site-administration needs, toilet, hand washing station, access points and parking for car and/or machinery. If planning to use permanent green house structures, include those. If the site is windy, plan for hedges or other types of wind breaks.

Ask for advice from other Market Gardeners, preferably local ones. Present the different sketches, discuss pros and cons with positioning the different elements in different places. Identifying weaknesses such as frost pockets, wet areas or insufficient vehicle access can shift the whole design. If relevant, integrate the feedback in a final version.

Bed system

The standard width of a Market Garden bed is 75 cm, while the length usually varies between 10-30 m. Pathways vary from 30-45 cm with the greater width allowing for easier access during weeding, harvesting etc.

The layout of the beds is designed with available farmland, sun angle, slope and prevailing winds in mind. A standard orientation in the Northern hemisphere is N-S to enable the highest amount of sun exposure. If it’s a sandy soil and the farm is situated on a slope it is generally a good idea to orient the beds at a 90-degree angle to the inclination, to prevent run off of water and nutrients. If it’s a clay soil the opposite is true because the paths might otherwise act as ditches and catch and store too much water, creating a water-logged soil. If the farm is situated in a windy area it is generally a good idea to orient the beds according to the prevailing wind direction. For ex, if the prevailing winds come from the West, beds should be oriented E-W. This is particularly important if polytunnels will be an integrated part of the farm design, since they withstand strong winds way better if the wind hits them from the gable, not from the side.

Taking these basic aspects into account, design a bed layout where as many criteria as possible are fulfilled, and tweak the design in accordance to the parcel of land.

Soil

The soil will determine the basis of a farming operation. Make sure to dig around and sample the existing soil to know if it is a sand, loam or clay soil.

Crop planning

Financial planning

Rules and regulations

Techniques used in market gardening

Soil building and micro biology

Water management and irrigation methods

Composting

Agricultural history and future scenarios

Intro to Market Gardening and SPIN-Farming

Comparison of Market Gardening, Regenerative Farming, Agroecology, BioDynamic agriculture, Organic agriculture (Swe vs EU vs USA), Permaculture Design, Holistic Management, Keyline Design.

Practical experience

Data tracking and management (sales, time, crops)

Nursery work

Bed prep

Starting from scratch with a two-wheel tractor

The **two-wheel tractor** allows a farmer to start building beds either from a plowed or non-plowed starting point. If the land is plowed, the usage of the two-wheel tractor is very straight forward. If the land is currently a pasture, the farmer will need to work the tractor and the soil a bit more.

The first step in preparing the beds is to bring the farm design, a 50m tape measure and marking poles. In accordance to the farm design and in-field permanent elements such as trees, fence posts, buildings, identify one corner of the bed system and mark it with a pole. From this corner measure up a square of for ex 10 beds. Mark the other corners of the square with poles and then cross measure to ensure straight angles. [drawing], Make sure to be in line with the field design and the surrounding permanent elements, and adjust if needed. Once these beds are put in place, they will also be permanent. Use more poles to mark the end of each bed and pathway along the edge of the square, putting down a pole at the alternating distance of 75 cm per bed and 45 cm per pathway.

Bring the two-wheel tractor with a **rotary plow** attached. The screw of the plow pushes the soil to the right, creating a slanted bed side, so it often makes sense to start plowing the field from left to right. Most tractors don't have a specific sight mounted to the machine, so instead figure out what feature to use to align your tractor with the side of the bed about to be plowed. The wing nut on top of the air filter is an example of a feature that works well as a sight. The wing nut shall line up with the poles at the start and at the end of the bed. Imagine a string in between the two poles (but don't use one, it

tends to move too much to actually help), then remove the starting pole to avoid driving over it. Run the tractor slightly forward so that the rotary plow is at the edge of the bed, engage the PTO and start plowing, following the imaginary string and aiming at the pole by the end of the bed.

The plow will form a slanted side, digging into the soil of the pathway and pushing it up to the right-hand side creating the first side of a raised bed. Nearing the end of the bed, put the machine in idle, remove the pole in the finishing corner, plow the last few meters and then disengage the PTO. With a quick 180-degree lift-and-turn, run the tractor in position with the next set of poles. Repeat the lining up using the wing nut sight, move into position and plow the second side. You will now have formed the base of a bed, 75 cm wide at the bottom. Seen as a cross section, the slanted sides and a lower untouched middle section now gives the bed a U-shape. This shape will be flattened and leveled further on, using the power harrow.

As you turn the tractor 180 degrees to start a third run, again use the poles and wing nut to align the tractor but also make use of the half-made pathway, positioning the tractors left wheel in the pathway. This will help guiding the tractor in plowing in a parallel, straight line. From now on, every second turn with the tractor you will have the pathway as a guide, thus speeding up the process of bed forming.

Using the poles as directional marks, keep plowing beds. It is useful to plow a minimum of four beds each time you bring out the tractor, to ensure a smooth workflow with a minimum of interruption.

While plowing the tractor often tends to steer of to one side, creating a bend in the supposed-to-be straight side of the bed. To oppose this bananalike shape, make sure to keep eying the sight line both back and forth while plowing, adjusting the trajectory when needed. If a bend has been created, disengage the PTO, back up and align the tractor, reengage the PTO and reshape the side as needed, moving material either from the pathway and into the bed, or slicing of a bit more soil from the side of the bed [drawing].

Depending on soil type and conditions, a small ridgeline might form in the middle of the path. This can easily be removed with the plow, making an extra pass right down the middle of the path to level the surface.

Strive to form beds with the tractor when the soil is in good condition moisture wise, since this will make the work easier and lighter. If the soil is too wet, the plow tends to get sucked down, and if the soil is too dry, the plow tends to bounce on the surface.

When operating the tractor in non-perfect conditions, it is useful to counter these movements with your own body weight. If you cross into a dry area, push down on the handles and lean into the machine with your weight to help the plow push deeper. If you cross into a wet area where the plow gets sucked down, simply help lifting it a bit by pushing upwards with your legs (making sure to spare your back). Tuck your arms along your side and rest your elbows on the top of your hip bones as you hold on to the handles with a light grip. Be mindful about your posture. The less physical strain you put on yourself to operate the tractor, the more hours you can keep on working. This in turn means less time spent on moving the two-wheel tractor back and forth to the storage shed due to short stints of work as a result of physical fatigue.

Initial time investment, plowing: 15-20 min per 20 m bed.

Maintenance, plowing: 5-10 min per 20 m bed.

The next step is to swap the rotary plow for a **power harrow.** This is a tool which is bulkier to maneuver on uneven land due to its weight and large surface area in contact with the ground. Getting stuck takes

time and energy away from the field work, so keep in mind what problematic, uneven areas to avoid driving over as you come into the field. If there is a ditch at the start of the bed, make sure to level it out with some soil or a board, otherwise the nose of the tractor will most likely get stuck in the ditch.

Position the tractor at the center of where the bed starts, with the width of the harrow covering the full 75 cm. Lower the teeth of the harrow fully by turning the handle above the mesh roller counterclockwise, approximately 15 turns from the highest possible position. This will bring the teeth down to a harrowing depth of about 10-12 cm. Engage the PTO and harrow the bed back and forth, allowing the teeth and the mesh roller to break up clumps and root mass in the soil and to level the surface.

If creating beds directly in a non-plowed pasture, most likely there will be a lot of root mass to work through both while plowing and harrowing. In this scenario it is advisable to first run down the U-shaped middle of the bed with the rotary plow to break up the root mass before using the power harrow to break up the last roots and level the bed.

Initial time investment: 10 min per 20 m bed.

Maintenance: 5-10 min per 20 m bed.

Now it is time to park the tractor and get back to manual labor. Using a **broadfork** as wide as the bed surface, start forking through each bed at a 10-15 cm interval. The aim is not to turn the soil over but simply to aerate it by creating many new cracks and porous spaces. The first time a bed gets broadforked is also an excellent time to remove perennial weeds, large stones and any other odd findings that may lay resting in the soil.

Align the tines of the fork with the end of the bed. Step onto the horizontal steel bar, finding your balance by holding on to the handles and using your body as a balancing weight. Wiggle the broadfork and your body back and forth in the lengthwise direction of the bed to make the tines slide into the ground. Depending on soil conditions, this will require more or less of an effort. Best practice is to use the wiggling motion and not to jump on the bar to force the tines into the ground. Jumping will require more strength and is more tiring, while wiggling turns the job into a fitness exercise and allows for a longer duration of work.

Continue to wiggle the tines at least halfway into the soil, then step of backwards and pull back heavily at the handles to leverage the soil in front of the tines upwards. This will create a first cracking of the soil. Move the broadfork handles into a vertical position again and step back onto the steel bar to keep wiggling the full length of the tines into the ground. Step of backwards and pull back hard at the handles to break up and reveal the deeper layers of the soil. If perennial weeds or stones are present, make use of this exposure of the soil to remove roots etc. This may be time consuming but is a good investment to erase future problems. As you move the handles into an upright position again, the soil will resettle but it now has a fluffier texture.

Take one step backwards and move the tines 10-15 cm towards you. Repeat the wiggling and cracking, remove weeds etc, move the broadfork another 10-15 cm, and keep repeating this motion the full length of the bed.

The surface of the bed will now be significantly higher than before, as the soil is less compacted. The more porous texture of the soil will allow for easier transport of both gas and fluids, which helps the microbiota in the soil to thrive due to enhanced living conditions.

Broadforking a bed shall be done at least once a season, commonly at the start of the season, and depending on what crops have grown in the bed it can be worth the time to broadfork in between successions as well. It is also an excellent way of monitoring the soil quality in different beds and sections of the filed, since it provides a rather detailed sensory understanding of the soil. This allows the farmer so make better informed choices regarding what amendments such as manure or compost to add or where to plant crops with specific needs in relation to for example root space.

Initial time investment: 40-60 min per 20 m bed.

Maintenance: 20-30 min per 20 m bed.

To finalize the shaping of the bed, use a 75 cm broad aluminum **bed preparation rake**. The standardized size helps you to easily form the correct width of the bed while working. If the soil is heavy, it is convenient to use a slightly narrower and heavier steel rake or another sturdier tool to start the job. Walking in the pathway on one side, rake the soil from the opposite path onto the top of the bed. Use the weight of the rake to break up clumps into finer soil congregates. By dragging the soil from the path on to the bed you are both preparing a smoother pathway and raising the bed even further, while also stabilizing the slanted sides of the bed. Especially if you are growing in clay soil in a colder, wetter climate, a raised bed will prolong your season by creating a heating effect during the shoulder seasons and it will also help to keep the soil drained.

As you rake your way down the length of the bed, keep dragging soil from the pathway onto the surface and push the material back and forth on the top of the bed to break up clumps and even out the surface. Strive to create a smooth, level bed surface. Using the broad bed preparation rake makes it easy to work the bed into the correct width of 75 cm since you are bringing along a constant measure. When you finish down the first side, step into the opposite pathway and continue with the second side.

Make sure to keep an eye on the straightness of the bed. If there is an obvious banana shape when you look at the bed from one end, use the rake to correct the bed by dragging soil from the bulging side to the skinny side. Its is definitely worth the time investment to finalize your bed shaping with this step, since this will be a permanent bed and the efficiency of planting, weeding etc relies on straight beds and straight lines.

Initial time investment: 30-40 min per 20 m bed.

Maintenance: 10-20 min per 20 m bed.

Before seeding or transplanting a crop into the bed, adding a thick layer of **compost** is the final step. This should be a well-blended garden compost or mulch. The compost can be brought in with a wheelbarrow or with a garden cart, or even with a small machine and trailer if the width of the wheelbase matches the pathways. Scoop out the compost with a shovel or spade. For a 20 m bed, roughly 500 liters of compost will be needed. Use the bed preparation rake and form a 5 cm thick layer covering the full bed surface, but not the sides. Compost sliding into the pathway can be raked back up on top of the bed to not ad unnecessary organic matter and nutrients to the pathway. Make sure to smash up any larger clumps and to remove twigs and sticks. Strive to create an even, smooth surface where a seeding machine can be used without problems.

The aim is not to integrate the compost with the original soil, but rather to keep it as a dark cover on top of the surface. This will help with subduing the growth of annual weeds, creates a perfect seeding or transplanting surface, retains heat due to the dark color, reduces the forming of a hard surface and cracks in a clay soil and reduces the amount of transpiration in a sandy soil. The soil biota and plant

roots will help to slowly integrate the compost into the deeper layers of the soil, which means that an annual refill is often needed, especially for the first 3-5 years.

Initial time investment: 30-40 min per 20 m bed.

Maintenance: 30-40 min per 20 m bed.

While the beds are being prepared it is valuable to have a cover to pull over them before they are fully formed and ready to get planted. This helps keeping the moisture in the ground on sunny days and smothers the growth of perennial and annual weeds, working as a passive weeding strategy. For this purpose, most farms use black or black-and-white **silage plastic** cut into pieces of a convenient size, covering for example four beds. The same sheets of plastic will be used at the end of the season to cover up the field during the winter months. The plastic should be thick, at least 120 µm, to last for many seasons. The plastic can be weighed down with for example sandbags or pallets. Any sharp edges can create rips in the plastic in windy conditions so make sure to only use heavy material with rounded edges that won't bite into the plastic. When not in use, fold the plastic (preferably in a dry condition) and store it in a dark space to prolong its lifetime.

Infrastructure set up

Using tools

DS & TP techniques

Tunnel or greenhouse cultivation

Outdoor cultivation, frilandsodling

Crop management

Weeding

Harvesting

Washing and packing

Transport and delivery

Building projects/Maintenace

Business side of farming

Marketing strategies

Setting sales goals

Customer relations

Accounting

Farm insurance: People, produce, infrastructure

Time management and need/cost for employees: Scheduling of tasks on a daily, weekly, monthly and seasonal basis

White collar perspective

Land management – egenägd mark, hur använda. Infrastucture etc

The importance of land to lease

Future trends – ideas and will to work as an urban farmer

Case study: GBG. Test beds, “from box to hectar” etc

Case study: Angereds Gårds learning environment

SATURN: Toolbox Series of
Sustainable Urban-Rural Landscape

Rural-Urban Metabolism (RUM)

A tool to enhance the rural-urban connections

Andreola M., Betta A., Ciolli M., Favargiotti S., Forno F., Gretter A., Pianegonda A., Zatelli P.

A Toolbox Series of sustainable urban-rural landscape:

Andreola M., Betta A., Ciolli M., Favargiotti S., Forno F., Gretter A., Pianegonda A., Zatelli P.

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Contents

Background

The SATURN project aims to reintegrate the natural assets within the city climate change impact strategy and to expand and feed its model by creating a wider initiative. Each territory has a number of pilot cases being part of the three year's project (2019-2021). The pilot cases all include innovative ways of connecting the rural and the urban landscape. The aim is to enable the upscaling of the pilot cases as to work towards system innovation.

As part of the work, several tools are developed from the pilot cases as well as from other best practices within sustainable urban-rural landscape. The pilot cases are presented in the green series; SATURN: Pilot Cases for Sustainable Urban-Rural Landscape.

The best practices are presented in the pink series; SATURN: Best Practices for Sustainable Urban-Rural Landscape

SATURN: Toolbox Series of Sustainable Urban-Rural Landscape present the tools as listed below. The tools are generic in nature and with the potential of inspiring other parts of Europe and globally.

- Fostering on Municipal Land using testbeds, Gothenburg
- Farming incubator tool, Gothenburg
- Mapping underutilized and abandoned farmland and farms, Gothenburg
- Market Gardening Manual, Gothenburg
- Governance model - eco I socio I digital aspects, Trento
- Rural Urban Metabolism (RUM), Trento
- Youth engagement and mentoring for business development, Trento
- Stakeholder Engagement tool, Birmingham
- Capacity building tool, Birmingham
- Visioning tool, Birmingham

Summary Tools

SATURN project has an objective to build a comprehensive and adaptive common framework and to test and improve the framework in an iterative process. The work entails mapping best practices regarding sustainable land use models reconnecting cities to their surrounding areas and to create a toolbox of models and strategies that can be replicable and scalable. The toolbox includes several tools that can be used by city planners, facilitators, developers and practitioners. The aim of the tools is to provide concrete guidance on how to implement a certain project or an aspect of a project relevant to the SATURN project. The tools can be derived from the pilot cases of the SATURN project or from best practices collected or from our satellite cities. The tools vary in format and content but have in common that they address ways to enhance a sustainable rural-urban landscape.

Rural-Urban Metabolism

Tool details

Title: Rural-Urban Metabolism

Objective: Analyse cities and their surroundings with the purpose to address new urban and rural plans towards a circular and sustainable future

Geography: Trento

Organisation:

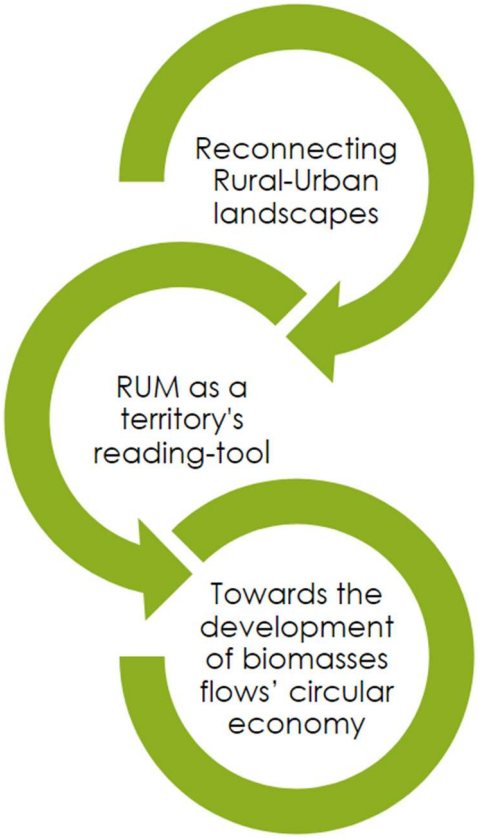
Financing: SATURN project

Time: 2021

Link:

What is Rural-Urban Metabolism?

The Rural Urban Metabolism (RUM) is a territory's reading tool that aims to analyse cities and their surroundings with the final purpose to address new urban and rural plans towards a circular and sustainable future. The term "Rural", prefixed to the well-known concept of Urban Metabolism, underlines the need for a reconnection between rural and urban landscapes, which is the main objective of the SATURN project.



Commonly, the Urban Metabolism (UM) tool maps fluxes of materials and energy that cross cities and territories. In the Rural Urban metabolism tool, the fluxes are mapped with a specific focus on biomasses, which are considered key elements in rural-urban reconnection strategies. This aspect is strongly linked with the other SATURN's tools as the Governance Model, and the tool to foster Youth Engagement and Green Entrepreneurship. The Rural Urban Metabolism has been thought to support the mapping of the different dimensions of sustainability including economic and social ones. The calculation of biocapacity and ecological footprint of the territory pictures the ecological balance (or unbalance) of the territory while the qualitative interviews shed light on the economic and social sustainability of certain modes of production and consumption. At the end of the process, a picture of the foodshed (the territory needed to sustainably feed the boundary area) will be available. In particular, the definition of the foodshed is a fundamental step to develop Urban Food Policies, which is a common purpose of each SATURN's HUBs (Birmingham, United Kingdom; Goteborg, Sweden; Trentino, Italy).

What is the purpose? Objectives and focuses

The relationship between urban and rural areas is negatively affected by the landscape fragmentation and the weakness of governance models. SATURN aims to bring together resilience strategies against climate change by reconnecting urban and rural landscapes in a multi-functional and multi-level territorial system. Consequently, the mapping of the macrosystems that influence the territory's development, including the different components of sustainability (ecological, social, and economical), is the main aim.
The aim of the RUM is to calculate the anthropic pressure in a defined region to promote new sustainable territorial plans.

The Ecological Footprint Analysis compared with the territory's biocapacity allows us to understand the relationship between natural resources supply and demand and to improve the circularity of the biomass economy. Moreover, it could be a tool to develop the connection between urban and rural landscapes when it is accompanied by strategic visions and plans to promote green areas as fundamental resources for the environment and social well-being. The RUM is relevant to policymakers because it divides the complex functioning of landscape systems into subsystems to count the (un)sustainability of each flow. By doing so, it shows the relationship between the subsystems, and it helps the identification of the drivers of resources' use and pollution emissions, i.e., the impacts of energy and materials flows in the environment.'

The RUM has been developed in the Trentino Hub, but it has been designed to be replicable and scalable in other territories. In order to guarantee the possibility to replicate this analysis by professionals, technical officers or local administrators, who may not be experts in the Urban Metabolism field, it has been deemed necessary to simplify the model in comparison to other Urban Metabolism examples. This adaptation has led to a decrease in the calculation precision but, as this is not the main aim of the RUM tool it has been considered as a necessary change. The final objective is to address a comprehensive and flexible tool to guide decision-makers and policymakers in the implementation of multi-functional landscapes and sustainable, local, and circular supply chains.

Background

The RUM purpose is to improve system thinking and the circularity of policies to transform the current linear approach to planning into a more circular vision. This is a challenge whose aim is the “transition from a linear perspective to a networked and cyclical perspective, in which wastes become new inputs, reducing dependence on the hinterland for resources” (Sanches and Bento, 2020).

The Ecological Footprint Analysis (EFA) quantifies and evaluates the Environmental Carrying Capacity (ECC) and is based on the Material Flow Analysis (MFA). The EFA estimates the amount of natural resources required by a city (or a region) to function. The Biocapacity (BC) analysis defines the capacity of a territory to renew the resources consumed by people and processes and its ability to assimilate waste.

By comparing the EFA and the BC of a certain Region, it is possible to define if the territory is a debtor or a producer of natural resources. When Ecological Footprint is greater than Biocapacity, the territory is defined as a ‘biocapacity debtor’, indicating that territory's consumption of natural resources and services is greater than the capacity of its ecosystems to supply them. On the contrary, when Ecological Footprint is minor than Biocapacity, the territory is called a ‘biocapacity reserve’ meaning that the territory's availability of natural resources and services is greater than the residents' demand (Borucke et al., 2013). By implementing the EFA and the BC into spatial management, it is possible to improve the planning of long-term natural resources consumption, provision, and regeneration.

The focus on the biomass flows, and in particular on the food sector, is related to the potential impacts of food supply chains on landscape and ecology. In terms of environmental contributions, the shortening of food supply chains and the supporting of local food productions could encourage small farmers to diversify their crops and thus contributes to the maintenance of the landscape, agricultural biodiversity, and suitable habitat for wildlife (O'Hara and Stagl, 2001). Short food supply chains have the advantage to lower the energy consumption and emissions due to a reduction in the travelled distances - the so-called "food miles externalities" (Pretty et al., 2005) - or the reduction in food conservation times.

Short supply chain systems such as home delivery and solidarity purchasing groups also reduce the use of packaging by reusing it as far as possible. In any case, however, to express an overall opinion on the potential energy savings related to the various Alternative Food Networks (AFNs) would require an assessment based on the entire life cycle of the product (Edwards-Jones et al., 2008), also because as illustrated in the research "Strengthening European Food Chain Sustainability by Quality and Procurement Policy" (Malak-Rawlikowska et al., 2019) the positive contribution in terms of environmental externalities of the short supply chain is not to be given for sure. An inadequately organized and optimized logistics organization can, on the contrary, lead to a negative balance in terms of energy costs and carbon footprint.

An interdisciplinary methodological approach

The RUM is based on an interdisciplinary approach that takes into account ecological, social and territorial planning disciplines and perspectives. The idea is to create a tool that analyses the territory from different points of view. This challenge is linked to both the first UM concept, defined by Karl Marx, and its latest theoretic developments, often concentrated in the material and energy flows analysis.

Origins of the UM concept trace back to the works of the sociologists Karl Marx and Friedrich Engels and their studies on the social structures related to how materials are extracted from the earth. In 1883, Karl Marx first mentioned the 'metabolism' metaphor to describe the interactions occurring between the humans and the raw materials of the earth which are extracted through labour (Zhang, 2013). By using this metaphor, he introduces the idea that physical labour alters the biophysical processes. Following the two sociologists, the biologist Patrick Geddes tried to exploit an empirical description of metabolism at a macro-scale. He has been the first one to establish a 'budget' translating into physical quantities all energy and material inputs or outputs. Until 1965 the method was not correctly exploited and developed. In his book "The Metabolism of Cities", Abel Wolman investigated all the fluxes of a hypothetical American city of 1 million inhabitants (Wolman, 1965; Kennedy, Picetl, Bunje, 2010) and he also introduced the concept of a limit in the resources that can be exploited to obtain a certain output and enhanced the knowledge about the system-wide impacts of the goods we produce and waste.

Other 30 years have been needed for Herbert Girardet to document the connections between urban metabolism flows and sustainability. Thanks to him and his pioneering works in the fields of 'industrial ecology' the topic of circular economy and circularity in the use of resources have been introduced to the scientific community. He considered circularity as a critical feature of natural environments compared to linear patterns typical of human society. By now the concept has become part of several studies worldwide. Various accounting methodologies and approaches exist depending on the research purpose and aims of the analysis. Hereafter we adopt the classification proposed by the "Metabolism of Cities" think tank which is one of the most relevant at international level (https://metabolismofcities.org/).

Accounting approach and methods

The goal of the RUM is to be a tool that can also be used by non-experts and in contexts that can be very different from each other. Therefore, the utilized approach prefers analysis' methods that are as replicable and scalable in as many cities/contexts as possible, in some cases resulting in a loss of the accuracy of the data.

The assessment of the Ecological Footprint follows a consumption approach that accounts for the resource use required to satisfy the consumption of inhabitants and the corresponding pollution emissions. The amount of the required resources is based on both top-down and bottom-up approaches, and in certain cases follow a hybrid approach by combining the two. The top-down approach gives aggregate values by using regional or national data (which correspond to the NUTS3 level). These data are scaled at the urban level in a second phase of the RUM methods. This is a highly standardized method and it ensures the comparability of the results with other cities or regions.

Sometimes, the top-down approach does not fully represent the local conditions as data are collected at a national/regional level. On the contrary, the bottom-up approach uses local data through the direct

involvement of local stakeholders using data provided by the stakeholders themselves and surveys. It reflects more precisely the local conditions but its results are hardly comparable to other territories as they are strictly linked to the specific context. The accounting methodology is based on a Material Flow Analysis adapting the procedures to the specific needs of an Ecological Footprint Analysis. The MFA has been defined by Brunner and Rechberger (2004) as a "systematic assessment of flows and stocks of materials within a system defined in space and in time". It is based on the first law of thermodynamics stating that matter is neither created nor destroyed, therefore the total amount of resources is determined by the sum of material/energy imports and local production that is consumed locally from which the exports are subtracted.

Datasets

In this section a collection of the data needed for the Ecological Footprint Analysis is reported. In the first column terms used in the calculations are reported and in the second one the type of data is indicated. In the third column possible sources of data are proposed, but as some data are strictly dependent on the local context, adjustments could be needed.

Data [unit]	**Definition**	**Possible source of data**
I_N [-]	Number of inhabitants	National statistics
A_F [kg or l]	The annual weighted average amount of given consumed food per inhabitant	National statistics / Eurostat
	List of the most consumed food categories in Europe	Castellani V., Fusi A., Sala S. (2017) *Consumer Footprint. Basket of Products indicator on Food*. EUR 28764 EN, Publications Office of the European Union, Luxembourg, ISBN 978-92-79-73194-5, doi:10.2760/668763, JRC 107959
I_{CO2} [$kgCO_{2eq}$/kg or l]	CO_{2eq} generated per kg or l of given food at all levels of production and consumption	Monforti-Ferrario, F., & Pascua, I. P. (Eds.). (2015). Energy use in the EU food sector: State of play and opportunities for improvement. Joint Research Centre, European Commission. Luxemburg.
EQF [-]	Equivalence Factor	Global Footprint Network https://www.footprintnetwork.org/
Is_{CO2} [gha/tCO_2]	Global Carbon dioxide sequestration rate	Mancini M.S., Galli A., Niccolucci V., Lin D., Bastianoni S., Wackernagel M. (2016). *Ecological footprint: refining the carbon footprint calculation*. Ecol. Indic. 61, 390-403.
A_{FW} [kg]	The annual average amount of food waste in kg per inhabitant	National statistics / Eurostat
IFW_{CO2eq} [$kgCO_{2eq}$/kg]	CO_{2eq} in kilos generated per kg of food waste	J. Pérez, J. M. de Andrés, J. Lumbreras, E. Rodríguez. (2018) *Evaluating carbon footprint of municipal solid waste treatment: Methodological proposal and application to a case study.* Journal of Cleaner Production, Volume

		205. Pages 419-431, ISSN 0959-6526, https://doi.org/10.1016/j.jclepro.2018.09.103.
A_{SEL} [kWh]	The annual amount of electricity needed for the sewage treatment plant and sewage pumping from households	Municipal company
IEL_{CO2eq} [tCO_2/GWh]	The total emission in CO_2 in tons generated per GWh	Municipal or local energy company
A_{Gbn} [t]	The annual amount of given garbage fraction generated from households	Municipal company
$I_{Gbn}CO_{2eq}$ [tCO_{2eq}/t]	The total emission in CO_2 in tons generated per 1 ton of given garbage fraction	J. Pérez, J. M. de Andrés, J. Lumbreras, E. Rodríguez. (2018) *Evaluating carbon footprint of municipal solid waste treatment: Methodological proposal and application to a case study*. Journal of Cleaner Production, Volume 205. Pages 419-431, ISSN 0959-6526, https://doi.org/10.1016/j.jclepro.2018.09.103.
A_{Gbm} [t]	The annual amount of mixed and mixed-packaging garbage generated from households	Local management company
$I_{Gbm}CO_{2eq}$ [tCO_{2eq}/t]	The total emission in CO_2 in tons generated per of mixed and mixed-packaging garbage generated from households	J. Pérez, J. M. de Andrés, J. Lumbreras, E. Rodríguez. (2018) *Evaluating carbon footprint of municipal solid waste treatment: Methodological proposal and application to a case study.* Journal of Cleaner Production, Volume 205. Pages 419-431, ISSN 0959-6526, https://doi.org/10.1016/j.jclepro.2018.09.103.
A_{WEL} [kWh]	The annual amount of electricity needed to supply water to households including the entire water production technology	Municipal or local energy company
$I_{ELCO2eq}$ [tCO_2/GWh]	The total emission in CO_2 in tons generated per GWh	Municipal company
A_{EL} [kWh]	The average annual amount of electricity used by inhabitant	Municipal company
$I_{ELCO2eq}$ [tCO_2/GWh]	The total emission in CO_2 in tons generated per GWh	Municipal company
A_G [m^3]	The average annual amount of gas used by inhabitants	Municipal company
I_{GCO2eq} [tCO_2/GJ]	The total emission of $kgCO_2$ generated per GJ of gas	Municipal company
I_{CV} [GJ/m^3]	The calorific value of gas	Municipal company
A_{kmB}	The annual number of kilometres	Municipal company

[km]	travelled by buses	
I_{BCO2eq} [$kgCO_{2eq}$/km]	The average emission of $kgCO_2$ generated per km of bus travel	Potter and Hall 2003
A_{kmT} [km]	The annual number of kilometres travelled by tram/light rail travel	Municipal company
I_{TCO2eq} [$kgCO_{2eq}$/km]	The average emission of $kgCO_2$ generated per km of tram/light rail travel	Potter, S. (2003). Transport energy and emissions: urban public transport. Handbooks in Transport, 4, 247-262.
C_N [-]	The number of registered cars according to given fuel type	National / Regional stats
A_F [km]	The annual combustion fuel per car for the 1.4-2.0 engine	Municipal company
F_F [MJ/l]	Fuel energy conversion factor	Hofstrand D. (2008). *Liquid Fuel Measurements and Conversions*. File C6-87.
I_{KCO2eq} [tCO_{2eq}/km]	The average emission of $kgCO_2$ generated per km driven by car	Juhrich K. (2016) *CO2 emission factors for fossil fuels*. Clim. Chang. 28, 45-47.

Assessment of the R-Urban sustainability

Ecological Footprint calculation

The calculation of Carbon Footprint is representative of the overall Ecological Footprint as the biggest impact on ecological footprint is given by the carbon-related cycle (emission and absorption).
According to Tukker, food and drink, transport, and housing account for 70-80% of the entire lifecycle impact of products (Tukker et al. 2006). In particular, households' consumptions are responsible for "65 % of global greenhouse gas emissions and 50%-80% of total land, material, and water use" (Froemelt et al. 2018), therefore their estimation could be a good indicator of the total emissions amount. Food consumption is responsible for 20-30% of the environmental burdens of total consumption, with meat products and dairy products sharing a major part of the total environmental impacts (Notarnicola et al., 2016). To comprehensively assess the impact of food consumption at EU level, the European Commission's Joint Research Centre developed in 2012 a lifecycle-based approach that focuses on specific representative products which are then up-scaled to overall EU consumption figures, named the Basket of Products (BoP) indicators (Notarnicola et al., 2016). The BoP regarding human nutrition is particularly significant, as food and beverage production and consumption are responsible for over one-third of the overall environmental burden caused by private consumption (Tukker et al, 2006). The BoP consumption is thus representative of 58% of the total apparent yearly consumption per inhabitant (933.2 kg/inhabitant) of all food and beverage products reported in Eurostat-Prodcom database (Notarnicola et al., 2016).

The CF of household consumptions has been analysed following the method proposed by Świąder (Świąder et al., 2018; Świąder et al., 2020).

According to Świąder (Świąder et al., 2018; Świąder et al., 2020), the CF of household consumption has been assumed as composed by:

- CF of Food:
    - Food consumption (CF_{FC})
    - Food waste (CF_{FW})
- CF of Housing:
    - Sewage (CF_{S})
    - Water (CF_{W})
    - Garbage (CF_{Gb})
    - Electricity (CF_{E})
    - Gas (CF_{GAS})
- CF of Mobility:
    - Ridership of buses and trams (CF_{BT})

- Car use (C_{FC})

Carbon Footprint of Food Consumption

$$CF_{FC} = \sum (I_N \cdot A_F \cdot I_{CO2} \cdot 10^{-3} \cdot EQF \cdot Is_{CO2})$$

Where:

I_N [-]	Number of inhabitants
A_F [kg or l]	The annual weighted average amount of given consumed food per inhabitant List of the most consumed food categories in Europe
I_{CO2} [$kgCO_{2eq}$/kg or l]	CO_{2eq} generated per kg or l of given food at all levels of production and consumption
EQF [-]	Equivalence Factor
Is_{CO2} [gha/tCO_2]	Global Carbon dioxide sequestration rate

I_N	542.739,00									
A_F	Annual consumption per All Inhabitants (kg)									
I_CO2	I CO2eq emission per unit of product (kgCO2eq/Unit of Product)									
EQF	1,280									
Is_CO2	0,33	http://dx.doi.org/10.1016/j.ecolind.2015.09.040								
Product group	Type of product	Unit	Annual weighted average consumption per Capita (kg)	Inhabitants (gennaio 2020)	Annual consumption per All Inhabitants (kg)	I CO2eq emission per unit of product (kgCO2eq/Unit of Product)	Total Emission of CO2eq per year (tCO2eq)	ISCO2	Total CFf per year (gha)	CF per Capita per Year (gha/ab)
	Beef	kg	13,87	542.739,00	7.527.789,93	6,102	45.934,57	0,334	19.637,95	0,03618304
	Pork	kg	4,02	542.739,00	2.179.097,09	4,227	9.211,04	0,334	3.937,91	0,00725562
	Poultry	kg	6,94	542.739,00	3.763.894,97	5,536	20.836,92	0,334	8.908,20	0,01641342
	Milk	L	44,53	542.739,00	24.168.167,67	0,700	16.917,72	0,334	7.232,66	0,01332623
	Cheese	kg	19,35	542.739,00	10.499.285,96	6,328	66.439,48	0,334	28.404,21	0,05233493
	Butter	kg	1,46	542.739,00	792.398,94	9,120	7.226,68	0,334	3.089,55	0,00569251
	Vegetable fats	L	11,68	542.739,00	6.339.191,52	3,541	22.447,08	0,334	9.596,57	0,01768175
	Sugar	kg	5,48	542.739,00	2.971.496,03	0,590	1.753,18	0,334	749,52	0,00138100
	Bread	kg	24,09	542.739,00	13.074.582,51	0,842	11.008,80	0,334	4.706,48	0,00867172
	Potatoes	kg	6,94	542.739,00	3.763.894,97	0,493	1.855,60	0,334	793,31	0,00146167
	Citrus fruit and bana	kg	17,16	542.739,00	9.310.687,55	0,482	4.487,75	0,334	1.918,60	0,00353504
	Apples	kg	55,12	542.739,00	29.913.059,99	0,385	11.516,53	0,334	4.923,55	0,00907166
	Coffee	kg	6,00	542.739,00	3.256.434,00	9,696	31.574,38	0,334	13.498,68	0,02487140
	Mineral and spring w	L	165,71	542.739,00	89.937.279,69	0,245	22.034,63	0,334	9.420,25	0,01735686
	Beer	L	28,90	542.739,00	15.685.157,10	1,453	22.790,53	0,334	9.743,41	0,01795229
					223.182.417,89		**296.034,91**		**126.560,84**	**0,23318914**

Figur 1 A screenshot from the Ecological Footprint Analysis assessment

Carbon Footprint of Food Waste

$$CF_{FW} = \sum (I_N \cdot A_{FW} \cdot I_{FWCO2} \cdot 10^{-3} \cdot EQF \cdot Is_{CO2})$$

Where:

I_N [-]	Number of inhabitants
A_{FW} [kg]	The annual average amount of food waste in kg per inhabitant
IFW_{CO2eq} [$kgCO_{2eq}$/kg]	CO_{2eq} in kilos generated per kg of food waste
EQF [-]	Equivalence Factor
Is_{CO2} [gha/tCO_2]	Global Carbon dioxide sequestration rate

Carbon Footprint of Sewage

$$CF_S = \sum (A_{SEL} \cdot I_{ELCO2} \cdot 10^{-3} \cdot EQF \cdot Is_{CO2})$$

Where:

A_{SEL} [kWh]	The annual amount of electricity needed for the sewage treatment plant and sewage pumping from households
IEL_{CO2eq} [tCO_2/GWh]	The total emission in CO_2 in tons generated per GWh
EQF [-]	Equivalence Factor
Is_{CO2} [gha/tCO_2]	Global Carbon dioxide sequestration rate

Carbon Footprint of Garbage

$$CF_{Gb} = [(\sum A_{Gbn} \cdot I_{GbnCO2eq}) + ((A_{GBm}) - (I_N \cdot A_{FW})) \cdot I_{GbmCO2eq}]$$

Where:

A_{Gbn} [t]	The annual amount of given garbage fraction generated from households
$I_{Gbn}CO_{2eq}$ [tCO_{2eq}/t]	The total emission in CO_2 in tons generated per 1 ton of given garbage fraction
A_{Gbm} [t]	The annual amount of mixed and mixed-packaging garbage generated from households
$I_{Gbm}CO_{2eq}$ [tCO_{2eq}/t]	The total emission in CO_2 in tons generated per of mixed and mixed-packaging garbage generated from households
EQF [-]	Equivalence Factor
Is_{CO2} [gha/tCO_2]	Global Carbon dioxide sequestration rate

Carbon Footprint of Water

$$CF_W = \sum (A_{WEL} \cdot I_{ELCO2} \cdot 10^{-3} \cdot EQF \cdot Is_{CO2})$$

Where:

A_{WEL} [kWh]	The annual amount of electricity needed to supply water to households including the entire water production technology
$I_{ELCO2eq}$ [tCO_2/GWh]	The total emission in CO_2 in tons generated per GWh
EQF [-]	Equivalence Factor
Is_{CO2} [gha/tCO_2]	Global Carbon dioxide sequestration rate

Carbon Footprint of Electricity

$$CF_{EL} = \sum (I_N \cdot A_{EL} \cdot I_{ELCO2} \cdot 10^{-3} \cdot EQF \cdot Is_{CO2})$$

Where:

A_{EL} [kWh]	The average annual amount of electricity used by inhabitant
$I_{ELCO2eq}$ [tCO_2/GWh]	The total emission in CO_2 in tons generated per GWh
EQF [-]	Equivalence Factor
Is_{CO2} [gha/tCO_2]	Global Carbon dioxide sequestration rate

Carbon Footprint of Gas

$$CF_{GAS} = \sum \left(I_N \cdot A_G \cdot I_{cv} \cdot I_{GCO2eq} \cdot 10^{-3} \cdot EQF \cdot Is_{CO2} \right)$$

Where:

A_G [m^3]	The average annual amount of gas used by inhabitants
I_{GCO2eq} [tCO_2/GJ]	The total emission of $kgCO_2$ generated per GJ of gas
I_{CV} [GJ/m^3]	The calorific value of gas
EQF [-]	Equivalence Factor
Is_{CO2} [gha/tCO_2]	Global Carbon dioxide sequestration rate

Carbon Footprint of Ridership of buses and trams (CF_{BT})

$$CF_R = [(A_{kmB} \cdot I_{BCo2eq}) + (A_{kmT} \cdot I_{TCo2eq})] \cdot 10^{-3} \cdot EQF \cdot I_{SCO2}$$

Where:

A_{kmB} [km]	The annual number of kilometres travelled by buses
I_{BCO2eq} [$kgCO_{2eq}/km$]	The average emission of $kgCO_2$ generated per km of single deck bus' travel
A_{kmT} [km]	The annual number of kilometres travelled by tram/light rail travel
I_{TCO2eq} [$kgCO_{2eq}/km$]	The average emission of $kgCO_2$ generated per km of tram/light rail travel
EQF [-]	Equivalence Factor
Is_{CO2} [gha/tCO_2]	Global Carbon dioxide sequestration rate

Carbon Footprint of Car use (C_{FC})

$$CF_{CU} = \sum \left(C_N \cdot A_F \cdot F_F \cdot 10^{-6} \cdot I_{KCO2eq} \cdot EQF \cdot I_{SCO2} \right)$$

Where:

C_N [-]	The number of registered cars according to given fuel type
A_F [km]	The annual number of kilometres travelled by private car for the 1.4-2.0 engine

F_F [MJ/l]	Fuel energy conversion factor
I_{KCO2eq} [tCO_{2eq}/km]	The average emission of kgCO_2 generated per km driven by car
EQF [-]	Equivalence Factor
I_{SCO2} [gha/tCO_2]	Global Carbon dioxide sequestration rate

The total Carbon Footprint corresponds to the sum of the previous ones:

$$CF_{TOT} = CF_{FC} + CF_{FW} + CF_{S} + CF_{Gb} + CF_{W} + CF_{EL} + CF_{GAS} + CF_{R} + CF_{CU}$$

Biocapacity calculation

The Biocapacity of a given region is calculated by multiplying the physical area by the appropriated Yield Factor and Equivalence Factor aiming to obtain the ecologically productive land uses.
The biocapacity has been calculated with the following formula:

$$Biocapacity = A_N \cdot \frac{Y_N}{Y_W} \cdot EQF$$

Where:

- A_N is the area for the specific land-use category (hectares);
- Y_N is the national average yield for this land-use category (https://www.footprintnetwork.org/licenses/) [tons/hectares-year];
- Y_W is the world average yield (https://www.footprintnetwork.org/licenses/) [tons/hectares-year];
- *EQF* is the equivalence factor. (https://www.footprintnetwork.org/licenses/) [tons/hectares-year].

It is necessary to divide the territory into homogenous areas corresponding to *cropland*, *forest, or forest products*, *grazing land*, *fishing grounds*, *built-up land, and carbon footprint*. The remaining areas can be grouped as *Non-productive areas*. The Global Footprint Network gives a definition for every land use:
This territory's classification is based on local land use maps or to the Corine Land Cover Map (https://land.copernicus.eu/pan-european/corine-land-cover).
Each surface is then weighted according to the specific yield factors and equivalence factors [Y_N, Y_W, EQF *defined by* $https://www.footprintnetwork.org/licenses/$].
The Biocapacity is then obtained by summing the various contributions of every area. According to Wackernagel (1997), we need to take out around 12% of this surface area which is the minimum amount of land needed to preserve biodiversity.
Finally, the Biocapacity value can be divided by the number of inhabitants to get the per capita biocapacity index.

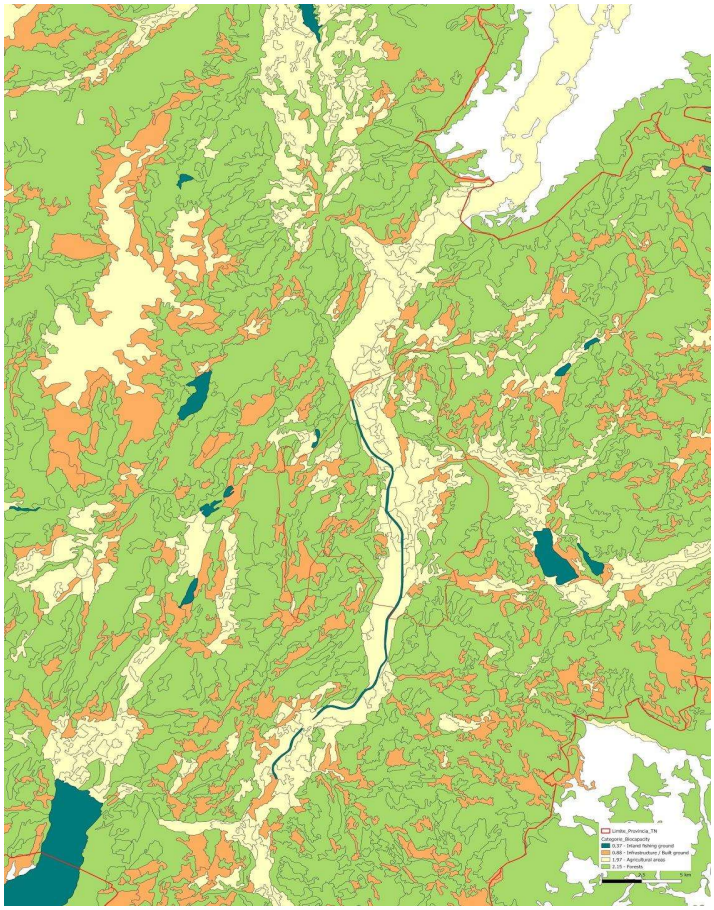


Fig. An example of the Biocapacity Analysis Map (Trento, Italy)

Mapping the foodshed: social and natural systems

The 'Socio2Eco sustainability indicators' are meant to highlight the conceptual transmigration of the three sectors analysed by the RUM: social, economic and environmental. In this sense '2' stands for 'to', as an onomatopoeia, indicating the interconnections between the social, economical and ecological aspects. Moreover, the term '2' has a second significance by collecting the economic, and the eco-logical indicators.

As regards the dimension of socio-economic-ecological sustainability, research over the years has repeatedly highlighted cases of social inequity inherent in the conventional production and distribution model, dominated by large-scale retailers. On the other hand, they have increasingly focused on alternative models, such as the short supply chain and the whole category of alternative food networks, since there has been evidence of greater equity and socio-economic sustainability. The social sustainability of these new supply chains refers to their contribution to equity among the actors working and interacting in the sector, as well as to the vitality of local communities.

It is argued that short supply chains provide a greater share of added value to producers, contribute to local development through synergies with other neighbouring sectors, and have fewer environmental and social externalities. However, until now, there is very little quantitative evidence on the socio-economic impact of different types of food supply chains, as the main studies that present supporting evidence are based on qualitative methods that report personal observations, perceptions and experiences.

Furthermore, it should be noted that a large part of local food needs is supported by imports. Considering that we aim to precisely map the flows of food, it is therefore necessary to consider this issue while developing the indicators and exploiting the research.

Existing studies done at European level (i.e. Strength2Food, a project developed within Horizon2020 research grants) have proposed a methodological framework with specific indicators to assess the social and economic sustainability of different food supply chains. The indicators are described in the following section, yet one of the aims of the SATURN project is to evaluate them and understand how to eventually modify them to better fit the local condition.

1) Labour to production ratio [h/kg]: shows the number of hours worked used in production and distribution processes, including preparation of products for transport, loading, transport and sale by the producer (farmer).

2) Gender equality: represents the share of hours worked by women out of total hours worked.

3) Generational turnover: represents the share of hours worked by young people (Under 35) out of the total hours worked.

4) Origin of the workforce: it represents the share of hours worked by "locals", i.e. inhabitants of the Autonomous Province of Trento, non-Trentino Italians, EU foreigners and non-EU foreigners.

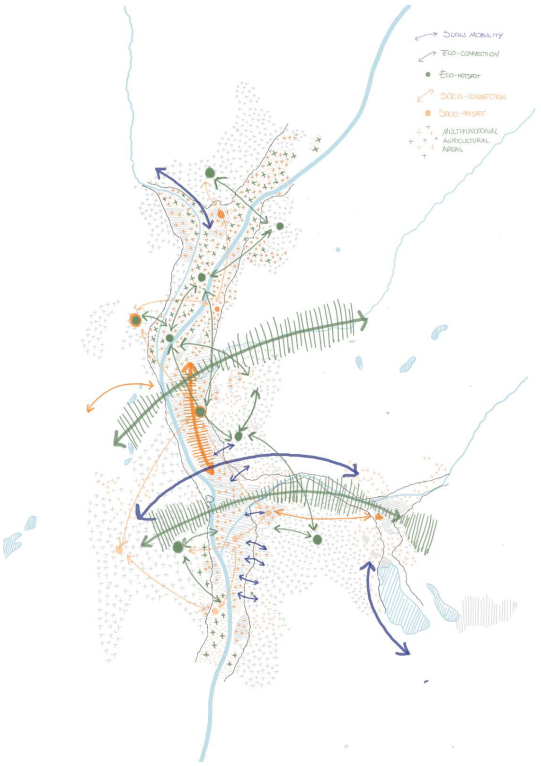
5) Seasonal work: represents the share of hours worked by seasonal workers. The section also includes further questions to investigate the share of seasonal workers among women, Under 35s and foreigners.

6) Bargaining power: estimated on the basis of a self-assessment by the interviewed farm owners or managers who evaluate their position in the supply chain on the basis of the following criteria:

1. position in the distribution chain, i.e. the extent to which they can influence "things";
2. level of trust in relationships with other participants in the supply chain;

3. relationships with other farmers (producers) participating in the same supply chain;
4. Relations with customers.

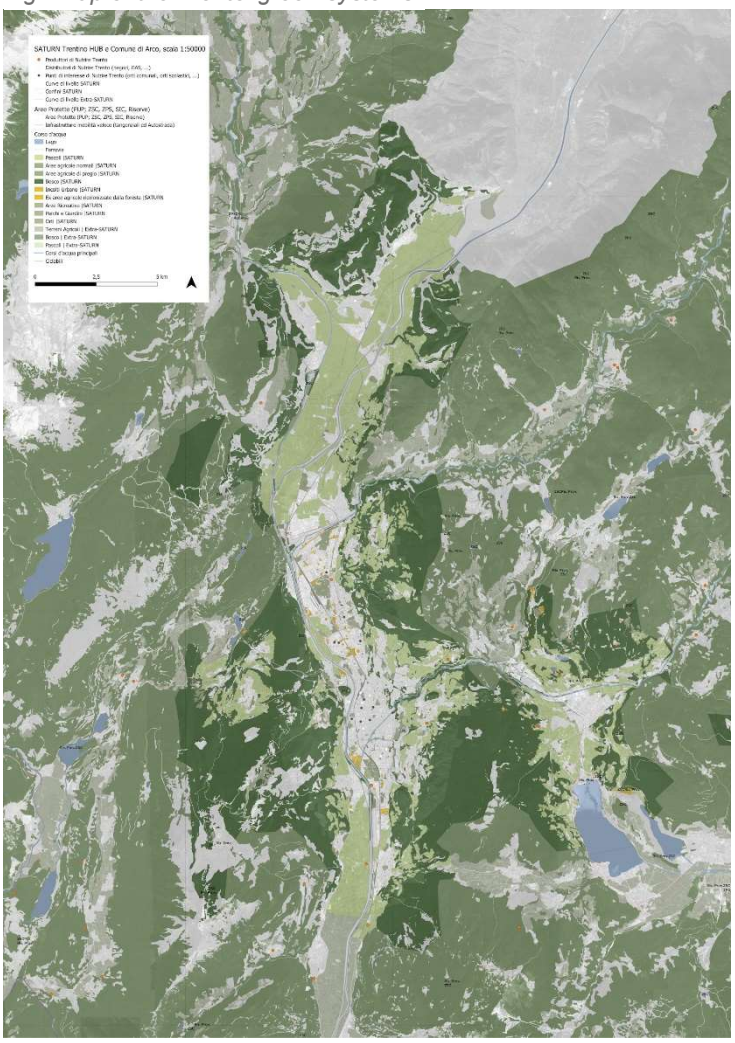
7) Chain evaluation: a measure based on the self-assessment of factors that may influence the perception of the attractiveness of the supply chain for the producer. The attractiveness of the supply chain is assessed according to the following factors:
1. Prices reached in the supply chain;
2. Possibility of selling large quantities of products;
3. Possibility of concluding long-term contracts;
4. regular and guaranteed payments;
5. level of general satisfaction (e.g. "how satisfied are you with this supply chain?").



Mapping the Socio2Eco systems

Maps of the socio-economic-ecological systems can be useful to visualise and analyse the interconnections between natural and social systems.
A map of the green systems could be the starting point. This map should represent forests, pastures, crops, and urban green areas as parks and gardens. The actors of the foodshed should be also reported in this representation of the current situation by mapping the position of their productive facilities.
It could be useful to adopt GIS systems in this phase in order to have a map that could be easy to update in the future and to do other analytical analysis of the territory. As an example, the green systems' map could be the basis for the analysis of ecological corridors.
A further step in the evaluation of diverse green systems. In fact, some areas could hide some critical features from a sustainable point of view: the so-called 'dark side of the green side'. For instance, crops treated with chemicals, pesticides and fertilizers could have a negative impact on the environment, therefore a hierarchy of green areas based on the sustainability of the different cultivation or management methods could be discussed and proposed.
The green systems' map depicts the first step of the mapping process. In the second stage, a representation of the overall dis/connections that occur in the territory is needed to analyse the interconnections between natural and social systems. This is the basis for the last step of the RUM tool: the implementation of a territorial strategic plan towards a more circular and sustainable future. The RUM therefore becomes a support tool to develop and design different strategies or visions and can help the evaluation of specific impacts or solutions (i.e. variations in biocapacity or connectivity according to proposed interventions).

Fig. Map of the Trento' green systems



The RUM deal

As mentioned earlier, the Rural Urban Metabolism is a territory's reading tool that aims to analyse cities and their surroundings from a socio-economic-ecological point of view. Its goal is to address future territorial plans (including both urban and rural areas) towards a circular and sustainable future. Therefore, the RUM deal is a report that summarises the overall analysis to be delivered to the local administrations, which might take it into consideration in their next activities and plans. In order to increase the integration of the RUM into administrative actions, the involvement of a wide range of local stakeholders, including the public administrations themselves, is needed since the first phase.

The creation of a strong network of actors can support and deepen the analysis of the territory and can help to define new possible elements and areas of socio-ecological connections. Moreover, a multi-disciplinary and multi-stakeholder approach could be the driver for better integration of different perspectives, needs and opportunities into the final visioning strategic plan and further promote better relations between the different sectors of public administrations.

This step is strictly connected with the 'Visioning' tool as an instrument to validate, guide, and support strategic decisions towards sustainable territory development.

Future-proofing activities

The RUM tool is meant to be used also by a variety of actors — like administrators, technicians, researchers — with the purpose to replicate the process in different contexts. The results deriving from different cities and regions could be compared in order to deepen the understanding of the territorial dynamics.

In order to simplify and speed up the process, the implementation of a GIS plugin is planned. Considering that, at this stage of development, the RUM tool is still a quite long process, the automatization of certain phases could simplify and accelerate the workflow. In particular, the plugin will be related to the 'Ecological Footprint Analysis' and the 'Biocapacity Analysis' and will compare the two in order to determine if the territory could be considered as a natural reserves or a biocapacity debtor.

The plugin could also offer the opportunity to virtually-quickly change some territorial features and variables in order to imagine and test different scenarios and compare them.

Glossary

Biocapacity: “a measure of the amount of biologically productive land and sea area available to provide the ecosystem services that humanity consumes – our ecological budget or nature’s regenerative capacity”. (Borucke et al., 2013)

Built-up land Footprint is calculated based on the area of land covered by human infrastructure — transportation, housing, industrial structures, and reservoirs for hydro-power. Built-up land may occupy what would previously have been cropland (Borucke et al., 2013).

Carbon Footprint measures CO2 emissions associated with fossil fuel use. In Ecological Footprint accounts, these amounts are converted into biologically productive areas necessary for absorbing this CO2 (Global Footprint Network). The carbon footprint is added to the Ecological Footprint because it is a competing use of bio-productive space since increasing CO2 concentrations in the atmosphere is considered to represent a build-up of ecological debt.

Cropland is the most bio-productive of all the land-use types and consists of areas used to produce food and fibre for human consumption, feed for livestock, oil crops, and rubber. Due to the lack of globally consistent data sets, current cropland Footprint calculations do not yet consider the extent to which farming techniques or unsustainable agricultural practices may cause long-term degradation of soil. The cropland Footprint includes crop products allocated to livestock and aquaculture feed mixes and those used for fibres and materials (Borucke et al., 2013).

Ecological Footprint: “a measure of the demand populations and activities placed on the biosphere in a given year, given the prevailing technology and resource management of that year” (Borucke et al., 2013). A major component of EF is the Carbon Footprint (CF) which is estimated to account for around 60 to 85% of the total overall EF.

Environmental Carrying Capacity: “ the level of human activity, population growth, land use, physical development that the environment can support without serious degradation and irreversible changes” (Świąder et al., 2020). The ECC is usually based on the ecological footprint (EF) and biocapacity (BC) indicators.

Fishing grounds Footprint: is calculated based on estimates of the maximum sustainable catch for a variety of fish species. These sustainable catch estimates are converted into an equivalent mass of primary production based on the various species’ trophic levels. This estimate of maximum harvestable primary production is then divided amongst the continental shelf areas of the world. Fish caught and used in aquaculture feed mixes are included (Borucke et al., 2013).

Forest land represents the area necessary to sequester carbon emissions. It provides for two services: the Forest Product Footprint, which is calculated based on the amount of lumber, pulp, timber products, and fuelwood consumed by a country on a yearly basis. It also accommodates the Carbon Footprint, which represents the carbon dioxide emissions from burning fossil fuels. The carbon Footprint also includes embodied carbon in imported goods. The carbon Footprint component of the Ecological Footprint is calculated as the amount of forest land needed to absorb these carbon dioxide emissions. Currently, the carbon Footprint is the largest portion of humanity’s Footprint. (Borucke et al., 2013)

Foodshed: "streams of foodstuffs running into a particular locality, their flow-mediated by the features of both natural and social geography" (Kloppenberg, 1996, p. 12). The concept of material flows between different places negotiated by both the physical world as well as by people and their cultures are central to the CRFS approach. Kloppenberg's definition is built on the work by Hedden from the 1920s and Getz in the early 1990s (Hedden, 1929; Getz, 1991). The 'foodshed' is a useful concept in considering the City-Region Food System (CFRS) as it defines the perimeter of a food region according to the growth potential of its soil and land.

Global Hectare is the accounting unit for the Ecological Footprint and Biocapacity accounts. [...] A global hectare is a biologically productive hectare to which a productivity factor equals to the world average biological productivity for a given year is assigned. (Global Footprint Network)

Grazing land: is the measurement of the *"area of grassland used in addition to crop feeds to support livestock. Grazing land comprises all grasslands used to provide feed for animals, including cultivated pastures as well as wild grasslands and prairies"* (Borucke et al., 2013). It is used to raise livestock for meat, dairy, hide, and wool products. The grazing land Footprint is calculated by comparing the amount of livestock feed available in a country with the amount of feed required for all livestock in that year, with the remainder of feed demand assumed to come from grazing land. (Global Footprint Network)

Rural Urban Metabolism (RUM): is a territory's reading tool to analyse, manage and plan cities and their surroundings. The term "Rural", prefixed to the well-known concept of Urban Metabolism, underlines the need for a reconnection between rural and urban landscapes, which is the main objective of the SATURN project.

Urban Metabolism (UM): is defined as "the sum total of the technical and socio-economic processes that occur in cities, resulting in growth, production of energy, and elimination of waste" (Kennedy et al. 2007). It describes the flows of materials and energy offering a holistic and integrated vision of a defined region by describing its productivity, efficiency and sustainability. One of the UM challenges is the "transition from a linear perspective to a networked and cyclical perspective, in which wastes become new inputs, reducing dependence on the hinterland for resources" (Sanches and Bento, 2020).

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SATURN: Toolbox Series of
Sustainable Urban-Rural Landscape

Stakeholder Engagement Tool

Problem and Goals Identification and stakeholder management process

Dr Anastasia Nikologianni, Nick Grayson, Prof Kathryn Moore

A Toolbox Series of sustainable urban-rural landscape:

Dr Anastasia Nikologianni, CATiD – Birmingham City University, UK

Nick Grayson, Birmingham City Council, UK

Professor Kathryn Moore, CATiD – Birmingham City University, UK

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Contents

Background

The SATURN project aims to reintegrate the natural assets within the city climate change impact strategy and to expand and feed its model by creating a wider initiative. Each territory has a number of pilot cases being part of the three year's project (2019-2021). The pilot cases all include innovative ways of connecting the rural and the urban landscape. The aim is to enable the upscaling of the pilot cases as to work towards system innovation.

As part of the work, several tools are developed from the pilot cases as well as from other best practices within sustainable urban-rural landscape. The pilot cases are presented in the green series; SATURN: Pilot Cases for Sustainable Urban-Rural Landscape.

The best practices are presented in the pink series; SATURN: Best Practices for Sustainable Urban-Rural Landscape

SATURN: Toolbox Series of Sustainable Urban-Rural Landscape present the tools as listed below. The tools are generic in nature and with the potential of inspiring other parts of Europe and globally.

- Fostering on Municipal Land using testbeds, Gothenburg
- Farming incubator tool, Gothenburg
- Mapping underutilized and abandoned farmland and farms, Gothenburg
- Market Gardening Manual, Gothenburg
- Governance model - eco I socio I digital aspects, Trento
- Rural Urban Metabolism (RUM), Trento
- Youth engagement and mentoring for business development, Trento
- Stakeholder Engagement tool, Birmingham
- Capacity building tool, Birmingham
- Visioning tool, Birmingham

Summary Tools

SATURN project has an objective to build a comprehensive and adaptive common framework and to test and improve the framework in an iterative process. The work entails to map best practices regarding sustainable land use models reconnecting cities to their surrounding areas and to create a toolbox of models and strategies that can be replicable and scalable. The toolbox includes several tools that can be used by city planners, facilitators, developers and practitioners. The aim of the tools is to provide concrete guidance on how to implement a certain project or an aspect of a project relevant to the SATURN project. The tools can be derived from the pilot cases of the SATURN project or from best practices collected or from our satellite cities. The tools vary in format and content but have in common that they address ways to enhance sustainable rural-urban landscape.

Stakeholder Engagement Tool

Tool details

Title: Stakeholder Engagement - The Cooking Challenge

Objective: Mapping, Analysis, Management & Engagement

Geography: UK

Organisation: CATiD BCU & BCC

Financing: SATURN project

Time: 2020

Link: TBC

Summary

The logic model tool summarizes the concept behind the three tools of Birmingham.

SATURN –Work Package 1: Stakeholder Engagement and regional design (WP1A) and Capacity Building (WP1B) LOGIC MODEL- TOOL

Project: (HUB locality or place to be entered)

Project Context

Policy context- Expansion of urbanized areas heavily changed cultural landscape features in many European countries. This process has turned natural, semi-natural or cultivated areas into the very spaces into which infrastructures, productive and commercial units or houses, have been located. This has caused several impacts on the natural, socio-cultural and economic fluxes between urban and rural territories. With the increasing effects of climate change, this relationship has now become of paramount importance. For example 75% of natural resources are consumed in cities, which also account for 80% of global greenhouse emissions. Figures that call for a series of interventions that should target urban settlements and their surroundings. In fact the nearby territories act not only as a provider of commodities (food, wood, fibre, water) but for services granted by ecosystems such as flood protection and control of pests and pathogens. Additionally to a large extent citizens are able to live their lives in urban settlements with little interaction with the rural areas.

Regional context-
The problem SATURN is trying to solve is one of governance of nature and landscapes and the regional scale. Currently the human approach to the management of land is determined by ownership and often from the interests of a single sector. Leading to a fragmented landscape with equally fragmented governance and therefore funding and people engagement. Leading to a fragmented approach to climate change.

What needs to be in place for change to occur? – SATURN WP1 puts in place a three tiered mechanism to re-understand the regional landscape through a holistic vision, look to assess both the hidden natural value in that landscape and its hidden stakeholders, then reveal those through a capacity building process. It is from here with this renewed capacity identified that the necessary 'Step-Change' required to meet the 21st century global challenges of environmental restoration and climate change. This approach then allows you to undertake a totally different assessment of 'value'- by noting all the inter-dependencies of social, economic and planetary wellbeing with nature and landscapes.

Programme objectives: This project stands at the intersection between CKIC- Impact Goals 2,5, and 6.

- **Impact Goal 2-** How can natural assets be valued in the urban context of "Create Green, Resilient Cities"(Impact Goal 2). The so called Nature Based Solutions (NBS) have been designed by looking at how agriculture was using ecosystem services and by adapting this approach to the city context;
- **Impact Goal 5 -**The food production "Transform Food System" -is the most important value chain that the project aims to re-localise. Closing the distance between the production and the consumption has a high mitigation potential, not only by reducing the transport, but also by limiting the externalities of the citizen consumption on climate on the other side of the world where agricultural practices are less regulated.
- **Impact Goal 6** –"Nurture Forest in Integrated Landscape" is at the core of the project. The integrated landscape approaches has been set up to have a better systemic understanding of deforestation and land degradation issues.

Rationale

- To address the over-riding challenge of fragmented regional landscapes, **SATURN WP1 brings a holistic vision practice** to re-imagine the future of your region- in how it needs to respond to the 21st century global challenges of climate and ecological emergencies.
- To address the identified challenge of under-valuing landscape the **SATURN WP1 brings a stakeholder engagement practice** based around ecosystem services and natural capital.
- To address the challenge of fragmented governance and policy and resourcing, the **SATURN WP1 brings a capacity building practice**, that connects the hidden beneficiaries and key regional stakeholders to local governance and circular economy models.

Inputs

- **A regional spatial vision workshop**: Outlines the critical potential impact of taking a visionary approach to regional landscapes and design;
- **A comprehensive stakeholder mapping workshop:** Outlines the potential benefits of establishing unseen values through both ecosystems and stakeholders;
- **A capacity building workshop**: Outlines the connections between values, stakeholders and capacity; linking to governance and circular economy models.

Activities

- **A regional spatial vision exercise**: Takes the group from individual visions, to future generational spatial visions for their region/place;
- **A comprehensive stakeholder mapping exercise**: A systematic series of challenges and steps that enable identification of value and key stakeholders;
- **A capacity building exercise**: Connects the key stakeholders to the local governance and economic context to determine future critical pathways to growing organisational capacity.

Outputs

- **A regional spatial vision:** To be described and shown through a series of worked diagrams, drawings and revised maps; contained in a summary report
- **A stakeholder engagement process, analysis and mapping:** To be described and depicted through CKIC tools on MIRO boards; contained in a summary report
- **A capacity building exercise:** To be described and captured through CKIC tools on MIRO boards; contained in a summary report

Intended impacts

- ***A new regional spatial vision and regional design methodology:***
- ***A new stakeholder engagement analysis methodology:***
- ***A new capacity building analysis methodology:***

Intended outcomes

A new regional spatial vision and regional design:

A holistic spatial vision for the region looking ahead at least a generation.
An integrated vision of landscape but also of culture, of heritage, of historic connection.
The vision must consider the social dimensions about families, access to nature, recreation.
The vision must also consider the policy and political and governance questions.
The vision must consider economic aspects, of productivity, infrastructure and growth.
The vision must consider how the region is seen in the future both internally and externally.
The vision process must end with a series of next step challenges to be picked up below.

A new stakeholder engagement analysis:

To complete a pentagonal challenge resulting in defined aims and goals for the region.
Against these goals and the created vision, research your key stakeholders.
Map these stakeholders on a 'Universe' Board as an expression of current engagement.
Match your key stakeholders to your vision themes.
Cluster these stakeholder groupings back on the 'Universe' Board; and pick leads.
Identify the critical players for accelerating change.

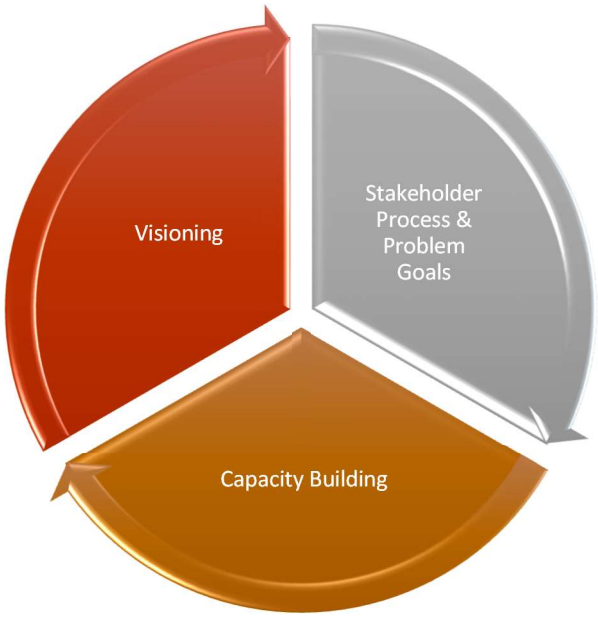
A new capacity building analysis:

The lead organisations or stakeholders need to be mapped against their corporate outcomes.
Using systems mapping link the strategic outcomes to key regional policy goals.
Connect your project aims, with the policy goals and the stakeholder outcomes.
Understand the inter-dependencies across the region.
Examine the regional landscape design implementation plans and timetable.
Connect the landscape vision and timetable to the other regional strategic timetables.
Connect and calculate the added value of synergistic working.
Submit to the regional strategic governance and circular economic decision-makers.

Climate-KIC is supported by the EIT, a body of the European Union

SATURN WP1 brings in three key processes which are interrelated. They can work as individual tools, but the results are stronger when these tools interact with one another and shape the outcomes.

a. The Holistic Vision practice
b. The Stakeholder Engagement practice
c. The Capacity Building Practice



The Stakeholder Engagement Practice

This process consists of a systematic series of challenges to enable identification of stakeholders as well as the project goals and values. Through a series of stakeholder management (stakeholder mapping, analysis and engagement exercises) and multilevel perspective to give better insights of the relationships within the challenge (project barriers and solutions).

Stakeholder Engagement Practice	
How Many	1-15 people per group
How Long	A series of 6-8 workshops (90mins/per workshop)
What You Get	A clearer visual depiction of the key actors influencing your challenge/project
What You Need	A challenge, an open mindset, a facilitator/trainer, a lot of energy
Difficulty	Medium (Level of difficulty varies among the exercises)
Important Ingredient	The Climate-KIC Visual Toolbox for system innovation
What is next	It allows for new ways to approach current or potential stakeholders and it also follows on to build capacity within the team

The challenge presented bellow uses the Visual Toolbox from EIT Climate-KIC. The toolbox consists of 17 tools around Stakeholder Management, Multilevel Perspective, Visioning and Backcasting and Niche management and is a collection of ready-to-implement tools to structure and manage the challenges and exploit opportunities of sustainability innovations and transitions. In CKIC's Visual toolbox, the tools have been conceived to work individually and as a full suite.
For the creation of this challenge the Birmingham Hub has singled out 5 tools as ingredients for our Recipe adding extra tools (ingredients) from its own experience on system innovation.

The Birmingham Hub Recipe follows specific steps and the 'ingredients' in the sequence presented by Cooking Recipe Challenge below. Any alteration to the order of the 'ingredients' will potentially result to a different recipe.

The Birmingham Hub Recipe can be performed on a face to face or virtual environment using supporting software like Miro, Mural, Stormboard and others.

The Cooking Recipe Challenge

What it is

The Cooking Recipe Challenge is a Problem and Goals Identification and stakeholder management process developed by the Birmingham Hub of SATURN. It is a combination of several stakeholder mapping and analysis tools that will allow you to create a new methodology for stakeholder analysis and build capacity within the team. Following a series of EIT Climate-KIC Stakeholder management tools, infused with additional tools and experience from SATURN the goal is to bring a systemic change in the stakeholder engagement process and reveal the most influential actors for your project.

When to use

Usually once you have completed the Holistic Vision, however it can also be used prior to the visioning exercise. You can use it whenever you need to focus on the challenge's broader aims and goals, define actors who are valuable to your project or learn more about their qualities and influence in relation to your challenge. You can also use it to define the often medium 'influence' players that can be your vehicle to approach bigger actors.

Why it is useful

It helps build the bigger picture that will bring systemic change on governance and strategic partnerships. The tool combination allows for identification of strategic aims and goals before it dives in the details of a specific challenge.

By completing the series of exercises your team can make better decisions about the most relevant/influential stakeholders, work on new engagement methodologies and prioritise the barriers of your project.

STEP 1

Create your team and set the rules!

Brainstorming Sessions are quick and focus on quantity!

Use one idea per post it!

Talking is not allowed all the time! Write first, discuss later! Let everyone write their ideas.

If you engage with an experienced trainer or facilitator will be beneficial for the process, but if you cannot do this, appoint a member of the team to facilitate, keep timings and guide you through this process.

It often takes some time to familiarise yourselves with the tools, so it is better if you don't have different members from one activity to the other (additional colleagues are allowed of course)

STEP 2

Approach this as a cooking recipe.

The meal might work if you put the 'ingredients' (tools) all together in the pot, but it will work better if you follow our recipe and sequence of activities.

Make sure you add all the ingredients with the suggested order to achieve the broader concept goal.

STEP 3

Choose your 'recipe'.

What is the challenge/project you have in mind? Describe it and make a note of it. Make sure you keep the focus on this challenge.

We often start cooking a meal but end up with something very different if there are many people in the 'kitchen'– so tell your team what you are cooking!

Try to stay focus in this specific challenge. Each time you add one more ingredient of our recipe to your pot, remind yourselves of what you are cooking for.

Our ingredients are:

Pentagonal Problem

Aims and Goals Identification

Actor Tree

Influences and Relations Pie

Enlarged Empathy Map

Stakeholder Universe

Fishing for Barriers

Search for Solutions

Reflection and Next Steps Decision

To follow our recipe please use the ingredients in the above order.

General notes:

The Green Ingredients focus on the **broader scope of your challenge**. Make sure you approach it with an open mind, be flexible to changes and allow sufficient time for it.

The Red ingredients often focus on **Quantity** – put in as many ideas and actors you have and don't worry about their relevance at this stage.

The blue ingredients focus more on **Quality** – make sure you analyse and examine ideas and actors to as much detail as you wish. Be critical with them and focus on what they will bring to your project.

STEP 4

Start adding the individual 'ingredients' of your recipe. Follow the steps and instructions of the individual tools/exercises that you will find below.

The time you will let each ingredient in the pot (how detailed/focus your team will be) might change the meal! Each ingredient has its own power. So, if you work more on the 'actor tree' than the 'aims and goals' you will have a different version of the meal 'Challenge X'. In general, try to assign similar timings to all the tools, but feel free to take a bit more time when you are setting your overall aims and goals.

If you stir too much you might dilute an ingredient! Sometimes trying too hard doesn't get us anywhere. Try to follow the instructions and if you get stuck take a break and start with a blank canvas.

Each time you cook for your meal (eg. Challenge X), you might get a slightly different version (that if you're not a professional cook or master chef winner, but even then, you can experiment with our ingredients!)

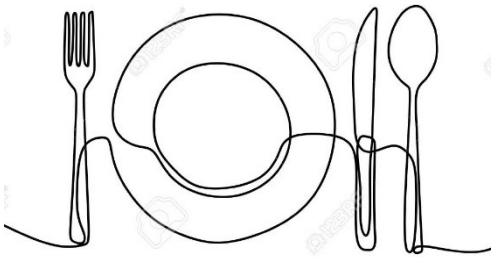
Add Spices to your meal: ask critical questions, bring in a few additional colleagues if you get stuck, make a note of the findings at every stage, test any new ideas on a small scale. You can even go back and add more of an ingredient, for example perform the 'Enlarged Empathy Map' for one more stakeholder – then go back to your cooking pot!

STEP 5

Reflect on the recipe and cooking process.

Once you cook a meal you eat it right?

Do not leave your findings and ideas for too long after you complete the process. Decide the next steps and prioritise your upcoming activities. You can always get back to one of these steps if you need to.



Tools in Detail:

1. Pentagonal Problem – Find in CKIC Visual Toolbox page 16
2. Aims and Goals Identification – Find Tool below
3. Actor Tree – Find in CKIC Visual Toolbox page 22
4. Influences and Relations Pie – Find Tool below
5. Enlarged Empathy Map – Find in CKIC Visual Toolbox page 22
6. Stakeholder Universe – Find in CKIC Visual Toolbox page 54
7. Fishing for Barriers – Find in CKIC Visual Toolbox page 96
8. Search for Solutions – Find Tool below
9. Reflection and Next Steps Decision – Find Tool below

2.Aims and Goals Identification Tool

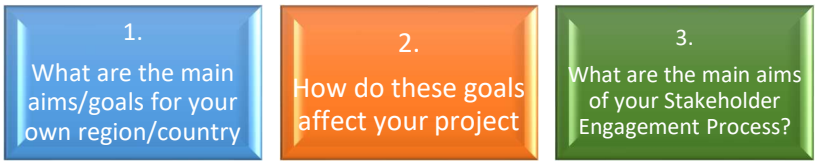
This is a simple tool aiming to support with your broad aims and goals. You can use this tool in the form of a brainstorming activity followed by discussion withing the team.

STEP 1. Sketch out the canvas.

Put the Summary of your Problem Statement (Generated from the Pentagonal Problem) in a post it on top of a blank canvas.

STEP 2. Ask the right questions.

Create three key questions related to your general aims and goals and reasons for the stakeholder process. Our suggested questions are:



STEP 3. Time to be bold.

Use a standard brainstorming session to respond to each question. Remember to use 'Short & Sharp' phrases or one word per post it!

Be bold! Take consideration of Global policy, World Challenges and Achievements. Have you been thinking about your challenge in such a broad spectrum or did you only focus on the local scale?

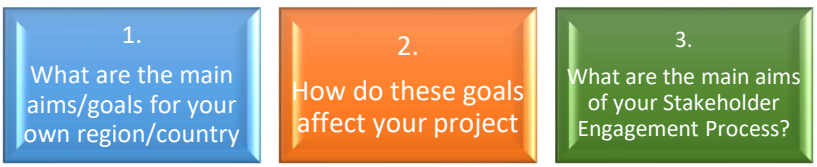
STEP 4. Make the connections.

Discuss within the team. Is there a golden thread through all aims? Does your challenge have a link to challenges in other areas? Is your idea part of a broader plan or does it focus in your neighbourhood?

Are you going to bring solutions to an international problem and what are the links with your region?

STEP 5. Reform and Rephrase.

The discussion is always necessary and there might be a need to rephrase some of your ideas. That is fine! Keep the initial post its for future reference and create a new canvas with 5-6 key responses to the questions chosen.



STEP 6. Debrief

You have now identified the aims and goals of your challenge and the reasons behind your stakeholder engagement process.

Take a few moments to make sure you fully understand them. You might want to ask questions such as: Do you think we have been bold enough? Are we doing this only for our area? What is the relation with global challenges (Climate Emergency, COVID-19, Hunger, Poverty)? Do our goals reflect the real world or is it biased due to the team's background?

The debrief can last a few moments or spark a lengthy discussion. Once you are ready, take a break and add the next ingredient!

4. Influences and Relations Pie Tool

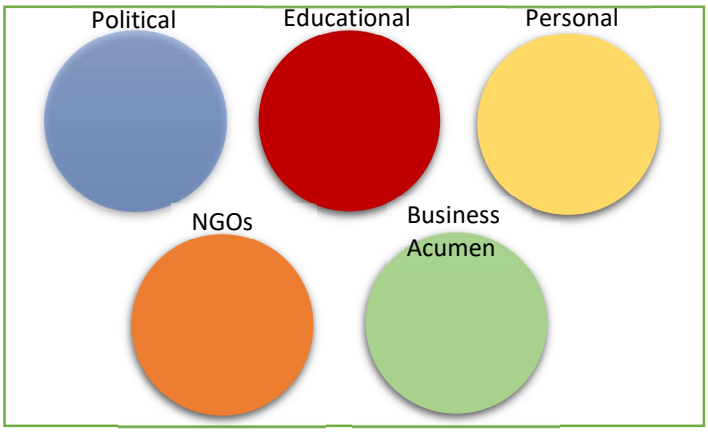
This tool focuses on uncovering the relations and influences of your stakeholders (identified in the Actor Tree) in relation to your challenge. It is the first level of a more in depth analysis that takes you from Quantity (how many actors we have and who) to Quality (who they really are? What is their relation to our challenge? Are they well known or sole warriors?)

At this stage you are asked to put the stakeholders in groups according to their characteristics. A more detailed development of their 'personals' will follow on the 'Enlarged Empathy Map'.

STEP 1. Sketch out the canvas

Take a large piece of paper and draw a large version of the canvas in which each 'Relations/Influences' Category is depicted. You can draw little 'pies' or any shape that suit your team.

Place the title of each category to the top of one pie.



The categories we have chosen are:

Political Influence (eg. an MP, councillor, mayor),
Educational Influence (eg. University, Training academy)
Personal Influence (eg. Public figure, HRH, Famous etc)
NGOs (eg. Charity, NGO)
Institutions (eg. Other institutions)
Business Acumen (eg. Known entrepreneur, company that supports project)
Movements (eg. Emerging public movements)
Communities (eg. Community groups)

STEP 2. Place the Stakeholders according to their role

Once the canvas is ready, start placing the stakeholders according to their relation or influence to your challenge.
Start with those who you think are easy to identify and add one stakeholder per sticky note.
Place the sticky note to the most suitable category.

Note one stakeholder might fit to more than one category. This is fine, duplications are allowed.

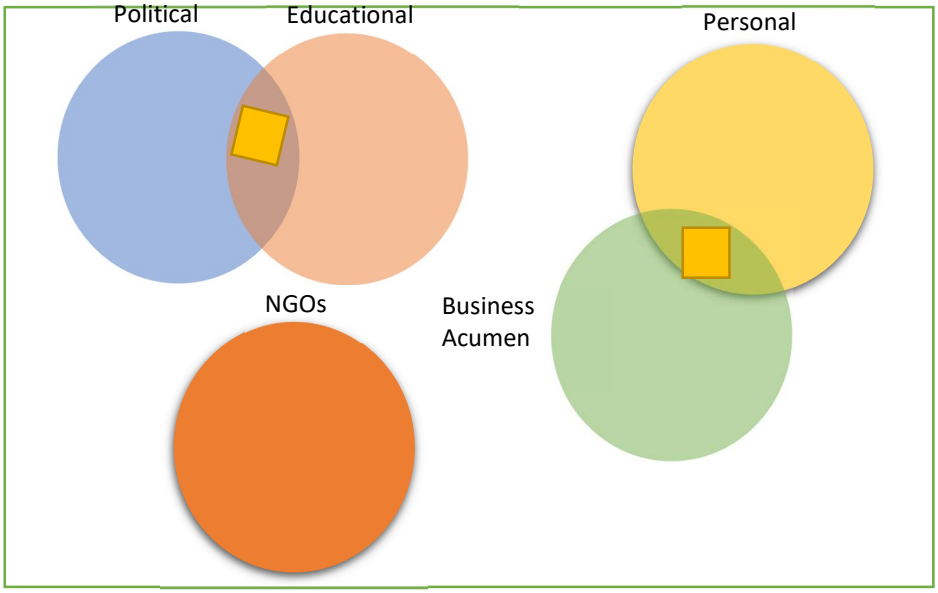
STEP 3. Create new categories

You have completed Step 2 and some of your stakeholders did not belong to any of the suggested categories? Create your own. There are no right and wrong categories, this tool is the first attempt to start identifying the characteristics of your stakeholders and the way they relate to your challenge.

Draw a new 'pie', name it and place the relevant stakeholders.

STEP 4. The In-between Stakeholders

Some stakeholders might belong to two categories, however none of the existing ones really suits them. This is the time you can start identifying the connections, relations between them and the existing groups. You can redraw your canvas demonstrating any in-between actors by following the diagrams below.



Place the relevant stakeholders in the in-between areas.

STEP 5. Define each category further

There might be cases that you will need to depict the difference in characteristics within a category (eg. different political views, success/failures). In this case be creative. Divide the category you need to examine in more detail and work in this one.

Do not forget to assess the stakeholders in relation to your challenge not only their overall attitude.

STEP 6. Debrief

Take a look at the canvas and reflect of what have you learned. Has it revealed any new characteristics of the actors you did not know about? Has the grouping helped your team to better understand how these relate to your challenge? Is there a plan of who are the most relevant?

3. Search for solutions

This tool is a follow up of the 'Fishing for Barriers' tool where you have identified and prioritise any potential barriers of your challenge. It is an easy and quick exercise to support with solutions.

STEP 1 Remind Yourself

Take a quick look at the barriers identified at the 'Fishing for Barriers' stage and the priorities your team has made. Have you only mentioned existing barriers or did you tried to predict any future risks (eg. a pandemic) ?

If there is something missing let the team know.

STEP 2 Your Ideal Solution

It is sometimes easier to see the problems than find solutions. But systemic change means finding solutions even if we have to shake things up a bit!

Pick the most important barrier for your group that is on top of your priority list. Do you think there is anything you can do about it? What would be your ideal solution?

Brainstorm! Write as many solutions as possible in a short brainstorming session. Write down your ideal solution no matter if this might sound a little 'crazy' for other team members.

Collect all the individual solutions and start discussing them one by one.

STEP 3 Come together as a team

Have Step 2 revealed any interesting ideas? Do you feel you can solve this problem alone or do you need it to be a team effort? What are the steps required? What is the timeline for a solution to be found? Who needs to compromise for the project to progress? Do you need any external support (eg. political support, money, publicity)?

STEP 4 Sketch out a solution timeline

Hoping you have found at least one potential solution in your problem, decide on immediate next steps. Allocate certain roles within the team that will support each step.

In case the solution requires for 'sacrifices' from some of the stakeholders, make sure you try to find areas to make it up for them or explain the reasoning behind it. Let them know the benefits and ask them to provide their solutions in the current problem.

STEP 6 Debrief

Make sure you discuss any difficult decisions with the team. Some of the solutions can be temporary and others more permanent, but make sure you re-evalutate the situation often.

9. Reflection and Next Steps Decision

You have put all the ingredients in the pot and tasted it a few times during the cooking process. It is now time to taste your meal.

STEP 1 Reflect on the overall process

What are the findings? How have these shaped your decisions? Were they any surprising moments? How has the stakeholder series helped you change or rethink your stakeholder engagement process?

Has this experience given you (and your team) new insights (identify new actors, new or hidden connections, attitudes and possible new roles)?

How these findings have changed (if they have) the way you will engage with your stakeholders in the future?

What was your number one learning point from this cooking recipe?

STEP 2 Design your Next Steps

Take your time to reflect and start pinning down actions related to each finding. Assign team members to each action and create a timeline.

SATURN: Toolbox Series of
Sustainable Urban-Rural Landscape

Fostering on Municipal Land using testbeds

A model for city planners and facilitators

Martin Bae Pedersen

A Toolbox Series of sustainable urban-rural landscape:

Martin Bae Pedersen, City of Gothenburg

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Acknowledgements

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As part of the work, several tools are developed from the pilot cases as well as from other best practices within sustainable urban-rural landscape. The pilot cases are presented in the green series; SATURN: Pilot Cases for Sustainable Urban-Rural Landscape.

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SATURN: Toolbox Series of Sustainable Urban-Rural Landscape present the tools as listed below. The tools are generic in nature and with the potential of inspiring other parts of Europe and globally.

- Fostering on Municipal Land using testbeds, Gothenburg
- Farming incubator tool, Gothenburg
- Mapping underutilized and abandoned farmland and farms, Gothenburg
- Market Gardening Manual, Gothenburg
- Governance model - eco I socio I digital aspects, Trento
- Rural Urban Metabolism (RUM), Trento
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- Stakeholder Engagement tool, Birmingham
- Capacity building tool, Birmingham
- Visioning tool, Birmingham

Summary Tools

SATURN project has an objective to build a comprehensive and adaptive common framework and to test and improve the framework in an iterative process. The work entails to map best practices regarding sustainable land use models reconnecting cities to their surrounding areas and to create a toolbox of models and strategies that can be replicable and scalable. The toolbox includes several tools that can be used by city planners, facilitators, developers and practitioners. The aim of the tools is to provide concrete guidance on how to implement a certain project or an aspect of a project relevant to the SATURN project. The tools can be derived from the pilot cases of the SATURN project or from best practices collected or from our satellite cities. The tools vary in format and content but have in common that they address ways to enhance sustainable rural-urban landscape.

Fostering small scale vegetable farming on municipal land using testbeds

Tool details

Title: Fostering small scale vegetable farming on municipal land using testbeds

Objective: Public-private partnership to enable local sustainable and organic food production for urban entrepreneurs

Geography: Gothenburg region

Organisation: City of Gothenburg

Financing: City of Gothenburg, EIT Climate KIC

Time: 2019-2021

Link: https://stadsnaraodling.goteborg.se

Fostering on Municipal Land Using Testbeds

In recent years we have seen a renewed interest in local food production in urban areas. This development arises from a combination of several factors including increased focus on food security, raised awareness of sustainable and organic food production and a new breed of urban entrepreneurs who are aspiring to create livelihoods from small scale organic vegetable production in combination with innovative business models.

Historically this is more of a renaissance than a new development however, as it resembles the pre-industrial food systems that were in place prior to the development of modern large-scale agriculture that relies heavily on chemical fertilizers, pesticides and a global supply chain fuelled by cheap non-renewable energy flows. Urban areas in the past were intimately connected to their surrounding agricultural lands, depending on local production for a number of goods. Especially products that had a short shelf-life such as vegetables and fresh milk. However, the globalisation of modern food systems grew tandem with an expansion of the urban landscape turning good quality soil into residential or industrial areas. As cities grew the supply chain turned global even for products that only could keep for a few days.

Today we are experiencing a global movement of various food systems that reconnect cities to its immediate surroundings. This movement includes not only the arable land surrounding cities but also within cities, on rooftops and even indoors such as aquaponics and microgreens production.

The aim of this report is to offer support for city planners, developers and practitioners who wish to create a good breeding ground for such initiatives, with a special focus on the municipally owned agricultural land. The rapport is based on experiences taken from the Gothenburg model where the city offers allotments to future commercial urban farmers.

The Gothenburg Model

The Gothenburg model is an attempt to couple the ownership of land with an extended sense of responsibility towards the desired goal, which in our case can be defined as fostering local food production on municipal land. Traditionally, land ownership has a very limited scope of engagement focusing on managing the technical, legal and financial aspects through contracts. In this model however, we are more directly involved in the process offering for example a range of educational support. Central to the Gothenburg model is the idea that you should be offered a seamless array of possibilities to grow food within the city, starting from a small pallet collar and ultimately ending in a traditional farm.

- Allotments. The city of Gothenburg has over 40 garden allotments where people can rent a small plot of land.
- Allotments with garden houses. There are 25 such allotments spread around the city.
- Testbeds for commercial intensive farming. There are presently two testbeds, involving about 30 people on approximately 5 hectares of land.
- The Model Farm. An educational farm combining the principles of market gardening with a strong focus on pedagogy and dissemination. One city farmer is employed using funding from Climate KIC -Saturn.
- The Incubator. A course based on several workshops focusing on the business side of small intensive market gardening. The course is organized by Botildenborg in Malmö and are held every winter/early spring.
- Farms. Gothenburg owns about sixty farms all situated on the outskirts of the city. The agricultural land owned by the city totals an area of about 3000 hectares.

The focus are the testbeds but it is important to acknowledge the importance of the other parts because they together form an “ecosystem” and the model can be visualized as a river. Upstream, the small allotments give an affordable and practical way in for anyone who are interested in growing their own vegetables. The testbeds offer a reachable next step because farmers can try growing commercially for a market without making large investments. Downstream the large areas of municipally owned agricultural land offer the possibility of expansion for the farmers that succeed and would like to scale up their businesses. On top of this you have the added value of hands on educational content provided by the Incubator and the Model Farm.

The testbeds in Angered and Skogome

Our two testbeds are both located on farmland in the outskirts of Gothenburg and are both on sites that do not have existing buildings. Both places are about 2,5 hectares in total featuring a system where individual allotments are offered in different sizes.

The overall idea of the testbeds is to offer the most necessary prerequisites for successfully growing vegetables in an intensive, largely non-mechanised system. There are several reasons for choosing such an approach. First, we are connecting to a large, global and growing community of urban farmers that combine the use of intensive, small scale vegetable production with the selling of produce directly to the

consumer as a business model. The market gardener model has merit because it provides a template with detailed descriptions of how to manage a profitable business on limited acreage as well as a limited budget. Offering the most basic building stones for such a model is the expressed goal all though it is a moving goal constantly evolving based on our experience. The second reason for choosing this approach is that we need to find a balance point for necessary investments versus the need for maintaining rent at affordable levels. The identified set of necessary prerequisites are the following:

- Sturdy fences surrounding the whole area, using a height that is graded for prevalent wild animals which in Gothenburg include rabbits and roe deer. Gates needs to be of same quality.
- Water source and distribution adequate for growing vegetables.
- Container for safely storing tools.
- Toilet suitable for off-grid sites

Naturally this is only a small part of what is necessary for farmers, but the remaining list is up to the farmers themselves to provide, either themselves or in groups. Sharing equipment and teaming up to buy compost are two examples of how to reduce cost that is applicable on the testbeds due to the small size of individual allotments and the advantage of growing on the same place.

Site preparation

All work put into the preparatory stage will yield manifold at later stages. Site preparation begins with the crucial question: What is a suitable location? The answer to that question depends on many different factors that need to be considered. Here are some of the most important ones:

- **Accessibility**. In general, the time spent on transporting oneself as well as goods and produce can be considered lost time. Because of this, sites should ideally be accessible by public transport as well as by car and offer adequate parking space. This is especially important because growing vegetables often require relatively short but very important chores such as watering. Poor accessibility will make even the smallest of action time consuming.
- **Soil quality.** Choosing a soil suitable for vegetables is very important. In some instances, amendments can be made bringing in soil and mixing in the top layer, but the cost of such strategies can be very high and bind up money that could be better spent on other places. The soil should ideally be rich in nutrients, able to store water and nutrients adequately, and easy to cultivate. This rules out heavy clay as well as too sandy soils for example. With time, soil structure will improve from cultivation and added organic material, but it is important not to make the first years too hard for growers by choosing a site with poor soil quality.
- **Soil preparation.** One of the most important things to consider is the drainage situation. A good sub-surface drainage system needs to be set in place prior to other preparations and should also reflect the needs of vegetables, which usually necessitates a denser grid of drains compared to other crops. Although the cost of a denser drainage system is high, this is outweighed by the advantage of higher yields of high value crops. Also, one should consider the inconvenience of attempting to mend a poorly functioning sub-surface drainage system once the field is in production as this will naturally affect the growers negatively. In the worst case, a season may be lost because digging needs to be done during the growing season in order to not permanently damaging the soil structure.

  Once the drainage situation is taken care of, the land should be prepared using suitable methods to remove weeds and improve soil structure. This should be considered as a long-term plan rather than a quick fix. The standard way of soil preparation includes ploughing and harrowing the land which will quickly deliver a soil ready for planting. The challenge is however that not all of the land will be rented out right away, leading to a situation with a surge in annual weeds equally problematic compared with the perennial weed situation prior to ploughing. On the other hand, once the grid of allotments is done and water distribution and pathways are set. It is challenging to do a second ploughing because machinery such as a tractor with plough is ill suited to small plots of land. One alternative to this is to use ground cover such as silo tarp1 as a way of preparing land instead of the plough. This will make it easier to handle plots in between others and does not require machinery although it needs the help of several people.

[1] Silo tarp is essentially plastic that is sturdy enough for several years of use. Choose the type that is black on one side and white on the other. With the black side up, the sun will increase soil temperature and activate weed seeds which consequently die due to the lack of sunlight.

There are pros and cons to this method. The pros are that it is effective in reducing both annual and perennial weeds, it is comparably inexpensive when compared to mechanical preparation, especially when you need to rent the tractor and driver, and it does not negatively affect the soil due to either compaction or leaving the soil bare. The cons are that it will need to be replaced after a few years due to wear and tear, handling requires several people to handle and it can be problematic if you have voles and moles in the area as the tarp will offer a protected space for them and these animals will tend to quickly make holes in it.

- **Water distribution.** Water distribution is perhaps the single most important factor affecting the success of the test site. The water distribution system needs to have adequate capacity meaning that it can deliver large amounts of water of good quality in dry periods. A less than optimal water distribution will affect crops in a serious way. In terms of both choosing which site to use and which system to implement, this is extremely important. Using municipal water is often the safest bet when considering secure delivery but on the same time it can be very expensive depending on the price of water. Commercial vegetable producers in general use water from other sources such as drilled wells or dams because of the cost issue. The test site offers an added challenge due to the many growers connected to the same system. No matter what system you have, you will need to share the resource in a good way, meaning that not all can water at the same time. It is also important to consider the amounts of water needed as this can be counter intuitive. Gothenburg for example has an average annual rainfall of over 750 mm a year, most of which falls during the growing season and mostly during autumn.

  The average rainfall per day between April to October is between 1 and 3 mm. If you have a site of 2,5 hectares this means that the average amount of water dropping every day is between 25000 and 75000 litres. If we want to exchange 1 mm of rainfall with irrigation this means a cost of between 175 SEK- 300 SEK depending on the price of water. Considering that the required amount of added water during a year can be between 1000-1500 cubic meters per hectare, and you rely on municipal water, this is a considerable cost that needs to be compared with the investment and running cost of other water distribution systems. When the water distribution system is in place you also need some sort of system to share the available water between the growers because both the amount of water as well as water pressure is a limited resource. Installing drip irrigation systems will for example allow for a larger area to be irrigated at the same time compared to sprinkler system which rely on sufficient water pressure and typically uses more water. When you have a system with time slots for example, this can be combined with automation using fairly inexpensive machinery that run on battery.

- **Roads and walkways.** With regular garden allotments, walkways tend to be narrow and suitable for walking or wheelbarrows. However, if you want to enable intensive vegetable production the need for accessibility is much greater because several tons of material such as compost and other organic material needs to be distributed to each of the allotments. First, you want a sufficiently large area where trucks can unload material as well as allowing for the necessary vehicle turning radius. This area must be weatherproof with gravel and sufficient drainage to allow for delivery even in bad weather. Also, the paths leading to each of the allotments should be broad enough to allow for a tractor with trailer or a car with trailer to access all allotments. Building walkways with the same quality as the offloading area would of course be great, but this is a cost issue. In general, the walkways leading to the allotments are used on a few occasions every season whereas the central area is used all the time. Also, with expensive groundwork, you need to be sure about the layout of the area so it will allow for

future development. If you go for a more rudimentary solution with limited groundwork you can of course improve the standard over time.

- **Storage.** The cost of equipment can be quite high and there is need for a safe storage solution to minimise the risk of theft as well as offer weather protection. In our case we have chosen shipping containers because they are comparably low cost, can easily be moved, are low maintenance and offer safe storage. High quality padlocks can be fitted with a cylinder allowing for the required number of copies to be made.
- **Neighbourhood and context.** Apart from all the technical aspects of choosing a site it is also important to consider the surroundings, including neighbouring businesses and residents. Including locals in the planning and providing good information can help alleviate friction in the establishing phase. When people living and working around the site can appreciate the value of the project, they can be of help and provide extra sets of eyes on the area.

Site operation

Once the site is prepared, the next things to consider are recruitment and daily operation. As pointed out earlier, in this project the level of involvement for the municipality is much higher than it normally would be. Being directly involved in the operation entails however not only benefits but also challenges. The benefits are first and foremost the ability to directly affect the development of the testbed, deciding on changes and quickly implement them based on a growing body of experiences. As the concept is new, there is an argument for keeping the project close. That said, having operational control also demand resources in the form of time and money and this is perhaps not possible for all cities. Another thing to consider is how such operational control affect the level of engagement among growers and the sense of project ownership. The level of detail when managing a site can be quite high and there are arguments to be made for choosing a model where the growers organise among themselves and lease the land as an entity.

- **Reqruitment.** The growers are the backbone of the testbed and no matter how much effort you put into preparation and planning, these undertakings are dwarfed by the many hours of work put in by the growers. Having a robust group of growers is all important from the very start of the project. In terms of recruitment, this offers a particular challenge in not only the way recruitments are done, but also how to best use the available land. The challenge comes from the fact that available land is limited on the testbed but the need for land among the growers are dynamic. In principle it is a good idea to start using a fairlysmall plot of land, and then expand the operation based on how the farm develops. This is dependent on several factors including how much time the growers have to spend on the farm, how successful they are when creating and maintaining customer groups, and also how their plans develop over time. For this reason, it is perhaps best to set aside areas within the testbed for future expansion. Due to large and growing demand among urban farmers, the new model we have chosen in Gothenburg includes a smaller plot of land for the first year which are then offered to new growers next year. On this plot of 200 square meters per allotment we plan to maintain a raised bed system. Using this system, we ensure that each year we will have some plots to offer. As some growers typically choose not to continue after the first year, or will find alternative places to grow, we can regard the first year as a trial year.

When considering applicants, it is important to stress the difference of the testbed model compared to normal allotments. Especially if regular allotments are available in the same area, you must clearly define the difference in order to attract the right type of growers. If this is not done sufficiently, you could expect some growers to be attracted to the low price per square acreage and downplay the focus on the commercial side of the operation. One way of safeguarding this is to write the requirement of a commercial focus in the actual contract. In Gothenburg we have decided that the growers should be registered as a company from the second year, but until now we have not enforced it as we are still developing the concept and we want to ensure the system is stable enough before making such demands on the growers. However, there will always come a moment when people will need to choose to commit and the precariousness of that moment cannot be removed by design. With that in mind, it is of utmost importance that the commercial aspect is stressed from the beginning if that indeed is the goal.

- **Daily operations.** Day to day operations include managing the common areas, maintaining the infrastructure and dealing with contracts and following up on questions and input from the growers. The level of detail can potentially be quite large and maybe even unmanageable for a single person, so the goal should be to create a system where the growers themselves have the means to assume responsibility for not only their own plot but also the common areas and systems. In the case of Gothenburg the only part of daily operations that are kept solely on a managerial level is the water distribution service, but even there it is an advantage if everyone knows how the system works and as well as what needs to be done if there is a problem requiring immediate attention.

Additional considerations

In Gothenburg we have chosen a model where we focus on what we found to be the most essential parts of a functional site for growing vegetables commercially using a minimum of machinery. Moreover, we have chosen sites without existing buildings and such basic infrastructure as electricity. However, there are arguments for choosing an existing farm as the starting point because this will provide much of the needed infrastructure at a much lower cost than systems that need to be set in place from scratch. This is not only due to the actual cost of installation but also due to the high administration and registration fees placed on for instance new water connections in the municipal grid and new electricity connection points. High value requisites not currently provided in the model include the following:

- **Municipal water rated as drinking water quality.** This would enable growers to rinse leafy vegetables prior to market. As of now this is only possible in Skogome because we have municipal water there. Currently the growers need to either do the rinsing at home or offer unwashed produce to the customer.
- **Walk-in-cooler.** This is regarded as something of a necessity in market garden systems but cannot be provided without ample electricity. The obvious advantages include being able to harvest and prepare the produce days before market and less post-harvest loss as vegetables will keep well even when the temperatures are high outside.

- **Temperature control in greenhouses.** There are off grid solutions available for regulating ventilation systems in greenhouses, but the systems based on electric motors are in general more efficient and also provide more intelligent solutions where you can make changes directly on your cellphone even when off site.
- **Automatic irrigation control.** This is also possible to provide in an off-grid situation, but on-site electricity provides more possibilities.
- **Integrating residential areas with growing.** As mentioned in the previous point on situating the testbed, growers will tend to spend a lot of time travelling to and from the allotment. If you have the possibility to provide housing on site this will lead to a much more efficient use of time for the growers as well as the added convenience and security of having people on-site 24/7.
- **Attracting visitors.** A testbed placed on a farm would provide the added value of facilitating for visitors. A café relying in part on vegetables produced on site is one possibility and this would also provide work opportunities for the growers, offering a perfect setting for displaying the growers individually in context as well as presenting the model as a whole. The key to this is however suitable buildings and amenities such as toilets and parking and/or access via public transport and bicycle.

Integration and education

The core of our model is to facilitate commercial production of small-scale organic vegetable production for the local market. However, there are several other areas of focus that can be attached to this model. It could for example help facilitate future work opportunities for unemployed immigrants with a background from agriculture. However, this would require support from other institutions and not only access to land. As the complexity involved in starting up a company is formidable, including getting permits as well as adhering to various laws and regulations as well as getting access to selling channels, a concerted effort is needed that can offer the right support. Another possibility is to use the testbed for various educational purposes ranging from small children to university level. The testbed is special in that it focuses on food production for the market but also offer a very high degree of diversity within a small area. For children, this can be a chance to get acquainted with agriculture and grasp the connection between their basic needs and how that relates to the land.

SATURN: Toolbox Series of
Sustainable Urban-Rural Landscape

Visioning Tool

Problem and Goals Identification and stakeholder management process

Prof Kathryn Moore, Dr Anastasia Nikologianni, Nick Grayson

A Toolbox Series of sustainable urban-rural landscape:

Professor Kathryn Moore, CATiD – Birmingham City University, UK

Dr Anastasia Nikologianni, CATiD – Birmingham City University, UK

Nick Grayson, Birmingham City Council, UK

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Visioning Tool

Tool details

Title: Visioning Tool

Objective: Spatial Vision

Geography: UK

Organisation: CATiD BCU & BCC

Financing: SATURN project

Time: 2020

Link: TBC

Summary

The logic model tool summarizes the concept behind the three tools of Birmingham.

SATURN –Work Package 1: Stakeholder Engagement and regional design (WP1A) and Capacity Building (WP1B) LOGIC MODEL- TOOL

Project: (HUB locality or place to be entered)

Project Context

Policy context- Expansion of urbanized areas heavily changed cultural landscape features in many European countries. This process has turned natural, semi-natural or cultivated areas into the very spaces into which infrastructures, productive and commercial units or houses, have been located. This has caused several impacts on the natural, socio-cultural and economic fluxes between urban and rural territories. With the increasing effects of climate change, this relationship has now become of paramount importance. For example 75% of natural resources are consumed in cities, which also account for 80% of global greenhouse emissions. Figures that call for a series of interventions that should target urban settlements and their surroundings. In fact the nearby territories act not only as a provider of commodities (food, wood, fibre, water) but for services granted by ecosystems such as flood protection and control of pests and pathogens. Additionally to a large extent citizens are able to live their lives in urban settlements with little interaction with the rural areas.

Regional context-
The problem SATURN is trying to solve is one of governance of nature and landscapes and the regional scale. Currently the human approach to the management of land is determined by ownership and often from the interests of a single sector. Leading to a fragmented landscape with equally fragmented governance and therefore funding and people engagement. Leading to a fragmented approach to climate change.

What needs to be in place for change to occur? – SATURN WP1 puts in place a three tiered mechanism to re-understand the regional landscape through a holistic vision, look to assess both the hidden natural value in that landscape and its hidden stakeholders, then reveal those through a capacity building process. It is from here with this renewed capacity identified that the necessary 'Step-Change' required to meet the 21st century global challenges of environmental restoration and climate change. This approach then allows you to undertake a totally different assessment of 'value'- by noting all the inter-dependencies of social, economic and planetary wellbeing with nature and landscapes.

Programme objectives: This project stands at the intersection between CKIC- Impact Goals 2,5, and 6.

- **Impact Goal 2-** How can natural assets be valued in the urban context of "Create Green, Resilient Cities"(Impact Goal 2). The so called Nature Based Solutions (NBS) have been designed by looking at how agriculture was using ecosystem services and by adapting this approach to the city context;
- **Impact Goal 5 -**The food production "Transform Food System" -is the most important value chain that the project aims to re-localise. Closing the distance between the production and the consumption has a high mitigation potential, not only by reducing the transport, but also by limiting the externalities of the citizen consumption on climate on the other side of the world where agricultural practices are less regulated.
- **Impact Goal 6** –"Nurture Forest in Integrated Landscape" is at the core of the project. The integrated landscape approaches has been set up to have a better systemic understanding of deforestation and land degradation issues.

Rationale

- To address the over-riding challenge of fragmented regional landscapes, **SATURN WP1 brings a holistic vision practice** to re-imagine the future of your region- in how it needs to respond to the 21st century global challenges of climate and ecological emergencies.
- To address the identified challenge of under-valuing landscape the **SATURN WP1 brings a stakeholder engagement practice** based around ecosystem services and natural capital.
- To address the challenge of fragmented governance and policy and resourcing, the **SATURN WP1 brings a capacity building practice**, that connects the hidden beneficiaries and key regional stakeholders to local governance and circular economy models.

Inputs

- **A regional spatial vision workshop**: Outlines the critical potential impact of taking a visionary approach to regional landscapes and design;
- **A comprehensive stakeholder mapping workshop:** Outlines the potential benefits of establishing unseen values through both ecosystems and stakeholders;
- **A capacity building workshop**: Outlines the connections between values, stakeholders and capacity; linking to governance and circular economy models.

Activities

- **A regional spatial vision exercise**: Takes the group from individual visions, to future generational spatial visions for their region/place;
- **A comprehensive stakeholder mapping exercise**: A systematic series of challenges and steps that enable identification of value and key stakeholders;
- **A capacity building exercise**: Connects the key stakeholders to the local governance and economic context to determine future critical pathways to growing organisational capacity.

Outputs

- **A regional spatial vision:** To be described and shown through a series of worked diagrams, drawings and revised maps; contained in a summary report
- **A stakeholder engagement process, analysis and mapping:** To be described and depicted through CKIC tools on MIRO boards; contained in a summary report
- **A capacity building exercise:** To be described and captured through CKIC tools on MIRO boards; contained in a summary report

Intended impacts

- ***A new regional spatial vision and regional design methodology:***
- ***A new stakeholder engagement analysis methodology:***
- ***A new capacity building analysis methodology:***

Intended outcomes

A new regional spatial vision and regional design:

A holistic spatial vision for the region looking ahead at least a generation.
An integrated vision of landscape but also of culture, of heritage, of historic connection.
The vision must consider the sccial dimensions about families, access to nature, recreation.
The vision must also consider the policy and political and governance questions.
The vision must consider economic aspects, of productivity, infrastructure and growth.
The vision must consider how the region is seen in the future both internally and externally.
The vision process must end with a series of next step challenges to be picked up below.

A new stakeholder engagement analysis:

To complete a pentagonal challenge resulting in defined aims and goals for the region.
Against these goals and the created vision, research your key stakeholders.
Map these stakeholders on a 'Universe' Board as an expression of current engagement.
Match your key stakeholders to your vision themes.
Cluster these stakeholder groupings back on the 'Universe' Board; and pick leads.
Identify the critical players for accelerating change.

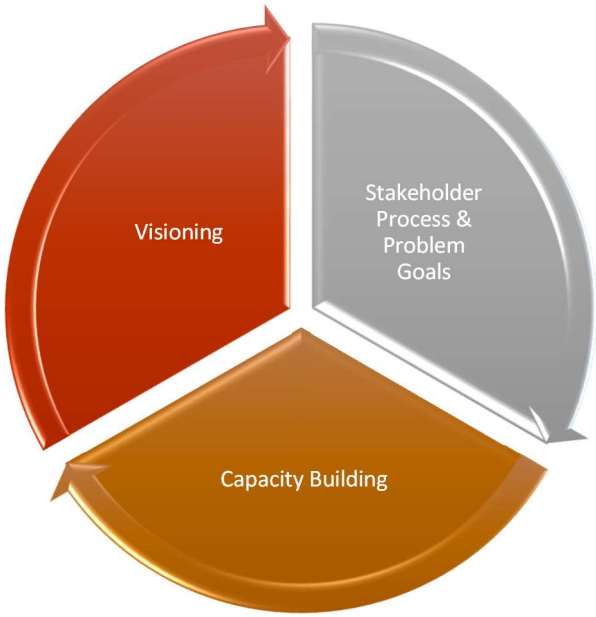
A new capacity building analysis:

The lead organisations or stakeholders need to be mapped against their corporate outcomes.
Using systems mapping link the strategic outcomes to key regional policy goals.
Connect your project aims, with the policy goals and the stakeholder outcomes.
Understand the inter-dependencies across the region.
Examine the regional landscape design implementation plans and timetable.
Connect the landscape vision and timetable to the other regional strategic timetables.
Connect and calculate the added value of synergistic working.
Submit to the regional strategic governance and circular economic decision-makers.

Climate-KIC is supported by the EIT, a body of the European Union

SATURN WP1 brings in three key processes which are interrelated. They can work as individual tools, but the results are stronger when these tools interact with one another and shape the outcomes.

a. The Holistic Vision practice
b. The Stakeholder Engagement practice
c. The Capacity Building Practice



The Visioning Exercise Practice

Very rarely are we encouraged to think about the art of the possible, to ask what if…? The purpose of the visioning exercise, designed by the EIT Climate Kic Saturn Project is to do just that. To move beyond what we know and feel secure with and instead imagine what could be possible. Imagine alternative future scenarios that will inspire others to act and think differently. It is a spatial, visual and conceptual exercise involving drawing, thinking and imagining.

SUMMARY

The process has to be driven by an embryonic long-term vision. A set of ideas to talk about, to act as a guide, a challenge and to encourage people to think in a different way. A vision won't just emerge from nothing. Parallel with this is the need to engage wide range of key stakeholders and to build capacity regionally from the beginning (see refs). As the work progresses, drawing/visioning workshops capture a different kind of information and case studies can demonstrate what the vision means in practice. The whole process is iterative and requires constant reflection and analysis. What are you trying to do? What is the main problem you are trying to solve and does this change as the process evolves? What are the implications of these important realisations for this vision? It is a question of revising and refining the vision as its implications become clearer whilst not losing overall sight of its ambition and drive.

CREATING A VISION

There is a certain way to approach creating a vision:

- Identify the idea that is of concern, requires investigating and researching
- Question basic assumptions. Ask “what if…?”
- Work across traditional boundaries (spatial, conceptual and contextual, economic, environmental, technical, professional, disciplinary and social).
- Have the ambition to learn new things and change current practices.
- See the bigger picture think strategically
- Work with ideas and ensure the discussion does not devolve to details or technical fixes
- Constantly encourage others to see the bigger picture, to build capacity.

INFLUENCING

The vision needs to engage leaders (funders, politicians, figure heads) Persuade by being convincing and knowledgeable:

- Get clued up. See the bigger picture and develop the vision, articulate the need to develop a long-term vision, based on knowledge, passion, commitment and expertise.
- Persuade the most influential person you know that it is a good idea to develop a spatial vision (not just a list of bullet points) in order explore alternative ways of thinking and explore alternative futures to address current issues and challenges.
- Present initial ideas to a range of decision makers. Analyse how their ambitions, concerns and vision for the future might or might not impact on your ideas in a national and international context.

DEEPENING THE CONCEPTUAL UNDERPINNING

Getting to know more about the potential of the vision

- Establish a sounding board of the best strategic thinkers and leaders that you can find with a broad range of views and interests.
- understand the impact on governance and regional strategies and financial models
- Develop an understanding of the territory, its history, culture, identity and geography, main social and economic drivers and issues
- Understand the problems in a wider geographical sense and establish how this relates to the regional and global context including the 2030 UNSDG's, UN Habitat etc.
- Synthesises this information. Generate a vision, map it and illustrate it supported by precedents of best international practice

SOCIALISING THE IDEAS

Promoting the vision regionally, nationally and internationally and develop case studies (capacity building and engagement)

- Promote and disseminate the vision through expert seminars, exhibitions, invited lectures, workshops and conference presentations
- Illustrate what the vison might mean for specific case studies within the using local or international examples and precedents
- Build local support through visioning workshops to further gauge concerns and ambitions
- Collect feedback an advice.

GATHERING SPATIAL INFORMATION AND IDEAS WORKSHOPS

Once the above has been undertaken it is then possible to carry out more detailed workshops

Building connections with local stakeholders

Hold workshops to engage stakeholders and by getting people to draw, to see the bigger picture.

Below is a workshop brief used in SATURN in September 2020.

Visioning Practice	
How Many	1-15 people per group
How Long	A series of 2 workshops (90mins/per workshop)
What You Get	The opportunity to see and define the bigger picture and to understand the potential of working in an integrated way.
What You Need	Papers, markers, pencils, a facilitator/trainer, a lot of energy
Difficulty	High
Important Ingredient	The ability to be brave and imaginative
What is next	This feeds into and helps shape the stakeholder and capacity building tools

What is it:

The opportunity to work at a strategic level with a mix of stakeholders to discover interrelationships and tackle global challenges from a holistic point of view. It is an opportunity to see the world differently and to challenge preconceptions.

When to use:

Ideally prior at the inception of the project, to help shape its development, tasks and priorities.

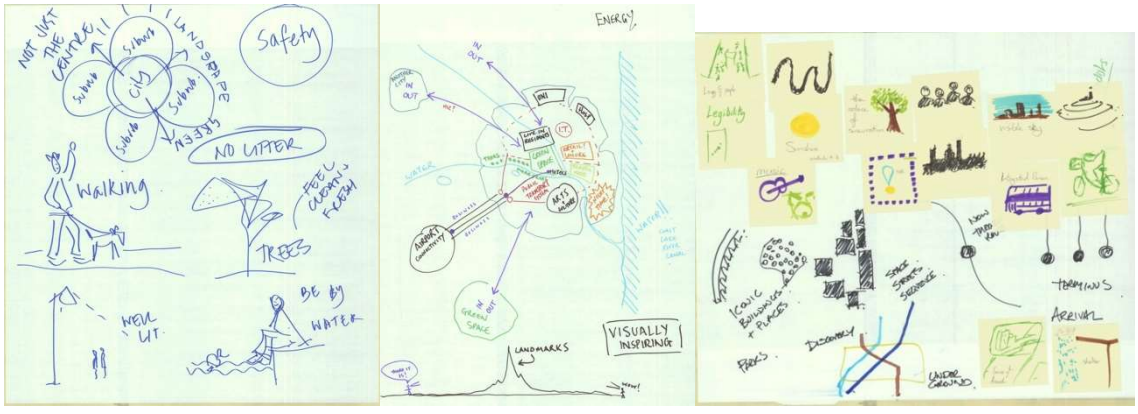
Why it is useful: it helps to

- See the bigger picture spatially
- find more effective ways to resolve the global challenges
- ensure that the strategies being considered become more than the sum of their parts
- builds constituencies across sectors and silos to establish a common vision to drive the project forward
- question and challenge deep seated assumptions that have in many ways contributed to the challenges we face
- provides a more integrated way of defining stkaholder engagement and capacity building
- requires work with ideas as well as technology as a means of helping to generate buy in and capturing latest international expertise.

TASK ONE: INVITATION

Invite participants, decision makers, politicians, experts, local communities and the public to a workshop.

- **Broadening horizons** - ask participants to come to a workshop prepared with an Initial task (to be undertaken individually). Ask them to think about the challenge, in the context of the international aspirations set out in the UN 2030 SDG's, the emerging challenges of a post Covid recovery and the climate emergency we face.
- **Making it personal**: Create a narrative: for example: It's the year 2050. Your great grandchild (or your friend's great grandchild) is now 10 years old. They ask you what did you do in 2020 to stop climate change; what was your vision for your region, then? Your task now is to draw & describe that very vision- now- that you would be comfortable showing this young child in 2050. What would you want your region to really look like?



Drawings from an expert seminar in 2015 where attendees were asked to draw "what makes a great city?"

Reassure participants that the images do not have to be complicated – it could be a series of diagrams/images as shown above. This is not something that is precise or to scale, but diagrammatic, to provoke ideas and discussion.

Ask them to get lost in the process of drawing as they explore your ideas, to avoid lists or bullet points. Ask each person is to present their ideas in 3 minutes.

TASK TWO - INTERPRETING THE VISION SPATIALLY: WHAT DOES IT LOOK LIKE?

At the meeting divide the group into teams of 4-6. Ask participants to undertake the task COLLECTIVELY in teams.

Ask them to interpret their reimagined region onto the base plan provided, to translate their dreams and aspirations for the region to explain to the 10 year-old great grandchild, what these mean in reality and how they might work spatially.

Work on large almost blank sheets of paper, with just the main geographical features indicated.

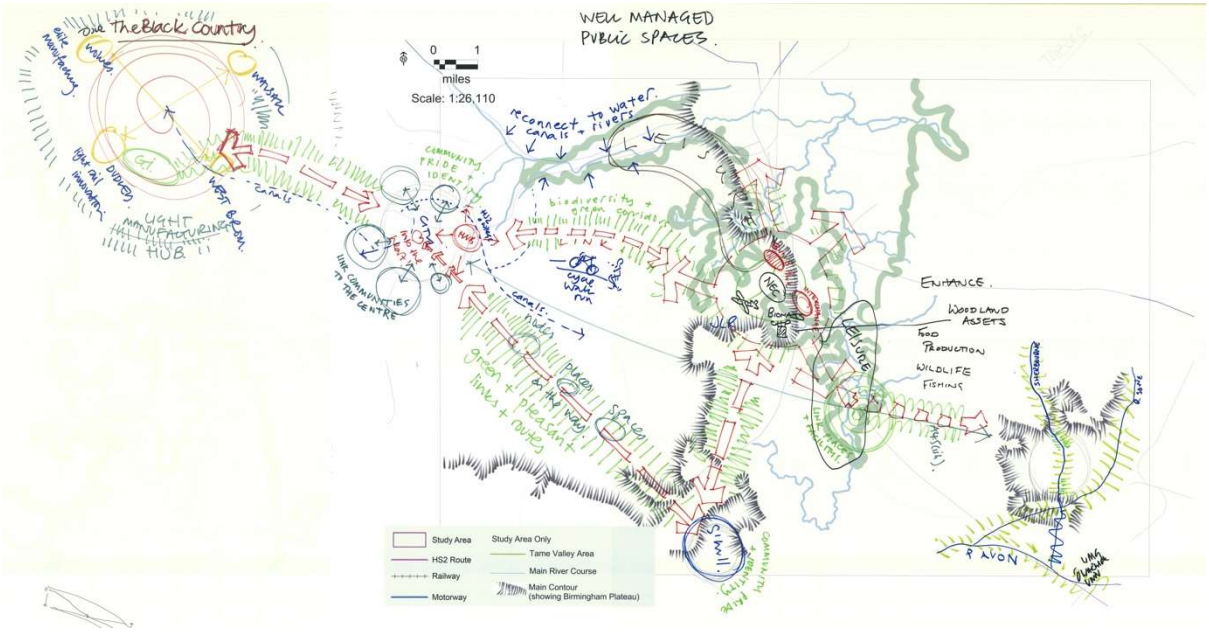


Diagram imagining how best to deal with the impact of HS2 (high speed rail project from London to Birmingham)

After 30 minutes, ask them to present to the whole group their spatial regional vision – not just of the physical landscape but also the political, cultural, social and economic landscape, looking at a range of issues (and others we haven't thought of) such as:

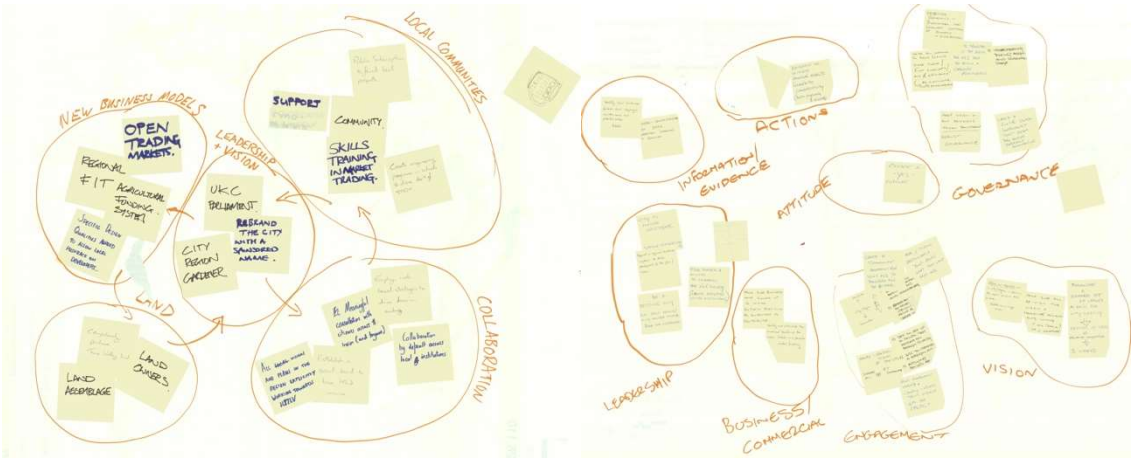
- better connections between food and local communities throughout the cities,
- more families eating and growing local produce
- a changing the reputation of the region,
- greater awareness of the history and culture of the region
- Greater care and concern for the soil, the land, the forest and water through policy and action
- an ability to protect the land from urban transformation
- greater awareness of the most important areas to protect or use for food growing

- traditional knowledge networks
- resilient circular economies through food production and consumption
- new policies – from where?
- governmental support - from whom?
- Land protected from urbanisation

TASK 3 REIMAGINING INTO ACTION: HOW DO WE GET THERE?

Without talking and one a blank piece of paper, stick post it notes identifying what actions ou think are necessary come from these discussions.

Work as a team, without talking, to create groupings of similar actions to achieve these long-term regional ambitions.



From the Sept 15th HS2LV expert seminar, BCU

When completed take time to think about how the strongest connections might be extended spatially and politically to new stakeholders/communities. Identify gaps in the spatial/political networks and how can these be overcome.

TASK 4 Group Discussion: Analysis

WHAT ARE THE IMPLICATIONS OF THESE EXERCISES?

Convene a discussion for 30 minutes, with 5 minutes per team.

Ask them:

- How has it changed what they would say to their great grandchild?
- In what ways has it changed how their perceive your region?
- Are there physical, cultural or social challenges/opportunities that have become apparent?
- Do they have a broader vision, if so in what ways?
- Do they need to rethink the current stakeholder maps in order to deliver this vision?

- Refer to the stakeholder engagement drawings to help to translate this spatially.
- Are there significant missing stakeholders to achieve the ambition?
- Are some stakeholders going to be much more important than anticipated?

Task 5 REFLECTION

THE IMPLICATIONS OF THIS WORK FOR THE CAPACITY BUILDING AND STAKEHOLDER ENGAGEMENT TOOLS (REF TO DOC)

Address these relevant and important questions before going to address Organisation Capacity/ Capacity Building- so who and how can you deliver this ambition now?

- Vision
- Stakeholder mapping
- Capacity building

Visioning Tool

The power of a vision image	Text why do it Introduction & summary
Vision at various scales and character image	Geographic scale Timescale Who's vision Potential links to existing ambitions/ policy/ national/local/regional
Image Capture pictures Images pictures	Apply geographically alongside multiple layers
Re imagining into action Vision against stakeholders Miro image	Stakeholder universe & capacity tool next steps…..