Legislative aspects and business models in Urban Agriculture

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General information about the module

Module n° 5

TITLE: Legislative aspects and business models in Urban Agriculture

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Introduction

This module will focus on the importance of governance, policy schemes and regulations for the development of an urban agriculture (UA) project. Moreover, it will explore the significance of an effective communication with private and public stakeholders, and a valid social network community for successful UA initiatives.

Duration

In hours –
Lessons : 8 hours
Exercices/activities : 6 hours minimum (2h/exercice).

Learning outcomes

On successful completion of Learning Unit 5 participants should be able to…

Knowledge	Technical Skills	Soft Skills
• Understand the Governance and legislative issues about UA on EU level and National Levels (partner countries). • Know the different types of Bussines Models in UA as well as its economic and financial aspects. • List the opportunities and challenges of Urban Agriculture.	• Be able to create a business model for a UA project. • Be able to identify the legislative and technical context to implement a UA project	• Communication and Marketing Strategies specific to UA businesses. • Being able to develop a risk management strategy for a UA project.

Main content and resources

SubChapter 1. Governance issue (European, national and local administration)

The Governance issues of Urban Agriculture (UA) is characterized by a complex situation not only at European level but also at National levels. The Innofarming consortium has made a literature review in order to outline the existing policy and governance framework of the EU and partner countries regarding the UA phenomenon. The complexity of UA policy impact areas derives from its multi-sectorial nature. An in-depth analysis by the European Parliamentary Research Service states that the UA activities have potential impacts on various policy areas which make it “complex” enough: health; poverty; food production; nutrition; social inclusion; sustainable / profitable agriculture; education; racial integration; local economy; culture; community development; environment; recreation; crime reduction and food access (**McEldowney**, **2017**).

European level

As it is known, the Common Agricultural Policy (CAP) is the main policy paper for all EU countries regarding agriculture. Although in recent years the issue of UA attracted increasing attention by a wider range of global and European policy makers and researchers, the phenomenon had been largely neglected by EU policies and especially in the CAP (**Piorr et al., 2018**). Despite its high potentials, UA is double marginalized by CAP (**COST Action**, **2013**). Firstly, it does not really benefit from the direct payments pillar of the CAP. Secondly, due to its location it is not covered by most of the rural development programs. In addition, **Curry et al.** (**2015**) state that analyses of European policies on UA are rare and European policy so far has not had the transformative effect on UA because such policy resolutely conceives of food production as a rural action rather than an urban activity. For instance, the Directorate’s General puts out “Agriculture” is automatically combined with “Rural Development” (**COST Action**, **2013**). Moreover, the policies in general are promulgated by 33 different Directorates General and so the policy landscape for those areas of interest to UA inevitably is complex (**Curry et al., 2015**). In conclusion, the adaptive governance processes for UA are still weak and a meta-analysis that could embrace the richness of UA and inform both initiatives and the public officials who can potentially support them does not yet exist (**Lohrberg et al., 2016**).

In the public consultation process for the coming CAP (2020-2024), the issue of urban and peri-urban farms was not addressed. Asking the question where the CAP may improve its contribution to rural areas, only 7 % of the consulted people named “Contributing to societal and cultural capital for rural areas to stay vital living spaces and to establishing mutually beneficial rural-urban linkages”, which indicates still a strong rural perspective on rural-urban-linkages (**Piorr et al., 2018**).

Figure 1 The Common Agricultural Policy of the EU
Source: www.consilium.europa.eu

UA meets most of the legal preconditions of being 'agriculture'. It is on the agenda of most European cities and it meets most of the Europe 2020 Strategy's aims for viable food production, sustainable management of natural resources, climate action, and balanced territorial development (**Curry et al., 2015**). Though, in the last and the current programming period of the CAP there were/are no measures specific for urban or peri-urban farms (**Piorr et al., 2018**). Nevertheless, it is possible to encounter some positive actions by the EU to support UA activities. Over the years, members of the European Parliament have raised the issue of UA through questions put to the European Commission. The Commission confirmed in August 2012 that "support to urban farms was available under both pillars of the CAP as

long as the eligibility conditions were met. The Commission has also acknowledged that urban farming could contribute to the objectives of sustainable development in an area, as long as the principles of sustainable farming were followed. But it is up to Member States to choose the types of operation or measures they want to include in their rural development programmes (**McEldowney, 2017**).

In the literature, there are some comprehensive studies addressing the need for policy development for UA at EU and National levels. Yet, the complexity of UA activities naturally affect the policy making process. One of the major studies on the issue realised by EU's Policy Department for Structural and Cohesion Policies (Urban and Peri-urban Agriculture in the EU) presents a general framework of policy domains of UA (**Figure 1**). This framework highlights two main aspects: 1- a variety of policy domains can influence UA directly and indirectly and the necessity for policy integration; 2- there are multiple perspectives on UA which mirror the different functions and perceived benefits of UA and which deliver arguments for policy intervention. The study concludes that "many policy areas influence the effectiveness of UA and the diversity of UA requires more political recognition. Policies from the different areas need to be better coordinated and tailored to specific UA conditions in order to fully exploit its manifold benefits" (**Piorr et al., 2018**).

The "Urban and Peri-urban Agriculture in the EU" study (**Piorr et al., 2018**) also indicates some relevant policy processes and programmes at global level for urban (and peri-urban) agriculture:

1. UN-UNEP and UN-FAO: Sustainable Food Systems (SFS) Programme: which is an integral part of the 10-Years Framework for Programmes on Sustainable Consumption and Production Patterns (10YFP), launched by UNEP and FAO in 2014 and aims to accelerate the shift towards sustainable production and consumption in developed and developing countries.
2. UN-FAO / Urban agriculture: that supports the transformation of UPA into a recognized urban land use and economic activity, integrated into national and local agricultural development strategies, food and nutrition programmes, and urban planning.
3. UN-FAO and RUAF / Food for the cities programme: a multidisciplinary initiative called "food for the cities" that addresses the "challenges that urbanization brings to the urban and rural population, as well as the environment".
4. UN-Habitat II and III (New Urban Agenda): United Nations Conference on Housing and Sustainable Urban Development at which the countries renew their commitment for sustainable urban development and identify and address new and emerging challenges (**Piorr et al., 2018**).

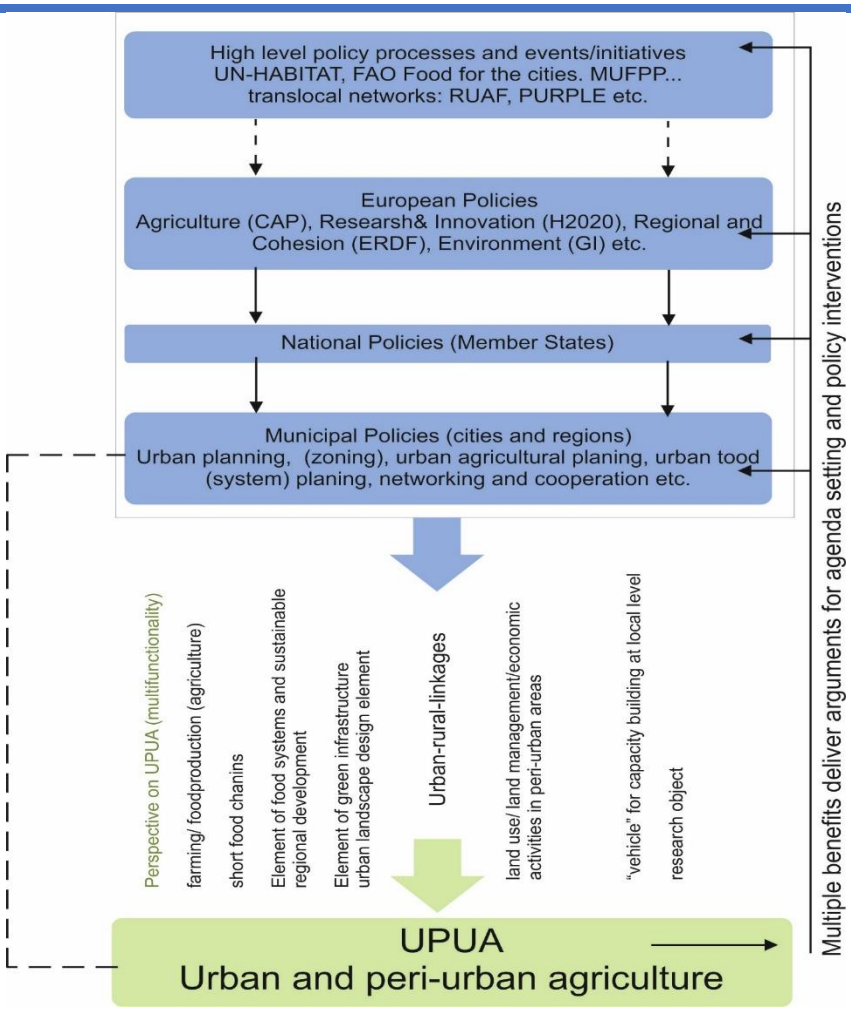

Figure 2: Policy domains and perspectives on UPUA. Source: "Urban and Peri-urban Agriculture in the EU":https://www.europarl.europa.eu/RegData/etudes/STUD/2018/617468/IPOL_STU(2018)617468_EN.pdf

The position of european agriculture organizations on UA

The Innofarming consortium have searched for the position, policies and strategies of European Agricultural organizations towards the UA sector. We can indicate two international organizations that work worldwide covering several European countries.

First, the **RUAF - Global Partnership on Sustainable Urban Agriculture and Food Systems** is a partnership of strategically selected expert institutions. The partnership brings together cities, research institutes and civil society organisations with a recognised track record in urban and peri-urban agriculture and urban food systems. UA is one of the main working areas of RUAF that works with cities and citizens to strengthen local and transparent UA production and value chains through supporting innovations and innovative farming systems, assessing market demand and linking producers with consumers, building local capacity and enhancing access to land and productive resources.

Secondly, the **Food and Agriculture Organization** (FAO) initiates the **Urban Food Agenda** to enhance sustainable development, food security and nutrition in urban and peri-

urban areas, and nearby rural spaces. It consists of a vast range of policies, programmes and initiatives developed and implemented in partnership with different stakeholders: civil society, academia, UN & International agencies, City Networks and relevant public and private bodies and entities. In addition to this Agenda, FAO established the **Urban Food Actions Platform** that provides access to a comprehensive database of resources related to urban policies and programmes, to achieve sustainable urban food systems. It covers a wide range of aspects: governance and planning, sustainable diets and nutrition, social and economic equity, food production and ecosystem management, food supply and distribution, food loss and waste.

On the other hand, the search activity included 7 big scale European agricultural organizations but no single specific article on UA can be found in the websites of above 7 European organizations.

1. **CEMA - European Agricultural Machinery** - the association representing the innovators and manufacturers of agricultural machinery in Europe.
2. **EAAE - European Association of Agricultural Economists** - A membership association of agricultural economists that focus on the issues in the agricultural and food industries and rural development in Europe.
3. **ECAF - European Conservation Agriculture Federation** – that brings together 16 national associations which promote among Europe's farmers the soil management "best practice" aspects of conservation agriculture.
4. **ECPA - European Crop Protection Association** - Protecting and conserving crops and also water resources by introducing innovative protection solutions and promoting sustainable agriculture.
5. **EPBA - European Professional Beekeepers Association** - Organisation from 15 national associations that represents most of the professional and semi-professional beekeepers in Europe.
6. **FSC - Forest Stewardship Council** - Organisation dedicated to promoting responsible management of the world's forests.
7. **SAOS Coop** - is the member organisation of agricultural and rural co-ops in Scotland committed to improving understanding of co-operation.

National level

Whilst European level policies exert a strong ‘baseline’ framework for action, national regional and local polices also have to be accommodated to foster the UA activities. It is clear that more local policies are needed to provide details to the principles of a European policy frame, but both adapted to local circumstances and integrated with other policy frameworks (**Curry et al., 2015**). A case study by **Curry et al.** (**2015**) shows that other than in the implementation of EU level policies, the policy position of food and related issues at the national, regional and local levels has been weak.

The durability and potential economic success of UA projects highly depend on local policies. However, urban farmers are often left alone in a state of insecurity due to five identified constraints while developing national-local policies for UA (**Piorr et al., 2018**):

- Missing integration of the work across and between city departments;
- Unclear division of competences between local authorities and the regions and national level;
- Lack of multi-level governance and policy coherence;
- Missing links between research, practice and policy;
- Difficulties in inclusion of critical actors in food policy, such as citizen associations.

While talking about local/regional policies and actions on UA, the Milan Urban Food Policy Pact (MUFPP) comes to the floor. It is a voluntary agreement among mayors who are committed to making urban food systems more sustainable, resilient and equitable. The overall objective of the pact is to develop urban food systems that are sustainable, inclusive, resilient, safe and diverse, and that provide healthy and affordable food to all people within a human-rights based framework. The MUFPP initiative has identified specific indicators under the "Governance" as well as "Food Production category" category, which also contains key aspects to refer the urban agriculture to outline the desired urban food policy programmes of the Pact's member cities. For more details about the MUFPP.

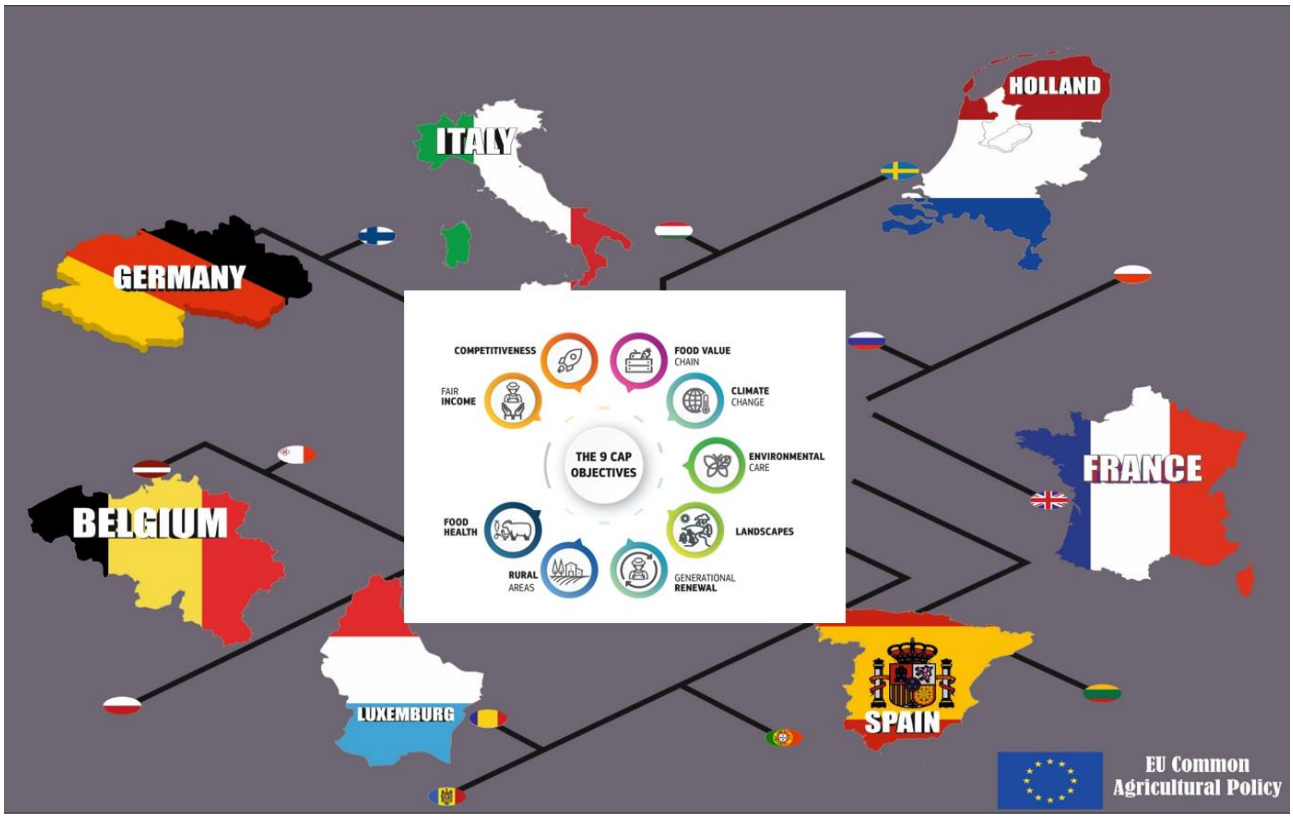

Figure 3 Objectives of CAP
Source: ec.europa.eu

Partner countries

As regards to National perspectives of UA policies of Innofarming project partners (France, Italy, Spain and Turkey) the situation is underwhelming as well.

Turkey

In Turkey, for example, any specific policies and consequently regulations are dedicated to UA activities on neither national nor provincial levels. The consortium has reconnoitred three major documents on the national level:

- The Eleventh National Development Plan (2019 -2023);
- The Presidency Annual Plan for 2020;
- The Strategic Plan of The Ministry of Agriculture and Forestry (2019-2023).

Although there are no specific sentences regarding UA and relevant issues in the National Development Plan, there are some reference statements dealing with increasing food demand, organic production and supporting the small agricultural initiatives:

- Article 80 (p.11): “While increasing demand for food, climate change, urbanization, soil and water resources, agricultural products and producers are putting pressure on the development of plant and animal species suitable for the changing climate, the protection of the environment and biological diversity are gaining importance, and the need for qualified labour force and technology is increasing in order to meet the food demand with less resources.”
- Article 81 (p.11): “Developing countries strive to be competitive in the food chain with large-scale production, as well as supporting small agricultural businesses based on technology.”
- Article 82 (p.11): “Demand for healthy, organic and good agricultural products is increasing, and the tendency to deliver additive-free and local products directly to consumers through different marketing channels is getting stronger.”
- Article 407.2 (p.89): “Good agricultural practices, organic agriculture, contract production, clustering, research, marketing and branding activities will be supported in order to increase product reliability, diversity and production, especially in high value-added medicinal and aromatic plants.”
- Article 416.4 (p.92): “Innovative and environmentally friendly production techniques, especially smart agricultural technologies, will be developed and supported.”

France

To date, France does not have a specific regulatory framework for UA. Agricultural activities in urban areas, whether above ground or not, fall within the general definition of agricultural activity in French law (article L311-1 of the rural and maritime fishing code): “Are deemed to be agricultural all activities corresponding to the control and operation of a biological cycle of a plant or animal character and constituting one or more stages necessary for the development of this cycle as well as the activities carried out by a farmer which are an extension of the act of production or which support exploitation. "

The installation of an urban farm must meet the same regulatory steps as for a farm project in rural areas:
- Obtain an operating license from the regional agriculture administration. In some regions, a minimum area is required for the authorization to operate. As a result, some experimental urban projects involving areas below these thresholds do not require an operating permit;
- Register as an agricultural business (and obtain a business identification number -SIRET- and a VAT number ;
- Respect the rules on identification, animal welfare and health (from the first animal for sheep or the first hive for beekeeping);
- Comply with national and European regulations on the use of phytosanitary products (Hygiene package) and water. In particular, obtain the "Certiphyto" which authorizes the use of sanitary products, even for organic productions;
- Comply with hygiene and food safety obligations for the sale of products (Law of January 1, 2006).

National and European aids can be mobilized a priori for any professional UA project, but in some cases, the minimum surfaces required (for example for installation grant) are not compatible with the small areas specific to UA without soil.

Several agricultural unions and organizations promoting UA are calling for a specific regulatory framework to be developed because many questions remain as to the social and fiscal rules and the technical frameworks that must apply.
Some examples:
- The agricultural property tax is calculated on the agricultural profit which is defined by the law as "the income that the exploitation of rural goods provides either to the farmers, sharecroppers, or to the owner-operators themselves". How to understand the concept of rural goods in the context of urban agriculture?
- What forms of land "rentals" apply to UA? In France, the most common land contract is “fermage”, a long-term lease (9 years minimum), but in UA, most owners refuse to apply this type of contract and favor precarious, short-term, revocable leases (for example the “commodat”) which constitute a real risk for the sustainability of the business project.
- Finally, the very status of farmer, and the resulting social security coverage, remains too closely linked to a classic vision of the profession, in both urban and rural areas. What status can be given to an urban market gardener, also a restaurateur, processor of his products, educational coordinator in the schools of his district?

To date, these questions remain under debate, and successive agricultural policy laws have not yet provided the necessary flexibility.

Beyond these questions of status and land, social and fiscal law, the experiences of UA highlight the difficult cohabitation of the uses of space in dense urban areas, which would require a revision of the law, or a minimum of mediation and debate to be carried out at the national level: the constraints of combating soil and air pollution in urban areas should

require the establishment of indisputable agricultural practices in terms of sustainable development (control of effluents, pesticides, etc.) with standards that are probably more restrictive than those applied in rural areas (**ADEME**, **2017**). Likewise, a number of neighborhood problems are now before the courts, for noise pollution problems, odor pollution, or permanent lighting of greenhouses. To solve those growing problems in an uncertain regulatory context, many national, regional or local public authorities are working to develop master plans (Ile de France region) or good practice guides (**ADEME**, **2017**; **Agence Urbaine de Bordeaux Métropole, 2016**)

Italy

As for Tukey, it does not exist a clear national regulation for UA activities in Italy. The only national law (n. 14 of January 14, 2013) which generally refers to the management of urban green space is the “Regulations for the development of urban green spaces”. Article n.4 of this law says: “Spaces reserved for public urban green areas and buildings of rural origin […] may be assigned to the management, as far as maintenance is concerned, with the right of pre-emption to citizens residing in the areas […] by means of a restricted public notice procedure, without publication of the call for tenders”. This is an expression of a certain willingness, and of the existence of contractual instruments, that enable Municipalities to grant public green spaces to citizens, even without a call for tenders, although this is only aimed at the enjoyment of the space in exchange for extraordinary maintenance.

On the other hand, several experiences related to single municipalities or metropolitan area exist, with specific characteristics. In the city of Turin, UA initiatives were used for the regeneration of some areas in the south of the city: the requalification project for the Laghetti Falchera area has in fact seen the maintenance of the existing agricultural productive activities and the creation of individual urban gardens (two blocks of 80 gardens, each block fenced and equipped with common facilities with toilets, lighting) and about 50 community gardens divided into two areas of 2500 square meters each. In the city of Ferrara, the “Regulations for the adoption of public green areas in the city of Ferrara” exists. The aim of the project is to involve citizens in the management of common goods, to raise awareness through participation, to fight urban decay, to create paths of active citizenship, to encourage collaboration, to recover public spaces with social, environmental and landscape aims. Citizens in associated form (even if not recognized) clubs and committees, voluntary organizations, educational institutions, legal entities and commercial operators can take over the areas. In the areas under adoption are allowed: ordinary and extraordinary maintenance and creation of urban gardens. Similar experiences also exist in the cities of Firenze, Roma and Bologna.

Spain

Legislation on UA in Spain can only be found at the municipally level (**Morán Alonso and Fernández de Casadevante, 2014**).

The first legislative document related to UA was published in 1950 after the Civil War and used during Franco dictatorship (Decreto del Ministerio de Agricultura, 12 May 1950). It was focus on family farms in the urban environment but it has not been updated or adapted to

current social needs or political situations. Although it has not been derogated, it is currently not in use (**Morán Alonso, 2011**).

Urban planning (Planes Generales de Ordenación Urbana) can designate areas for UA projects development but do not have a specific term to define UA. UA areas are defined as infrastructure, forest parks, private protected, park, non-developable agricultural landscape (**Morán Alonso and Fernández de Casadevante, 2014**).

SubChapter 2. Legal and policy issues: food safety, food security and labelling

The lack of a clear regulations framework may adverse the development of UA initiatives (**McEldowney, 2017**). In this chapter, we will examine the legislative issues of UA activities under three main topics: food safety; food security; labelling and land use.

Food Safety (health issues)

Food safety should be ensured through the whole food chain and requires assessment, planning, and management in order to ensure consumer protection. Food safety is important (a) to protect consumer health (even in cases of own-consuming) and (b) to gain market access (in professional UA activities) (**FAO, 2010**).
UA project holders must pay much attention to basic food safety principles. In professional farms, ensuring food safety covers a broad range of processes, from on-farm production, to processing, distribution, storage, selection, preparation, and consumption. Therefore, building a good food safety plan is a top priority for a new and beginning UA farm business. While developing the food safety plan, the European and National regulations regarding food safety should be examined first. All professional production, storage, packaging and selling processes must comply with those regulations.

Aubry and Manouchehri (**2019)** provide some key recommendations for improving food safety of UA initiatives and, in a more general sense, for helping to drive their growth:

- It is vital to focus on crops that are best suited to this form of cultivation, and on developing products that complement, rather than compete with, conventional agricultural products.
- It is imperative to involve all actors – municipalities, businesses, farmers and residents – in building a healthy UA activity, first of all by making sure that they know the risks.
- Urban farmers should be aware of the quality criteria for foodstuffs from UA.
- The health of farmers exposed to pollutants and the impacts of excessive pesticide use on biodiversity are other concerns of consideration.
- Finally, urban farmers should obtain appropriate tools for helping with risk management.

Figure 4 Food Safety
Source: Innofarming Project

Food Security

The FAO, in 1983, gave a clear definition of food security: "ensuring that all people at all times have both physical and economic access to the basic food that they need". The contribution of UA to enhance urban food security and healthy nutrition especially of the poorer sections of the urban population is probably one of its more important assets.
Studies estimate that 15-20% of world's food need can be fulfilled through UA activities and UA can be small-scale answers to this vulnerability by securing the own-food production of city dwellers. However, food safety policy, agricultural product quality and consumer rights and safety amongst other polices, put high standards of both health and food safety in food consumption and, in particular, food production and processing. This provides disadvantages for local urban food production (**Curry et al., 2015**).

UA activities are linked to nutritional self-sufficiency and access to affordable and fresh food improving dietary quality and diversity as well as human health. The literature provides several case studies precisely from African countries. However, the outbreak of Covid-19 pandemic showed that in cases of such global crises not only developing countries but also developed ones would face the risks of food security.

Finally, the World Economic Forum (WEF) has recently published an online agenda indicating "4 reasons why the world needs more urban farming post-pandemic in 2020". These four reasons are:

- Growing greener towns and cities: weaving food growing into the fabric of urban life could bring greenery and wildlife closer to home;

- Resilient food supplies: diversifying where and how we grow our food helps spread the risk of disruption to food supplies which eventually contributes the food security;
- Healthier lives: getting out into nature and gardening can improve your mental health and physical fitness;
- Healthier ecosystems: while urbanisation is regarded as one of the biggest threats to biodiversity, growing food in towns and cities has been shown to boost the abundance and diversity of wildlife, as well as protect their habitats.

Figure 5 Food Safety
Source: Innofarming Project

Labelling

European Union has been developing a specific policy with regard to geographical indications for agricultural products and foodstuffs since 1992. Rules on the labelling of foodstuffs to be delivered in their existing state to the final consumer and on the advertising of such products are laid down in the Labelling Directive. However, there exist no specific regulations on the EU level on labelling the food produced through UA activities. For instance, most soilless growing systems (which is one major type of UA) cannot be certified as organic yet. In the EU, only plant production that is primarily based on a soil ecosystem is eligible for organic labelling and could hamper an increase in acceptance and diffusion for such methods (**Piorr et al., 2018**).

On May 20, 2020, the European Commission announced the publication of the Farm to Fork Strategy (F2F). The EC has stated that its key approach to achieving the goals of the F2F Strategy is to support EU consumers in making informed decisions when buying food. In this vein, the Commission announced several labelling measures it intends to pursue that would have an impact on food and beverage labelling legislation in the EU (**Bolla, 2020**). Both, in non-profit and professional UA activities, organic farming practices are largely applied. However, it is observable that in many initiatives the organic production is not undergoing any certification, in order to reduce costs. Obviously, mutual trust and shared decision making on quality production between consumers and farmers is substituting organic certification (**Piorr et al., 2018**). On the other hand, although organic labels are seen as a guarantee of product quality, they are often criticised. The wide variety of labels means they can be hard to understand, and not all producers can afford the costs of certification.

In conclusion, UA farmers must act carefully while putting their edible products into the market:

- Avoiding the use of un authorised labels like “organic”;
- Following the European and National level policies and upcoming regulations as regards to labelling their products;
- Planning the budget of their projects to include the costs for labelling;
- Establishing trust-based relationships with their customers in the market by ensuring the sustainable quality of their products.

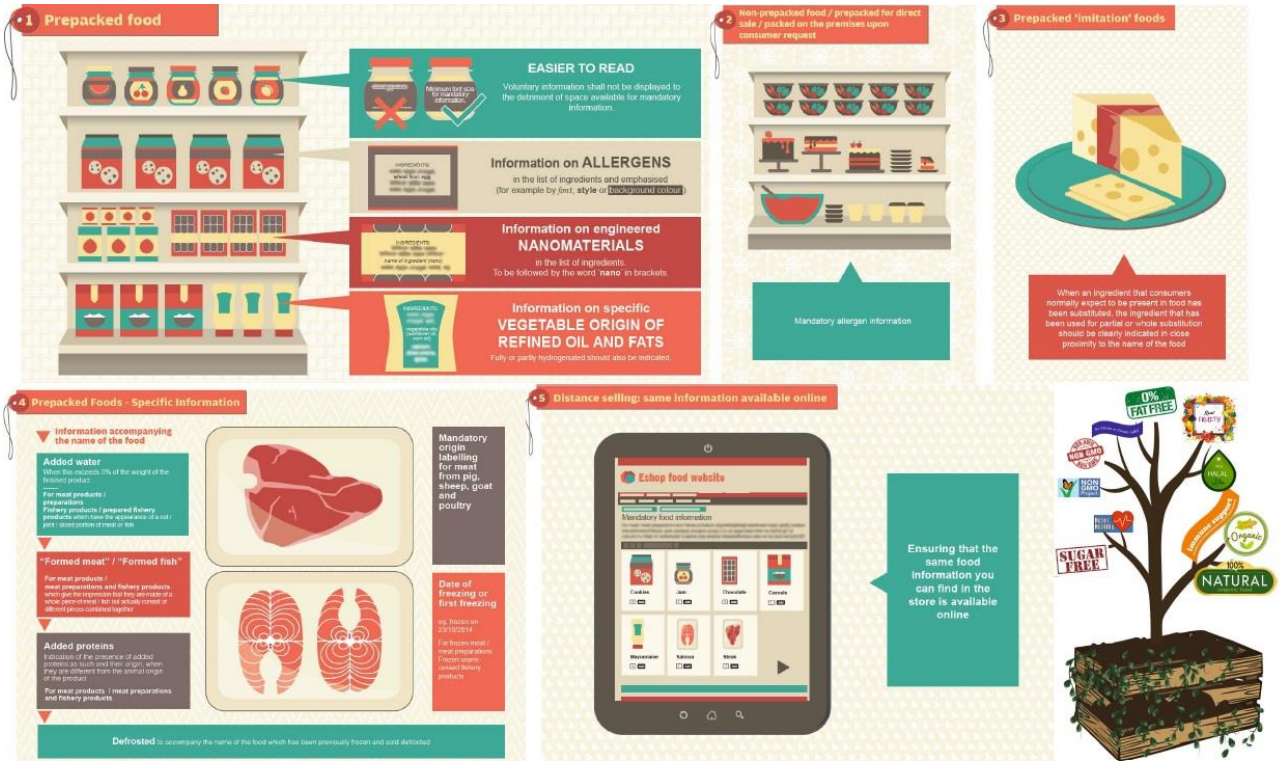

Figure 6 EU Food Labelling Rules
Source: https://ec.europa.eu/food/sites/food/files/safety/docs/labelling_legislation_infographic_food_labelling_rules_2014_en.pdf

Land use

Because of its multi-functional use, UA can occur through various forms (already defined in **Module 1**). Thanks to their official power to use public land that can be licensed or leased, city managers and local councils can influence and utilize these different UA practices directly or indirectly through policies, zoning arrangements, programs and laws. They can dictate how any land can or cannot be used (**Sarker et al., 2019**).

Miguel Altieri (professor of Agroecology at University of California) suggests in his online article that the biggest challenge for UA activities is access to land. The gardening activities of UA activities, precisely allotment gardens, are typically land based and often subject to local bylaws and regulations. These regulations may require that a minimum range (one third for example) of the plot has to be dedicated to non-commercial food production (**Piorr et al., 2018**). Often, within the urban fringe, land is owned by the municipality or by private investors. Thus, comparably short-term renting contracts or only temporary use agreements can be signed, making access to loans more difficult and preventing investments. UA farmers and their networks therefore adopt more frequently strategies building upon elements of sharing economy, e.g., crowd funding and community-financing models that make it possible to preserve land resources for small-scale agriculture (**Piorr et al., 2018**).

There are some surveys available, mainly case studies from USA and Australia, aiming to provide strategic policy recommendations about land use for UA activities for the decision makers and urban planners. Some key principles from such surveys, we suggest to our UA farmers:

- To carefully examine the national/local regulations (if there are any) about land use for UA activities;
- (If no specific regulations found), to ask for official permission from the local authorities for their UA projects.

Figure 7 Land Use for UA Activities
Source: Innofarming Project

SubChapter 3. Communication / Marketing

The economic model of UA is based on specificities in terms of clientele (mainly local), and also marketing strategies linked to this clientele (product image, marketing channels, ...) should be specific. Some studies on farmers' professional skills state that many of them lack in experience and specific skills in areas such as entrepreneurship, networking and marketing, and have limited access to strategic information in these subjects (**McEldowney, 2017**). Communication and marketing are interrelated; in that it is impossible to develop effective and efficient marketing systems without first establishing channels of communication for your business. In addition, target groups (customers) will not be aware of products until you adapt an effective marketing & communication strategy.

There are several advantages of UA activities regarding marketing. Since production is close to consumers and direct marketing from producers to consumers of fresh products is possible, food costs are lower than the same foodstuffs brought from the rural areas and global markets. Furthermore, there is less transport, cold storage, losses, processing and packaging, leading to direct economic savings for urban residents in UA. Finally, there is improved access to food for the urban poor because of lower prices, accessible location and distribution (**FAO, 2007**). It is only possible to benefit from these advantages when the UA farmers have effective communication and marketing strategy.

The United Nations' Food and Agriculture Organization (FAO) identifies five specific objectives for communication and marketing in agriculture sector which can be adapted to UA as well:

- The provision of information;
- The stimulation of demand;
- Differentiating the product or service;
- Underlining the product's value;
- Regulating sales.

Figure 8 Communication and Marketing
Source: Innofarming Project

In another EU funded project, AGRI-URBAN, aiming at rethinking agri-food production in small and medium-sized European cities that have a relative specialization in agri-food production, it is stated that there are several ways that the city can pull local food onto urban plates, hence bringing success to local agriculture, economy, sustainability and health. The AGRI-URBAN project created a framework consisting of four main themes that together create this “push-and-pull” effect. Although the focus of this framework is not the UA itself, the methodology has some common aspects to be benefited from while developing the business model of a UA project together with its marketing strategy (**Figure 2**).

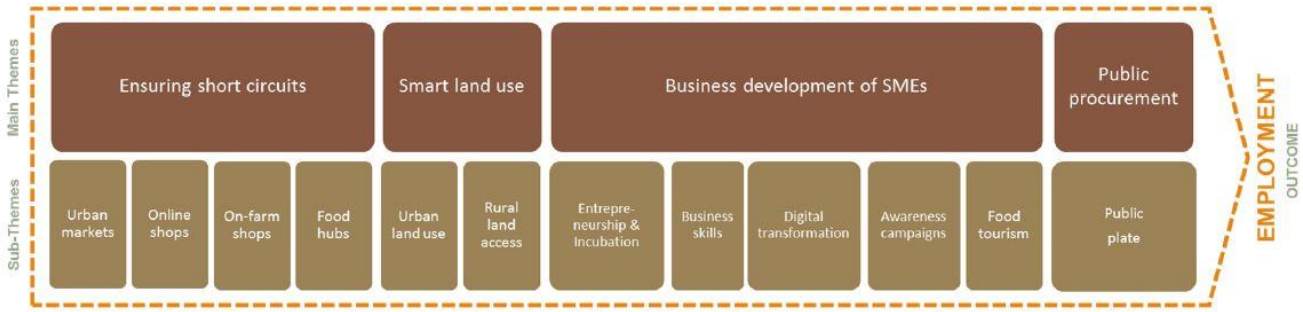

Figure 9: AGRI-URBAN Framework.
Source: https://ubract.eu/agri-urban

Access to urban markets, constituting online-shops, selling products on the farm, integration to existing food hubs and/or developing new hubs, smart use of urban lands, developing

entrepreneurship skills and diversification of the UA project (such as urban farms for tourism or education) are all key aspects that one should consider while designing its UA project.

3.1. Marketing Channels for UA Products

UA products can be sold at the farm gate, by cart in the same or other neighbourhoods, in local shops, in local farmers' markets, or to intermediaries and supermarkets. The AGRI-URBAN project has identified four main types of marketing channels. Though these channels are more common for peri-urban farmers, they can also be adopted by urban agriculture projects.

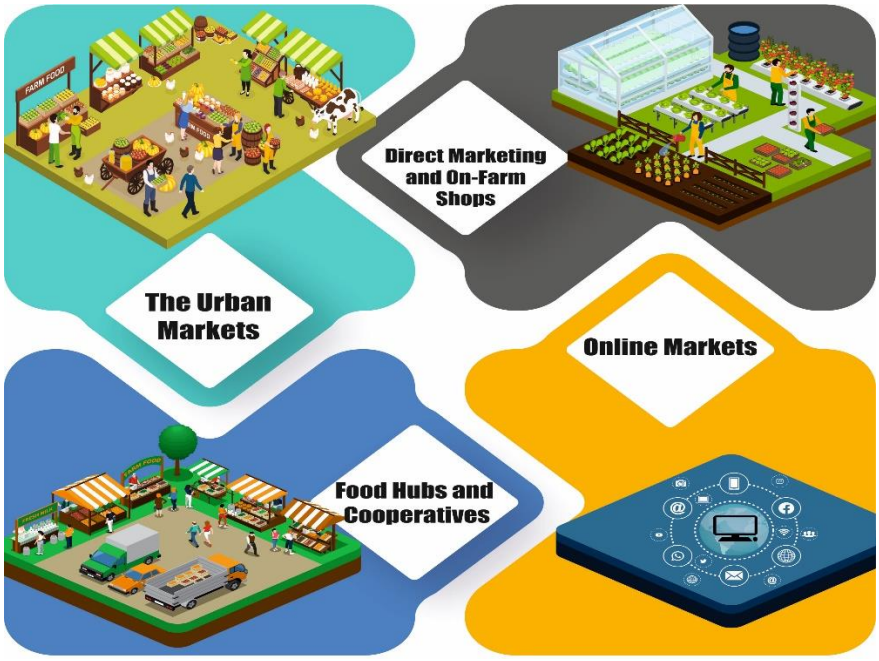

Figure 10 Marketing Channles for UA
Source: Innofarming Project

Direct marketing and On-farm shops

The number of direct marketing outlets have risen due to increasing consumer demand for local fresh and value added food products. The UA farmers put their fresh products on a chart or shelves of a small outlet in front of their farms. This model is more common for peri-urban agriculture farms where the city dwellers would like to visit at weekends for leisure time and relaxing. In Turkey, for example, it is very common to see small market booths side road in peri-urban areas of big cities like İstanbul, Kocaeli and Bursa.

Urban markets

The regular urban markets, generally organized weekly in several parts of cities, are of the most popular ways to shorten the way of food from farm to consumers. The UA farmers can rent a small area in these markets to market their products. This typology of marketing in quite common in several cities in Italy (e.g., Bologna, Roma).

Online markets

Due to technological advancement, online shops are rapidly becoming a more popular form of agriculture outlets. The UA farmers could set up a simple and affordable website, where an order can be placed without any intermediates. Furthermore, social media platforms like Instagram and Facebook provides free online marketing opportunities for UA farmers in reaching their local target groups. On Facebook, for example, there are many small groups facilitating direct interaction between consumers and local farmers.

Food Hubs and cooperatives

Food hubs are intermediaries between food producers and large-scale wholesalers, operating at the centre of a network of individual, small-scale farmers and producers. In further steps of an UA initiative, when the UA farmers can sustainably produce adequate amount and of specified food, they can cooperate with such hubs and cooperatives to market their products indirectly.

Finally, the Innofarming Project highlights some key notes and recommendations for the consideration of potential UA farmers while developing a communication and marketing strategy:

- Marketing and selling are two different concepts. Even the best products do not sell themselves if you do not have an effective marketing strategy.
- Try to benefit from the closeness of your UA activity to city markets; possibility for direct marketing to customers; higher degree of local processing (including street foods) and lower storage and transportation costs.
- Local production enhances transparency about production processes and freshness of products. Differentiate your project and products by ensuring the mutual trust with your target groups/consumers.
- There are many attributes available in local urban products that industrial food products lack, including freshness, seasonality, variety, and healthiness. You should promote your "value-added" products with a story to tell, highlighting such pros of your products to compete with the global industries in local level.
- The involvement of consumers into food production and distribution can create a sense of solidarity between farmers and consumers. In this way, you can alter your “consumers” into “prosumers” who are motivated by experimenting with new consumption patterns, do-it-yourself culture or more politically motivated reasons like citizen empowerment, anti-globalisation and food sovereignty (**Piorr et al., 2018**).

Basing your UA activity on a Community Supported Agriculture (CSA) model can contribute the diversification of your project and provide advantages for competition on a global market with income and economic stability.

- Direct marketing channels aiming at local markets are most suitable market places for UA which enable the UA farmers obtain premium prices for their products.
- Because of the food safety issues caused by the distrust to global mass production food industry (traceability and transparency of production and processing) and the freshness and quality of local food, most city dwellers prefer to buy fresh food directly from UA farmers on weekly markets, through delivery services, in food cooperatives or on the UA farm itself.
- Additional benefits can be obtained through involvement in processing and marketing activities (for example ghee making, preparation of street foods, street carts or small local shops, and cleaning/packaging food for sales to supermarkets, etc.) and in farmer organizations. (**FAO, 2007**).
- Cooperative societies can effectively address marketing problems, thus enhance the profitability of urban farming. By developing strong partnerships, you can engage in "cooperation," or the sharing of resources from equipment to ideas while operating as competing individuals. Search for local cooperatives, food hubs, relevant associations etc. and integrate your UA activity to these communities. Moreover, as a new comer to UA, you may lack critical information on the best farming practices and available support mechanisms for you activity. Being a part of such cooperation hubs will provide access to valuable information circle (**FAO, 2007**).
- Information and communication technologies and online tools are inevitable parts of communication in any kinds of businesses. Make use of such tools to make your products (and services) more visible.
- Advertising is important for the business on the whole as it lets the business gain more customers, thereby increasing business turnaround. Dedicate enough amount of budget for advertising on various media It is also suggested to get professional support for producing your advertising materials (posters, photos, infographics, videos etc.)
- Some final ideas: access to existing city markets, integration to local farmers' markets, interaction with farmer and consumer organizations, search for supplying food for public plates (school feeding etc.), influencing local decision makers and investors for creation of local infrastructure for small-scale food preservation and storage facilities (i.e. canning, bottling, pickling, drying) (**FAO, 2007**).

SubChapter 4. Economic, management and financial aspects of UA

As already observed, UA is an agricultural productive model which can fulfill several functions (**Module 1**) and offer environmental and social services in urban areas (**Module 3**).

If we focus only on the agricultural production, the economic profitability of existing business models for UA activities is still fragile, and has not always been demonstrated (**Mayol and Gangneron, 2019**). This still fragile profitability is linked to several factors: often still experimental dimension of urban agricultural projects, which limit scale economies, sometimes high level of investments (lighting, greenhouses, irrigation systems), often small sizes of plants, and farms that limit the volumes produced.
This paragraph will focus on highlighting the different factors and levels of action that promote the economic profitability of an urban farm.

4.1. Originality of the UA business models

Due to their multifunctionality, economic viability of UA initiatives still remains a complex framework. UA offers social and ecological benefits to society - but it also has an economic dimension: well-run urban farms and projects are "hidden champions" of urban green development strategies.
The EU-funded COST-Action "Urban Agriculture Europe" and Erasmus+ project "Urban Green Education for Enterprising Agricultural Innovation" identified six basic business strategies among a great range of diverse and successful case studies (**Orsini et al., 2020**).

Cost reduction business model

Cost reduction business model refers to farms that build their success on reducing costs associated with crop production. Reducing costs trough an appropriate economy of scale may also be viable in urban environment. An example can be a peri-urban farm that benefit from the increased market opportunities provided by the proximity of the consumers. Proximity farms may also benefit from in-farm shops, participation in farmers market, or integration in consumer delivery schemes. Other examples can be related to specialization in high-value horticultural crops, exploration of synergies with other industries like re-using surplus energy or organic waste from them, decrease harvest costs through self-picking schemes.
Existing examples are Keelings farm (close to Dublin, Ireland), Hof Mertin farm (close to Dortmund, Germany) and Jardin de l'avenir (in Sainte-Gemmes-sur-Loire, France).

Illustration ??

Diversification business model

Diversification business model includes farms that produce a diversified variety of products and services. It is often used urban farms which effectuate in parallel activities in some or even many business fields, including services close to agricultural production, like agro-tourism, horse keeping, leisure activities, care farming, ecological education and training, green waste recycling or landscaping measures. A second type of the diversification is realized by institutions with key activities outside farming: they engage as a diversification strategy themselves in agricultural or horticultural activities. These activities are related with societal benefits, often focusing on inclusion of disabled or socially disfavored persons.

Existing examples are EtaBeta (in Bologna, Italy), Prinzessinengarten (in Berlin, Germany), Les Grands Voisins (in Paris, France), La Recyclerie (in Paris, France), Le Talus (in Marseille, France) and Ferme Nos Pilifs (in Brussels, Belgium).

Illustration ??

Differentiation business model

The differentiation business model is frequently applied in urban areas and means to create distinctions from mainstream farming in production, processing and/or marketing. It helps to survive in very competitive markets with low producer prices, suitable for small farms and part-time farms without possibilities to increase their productive area. Differentiation is often linked with direct marketing and own processing: freshness, taste, locality, tradition and personality can be convincing selling propositions to consumers.

Existing example is the Himmelbeet community garden (in Berlin, Germany).

Illustration ??

Share economy business model

Share economy business model is the most innovative business model in UA, including collectively managed projects where the production risks are shared within a community. It originates from the concept of “commons,” bringing together communities into collaborative efforts toward the achievement of a shared objective. In France known as AMAP (**Tang et al., 2019**), elsewhere generally referred to as Community Supported Agriculture (CSA) schemes (**van der Schans et al., 2016**), they generally originate and grow from grassroots experiences of groups of activists and environmentally concerned citizens. In these experiences, citizens move from consumer’s concept and become so-called prosumers,

capable. Share economy initiatives in UA are social laboratories, which in fact claim to be more than a new way of food production and distribution: starting from a new consciousness about nutrition, food and food systems, some of them go for reclaiming new food sovereignty for urban dwellers and for founding a new civil society. Also community gardens initiatives are considered into the share economy business model category.

Existing examples are Arvaia (in Bologna, Italy), the Allmende Kontor community garden (in Berlin, Germany), and the Poste Immo Chapel community garden (in Paris, France).

Illustration ??

Experience business model

Experience BM includes projects where the revenues are mainly associated with marketing a specific experience rather than a farm product. Urban farms are capable of staging unique experiences precisely because of the ultra-short distance between them and consumers - and can create a direct and very exciting interaction in the city between opposing phenomena such as nature and culture, green space on one side and grey buildings and infrastructure on the other side.

Existing example (about kill-your-own chicken) is the Uit Je Eigen Stad (in Rotterdam, The Netherlands).

Experimental business model

Experimental BM includes projects that retain a high level of innovation, generally linked to new food producing technologies or adaptation of existing solutions to the urban environment. Innovation may fall within the production technology (e.g., indoor vertical farms, rooftop greenhouses or aquaponics), but also in the processing stage ot in the functions (e.g., regeneration ofvacant land).

Exisiting examples are ECF Farms and InFarm (in Berlin, Germany), Rotterzwam (in Rotterdam, The Netherlands) and AgricoolTur (in Turin, Italy).

4.2 Cost management and agricultural incomes

There are different models of urban farms. Here we assess the investments necessary for the installation of green roofs, as estimated by the reference literature.

An economic study made by CRETAU, a canadian laboratory of research and expertise in urban agriculture economy, analyzed 5 cases of roof vegetables farms. These farms are Brooklyn Grange (New York), La Ligne Verte by Duchemin family (Canada), the gardens on the roofs of Opera Bastille (Paris), and the experimental farm - laboratory on urban agriculture at the "Palais des Congrès" of Montréal. For the study, the Cretau laboratory obtained detailed installation costs and operation costs, as well as revenues generated by the production of the project. The following table shows the characteristics of the different cases.

*Table 1. Characteristics of the cases (**Duchemin, Huot., 2020**).*

	Type of roof	Area (m^2)	Type of marketing	Site
Case 1	Long bags of 300 L, covering 0.72 m^2	1000	No setting market in 2019	Project carried out on an existing building
Case 2	Long bags of 75 L, covering 0.2 m^2	510	Sale to restaurants	Project carried out on an existing building
Case 3	Bags of 30 L	2500	Sale of baskets and sale to restaurants	Project carried out on an existing building
Case 4	Intensive green roof 1	2200	Sale to stores (95%) and markets (5%)	Project carried out during the construction of the building
Case 5	Intensive green roof 2	2500	Sale of baskets and sale to restaurants	Project carried out on an existing building

Source available at: http://cretau.ca/wp-content/uploads/2020/02/Fiche-%C3%A9conomique-fermes-sur-toit_edition_F.pdf

One of the important elements of rooftop market gardening is the establishment of the facilities. In addition to the time needed to find a roof that meets the needs of production (accessibility, access to water, sunshine, load-bearing capacity, etc.) and marketing (proximity to points of sale or potential customers), many investments are to be expected so that a roof can become productive.

For a market garden roof of 2000 m^2, the initial investments are between 55000 € and 260000 € depending on the cases studied. Choosing an intensive green roof is significantly more expensive than choosing a market garden roof using geotextile bags. However, the first has many advantages such as the protection of the roof membrane, the insulation of the building, a longer life of the membrane (several decades) and the ease of growing certain crops. The use of geotextile bags, in addition to a lower cost, offers greater flexibility (the roof can be dismantled and moved) and rapid installation (without the need for specialists).

However, this inevitably involves the purchase of new bags which have a lifespan of around 10 years. In a long-term vision, the installation of an intensive green roof is certainly a solution to be valued for a real estate developer or a building manager, particularly in the context of the construction of a building or the cost of the green roof which can be easily internalized.

The following table presents the installation costs (approximatively) of the roof vegetable farms studied.

*Table 2. Installation costs of roof vegetable farms (**Duchemin, Huot, 2020**).*

	Material	**Roof area**		**Cost (€ m^{-2})**
		1000 m^2	2000 m^2	
Case 1				
	Long Bed Bags (0.74 m^2)	12800 €	25600 €	
	Irrigation (material)	2000 €	4000 €	
	Installation Time (bags)	2000 €	4000 €	
	Installation Time (irrigation)	450 €	900 €	
	Engineer	2000 €	2000 €	
	Access to the water	320 €	320 €	
	Potting soil	9000 €	18000 €	
	Truck crane	480 €	640 €	
	Access to the electricity	320 €	320 €	
	Total	29370€	55800 €	From 28 to 29.4 € m^{-2}
Case 2				
	Round Bags (20 gallons 0.2 m^2)	25600 €	51200 €	
	Irrigation (material)	2600 €	4500 €	
	Installation Time (bags)	2000 €	4000 €	
	Installation Time (irrigation)	450 €	900 €	
	Engineer	2000 €	2000 €	
	Access to the water	320 €	320 €	
	Potting soil	9000 €	18000 €	
	Truck crane	480 €	640 €	
	Access to the electricity	320 €	320 €	
	Total	42770 €	81880 €	From 41 to 43 € m^{-2}
Case 3				
	Intensive green roof (23 cm)	69000 €	138000 €	69 € m^{-2}
Case 4				
	Intensive green roof (30 cm)	130500 €	261000 €	130.5 € m^{-2}
Hypothetical cases - based on standard estimates of implementation of intensive green roofs				
	Intensive Green Roof (soil thickness - 23 cm)	83200 €	166400 €	83.2 € m^{-2}
	Intensive Green Roof (soil thickness - 30 cm)	115200 €	23400 €	115.2 € m^{-2}

Source available at: http://cretau.ca/wp-content/uploads/2020/02/Fiche-%C3%A9conomique-fermes-sur-toit_edition_F.pdf

Several elements will influence the income from vegetables production, including agronomic and horticultural skills, the type of production and a detailed knowledge of the constraints of space. Income per m^2 ranges from 7.36 € to over 16 €. In the examples collected, the case with the highest ratio achieves a large part of its turnover on the production of mesclun.

The following table highlights the income from vegetable production from urban rooftop farms and Intensity of labor for exploitation.

*Table 3. Income from vegetable production from urban rooftop farms and Intensity of labor for exploitation (**Duchemin, Huot, 2020**).*

Revenues		€	€ m^{-2}
Case 1 – Case 3	Roof - bags	3800 to 19 00	7.36 to 9.66
Case 4 – Case 5	Intensive green roof	21600 to 38400	8.64 to 17.47
Working time		**Total hours**	**Hours m^{-2}**
Case 1 – Case 3	Roof - bags	728 to 2 000	0.8 to 2.9
Case 4 – Case 5	Intensive green roof	2760 to 4800	1.2 to 1.9

Source available at: http://cretau.ca/wp-content/uploads/2020/02/Fiche-%C3%A9conomique-fermes-sur-toit_edition_F.pdf

Viability

Today, if an urban producer bases his income solely on fruit and vegetable production, the viability of his rooftop farm is still very precarious. In the cases studied, a single producer would succeed in generating an annual profit solely through his agricultural production. Case 4 is the one that generates the most income per square meter (17.47 € m^{-2}), with a high work intensity (1.2 h m^{-2}). However, the model is precarious and additional expenses (inputs, seeds, rent, loss of harvest due to pests, etc.) can easily make it in deficit within the framework of such a prospective.

For the other projects, none of the other projects generated profit from their agricultural production alone. Case 4 generated additional income of 13000 € and Case 5 generated 2000 € from country visits or meals. As for Case 2, the income from site visits brought in approximately 960 € annually and this case received approximately 7400 € in support from the building manager. This estimation shows that urban producers need to be more than farmers. They must also take advantage of the opportunities provided by the proximity of a large pool of people and must be actors in the city by developing a range of services.

A rooftop vegetable farm requires economically enhanced production over a small area. The rooftop vegetable farms in this study, for which the economic data are provided, show that a minimum income of 12.80 € m^{-2} per year should be targeted as production income in a business plan. Likewise, the intensity of the work should be around 1.5 h m^{-2}, or 3750 hours for a market garden roof of 2500 m^2. Resources must be subsidized, or the work must involve volunteers, which is found in the majority of urban farms and small farms in peri-urban areas. In order to have a low work intensity (the number of hours worked per m^2), the marketing must be simplified as much as possible because this is generally a task requiring a lot of time in human resources for travel and sales.

In order to help achieve these two elements, a minimum area is essential for projects (currently it is estimated to be 2000 m^2 of growing area) to avoid travel between many sites.

In addition, it is essential to build a stable team of market gardeners/horticulturalists and to be able to structure and organize their tasks and their work schedule.
Finally, it is difficult for a vegetable farm to develop a viable economic model based solely on the production of fruits and vegetables.

The following table shows the estimation of the viability of rooftop vegetable farms, based on the production of fruits and vegetables.

*Table 4. Viability of rooftop vegetable farms (**Duchemin, Huot, 2020**).*

	Agricultural income €	**Operation cost (€ year^{-1})**	**Material cost (€ year^{-1})**	**Profit or deficit vegetable production (€ year^{-1})**	**Other financial sources (€ year^{-1})**	**Project profit or deficit (€ year^{-1})**
Case 1	4000 €	7000 €	1120 €	(4120 €)	10200 €	6080 €
Case 2	5000 €	14700 €	1120 €	(10820 €)	9600 €	(1220 €)
Case 3	19000 €	19200 €	5120 €	(5320 €)		
Case 4	38400 €	26500 €	5120 €	6780 €	12800 €	19580 €
Case 5	21600 €	46000 €	4160 €	(28560 €)	(in development)	

Source available at: http://cretau.ca/wp-content/uploads/2020/02/Fiche-%C3%A9conomique-fermes-sur-toit_edition_F.pdf

Key elements for a sustainable economy

For a sustainable economy, the economic model should not be solely based on production. It is essential to diversify the sources of income with workshops, events, country restaurants, etc., in a strategy of diversification. Secondly, it is advised to mobilize part of the human resource needs through the involvement of volunteers, or obtain support from government programs to financially support jobs. Thirdly, it is required to obtain program support for the environmental services offered by the rooftop vegetable farm project. Finally, it is needed to focus on high value-added production and examine the option of transformation into niche products with distinct brands.

SubChapter 5. How to create your own business model

The most common tools used for the analysis of the profitability of a business is the Canvas Business Model. It is a strategic management template to document existing and even to develop and visualize new business models. The four main components in the Canvas Business Model are customers, offer, infrastructure and financial viability. These four main components are the backbone of nine basic building blocks: the **customer segments**, the **value propositions** for each segment, the **distribution channels** to reach customers, the **relationship** established with the **customer**, the **revenue streams** that are generated, **the key resources** and the **key activities** that are required to create value, the key partnerships and the **cost structure** of the business model.

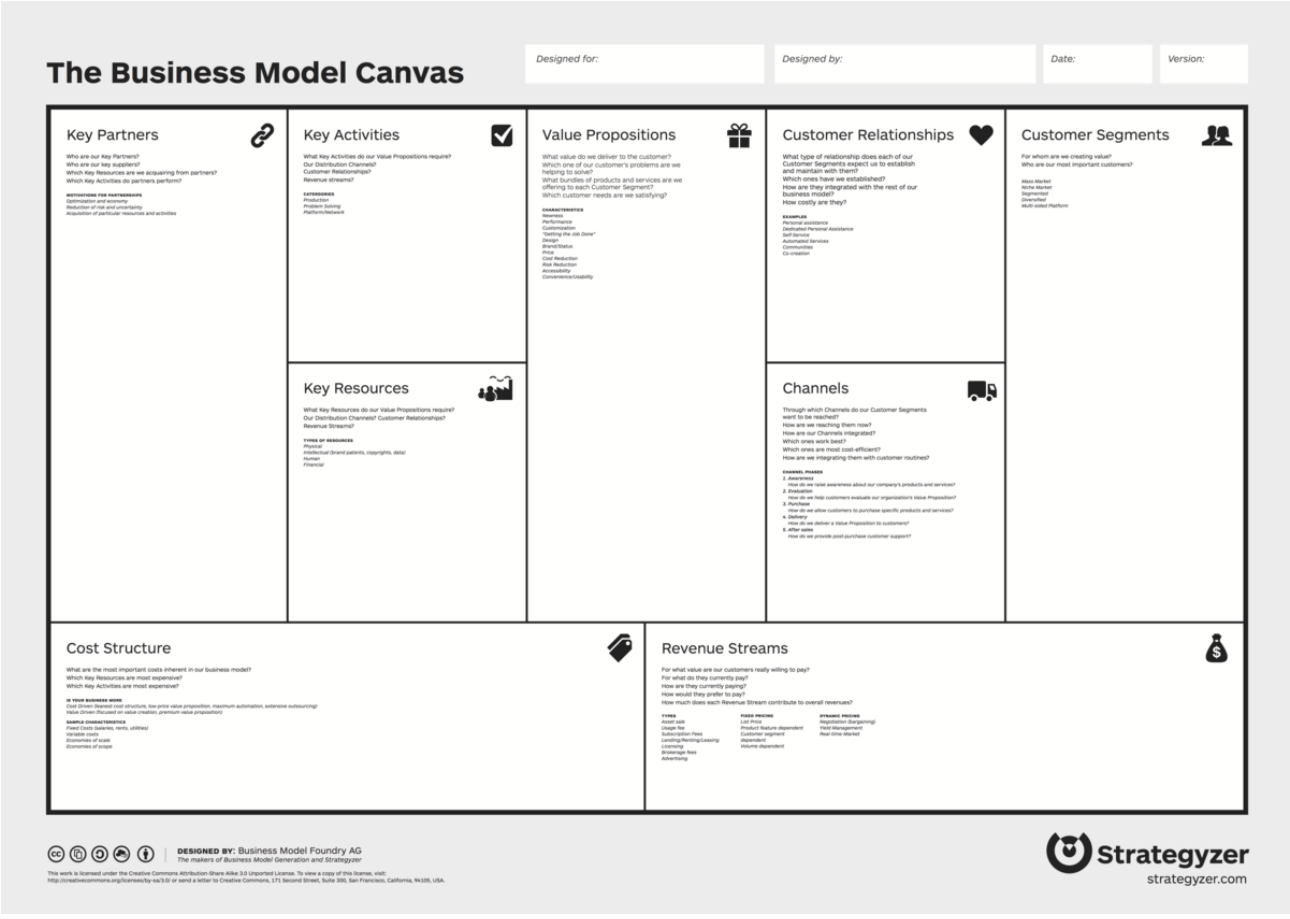

Figure 11. Business model Canvas template (available at: https://commons.wikimedia.org/wiki/File:Business_Model_Canvas.png)

The nine blocks should be analyzed in the following order.

Customer segments

The **customer segments** are the the different groups of people or organizations that the company aims to reach and serve by its products and services. In UA, clients can be local residents, customers looking for organic and healthy products, restaurants which need fresh products, or collective catering. Different main types of customer segments exist:

- Mass market (one large group of customers with comparable needs and problems);
- Niche market (specific, specialized customer segments);
- Segmented (customer segments distinction with slightly different needs and problems);
- Diversified (unrelated customer segments with very different needs and problems);

Value proposition

It is the bundle of products and services that create value for a specific customer segment. In UA, it can be high added-value products, technological and social innovation (e.g., aquaponics), specific production techniques, or related activities (e.g., education, service provision). Some often provided value propositions are newness, performance, customization, design, brand, price, cost reduction, risk reduction, accessibility and convenience.
Thus, the aim here is to identify what need(s)/problem(s) does your customer segment have to then figure out how to solve it (value proposition).
Channels and customer relationships interlock the customer segments with the value propositions.

Channels

Channels describe how an enterprise communicates with and reaches its customer segments to supply value propositions. An appropriate mixture of channels is crucial to satisfy customers. UA activities can use direct (own stores, sales force, web sales) and/or indirect (partner stores, wholesaler) channels. Channel phases consist of five steps, which are awareness, evaluation, purchase, delivery, and after sales.

Customer relationships

Customer relationships show what type of relationship the organization establish with customer segments. In local agriculture, particularly in urban areas, customer relations must emphasize the proximity, quality and authenticity of the product. It is therefore a question of constructing the marketing strategy which makes it possible to promote these dimensions through the organization of events, awareness-raising actions accompanying the marketing of products, and "open days".

Revenue streams

Revenue streams represents the cash a company generates from each customer segments. A bundle of ways exists to generate cash including the main two pricing mechanisms of fixed and dynamic approaches: asset sales, usage fees, subscription fees, lending/renting/leasing, licensing, brokerage fees and advertising.
In this part, what is required is to figure out how to generate income. In UA, it can be market price, services, public subsidies, food aid, private fundraising, crowdfunging and sometimes contributions in kind (volunteering) which can be indirectly valued as sources of income (estimation of valued volunteer hours for example).

Key resources

Key resources are the most important assets required to make a business model work. Key resources can be divided in physical, financial, intellectual and human, and are either of own possession or leased/purchased from partners.
In UA, fixed assets normally include items such as land and buildings, greenhouses, irrigation system, motor vehicles, furniture, office equipment, computers, fixtures and fittings, and plant and machinery. The technological investments and innovative productive systems are included in those resources.
Those items that are normally depreciated over time for tax purposes, and the depreciation rules must be integrated in the balance sheet.

Key activities

Key activities are the actions or activities required for the value position of the organization in order to be performant. It determines what are the deliverables needed for the distribution channels, customer relationships. In UA, key activities can be production, marketing, animation, communication.

Key partnerships

Key partnerships are the network of suppliers and partners that make a business model work. Key partnerships can be divided in four types of partnerships: strategic alliances between non-competitors, “coopetition” (cooperation + competition) as strategic partnerships of competitors, joint ventures to develop new businesses and buyer-supplier relationships. In UA, key partners can be communities, neighborhood stakeholders, other farmers, agronomic researchers, design offices.

Cost structure

Once that the infrastructure of the business model is established, it becomes easier to get an idea of the **cost structure**. It defines what will it cost to launch and maintain the business for each stage of the company creation. It goes from the creation of a website to hiring employees, produce goods, market the products and get them to the consumers.

Below is the estimate of the average investment costs that may be required to start-up of a 1 ha micro-farm (excluding land and on the principles of a low-tech installation). It corresponds to an estimation of the costs for any basic 1 ha micro-farm in France, in vegetable production. This estimate is constructed from the aggregation by the author of the publication of several economic models observed in France in different contexts. Thus it is important to know that the real costs depend on the location, the conditions of acquisition of the land and the project itself.

*Table 5. Cost structure of an enterprise (**Hervé-Gruyer**, **2019**)*

	Cost
Fences and barriers	5000 €
Equipment and tools, marketing equipment	22000 €
Lightweight tool building	10000 €
Used vehicle	5000 €
Planting an orchard and a hedge	10000 €
Digging a pond	5000 €
Paths inside the field	5000 €
Office supplies	2000 €

SubChapter 6. Risk Management

It is inevitable that UA farmers will face many obstacles, restrictions and unexpected negative situations in the process of establishing and running their UA projects. These negative factors are generally named as “risks” for entrepreneurs. In a wider perspective, a risk can be defined as an event or circumstance that has a negative effect on your business or project. Successful project holders and entrepreneurs are supposed to equip their initiatives with careful and clear risk management strategy before starting their project/business. In an unsettled sector like UA, having an effective risk management strategy increases in importance in that there are very few role models, good examples and specific studies in UA sector to learn from.

Risk analysis is a proven way of identifying and assessing factors that could negatively affect the success of a business or project. It allows you to examine the risks that you or your organization face, and helps you decide whether to move forward with a decision. Once you have worked out the value of the risks you face, you can start looking at ways to manage them effectively. This may include choosing to avoid the risk, sharing it, or accepting it while reducing its impact. It is essential that you are thorough when you are working through your Risk Analysis, and that you are aware of all of the possible impacts of the risks revealed. This includes being mindful of costs, ethics, and people's safety.

In this context, the Innofarming Methodology provides a specific 5-step risk management guideline for potential UA farmers.

6.1. Conducting a risk analysis survey (Situation and Stakeholder Analysis)

Situation Analysis

In the first step, you should conduct a survey based on situation analysis and stakeholder analysis techniques. One of the most famous methods of situation analysis is the SWOT analysis, which aims to identify the Strengths, Weaknesses, Opportunities and Threats of your project idea. SWOT Analysis can be very helpful in identifying possible risk producing factors (weaknesses and opportunities) as well as the clues to prevent the potential risks (strengths and opportunities).

Table 6. Elements of the SWOT analysis.

	Focus	**Objective**
Strenghts	Internal	Business or project characteristics that give advantages over others

Weaknesses	Internal	Business or project characteristics that give disadvantages over others.
Opportunities	External	Elements in the environment that could exploit advantage for the business or project
Threat	External	Elements in the environment that could cause trouble for the business or project

First, hold brainstorming sessions preferably with a group of relevant people to identify the SWOT factors and then fill in the diagram (see example below). Second, examine the identified SWOT factors with your group; analyse the strengths, weaknesses, opportunities, and threats; combine the similar ones and discard the unnecessary brainstorm ideas collected in the step before and prioritize all factors in rank order. Third, identify the potential risks for you project based on SWOT factors.
There are plenty of online sources and tools to help you in developing a SWOT analysis for your UA activity. Some examples are: Creately, Smartsheet, MindTools, or Canva.

Stakeholder Analysis

Stakeholders are parties that have somehow an interest in your UA activity and can either affect or be affected by the business. These effects could be in a negative way (which means they can create risks for your project) or in a positive way (which means they can facilitate your work). Therefore, conducting a specific stakeholder analysis before starting your UA activity will definitely help you to develop a convenient risk management plan. Moreover, a good stakeholder analysis will be useful while developing your communication and marketing strategy. Again, there are plenty of online sources on “how to conduct a stakeholder analysis” available by a quick online search. Some example sources are MindTools and Project Engineering

Involving new actors (such as consumers, civil society organisations), leads to new practices (e.g. ‘prosuming’) and governance arrangements in food production and consumption adapted to the local context (**Piorr et al., 2018**). **Lohrberg et al**. (**2016**) identifies the basic stakeholder clusters to consider while developing an UA project:

- Governmental bodies: international level; national level; regional level; local government; government-led organizations; government-led institutions.
- Civil Society: NGOs; non-profit farms/organizations; funders; artists; (public & private) educational institutions; religious institutions; individuals; volunteers.
- Market: for-profit farming; farmers’ associations; private actors; entrepreneurs; funders; distributors; vendors.

6.2. Identification and classification of potential risks

After conducting the risk analysis survey, you should identify and classify the specific risks for your activity. All the identified risks will probably seem to be connected to each other. Yet, to give a general idea, the main risk clusters for an UA project could be:

- Legal issues and restrictions (needed permissions, official documentation, safety requirements, taxes, accounting etc.)
- Environmental (pest management, wastes, water use, land use etc.)
- Social (acceptability by close society/neighbourhood)
- Health (food safety issues)
- Marketing (Access to market, competition, sustainability etc.)
- Financial (investment costs, operational costs, advertising etc.)
- Technical (lack of skills and knowledge, use of technology)
- External (weather conditions, change in policies and regulations, economic crisis etc.)

6.3. Assessing the Risks and Producing Assumptions / Precautions

In the third step, you should assess the identified and classified risks. You can assess each identified risk through a basic formula including; (a) the likelihood of the risk (frequency of it occurring) and (b) the consequence of the risk on your activity (the negative impact if it occurred). You can use a calculation grid from 0 (zero) to 5 (five) for both the likelihood and consequence of each risk. This assessment may seem somehow subjective, as you (and your team) will score the levels of likelihood and consequences of the risks. In addition, the assessment result, particularly the likelihood level, may change depending on the produced assumptions / precautions for a risk factor.

The Formula to determine the level of the risk: Level of risk = likelihood x consequence

Example Risk Assessment:
Identified risk: wastes of products can cause an odd smell and the stakeholders (neighbours in this case) may complain about it.
Likelihood (its probability to occur when you implement your UA activity): 2 out of 5
Consequence (its negative impact on you activity): 3 out of 5
Level of the Risk: 2 x 5 = 10

After assessing each identified risk with this formula, it is time to prepare a risk analysis matrix to determine the priority and rating level of risks.

Likelihood		Rare The event may occur in exceptional circumstances. Less than once in 2 years	Unlikely The event could occur at some time. At least once per year.	Moderate The event will probably occur at some time. At least once in 6 months.	Likely The event will occur in most circumstances. At least once per month.	Certain The event is expected to occur in all circumstances. At least once per week.
Consequence	**Level**	**1**	**2**	**3**	**4**	**5**
Negligible No injuries. Low financial loss.	**0**	0	0	0	0	0
Minor First-aid treatment. Moderate financial loss.	**1**	1	2	3	4	5
Serious Medical treatment required. High financial loss. Moderate environmental implications. Moderate loss of reputation. Moderate business interruption.	**2**	2	4	6	8	10
Major Excessive, multiple long term injuries. Major financial loss. High environmental implications. Major loss of reputation. Major business interruption.	**3**	3	6	9	12	15
Fatality Single death.	**4**	4	8	12	16	20
Multiple fatalities Multiple deaths and serious long term injuries.	**5**	5	10	15	20	25

Risk rating	Risk priority	Description
0	N	**No risk:** The costs to treat the risk are disproportionately high compared to the negligible consequences.
1 – 3	L	**Low risk:** May require consideration in any future changes to the work area or processes, or can be fixed immediately.
4 – 6	M	**Moderate:** May require corrective action through planning and budgeting process.
8 – 12	H	**High:** Requires immediate corrective action.
15 – 25	E	**Extreme:** Requires immediate prohibition of the work process and immediate corrective action.

Table 4. Risk Assessment Matrix. Available at: https://www.smallbusiness.wa.gov.au/business-advice/insurance-and-risk-management/risk-management

6.4. Managing the risks – Risk Management Plan

Once you have identified the value of the risks for your activity, you can start to look at ways of managing them. Managing risks involves developing cost effective options to deal with them including avoiding the risk, reducing the risk, transferring the risk and accepting the risk. It is recommended to develop a risk management plan covering the management strategies for each risk factor.

Figure 12 Risk Management
Source: Innofarming Project

Avoiding

In some cases, you may want to avoid the risk altogether. This could mean not getting involved in a business venture, passing on a project, or skipping a high-risk activity. This is a good option when taking the risk involves no advantage to your organization, or when the cost of addressing the effects is not worthwhile. However, when you avoid a potential risk entirely, you might miss out on an opportunity. In this case you can conduct a What if? Analysis to explore your options when making your decision to change your business process, equipment or material to achieve a similar outcome but with less risk.

Reducing

If it is not possible to avoid a risk factor totally, then you need to seek ways to reduce either the likelihood (probability) of the risk factor or its consequences (impacts) on your activity. This could include capacity building and gaining skills through training, documenting procedures and policies, complying with legislation, maintaining equipment, practicing emergency procedures, keeping records safely secured and contingency planning.

Transferring

Another risk management technique is transferring the risk to other parties or in other words "sharing the risk" with stakeholders (other people, teams, organizations, or third parties). For instance, you share risk when you insure farm or products and your inventory with a third-party insurance company, or when you partner with another organization (a food cooperation) in a joint product development initiative.

Accepting

If the above three techniques do not work in managing a specific risk factor, accepting the risk would be your last option. This option is usually best when there is nothing you can do to prevent or mitigate a risk, when the potential loss is less than the cost of insuring against the risk, or when the potential gain is worth accepting the risk. For example, you might accept the risk of a project launching late if the potential sales will still cover your costs.

6.5. Monitoring and Reviewing

Risk factors will continue to exist and evolve in time depending on other variables of your activity. Therefore, the last technique for your risk management strategy is monitoring and reviewing the risk factors. Without following through on the risks that were identified, assessed, and mitigated at the beginning, it is all just a one-time exercise which is also "risky" for you activity.
In short, you should monitor and review the risk factors for your UA activity periodically to know:

- How and to what extend the risk factor is changing;
- The effect those change(s) will have on objectives and operation of your activity;
- If your risk management strategy works well or it needs modifications and/or improvements.

Finally, the Innofarming Project briefs some possible restrictions (weaknesses and threats) that can create risk factors for an UA project:

- Often UA actors may lack of sufficient training in agricultural practices. Although, they may possess other skills that can foster innovation, a lack of agricultural knowledge can depict a big obstacle for establishing an economically viable operation. This in turn can result in difficulties to find funding or cooperation partners (**Piorr et al., 2018**). In this context, the Innofarming project and its current outputs strategically aims at satisfying the initial needs of UA project holders on basic technical knowledge and skills on developing an UA project.
- Community gardens often do not have permanent rental agreements and hence, no planning security for several growing seasons is granted. Furthermore, the soil of vacant urban land is often contaminated (**Piorr et al., 2018**).

- Technical solutions for indoor farming systems are not fully developed and the variety to choose from is limited as well. The technical equipment may cost too much at the time if the UA activity is in an indoor farming form. Moreover, since plant growth in indoor farms relies mainly on artificial lightning, the energy demand can create high operational costs and decrease competitiveness (**Piorr et al., 2018**).
- The contamination of soils within cities hampers the establishment of commercial horticultural businesses. Therefore, areas used for UA activities are often just available for interim use and remain a temporary activity of social initiatives without economic ambitions (**Piorr et al., 2018**).
- From a social perspective, modern cultivation technology often struggles with consumer acceptance. Many consumers have a romanticized image of agriculture being low-tech and traditional and thus, often reject modern methods such as hydroponics for being “not natural” (**Piorr et al., 2018**).
- Traditional farmers (such as large-scale dairy farmers and farmers running mixed arable farms) considered those promoting new farming initiatives like Urban Agriculture activities as a competitive threat. Such perceptions contribute to the tensions, which can form a strong barrier to cooperation between the two groups (**McEldowney, 2017**).

Key concepts and vocabulary

Business plan / business model : Business plan and business model are two fundamental concepts that should not be confused. The business model (or economic model) is the way in which the company generates its profit, while the business plan is a document presenting the strategy of the company and its financial implications for the years to come. Thus, the business model is at the center of the business plan.
The business model describes how the company positions itself within the value chain of its sector and how it organizes its relationships with its customers, suppliers, and partners in order to generate a profit. The business plan translates this positioning into a series of strategic actions to be implemented and quantifies their impact.

CAP (Common Agricultural Policy): The CAP is a common policy for all EU countries. It is managed and funded at European level from the resources of the EU's budget. It is a partnership between agriculture and society, and between Europe and its farmers.

Cost management: Cost management is a process of planning and controlling the budget in a company. This method provides that the expected costs for a given project are calculated during its planning phase and that these costs must be approved in advance. All expenses are then recorded and monitored during the course of the project to ensure compliance with the cost management plan. Once the project is finished, it is possible to compare and analyze forecast costs and actual costs observed.

Economic viability : Economic viability is the ability of an organization to pay its expenses and meet its expenses. In the case of an urban farm, it is a question of both paying for supplies and consumables (water, electricity, inputs, etc.), paying the purchase / rental invoices for equipment, pay the employees who work on the farm ... The economic viability of an urban or rural farm does not depend exclusively on the sale of agricultural production. The diversification of revenues, the mobilization of external financing and subsidies also contribute.

Food-Hubs: are intermediaries between food producers and large-scale wholesalers, operating at the centre of a network of individual, small-scale farmers and producers.

Food safety: a scientific discipline describing handling, preparation, and storage of food in ways that prevent food-borne illness.

Food security: is a measure of the availability of food and individuals' ability to access it.

Labelling: A food label is any tag, brand, mark, pictorial or other descriptive matter, written, printed, stencilled, marked, embossed or impressed on, or attached to, a container of food or food product.

Risk Management: is the process of identifying, assessing and controlling threats to an organization's capital and earnings. The risk management plan can implement 4 ways of managing a specific risk or thread; (a) avoiding the risk factor; (b) reducing the risk factor; (c) transferring the risk to third parties and (d) accepting the risk.

Stakeholder Analysis: is a process of identifying the stakeholders - parties that have somehow an interest in your UA activity and can either affect or be affected by the business - before the project begins; grouping them according to their levels of participation, interest, and influence in the project; and determining how best to involve and communicate each of these stakeholder groups throughout.

SWOT Analysis: is a strategic planning technique which aims to identify the Strengths, Weaknesses, Opportunities and Threats of your project idea. A SWOT analysis framework assesses internal and external factors, as well as current and future potential of an idea.

Evaluation section

1. The Governance issues of Urban Agriculture (UA) is
    a. **Characterized by a complex situation not only at European level but also at National levels**
    b. clearly examined within the scope of Common Agricultural Policy of the EU
    c. delegated to partner countries by the EU

2. The stakeholders for an UA activity can include
    a. Governmental bodies and Civil Society Organizations
    b. Profit-making organizations and individuals (volunteers etc.)
    c. Both

3. Which international organization has initiated the Urban Food Agenda
    a. OECD
    b. European Commision
    c. FAO

4. Which of the following statements is true:
    a. Urban agriculture does not require a specific regulatory framework
    b. The regulations necessary for the organization of urban agriculture already exist
    c. Urban agriculture deserves a specific regulatory framework which does not yet exist in Europe

5. In Spain, regulations relating to urban agriculture are currently defined
    a. At municipal level
    b. At national level
    c. At regional level

6. Food safety means;
    a. the availability of food and individuals' ability to access it
    b. preparation, and storage of food in ways that prevent food-borne illness
    c. the measures by governments to protect the food producers

7. Food security means;
    a. the availability of food and individuals' ability to access it
    b. preparation, and storage of food in ways that prevent food-borne illness
    c. the measures by governments to protect the food consumers

8. Studies estimate that…….% of world's food need can be fulfilled through UA activities.
    a. 45 – 50

b. 15 – 20
c. 3 - 5

9. Main benefits of an effective communication and marketing strategy for UA farmers are
   a. Lower costs for transport, storage and packaging the food
   b. Being close to the consumers for direct marketting
   c. Both

10. Which pair is **not** a main marketing channel for UA products?
   a. Frozen Food Markets – Cosmetic Sector
   b. Direct Marketing – Urban Markets
   c. Online Markets – Fod Cooperatives

11. A food hub is :
   a. A food store located in an airport
   b. An intermediary between food producers and large-scale wholesalers
   c. An hypermarket

12. A business model is :
   a. a document presenting the business strategy of the company
   b. the way in which the company generates its profit
   c. A company's marketing strategy

13. Among the following business models, which does not correspond to the usual models of an urban farm :
   a. Cost reduction business model
   b. Intensification business model
   c. Diversification business model

14. Which of the following statements applies to the economic context of urban agriculture?
   a. It is easier to make an urban farm profitable with a vegetable monoculture
   b. Diversification of activities is a useful strategy to make an urban farm profitable
   c. An urban farm cannot be profitable without public funding

15. A niche market is:
   a. A place specializing in the sale of pets
   b. A marketing strategy focused on the sale of a reduced diversity of productions
   c. A very narrow market corresponding to a very specialized product or service.

16. The average European income per square meter of an intensive gardening crop on a "green roof" is between:

a. **8 and 18 €/m2**
b. 14 and 24 €/m2
c. 50 and 60 €/m2

17. The business model canvas is:
    a. **a method for developing a business model**
    b. a business plan template
    c. a framework for initiating a marketing study

18. Customers segment are :
    a. **The groups of people that a farm must reach for its production**
    b. A niche market
    c. A group of partners for the marketing strategy

19. Among the key resources of an urban farm, the least likely are:
    a. greenhouses
    b. **a grape harvester**
    c. a drip irrigation system

20. A SWOT analysis is appropriate:
    a. **When defining the urban farm project**
    b. After building the business plan
    c. When marketing the first production

21. The proper sequence of risk handling tactics of a risk management strategy should be;
    a. Accepting – Avoiding – Transferring – Reducing
    b. Transferring – Reducing – Accepting – Avoiding
    c. **Avoiding – Reducing – Transferring - Accepting**

Activities / exercise

1. Try to develop a SWOT Analysis framework and diagram for your project idea on Urban Agriculture. Identify your strengths and weaknesses then think about the externall factors; the threats and possible opportunities for your project idea.

2. Once you have developed the SWOT analysis of your forecast project, propose a business plan model by clearly identifying the 9 fields integrated in the "business model canvas". Try in particular to identify the main families of production costs and receipts and to estimate them.

3. Develop a general communication and marketing strategy for your UA activity. Identify your channels for marketing (direct – on farm; urban markets; online; food hubs; cooperatives etc;). Describe how you will benefit from these channels to promote (market) your products.

Useful resources for the lesson

https://www.youtube.com/watch?v=Bi3hNsTcda8

https://www.youtube.com/watch?v=QoAOzMTLP5s

https://kromatic.com/blog/business-model-canvas-for-user-experience/

Australia. (2009). Risk management guide for small to medium businesses Available at: https://www.cpaaustralia.com.au/~/media/corporate/allfiles/document/professional-resources/business/risk-management-guide-for-small-to-medium-businesses.pdf?la=en

http://cretau.ca/wp-content/uploads/2020/02/Fiche-%C3%A9conomique-fermes-sur-toit_edition_F.pdf

https://www.anru.fr/la-docutheque/carnets-de-linnovation-lagriculture-urbaine-dans-les-quartiers-en-renouvellement

http://www.groof.fr/wp-content/uploads/2016/11/GROOFathon_PetitDej_CR.pdf

Partnership for sustainable communities – Urban farm business plan Handbook – September 2011. Available at: <https://www.epa.gov/sites/production/files/2015-10/documents/1.urban_farm_business_plan_handbook_091511_508.pdf

Pölling B., Prados M.-J., Torquati B. M., Recasens X., Paffarini C., Alfranca O., Lorleberg W. (2017). Business models in urban farming: A comparative analysis of case studies from Spain, Italy and Germany. *Moravian Geographical Report, 25*(3), 166-180. Available at: http://www.geonika.cz/EN/research/ENMGRClanky/2017_3_POLLING.pdf

http://www.au-lab.ca/2019/06/14/premier-portrait-de-lagriculture-urbaine-commerciale-au-quebec-le-quebec-se-demarque/

https://quebec.huffingtonpost.ca/

https://www.business.hsbc.uk/en-gb/gb/article/business-plan

https://www.knowledge.hsbc.co.uk/business_plan/embed

https://document.leefmilieu.brussels/opac_css/elecfile/etude_agricultureUrbaine_viabilite_Greenloop_avril2013.PDF?langtype=2060

https://centdegres.ca/magazine/alimentation/guide-pour-demarrer-son-entreprise-en-agriculture-urbaine/

https://www.strategyzer.com/canvas/business-model-canvas

Urban agriculture and health: assessing risks and overseeing practices http://journals.openedition.org/factsreports/5854

Brownfields and Urban Agriculture: Interim Guidelines for Safe Gardening Practices. https://www.epa.gov/sites/production/files/2015-09/documents/bf_urban_ag.pdf

Step-by-step Introduction to Food Safety https://onfarmfoodsafety.org/step-by-step-introduction-to-food-safety/

Urban Agriculture Manual https://urbanagriculture.horticulture.wisc.edu/food-safety/

Bibliography, References and links to know more

ADEME. (2017). – Agence de l'Environnement et de la Maîtrise de l'Energie. Agriculture urbaine, quelles enjeux de durabilité ? ADEME Editions. Available at: https://www.ademe.fr/agriculture-urbaine-enjeux-durabilite

Agence Urbaine de Bordeaux Métropole, A'urba. (2016). L'agriculture urbaine à Bordeaux, panorama des projets exemplaires et premiers éléments de stratégie. Available at : https://www.aurba.org/wp-content/uploads/2017/02/aurbaagricultureurbainebordeaux2016.pdf

Aubry, C., and Manouchehri, N. (2019). Urban agriculture and health: assessing risks and overseeing practices. *Field Actions Science Reports*. Special Issue 20. Available at: http://journals.openedition.org/factsreports/5854

Bernier, A.-M., Duchemin, E., Vermette, J.P. (2020). Guide de démarrage en entreprise agricole urbaine. Carrefour de recherche, d'expertise et de transfert en agriculture urbaine du Québec (CRETAU). Available at : http://cretau.ca/wp-content/uploads/2020/08/GUIDE-DE-DÉMARRAGE-EN-ENTREPRISE-AGRICOLE-URBAINE.pdf

Bolla, S. (2020).Food Labeling Initiatives in the EU Farm to Fork Strateg. USDA. Available at: https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Food%20Labeling%20Initiatives%20in%20the%20EU%20Farm%20to%20Fork%20Strategy_Brussels%20USEU_European%20Union_05-23-2020

Chardenon, A. (2017). Les distributeurs font pousser l'agriculture urbaine. *LSA*. Available at: https://www.lsa-conso.fr/les-distributeurs-font-pousser-l-agriculture-urbaine,265942

Correy, R., Riley, K, Rivera, F, and Sullivan, D. (2015). Economical viability of urban agriculture in Boston, Massachusetts. Northeastern university

Curry, N., Reed M., Keech, D., Maye, D., and Kirwan, J. (2015). Urban agriculture and the polices of the European Union: the need for renewal. *Spanish Journal of Rural Development*, 5, 91-106. doi: 10.5261/2014.ESP1.08

Den-Hartigh, C. (eds). (2013). Jardins collectifs urbains, parcours des innovations potagères et sociales. Educagri

De Zeeuw, H. (2004). “The development of Urban Agriculture; some lessons learnt”. Key note paper for the International Conference Urban Agriculture, Agro-tourism and City Region Development, Beijing, 10-14 October, 2004.

DRAAF, Ile de France .(2016). Mon projet d’agriculture urbaine en Ile de France- Guide pratique des démarches réglementaires. Available at : https://driaaf.ile-de-france.agriculture.gouv.fr/IMG/pdf/Maquette_VF_cle475afb.pdf

Duchemin E, Huot C (2020). Fiches économiques Fermes urbaines de maraîchage sur toit. CRETAU

EU – URBACT. (2016). Agri-urban baseline study. The local food in urban forks. Available at: https://urbact.eu/sites/default/files/agri-urban_baseline_study_vf_january_2017.pdf

FAO. (2010). Food Safety Manual for Farmer Field Schools. Available at: http://www.fao.org/3/a-at509e.pdf

FAO. (2007). Profitability and sustainability of urban and peri-urban agriculture. Available at: http://www.fao.org/3/a-a1471e.pdf

Hervé-Gruyer P. et C. (2019). Vivre avec la Terre – Manuel des jardiniers-maraichers. Actes Sud

Lohrberg, F., Licka, L., Scazzosi, L.,Timpe, A. (eds.). (2016). Urban Agriculture Europe (COST). Jovis.

McEldowney, J. (2017). Urban agriculture in Europe: Patterns, challenges and policies. European Parliamentary Research Service (EPRS). Available at: https://www.europarl.europa.eu/thinktank/en/document.html?reference=EPRS_IDA(2017)614641

Morán Alonso N. (2011). Huertos urbanos en tres ciudades europeas: Londres, Berlín, Madrid. Boletín CF+S, 47/48: 75-124.

Morán Alonso N. & Fernández de Casadevante, Jj.L., (2014). A desalambrar. Agricultura urbana, huertos. Hábitat y Soc. 7, 31–52.

Morel-Chevillet, G. (eds). (2017). Agriculteurs urbains: Du balcon à la profession, découverte des pionniers de la production agricole en ville. Éditions France Agricole

Orsini, F., Dubbeling, M., De Zeeuw, H., Gianquinto, G. (Eds.). (2017). Rooftop urban agriculture. Springer. doi: 10.1007/978-3-319-57720-3

Orsini, F., Pennisi, G., Michelon, M., Minelli, A., Bazzocchi, G., Sanyé-Mengual, E., & Gianquinto, G. (2020). Features and functions of urban agriculture in the Global North: a review. *Frontiers in Sustainable Food Systems*, 4, 228. doi: 10.3389/fsufs.2020.562513

Piorr, A., Zasada, I., Doernberg, A., Zoll. F, Ramme, W. (2018). Urban and Peri-urban Agriculture in the EU. Leibniz Centre for Agricultural Landscape Research (ZALF). Research for AGRI Committee. Available at: https://www.europarl.europa.eu/RegData/etudes/STUD/2018/617468/IPOL_STU(2018)617468_EN.pdf

Robineau, O., Tichit, J. and Maillard, T. (2014). S'intégrer pour se pérenniser : pratiques d'agriculteurs urbains dans trois villes du Sud. *Espaces et sociétés*, 158, 83-100. doi: 10.3917/esp.158.0083.

Sarker, A, Bornman,, J., and Marinova D. (2019). A Framework for Integrating Agriculture in Urban Sustainability in Australia. *Urban Science* 3, 50. doi: 10.3390/urbansci3020050

Tang, H., Liu, Y., and Huang, G. (2019). Current status and development strategy for community-supported agriculture (CSA) in China. *Sustainability* 11, 3008. doi: 10.3390/su11113008

van der Schans, J. W., Lorleberg, W., Alfranca-Burriel, O., Alves, E., Andersson, G., Branduini, P., et al. (2016). “It is a business! business models in urban agriculture,” in Urban Agriculture Europe, eds F. Lohrberg, L. Li˘cka, L. Scazzosi and A. Timpe (Berlin: Jovis Publishers), 82–91.