REPORT

SUPURBFOOD

WP2 Final case study report:

City region of Zurich (Switzerland)

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Picture front page: Huebhof, Zurich (Source: stadtgmues.ch)

Case Study Report of Zurich City

1. National Context - a description and analysis

1.1 Governance structure – degree of autonomy from the national state that city regions have

The policy and regulatory framework for the Zurich City region is quite complex. It constitutes a mix of national, cantonal and city/community related laws, regulations and guidelines for implementation and also some policy goals and programmes. Most of them can be clearly related to the three focus areas of the project (food provisioning, multifunctional land use and nutrient recycling/waste) whereas others are more overarching frameworks such as the national environmental law or the Zurich City goal of the “2000-Watt-Society” and their “Sustainability goals 2025” (see Figure 1).

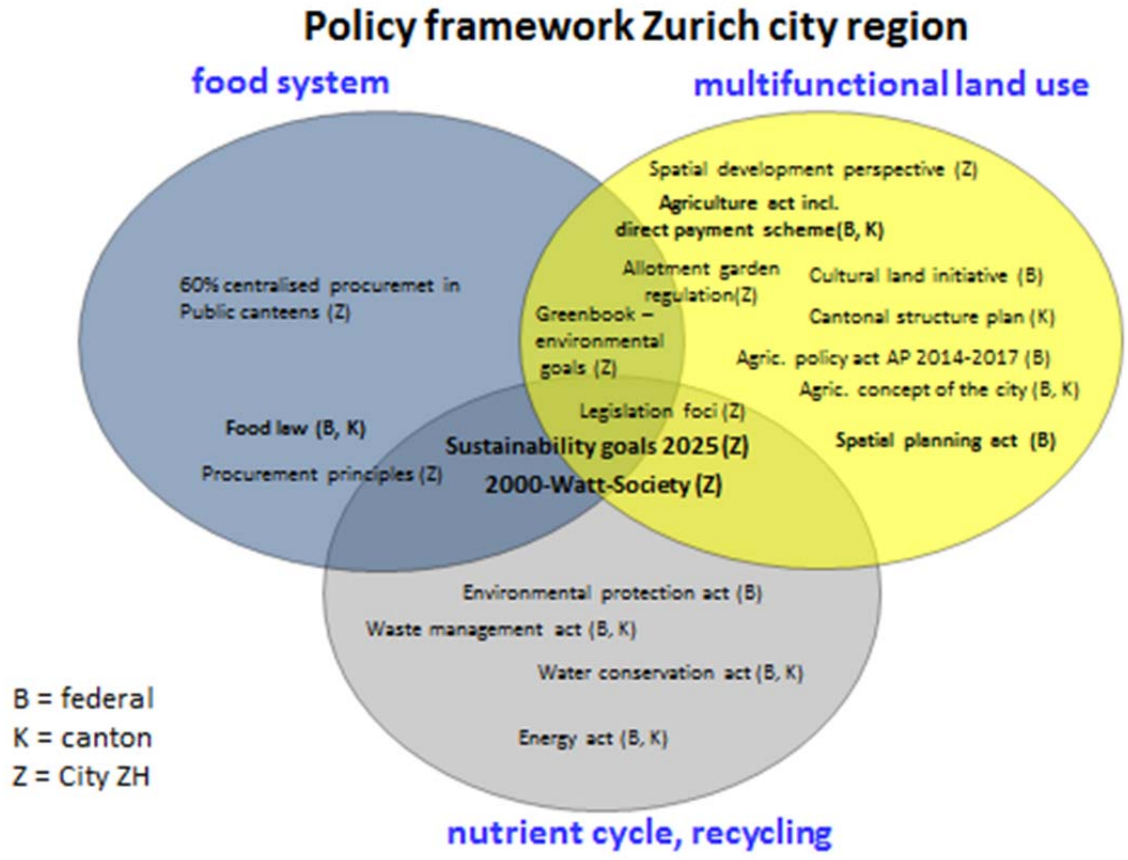

Fig. 1 Policy and regulatory framework for the Zurich City region

Food policies and regulatory framework

Regarding food policies on the national level there is a fragmented and relatively narrow policy and regulatory framework mainly related to food safety and not at all to sustainable food provisioning. The frame is set by a national law on food safety: the so called food law and related regulations for implementation, which is coordinated by the Federal Office for Public Health (FOPH), belonging to the Federal Department of Home Affairs (ministry). FOPH, with the cantonal food inspection services, is responsible for the implementation and supervision of the laws and related regulations. As FOPH is also responsible for public health, they actively encourage a balanced diet and physical activity to prevent ill-health.[1] However there is a lack of a connection between public health and a wider national food policy. With the exception of some public campaigns and projects against obesity, a pro-active policy is missing. This might be explained by the fact that food production was, and still is, traditionally an area of the agricultural policies (see below).

On a cantonal level, food policies have their main focus on ensuring food safety, but there are no other food policy activities relevant in the Canton Zurich.

On a community level, only few communes in Canton Zurich deal with food provisioning: in particular the City of Zurich, which is outlined later in this report. There are some activities in a midsized town, such as Uster (20 km outside of Zurich), where the town council supports to a limited extent a local food initiative (Uster Plus), which is a private producer-consumer association to promote local food. In fact, the communities could be more active with regard to sustainable food provisioning in public procurement or through territorial planning in securing good agricultural land. Such an orientation has not sufficiently been taken place until now in Canton Zurich (or only to very limited extent) mainly due to the current more liberalised policy approach in Switzerland, which rather leaves such initiatives to the private sector and to private households.

Agricultural and land use policy and regulatory framework

On the national level the main regulatory framework for agriculture and food production is the Federal law for agriculture and several related regulations. These regulations cover direct payments; food origin labelling of production methods (e.g. organic, free-range eggs) and of food origin (PGI – Protected Geographical Origin, PDO - Protected Denomination of Origin); and investment support. The Federal Office of Agriculture (FOAG), which belongs to the Department (ministry) of Economic Affairs, Education and Research, is in charge of this regulatory framework.[2] Most of these regulations are comparable with the EU legislative framework. This can be explained, because Switzerland's economic and trade relations with the EU are mainly gov-

[1] http://www.bag.admin.ch/themen/ernaehrung_bewegung/index.html?lang=en
[2] http://www.blw.admin.ch/index.html?lang=en

erned through a series of bilateral agreements where Switzerland has agreed to take on certain aspects of EU legislation in exchange for accessing the EU's single market.[3] For example the rules for labelling of origin or production methods are now equivalent to the EU legislative framework.

The current Federal direct payments system for farmers in Switzerland, which was introduced in 1993, is somehow comparable with the pillar I and Pillar II payments of the European Union as part of the CAP (Community Agricultural Policy). It puts a lot of emphasis on promoting the multifunctionality of agriculture, biodiversity measures, special environmentally friendly farming systems (such as organic), and on animal welfare with special targeted direct payments. The payments are relatively high compared with most European Countries, which shows the commitment of the public policy to maintain Swiss agriculture. A bit unique in Europe are the so called biodiversity quality payments (e.g. for species-rich meadows with a minimum of indicator plant species as well as for creating ecological corridors), which are also linked to a mandatory landscape planning process on the community level, which has to take place before the first payments can be transferred. These framework conditions continue to positively contribute to a more sustainable agriculture and attractive green space in and around the Zurich City: also thanks to a good participation of farmers in the city and public support (see below).

In 2013 a new Swiss agricultural policy for 2014-2017 (AP 2014-17) has been debated and voted on in the Swiss parliament. The Federal administration has worked on the details for implementation of the policy in 2014, which is administrated mainly on cantonal level.[4] The main challenges of this policy are to improve the competiveness of Swiss agriculture in order to access additional markets; to increase the services provided by farmers for the community and the efficient use of resources in agricultural production; and to minimise the negative effects of farming on the environment. The new Swiss agricultural policy for 2014-17 for direct payments will include more targeted measures for biodiversity and quality of the landscape; thereby ensuring that the farmers who reduce their animal stocking densities will get alternative incomes. Several other special payment measures are foreseen for ensuring food supplies, encouraging environmentally-friendly production systems and enabling more efficient use of resources. However this stronger ecological orientation is seen rather critical by the traditional Swiss farmer's organisations both on the national level as well as in Canton Zurich, but is supported by the organic farmer organisations, environmental NGOs, the two large retail chains (Migros and Coop), and the more green and left-wing parties.

[3] http://ec.europa.eu/trade/policy/countries-and-regions/countries/switzerland/
[4] Lanz, S. (2012): Article on economics: Main aspects of the Agricultural Policy for 2014-2017. Federal Office of Agriculture (FOAG). Website: http://www.blw.admin.ch/index.html?lang=en

A new initiative on national level, which started in 2012 as a private initiative from big supermarket chains and processors, farmer organisations, and consumer organisations, is to promote a "Quality strategy" for Swiss agriculture and food production. The Department (ministry) of Economic Affairs, Education and Research, is supportive of this initiative, which has launched a "Quality Charter for agriculture and food economy".[5] Their main principles (values) are: a sustainable food production (including animal welfare friendly production), authenticity, naturalness (no GMO), food safety and health, and origin from and processing in Switzerland. Common marketing activities (in particular communication) and projects are foreseen.

The implementation and administration of the Swiss Agricultural law, and particular the direct payments, are delegated to the cantonal level. In Canton Zurich, the Office for Landscape and Nature (ALN) is in charge. To a limited extent, ALN also supports some marketing projects on the cantonal level with funds: in particular in the Zurich mountain area. For example, a successful regional cheese initiative (cooperation of several small dairies) gets financial support. ALN has been engaged in regional planning processes and has tried to maintain good agricultural land for farming: in particular in the peri-urban areas where the pressure on land is high. A cantonal public referendum on the protection of good agricultural land has passed with 54 % in Canton Zurich in June 2012, which might be politically supportive.

The main framework for agriculture on city level is set by the "Sustainability goals 2025" and the Town Council Greenbook 2006. Currently a new concept for agriculture 2030 in Zurich City is being developed and discussed, which is coordinated by the GSZ ("Green City Zurich"): the city administrative section for green spaces. Also farmers in the city have been interviewed within that process. The concept should be finalised in 2014. 2013.

1.2 History of the agriculture industry, structure and ownership patterns

Agriculture is still an important part of Swiss society and the role is enshrined in the country's constitution. It exists not merely to produce food but also has the duty of preserving the countryside and of ensuring that decentralised regions remain inhabited. However, although many people still view Switzerland as a country of farmers and cows, the percentage of people working in agriculture and the size of farms is very much around the European Union average. About 4 % of the working population is employed in agriculture and forestry, and the number continues to fall.

According to national data from the Federal Office of Statistics (BFS) in their 2013 publication on Swiss agriculture, 164,000 Persons worked in agriculture in 2011; of which 44 % were full

[5] http://www.qualitaetsstrategie.ch/de

time.[6] In 2011, Switzerland had some 1,054,080 ha in agricultural use. The size of the average farm was 18.3 ha. For several years there has been a clear trend towards fewer and larger farms. In 2011, the total number of farms was 57,600 of which 5,800 were organic farms, which cultivated 11 % of the total agricultural land.

Three quarters of the farmed area in Switzerland is devoted to meadows and pastures, as both climate and terrain make most of the country unsuitable for crops. Cereals and vegetables are limited to the lowlands. About one third of farms are engaged in crop production. Most of the farms are family farms (94 %). In 2010, 47 % of the agricultural land was rented and was not family owned.

In Switzerland, the cattle population (2010: 1,591,233, of which 700,315 are cows) and pig population (2010: 1,588,998) are nearly the same size. [7]

In 2011, 74 % of the farms were specialised in animal production. The milk production was 4.1 Million Tons, of which 35 % was processed to cheese.

The gross value share of agriculture in the Swiss economy fell from 2.3 % in 1990 to 0.7 % in the year 2011 (3,926 Mio. Swiss Francs or 3,271 Mio. Euros).

On a private household level, only 1/8 of the total household budget was used for food (1,000 Euros/month) in 2010 and around 56 % of the food was produced in Switzerland. Regarding import/export balance, only figures for agricultural and forestry products were found. These show 8,498 million Swiss francs of exports and 13,398 million Swiss Francs of imports in 2010.[8]

On the level of Canton Zurich, the Federal Office of Statistics published a study on the structural changes in agriculture in Zurich.[9] In 2008 only 1.5 % of the working population in Canton Zurich was working in agriculture compared to 3.2 % in 1985. During that period, the agricultural land diminished by 2,200 hectares: mainly due to the use for construction and traffic roads. In 2011 there were 3,879 farms in Canton Zurich, with 11,800 people cultivating 74,000 hectares of land, with 9 % of the farms being organic. The gross added value of agriculture in the Canton Zurich was 350 million Swiss Francs in 2008.

As in the remainder of Switzerland, the average size of farms has been constantly increasing, which is also linked with a stronger mechanization. Interestingly, most of the farms in the lowland area of Canton Zurich have diversified rather than specialized, with the exception of horticulture and fruit farms, whereas most farms in the Zurich mountain area produce either milk or beef.

[6] http://www.bfs.admin.ch/bfs/portal/de/index/news/publikationen.Document.167626.pdf
[7] http://www.swissworld.org/en/economy/farming/
[8] http://www.ezv.admin.ch/themen/04096/04839/index.html?lang=de
[9] http://www.bfs.admin.ch/bfs/portal/de/index/themen/07/22/press.html?pressID=6297

In Zurich City, there are still 900 hectares of agricultural land, which is 10 % of the town area and is part of a total green space/area of 4,440 hectares, to which forests and parks also belong[10]. There are 27 full and part-time farmers as well as 10 hobby farmers who cultivate agricultural land. Ten farms, accounting for two thirds of the agricultural land, belong to Zurich City of which nine are rented, and work for their own profit, and nine are organic. The staff of one multifunctional farm is made up of city employees and the farm offers special services on behalf of the city. Most of the farms in Zurich use direct marketing and often have a farm shop with an attractive assortment of products. The "Green City Zurich" administration (GSZ – Grün Stadt Zürich) is in charge of the agriculture of the Zurich City and has actively tried to buy farms in order to maintain green space areas for sustainable farming as well as for landscape reasons. More information about the city policies and measures for sustainable multifunctional land use is provided in section 2.3.

1.3 Sketch of the pre-dominant forms of food retailing

Large retail or supermarket chains dominate food distribution within Zurich city and region. In Switzerland, the two major chains (Migros and Coop) had a total market share in 2008 of 56 %. Although detailed figures are missing, the authors estimate that these two large retail/supermarket chains are also the main suppliers of food to consumers of Zurich City.

Both retail companies, however, also have chains of convenience stores and electronics as well as gasoline stations, which have allowed them to attain leading positions from the multi-channel strategy. Both Coop and Migros have also been very successful in Switzerland with their food label products: for example the Coop label "Naturaplan" has the dominant value share for organic food products in Switzerland. As a reaction, Migros launched large organic supermarkets in 2012 (Alnatura shops – a concept overtaken from Germany), with the first outlet in Zurich. Migros maintained a comfortable lead over Coop in overall turn-over up to 2012, however, with the discounter Aldi entering the Swiss food retail market in 2005 followed by another discounter (Lidl) in March 2009, food prices have decreased. It is expected that these discounters will gain a higher market share from Migros and Coop in the future. Discounters will attract attention which will force the established retailers to sharpen their sales approach to the benefit of the consumers: however they might also put more pressure on producer prices.

Bigger supermarket chains have their own retailing facilitates. For smaller retailers and bigger growers in the surroundings, there is one central selling point in Zurich: the "Engros market". The particularity of this market is the centrally located sales point supplying smaller retailers, restaurants or canteens with fresh fruits and vegetables. The main focus is on specialities,

[10] According to info GSZ "Green City Zurich"

which is why a large share of produce is imported. The market is situated next to the motorway and a lot of produce is delivered in trucks. There is also a nearby branch of the railway system, which closed 20 years ago but might be of strategic advantage in the future. During the growing season, the bigger local vegetable and fruit producers sell their produce there.

Generally speaking, Switzerland imports more food than it exports. The majority of the imports are crop products such as sugar, cereals, oils, cacao, fruits, beverages and vegetables. The import rate is between 2 % for legumes and 81 % for sugar with most imports being from other European countries. The majority of Swiss exports (65 %) are confectionery.

In Switzerland, the demand for local and organic food[11] is growing although there is also an increasing demand for convenience food[12]. In recent years, the food consumed outside the home in restaurants and public canteens has been growing.

Due to Swiss topography, the production of animal food products dominates Swiss agricultural production, with a self-sufficiency level of 94 %[13]. Animal production is also of great importance in the Zurich City region. Meat is often marketed through on-farm channels, but the main products in direct marketing are eggs. Several farmers have installed on-farm shops. One reason is that the city department in charge offers investment funds for city owned family farms. Generally, direct marketing is of great importance in Switzerland with 20 % of farmers marketing at least some produce directly to consumers[14]. Farmer markets though are of minor importance. In the City of Zurich there are some weekly markets where also farmers sell their produce.

Direct marketing is considered to be a potential in order to connect consumers and producers and to raise the awareness of consumers for agriculture: especially in the city region of Zurich.

1.4 Current levels of recycling and resource protection

On the national level, the regulatory framework for recycling and resource protection is set by several laws and regulations: in particular the Environmental law (regarding resource efficiency), the Energy law (e.g. conditions for renewable energy), and the Water Protection law (nutrients recycling), and the Waste law.

On the cantonal level, the cantonal “department for waste, water, energy and air” is responsible for the area of nutrients and recycling. They rely on an “Action Plan for waste and resource

[11] http://www.happytimes.ch/news/news-schweiz/7116-gesunde-einstellung-nachfrage-nach-bioprodukten-steigt-in-der-schweiz-weiter.html
[12] http://www.marke41.de/content/veraenderungen-im-essverhalten
[13] Milk and milk products 109 %, meat 87 % (http://www.sbv-usp.ch/fileadmin/user_upload/bauernverband/Taetigkeit/Situationsberichte/SB2012_de.pdf)
[14] http://www.sbv-usp.ch/fileadmin/user_upload/bauernverband/Medien/Medienmitteilungen/PM_2009_de/090421_Direktvermarktung.pdf

economy 2011-2014". One important decision was that all sewage sludge has to be brought to one central station in the Zurich city (Werdhölzli plant) and be burnt. It is planned to recover the phosphorous from the ash once the technology has been fully developed.

On the Zurich City level, there is one administrative and operational unit: the ERZ, which implements the waste collection and recycling strategies. ERZ is responsible for heat and energy, water, and organic waste. One very big biogas plant has been built in the city beside the exiting sewage sludge plant and will start in the second half of 2013. It should produce 2 million cubic metres of biogas and heat 5,000 apartments. This will mostly replace an existing compost operation, which had created unwanted air-emissions in the neighbourhood. However, the main reason to change to biogas was financial (more state support for renewable energy production). The biogas slurry should be recycled on agricultural land: in particular to the farms in the Zurich area. There will be a separate collection of green organic material (from parks, gardens etc.) as well as for food waste (on an inscription basis).

The use and recycling of organic waste has gained very much importance in the last years: both in the public as well as in the private sector. This is seen as a business opportunity: mainly for bigger companies.

2. General introduction to the Case Study

2.1 History of the city region

Zurich is the largest city of Switzerland and the capital of the Canton of Zurich. It is located in north-central Switzerland at the north-western tip of Lake Zurich (see Figure 2). The municipality has approximately 390,000 of the 1.83 million inhabitants of the Zurich metropolitan area. The area of the city region is 87.88 km^2. Zurich is a hub for railway, road, and air traffic. Both Zurich Airport and Zurich railway station are the largest and busiest in the country. Zurich is a leading global city and among the World's largest financial centres. According to several surveys from 2006 to 2008, Zurich was named the city with the best quality of life in the world as well as the wealthiest city in Europe.[15]

[15] http://en.wikipedia.org/wiki/Zurich

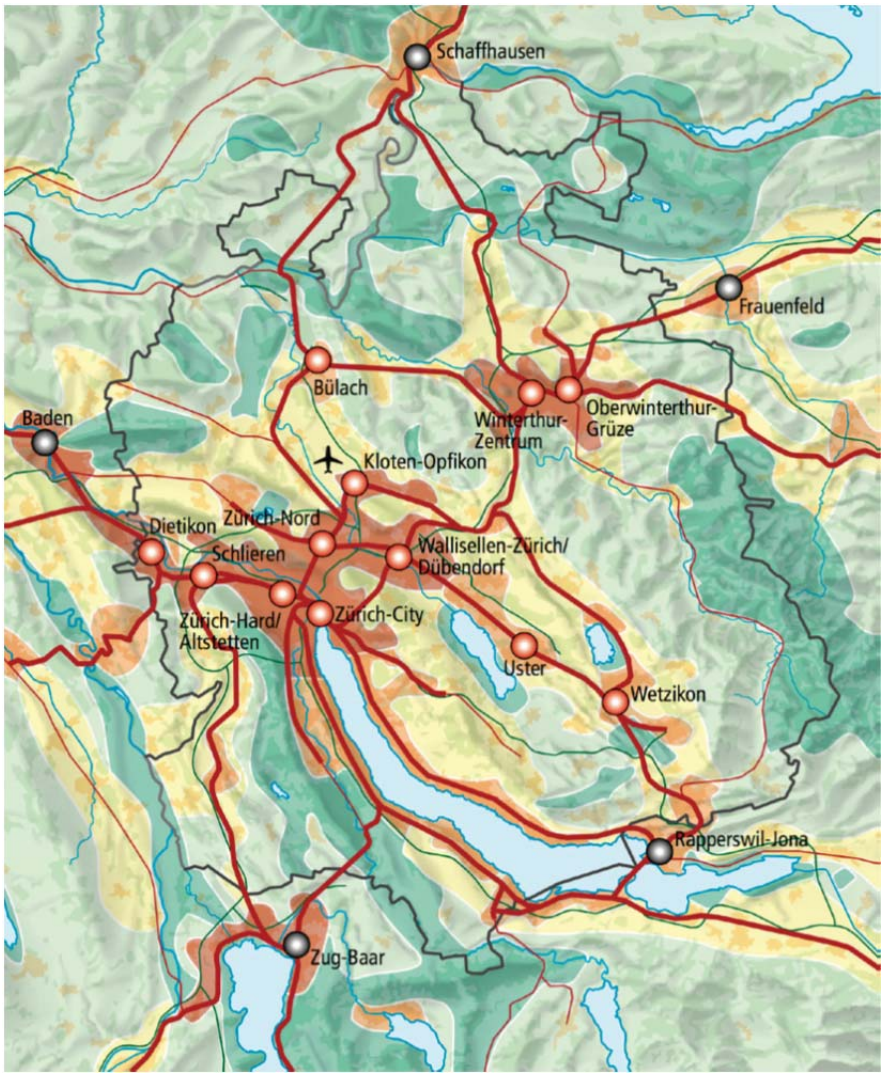

Fig. 2: The large metropolitan region of Canton Zurich (RZU-Zürich, 2012)

The city region shows a high density of settlements, industry and traffic roads. However a quarter of the land is forests.

In order to promote the “greening of the city”, the city council decided in 1989 to promote the conversion of their own farms (which are rented) to organic farming. Currently, 40 % of the agricultural land in the City of Zurich is cultivated organically and 70 % of the city-owned agricultural fields are cultivated organically.

In the city region of Zurich one can find quite different types of urban agriculture:

- The farm types include mixed farms with milk cows or beef, fodder production farms, and arable production. Products are sold using direct marketing; regional production and distribution of the products through retailers; or at several vegetable/fruit markets in the centre of Zurich City.

- The city council aims to maintain and support small-scale gardening: 130 ha are allotment "family" gardens (5,500 allotments/plots), while 80 ha are areas with small-scale community gardens, migrant gardens, or hobby animal holdings (sheep, bees). Several community supported agriculture (CSA) initiatives exist, with a few of them having been established for a relatively long time (e.g. Topinambur on the farm Brüderhof in Dällikon). In recent years, new groups of mostly young people have started CSAs and urban gardening initiatives: partly with a slightly different focus than the established ones: Examples include Dunkelhölzli, Ortoloco, Seedcity, etc. which are more like community gardening and are often combined with a box scheme of vegetables for their members.
- There are several large-scale horticulture farms or specialised farms (e.g. fruit growers) around Zurich City, which deliver food to Zurich or market directly to consumers.

2.2 Current social and economic situation

The Zurich city, as well as the larger metropolitan or peri-urban area, which covers most of the Canton Zurich area and parts of Canton Aargau (with Baden as larger town), is an economically booming region in Switzerland. Most of the main large companies are located in or near Zurich. As a result, there is a strong pressure on agricultural land.

The communities and smaller towns near the city (10-20 km around) are very much oriented towards Zurich with many of their inhabitants working in the city. However these communities can be still quite different in their social structure and their community tax: Some are rather dormitory settlements, while others are places to live for rich people (along the lake Zurich), and some are more satellites to Zurich with shopping or trade centres or industry.

The communities that are more distant from Zurich have a more diverse structure with apartments, industry and service businesses, and surrounding agricultural farms. Furthermore some middle size towns such as Winterthur or Uster still maintain a degree of autonomy.

There are a few specialised food processors in or near to Zurich including the Migros JOWA bakery and chocolate factories.

2.3 Land planning system

Land use planning in Switzerland is framed by national law, but the actual planning of land use lies within the responsibility of the Cantons, which to some extent also transfer responsibility to communities. The central planning instrument is the "Cantonal structure plan" ("Kantonaler Richtplan"). While on the cantonal level, the main distinctions are made in terms of construction area, infrastructure, conservation areas etc., the communities are responsible for defining the

detailed land use as agricultural land, recreation area, infrastructure, conservation areas (on community areas) etc. The cantonal structure plan is currently under revision, after which it will then be obligatory for another 15 years.

Structure planning was also influenced by the cantonal referendum “cultural land initiative” (“Kulturland-Initiative”) in 2013. This initiative was aimed at securing agricultural land in populated areas that was foreseen for construction. In Switzerland, direct democracy by popular votes is a very common instrument. In the case of the “cultural land initiative”, 54 % voted for this initiative and in that case prevented construction. At the same time, a revised Federal law on space planning also passed a public vote, which allows better protection of agricultural land and long term planning.

Nevertheless agricultural land is under pressure: especially in the city region of Zurich. Diverse actors including farmers and representatives of urban gardening initiatives are anxious about the increasing pressure of construction in the city area. Though agricultural premises are fixed in the land structure plan, actors fear that through an order of the city council, the land can be re-allocated for construction. One city representative states though, that the legal barriers for doing so are much higher than they were in former times.

Agricultural land use

Over the last years, the strategy of the City of Zurich has aimed to condense settlements by building upwards rather than outwards in new constructions, while the current green spaces are considered to be safe within the current structure plan. Nevertheless a trend is seen towards urban sprawl as the city population is growing, and the increasing populations’ need for new schools and sports areas. The construction of these is often on allotment garden zones. The different interests in the city are coordinated between city departments. The department in charge of green space management is eager to secure open green spaces for farming, recreation or nature protection in buying land of private or other public owners. About 500 ha of the total amount of 900 ha agricultural land on city premises is owned by the city.

For many years, Zurich City had a strategy in place for the agricultural cultivation of city land, which defines the goals and fields of action. The strategy aims at maintaining attractive open space for recreation for city dwellers, enhancing biodiversity on farmed land and to communicate “green knowledge” aiming at raising ecological awareness of city dwellers. As mentioned, the city owns ten farms within the city, of which nine are rented to families, while one is run under the management of the city department in charge. The city concept for agriculture was first installed in 1989 and has been revised twice since then. In the 1989 version, organic cultivation of urban agricultural land was first introduced. In later versions also the obligation for ecological compensation areas were stipulated. Furthermore allotment gardens are also obliged to be cul-

tivated organically. In a current revision of the strategy, the goals for "agriculture 2030" will be defined. This process is based on the so called "Green Book" of the Town Council from 2006 in which, *inter alia*, the strategic goals in terms of agriculture for the next 10 years are set, and which will consider ownership structures, farming practices, biodiversity goals, animal husbandry and direct-marketing issues. One main trigger for future cultivation lies in the ownership and the orientation of farms in terms of production, nature conservation or educational focus. This concept is discussed within different divisions of the department for green space management. One strength of the department is that divisions as agriculture, nature protection and land use planning are within one department which commonly elaborate new strategies and concepts.

The "Green Book" Zurich 2006 defines all goals in terms of green space cultivation. The forest owned by the city is FSC-certified (Forest Stewardship Council). Supporting biodiversity through different issues is one main goal of the city. In elaborating such concepts that consider land based issues, some farm managers of the city owned farms have been involved to some extent.

The support of biodiversity on city land is mainly triggered by national policy measures. Swiss farmers get compensation money for implementing biodiversity measures on their farms. It is an obligation for Swiss farms to carry out biodiversity measures on 7 % of their farmed land. The City of Zurich has a higher obligation in place, in which 15 % of city area must be cultivated to support biodiversity, and currently 25 % are reached. The areas for biodiversity measures are defined in specific strategic plans where the aim of region wide biodiversity measures in order to support cross-linkages between different species is pursued.

Allotment gardens and urban gardening initiatives

In the City of Zurich, there is a great importance of gardening in allotment gardens. These are garden zones with long standing history and mainly very strict rules and strict organisation/associations with social control. City administrators reported that until now the main interests of family garden representatives are generally to have "tidy gardens" and they regularly check that garden sheds and other construction works are built according to the rules. These rules however are set by the cities in terms of a regulation. Allotment plots on city premises are usually administrated through "family garden associations" which directly lease the plots to interested gardeners. Plots for urban gardening initiatives or bee keepers are administrated directly through the city administration of "Green Space Zurich (GSZ)". Currently, the realignment of allotment gardens is discussed within the city administration as to partly open the allotment gardens to public (gaining access to the public premises) and to integrate urban gardening initiatives. By opening the allotment premises, representatives of the family gardeners however fear an increase of vandalism. Though, reorganising the current system of allotment gardens will be

dependent on future demand for allotment gardens, as gardeners are often more than 60 years old, and the increasing demand of plots for urban gardening initiatives.

2.4 Development of food strategies and key actors

Considering that a food strategy is defined as an instrument with which a city takes a holistic view on food, which the city produces, stores, delivers, sells, consumes and wastes (Reynolds 2009),[16] the City of Zurich does not have a food strategy. However there are, to some extent, strategy documents that consider specific aspects in relation to food. Diverse postulates have also been handed in to the city parliament with the aim of proving its feasibility. Examples are to abandon use of meat produced in national and international factory farming in the municipal public canteens and to promote vegetarian menus. There was also a postulate related to the transformation of the city green of Zurich into an "edible city", which has been approved. In 2014, Zurich will plant vegetables on public areas as traffic islands.

Generally, Zurich has formulated the vision to develop towards a sustainable city-region by the year 2025. Diverse goals have been formulated; especially in terms of construction, mobility, infrastructure/traffic, energy use and public spaces. The citizens of Zurich voted in 2008 for the development of the city to aim towards a "2000-Watt-Society" by the year 2025. The aim is to reduce the energy consumption, to reduce CO_2 emissions, and to support renewable energy sources. Food has not been specially addressed. In terms of agricultural production or food, there is only a vague formulation in this vision that "in the year 2025, Zurich is a landscape wise attractive city which is carefully cultivated".

The city measures that have so far been taken in terms of food have been very much focused on land based approaches, such as organic cultivation or support of biodiversity, as mentioned in chapter 2.3. This is seen by diverse interviewees of civil society, market and within policy administration as a pioneer approach, although they mention that other aspects in relation to food are not considered by the city government or have only been marginal addressed, such as in terms of public procurement guidelines of food for public canteens.

Two different departments are responsible for food provided to a) schools and day care centres and b) to hospitals and elderly homes. So far, there has been no communication or harmonization of strategic goals. The focus of the food issues is referred to the responsible department: school food provisioning lies in the responsible of the department for schools and sport, and healthy diets as sugar or fat reduced meals are supported. Sustainability issues have so far not been addressed in a more significant and prominent way. Food provisioning for hospitals and

[16] Reynolds, B. (2009) Feeding a World City: The London Food Strategy, International Planning Studies, vol. 14, no 4, p. 417-424.

elderly homes lies in the responsibility of the department for environment and health, and 60 % of food is procured centrally. However, purchasing activities follow the public aim: “Zurich buys good and reasonable”. Price pressure is a big issue. Budgets for food procurement have been reduced while environmental and social requirements[17] have been raised. There is a core buying team installed within the city departments, which suggests that there are criteria to be met.

Activities within city departments in terms of sustainable food often depend on very motivated individuals. For example, in the City of Zurich, a social responsibility procurement guideline is in place. A current postulate asks to check whether this guideline can be added by considering sustainable criteria in the procurement process of textiles (e.g. uniforms for the city police). This raised the question for the city department in charge to also include the creation of ecological guidelines for procurement groups other than textiles, such as food. Another example is a pilot project for CO_2 reduced menus in four city canteens, which has now been generally installed.

Individuals of the same department are currently eager to develop an urban food strategy, or position, in support of sustainable food. In this regard, the development of a food strategy might have good chances because, in other areas (e.g. forestry management), an overall strategy has been accepted by the city council. However, in terms of a food strategy, “some points need more concretisation”. Though, these points are considered as quite challenging in terms of how to define e.g. sustainable food provisioning, it is not clear whether what actors outside city departments should, and could, be involved in developing such a strategy.

Generally speaking, within the responsible field of activities, policy administration actors often share good contacts with private actors, though these are mainly on the operational rather than on the strategic level. Actors from the market and civil sector stated that they expected action from policy to create frameworks easing their operations as e.g. obligation of 10 % organic food procurement or dedicating land for urban gardening initiatives. However there is a lack of capacities by market actors to actively address public policy.

Private actors rather form strategic partnerships with like-minded organisations/initiatives in support of sustainable food issues. However such partnerships usually go beyond city borders; they are rather operating nationally. One example is a program aiming at reducing food based CO_2 emissions by supporting vegetarian menus. This is collaboration between the biggest Swiss catering company (SV Group) and the “World Wide Fund for Nature” (WWF). Another example is the common marketing activity of Slow Food and Coop: the second biggest supermarket chain in Switzerland. Initiatives operating on the city level are very often urban garden-

[17] Examples are 5 % organic food, MSC label, Fairtrade label, eco-friendly vehicle fleet, GMO-free food, gender aspects. However, there is not controlling instrument installed in order to proof the compliance with this purchasing criteria.

ing initiatives. Though these are very small initiatives they are very well connected with other initiatives in the city and also nationally.

3. Dynamics in the City region

The dynamics in the City region have been elaborated through interviews with actors in the city region (details see Annex III). In this chapter the authors focus on the main blockages, opportunities and priorities in the three areas: shortening of food chains; the multifunctional use of land in urban and peri-urban areas and recycling of nutrients. We do differentiate between the views of public policy, market actors and civil society. Furthermore some examples of best practise are described.

3.1 Shortening of food chains

The following presents blockages, opportunities, priorities and best practice examples concerning the shortening of the food chain in the city region of Zurich.

3.1.1 Blockages

Public Policy

Several interviewees describe the food supply of the city as generally „good“. It was mentioned that also some regional products are available in supermarkets since the two biggest food retailers: Coop and Migros, to some extent supply organic and also regional food. One supermarket chain (Migros) has a program called “From the region for the region” where regional produce is sold in local supermarkets. However the collection area goes far beyond the Canton of Zurich. It is also not clear how big this share of the total food offered is. Also in Coop, few organic products are sold as regional specialities.

Furthermore farmers markets, small shops with local or organic food and food cooperatives driven by consumers do exist in the City of Zurich. The City of Zurich stipulates organic farming practices for the city owned family farms and allotment gardens. A compulsory Veggie-day in city owned nursing homes is set. Public Procurement goals in terms of organic food or GMO free food supply are set, but are still limited in application. In this regard, one interviewee of the city level described it as, so far, there was not a huge political pressure from the outside to act towards sustainable food. However the current movement of urban gardening initiatives and the perceived growing interest of the public in sustainable and local food issues will put this more on the policy agenda.

Policies dealing with food and agriculture have so far been implemented by individual departments. The city policy has a decentralized approach: departments can act very independently. Overarching cooperation between departments still could be much improved in the City of Zurich. It is seen as a challenge to motivate people in single departments to not only focus on their own field of activity but to consider cooperation with other departments. Regulations considering a whole city perspective are rare. Strategies governing different departments and fields of responsibility furthermore are incompatible. City strategies of "Zurich buys good and reasonable" is not in favour of fostering local and more sustainable food strategies.

Furthermore, each department deals with different aspects of food, reaching from a health perspective to production and ecological perspectives. Interviewed civil society organisations and market actors primarily recognise the production-based approach of the city departments in terms of sustainable food. By this they, *inter alia*, mean the organic cultivation of city owned farms and allotment gardens. One civil organisation with a focus on food consumption emphasizes the good work of the City of Zurich in terms of these production based policies but at the same time criticizes the missing perspective of food from a sustainable consumption and cultural perspective. Though sustainable procurement measures to some extent exist, such strategies are not communicated to the outside.

One reason mentioned by several actors of city departments why food issues have not been overtly addressed so far is that it is not clear how to define "sustainable food" and how to fit that into the overall strategy of the "2000-Watt-Society". Some first approaches in public procurement have been undertaken to buy more sustainable food. But it seems that city actors until now are rather reluctant to push more such approaches as organic or local or Fair trade due to uncertainty whether these concepts are "really sustainable". Setting policy targets, such as e.g. seasonal food by city departments, need reasonable justification for policy makers. However certain criteria are hampered due to specific laws. In the EU, defining short distances as criteria in public procurement awards is not allowed, and this also counts for Switzerland. Furthermore it is also argued that seasonality is difficult to consider under the current law regime. Transport criteria are considered by asking for an eco-friendly vehicle fleet. Furthermore, 60 % of the procured public food is bought centrally. Referring to the city's aim of "Zurich buys good and reasonable", a minimum of 50 % of the award criteria is laid on price aspects. These criteria have been stipulated within some municipal departments, and there were no market or civil actors involved. Interviewed farmers and smaller retailers criticized this approach on the basis that only bigger suppliers have a chance to deliver the amount of food throughout the year.

Market

Considering short food supply chains in terms of short distances, the market actors agree that the surrounding of Zurich city alone cannot feed the city. One city department representative estimates potential for supplying 1-2 % of the total food supply. Civil actors however highlight that these are figures based on the current food grown and current food system: from their perspective a change of the food system towards more sustainability would mean higher percentages of food supply.

Interviewed retailers argue that Zurich farmers have a lot of different opportunities and have already found different ways in being economical viable, e.g. through farm shops. One farmer agrees: *The location of Zurich city area is not the worst for running a farm*. Retailers define regional food as food produced in a specific region as e.g. Seeland an area around a lake in the west of Switzerland, which was once a prosperous vegetable growing area. At this point it needs to be stated that the Seeland is around 150 km away from the City of Zurich. In their concern there are other regions than Zurich city region that need support in order to stay economically viable. Switzerland is a small country, so goods produced in Switzerland are often considered to be local. Interviewed caterers often purchase 80-100 % national produce such as Swiss meat. This however is argued as a strategic decision to some extent, as Swiss tax laws with high taxes on imported produce *"make it quite easy to consider Swiss products"*.

Sustainability in the purchase activity is therefore often considered in terms of sustainable cultivation method as organic farming and social standards in terms of Fair Trade products. It seems that, at least to some extent, these are conflicting targets. One caterer stated that considering CO_2 emissions as an important target is not always in favour of organic or local food. Market actors often address different sustainability criteria, ranging from considering CO_2 emissions as the most important aspect and putting emphasis on very detailed logistics systems, through to being mainly willing to support local traditional food of peasant farmers and collecting produce from each farm. Short food chains, in that regard, very much depend on the individual views and priorities of market actors.

Logistics in terms of organisation and price is mentioned by market actors as a huge challenge. Direct delivery from farmer to consumer is perceived as a huge advantage for farmer-consumer-partnership. However the way the current logistics system is organized is not perceived as ecological sustainable by retailers, since more and more farmers are directly delivering produce to their consumers. However, direct delivery assures the farmers better prices and income. One civil organisation however sees the need for more direct contact between farmers and consumers. Local farmer's markets are perceived as a better and less expensive possibility of connecting farmers with consumers. One retailer mentioned that there is an increasing pressure be-

tween retailers as a lot of deliveries of small quantities are done almost for free. There is a need to find a solution in order to address ecological and economic sustainability.

The centralized approach from the public canteens which are in favour of one or two suppliers of food is also seen in private canteens and restaurants. That means that the city owned organic farms are hampered to deliver their produce to the city canteens. One exception is one city owned farm that is not family run but by a manager. This farm does not farm organically but is able to deliver the produced milk to city canteens. Furthermore there is a trend of canteens towards convenience food, which makes is difficult for market actors, such as farmers or specific retailers, in the Zurich city region to fulfil this demand. One farmer mentions that they could provide restaurants with meat, but restaurants only want the "best pieces": they are not willing to take half the cattle. This is also argued that there is a lack of knowledge among restaurant managers.

One interviewee mentioned that, to some extent, there are not many possibilities to act without a resolution of the city council. Nevertheless the implementation of sustainable food aspects in public canteens needs people on the canteen management as cooks who are willing to adjust these principles. There is still a certain lack of consciousness and willingness seen to adapt to sustainable cooking practices. So far, one city department in charge has tried to motivate cooks by organising farm visits and seminars. There is a potential to do more and to intensify such information and training activities. However at this point it needs to be stated that the budget for public canteens has been reduced in the last years, and the requirements in terms of considering sustainability criteria have increased.

Interviewed retailers, to some extent, have contact with public policy actors, but more on the operational than on the strategic level. While some do not have any expectations from policy, others address public policy in terms of their consumer behaviour and request e.g. a higher percentage of organic food produce in public procurement awards. Also farmers would see that as an urgent field of action. The consideration of price as the most important criteria is much criticized by market actors. Since Zurich has set its strategic goal in terms of "2000-Watt-Society", market actors see a need for action *"if the city takes that seriously, and not just writing it on paper*". However, market actors stated that they do not see it in their field of responsibility to address public food policy.

For farmers, direct marketing is seen as interesting income source (see Figure 3), however there are limitations regarding the available work force. Market actors and a civil organisation see an increase in on-farm food processing as a future strategy for farms. However this would need a lot of effort from the farmers' side, as currently the processing of food is of minor importance on the farms. As one farmer states*: Farmers see themselves too much in the classical*

production and do not fully use the potential of the city region. That means also that direct marketing potentials, especially in terms of farmer markets are not used because of a lack of capacity from the farmers' side.

Fig. 3 Direct marketing facilities on farms (Source: stadtgmues.ch)

Civil Society

Civil organisations in the Zurich city regions were found to be very different. They range from urban gardening initiatives with a focus on production of food or a focus on educational aspects of food production, through to consumer organisation with a focus on food consumption issues and environmental NGO's with a more national perspective. So far, there have been different forms of collaboration with public institutions, though solely on the operational rather than on the strategic level. In terms of urban gardening initiatives with a focus on production, the contact with the responsible department on the city level is described as very good and helpful. The department was searching for suitable places for urban gardening. Initiatives however claim a lack of commitment from public institutions, as it is not clear whether they can keep the fields in the long term to continue their activities. Investments, which are necessary in order to reach more professionalism, are hampered due to an uncertain future.

The main blockage in terms of the interviewed civil society organisations is that a lot of times the activities are based on voluntary work and on the very motivated engagement of single actors. This problem is faced by smaller organisations with 40 up to 400 members. This is especially the case with urban gardening initiatives that are often run by students. The question is what happens to the initiative if these crucial actors leave.

3.1.2 Opportunities

Public Policy

The overall goal of the City of Zurich is its development as a sustainable city. Within the strategy of the "2000-Watt-Society", the aim is to reduce the energy consumption of Zurich (details see 2.4). In the current system with centralized food procurement for hospitals, elderly homes and some other canteens, the focus in terms of consumption is laid on an eco-friendly vehicle fleet, sourcing energy from renewable sources, and implementing guidelines for energy efficient office equipment. Zurich also has a guideline for sustainable public procurement in place. In public awards, specific guidelines are set in terms of food, with one example being that only suppliers with eco-friendly vehicle fleet, and reduced packaging and/or 5 % organically produced food are accepted. One city department representative mentioned that, years ago, there was a group of individuals within city departments who wanted to push the percentage of organically procured food higher than 5 %. At that time no consensus and decision was possible, mainly because of different views regarding costs.

Suggestions to also consider the composition of menus and see how they can be adapted in e.g. reducing the meat per meal, as it was done in other cities, was at that time not taken up. In the meantime the framework conditions have changed. The City of Zurich has created a kind of policy framework where steps towards sustainable food and short food chains have a potential to be considered.

The city department that is responsible for agriculture has launched the „Grünbuch Zürich" (Greenbook Zurich). Within this book, the strategic direction in terms of green space management and environmental education towards sustainable development of the city is set. In terms of agriculture, it is prescribed that the currently agricultural farmed land around the city is assured. Farmers interpret it that the city has made a clear commitment towards agriculture and are keen on assuring agricultural production and the agricultural green spaces. Evidence for this can be seen in that the city finances city-owned farms in terms of e.g. the installation of farm shops and stable constructions. With this support, the city wants to guarantee farmed land, and culturally diverse and attractive open spaces around the city.

Though there is not much cooperation between departments dealing with different issues of food, there is good cooperation between departments and market or civil actors within their responsible area of activities e.g. there is a good cooperation between the city department responsible for agriculture and the farmers as well as urban gardeners. This opinion is shared by actors interviewed at the city department for green space management and the urban farmers/gardeners. Farmers on city owned land very much appreciate the support they get from the city: especially in terms of investment funds. Farmers highlight that this gives them security in

terms of investments, although they do not own the land. Also urban gardeners appreciate their support in finding space for urban gardening. One urban gardener argues: *"It was much uncomplicated to get a field for our gardening activities. The city department is very open for new ideas and they (contact persons) are willing to try new things."*

Market

One written goal in the "Green Book" is to support city farmers' marketing activities especially through farm shops, but also through city based private and public restaurants and canteens. However the second issue has so far not been addressed. So far, several common attempts have been made by city farmers and the responsible city department to work out marketing opportunities. However farmers are not sure to what extent the city department is responsible and also capable of supporting marketing activities besides functioning as a "door opener" to build networks between involved organisations; as it was done with the bread marketing project "Züri-Chorn-Brot".

The city department in charge of the city owned farms has stipulated a marketing opportunity for city farms called "Züri-Chorn-Brot". This was cooperation between city farmers, a mill, and the second biggest Swiss supermarket chain: Coop. The aim was to produce bread from wheat produced in the city region but, after 5 years, this program stopped. Reasons were given that *"there was simply not enough grain from city farms to run such a program" and also insufficient engagement of persons in charge*. Furthermore, city owned farmers are obliged to run their farm organically. This bread was marketed as conventional bread although organic grain from city farms was used.

Besides, a city owned label was not perceived as being useful by farmers, as farmers behind such a label are anonymous. Farmers have created direct marketing channels and prefer to market with direct contact to the consumer. However, there have been experiences and attempts made towards common marketing activities and cooperation with municipal and market actors that can be cultivated and fostered.

Market actors, such as retailers, perceive an increasing price pressure on their activities from consumers. Two kinds of development are seen: on the one hand there is an increasing demand for reasonably priced food and on the other, the demand for specialized, good quality food is increasing in Zurich society and with that also the willingness to pay. One civil society organisation in support of sustainable agriculture has used this development by launching regional specialties in the supermarket chain Coop. Launching further specialties in a discounter chain is seen as a boost for regional specialties, although this needs special efforts of good and transparent communication. Farmers around the city have a long standing tradition in direct marketing. Farms are diversified and farmers see this as strength of their farm. This is revealed

in a survey about the farm production around Zurich (Grün Stadt Zürich 2012). Although the direct marketing does not produce a huge share on the farms' revenue, it is considered to be very important. Farmers have found different ways in marketing their produce, either on-farm or through restaurants. Most famers see a great potential in more direct marketing: especially in canteens and restaurants. A lot of farmers engage in milk production. Direct marketing is especially seen as necessary with the currently volatile milk market prices. Farmers in the city region have a tradition in cooperating with other farmers. The farmers with farm shops sell their own produce but also sell produce from other local farmers.

Farmers see a potential in collaboration to increase quantities, which might guarantee them an improved access to the city public canteens or to run a common stand at the farmers' market in town. The already mentioned study (Grün Stadt Zürich 2012) however also revealed that none of the farmers is willing to take the initiative for common marketing activities. Furthermore, as one interviewed farmer mentioned: *Currently there is not a huge pressure to change something in terms of direct marketing. That is why the impulse must come from outside, from the city policy or/and from consumers for example*. More cooperation in terms of creating bigger quantities is one option: one interviewee from a civil society organisation sees another approach in terms of focusing on marketing of regional rarities or specialties, such as certain plums or water buffalo mozzarella.

Caterers also realise an increasing demand for considering sustainability criteria in private awards for e.g. the staff restaurant of a bank. Seasonality is an aspect that is considered as likely to become more important in the future. This aspect might bring opportunities for regional farmers to market their produce. As one retailer states: *seasonal organic food that travels short distances can be cheaper than imported conventional food*.

Civil Society

One opportunity to gain more recognition on the private and public plate is that some urban gardening initiatives are very well known: also beyond the city region. One reason is their media presence. Newspapers have shown much interest in garden initiatives, and initiatives create blogs and newsletters.

Furthermore consumer organisations are very well connected: both within and beyond the city region. In terms of urban gardening initiatives, their linkages are mainly within the movement: they share knowledge and experiences but also garden material as seedlings. Another consumer organisation with a focus on sustainable consumption sees itself as co-producers aiming at fostering local traditional food. This organisation is well connected with farmers and other market actors, such as food shops, although so far there is no connection to public policy.

3.1.3 Priorities

Public Policy

The interviews showed that several individuals on the city department level are currently interested and motivated to create an overall food strategy for Zurich. These actors see that there are some activities and approaches towards sustainable food in progress within the city, however, framing that within an overall strategy and linking it within the "2000-Watt-Society" is missing. One interviewee stated that, in order to be active, departments need an order from the general policy level. The general orientation could be given by the general strategic vision of the City of Zurich of a "2000-Watt-Society", where a common food strategy would fit into this goal. Hereby some interviewees often refer to other cities as Munich or Malmö, which have an overall food strategy in place. In this regard, it was mentioned that first of all it needs to be elaborated what aspects of "sustainable food" can be considered within the "2000-Watt-Society". Also other actors from market and civil society see a need for the city to find out *"what it really wants in order to reach its sustainability goals".*

The city is currently implementing pilot projects, such as „Menu Plus"(mentioned below), with the aim of providing meals with less meat and more seasonal food. This is however an exceptional project and is not really communicated to the outside. This program was initiated by members of one city department and participation in the program is voluntary. The approach of city representatives so far was to carry out awareness raising activities rather than putting obligatory measures in place. Besides creating an overall strategy, on the operational level, policy administration actors also highlight the need to find ways how to deal with local or organically produced food in and around the city. In this regard the need is seen to connect with diverse actors: especially market actors, to find out to what extent the food could be provided for the city and how this could be organized and implemented in a long term strategy. Municipal institutions are not aware of the extent to which the city region can supply food. Though, one interview mentioned that the food produced on city farms would feed 1-2 % of the city population. Policy administration actors stated that their scopes of activities are limited and that an overall strategy needs the decision of the city council. In this regard, a common understanding of "sustainable food" and concrete targets need to be defined. Interviewees from the policy level currently argue differently, depending on their scope of responsibility. Current goals reach from *"the energy expenditure of the food supply chain needs to be reduced"* while others see a long-term viability of farming and the support of biodiversity on farmed land as targets.

Different actors, including market actors and policy administrators see a great potential in the procurement of sustainably produced food in public canteens. One way to address this issue is to raise the mandatory amount of sustainable food in public awards e.g. mandatory organic

quote. One farmer mentioned that it is quite unlikely that all city farmers will market their produce directly to the city canteens but expects that the public procurement activities of the city at least consider the equivalence of what the organic farmers produce in organic quality. Market actors furthermore expect city policy to function as a "door opener" in order to get access to public canteens.

Market

Market (farmers and retailers) and public sector actors see a great potential in bringing more local food into city public canteens and private restaurants. As mentioned, the interviewed farmers do not see themselves in the position to start new cooperatives to e.g. meet the criteria for public procurement awards of the city. However, intermediaries are needed to coordinate such activities. Although farmers mentioned that vegetable growing does not play a huge role around Zurich due to its soils nevertheless there are a few rather large vegetable producers near the city, which are main providers of vegetables at least for one of the large retail chains (Migros). But potential is seen in terms of eggs, milk, beef and apples/apple juice. Retailers and also the civil society organisation with a focus on sustainable consumption see a growing demand for specialties. What is however missing is the information about what kind of, and to what extent, the city farmers could provide food. An inventory of the current crops and marketing activities is needed.

Civil Society

Although civil society organisations are very different, they all are in need of more members if they are to build a more critical mass and to become noticed on the public and private plate (see Figure 4). Initiatives themselves constitute a raising awareness for sustainable food issues but their representatives are not sure whether this is only a current trend for their members and whether the growing interest will continue in the future.

In order to get more public recognition, one organisation perceives the need for members out of the public sector: persons who are respected and influential, to lobby on their behalf for sustainable food. Furthermore, the need for a food representative in each community is seen.

Fig. 4 Common activities at a peri-urban garden initiative (Source: Ortoloco.ch)

3.1.4 Examples of best practice

The following examples mentioned below are not best practice examples for short food supply chains in terms of direct marketing from farmers or short food miles, but they show that there are certain steps made in the direction of sustainable food chains.

Menu Plus

Within “Menu Plus”, the city has implemented a pilot project to find out to what extent climate relevant emissions can be reduced through adjusted menus. This pilot, running for 13 weeks, has now been accepted in offering a daily menu with 60 % CO_2 reduced food in all four employment canteens of one city department. The reduction results in usage of less meat and the usage of more seasonal food. The usage of local food however was not an issue to address. One interviewee though stated that this would be an interesting point to consider.

One Two We

This program is run by the biggest Swiss catering company (SV Group) in cooperation with the “World Wide Fund for Nature” (WWF). It is a program where staff canteens of companies, such as e.g. of banks can participate. It is a national program, but there are also bigger canteens in the City of Zurich participating. Currently 17 canteens are taking part and it is expected that this figure will be more than doubled by the end of the year. The main trigger of this program is the aim of food based CO_2 reductions. This is mainly done by focusing on reducing meat and fostering vegetarian menus[18]. This program very much focuses on the support and education of restaurant managers and cooks, and is carried out by the SV Group. There are education material and half day courses on the topics of vegetarian cooking, seasonality etc. The participating can-

[18] Other sustainability criteria that need to be met: less flight transport of food (suppliers are asked to indicate the type of transport), seasonal food (no strawberries and asparagus before April), three mandatory Fair Trade products as coffee, tea or bananas; only vegetables from unheated greenhouses.

teens are monitored in terms of purchased food and food waste. This system however only works in cases where the menu prices as subsidised by the companies. Companies define the prices their employees pay in the restaurant and pay the differences of the actual costs.

One main focus of the program is on regional food, however food supplied within Swiss boarders is perceived as regional. One reason is the high demand of large quantities and the fact that most vegetables used are demanded to be pre-prepared, such as peeled onions or potatoes.

3.2 The multifunctional use of land in urban and peri-urban areas

The following section highlights blockages, opportunities, priorities and best practice examples concerning the multifunctional land use in the city region of Zurich.

3.2.1 Blockages

Public Policy

Multifunctionality is an important concept in Swiss agriculture. The term is used for production of food, nature conservation and offering other public services, such as e.g. attractive recreation areas on agricultural land. With the current revision of the agricultural regime 2014-2017, nature conservation/biodiversity measures will become more important on agricultural land in terms of more money dedicated for education and for carrying out measures on farm land. The City of Zurich has set its agricultural goals along the national definition. The aspects of nature conservation and public services in terms of educational offers ("Green knowledge") are of great importance within the city region. The stronger ecological orientation of the new agricultural policy on national, cantonal and on city level is not fully supported by all groups. Especially one interviewed farmer representative on the Canton level was critical concerning this development and prefers the production of food on agricultural land as the main goal.

The focus of the city so far is on supporting farmers. Urban gardening initiatives are mainly seen as an *interesting alternative, where we will observe their development*. Currently urban gardening initiatives are provided with land, but these are often residual fields. Some urban gardening initiatives however are claiming support by demanding more agricultural land from city farms for themselves. It was argued by a representative of the department in charge to be in a critical position: *if we provide agricultural land to initiatives then the farmer does not have it anymore, there are certain tensions and conflicts of interest.*

Market

The concept of multifunctional land use puts great economic pressure on farmers: not at least because city representatives and their official farming representatives are aiming for different

goals in terms of land use activities. On city premises, carrying out nature conservation measures is mandatory. Furthermore farmers are obliged to open their farms to the public, such as by having school excursions to their farm or carrying out direct marketing activities. Farmers are dealing differently with this and there is a potential for conflict: especially in the decision between production of food and carrying out ecological measures. Several policy actors mention that farmers do not see the sense of nature conservation. One representative of the city department for nature conservation claimed very good cooperation with farmers of city owned farms, but *other farmers are hard to reach. Those want mainly to produce food*. Incentives are missing for farmers to carry out more biodiversity measures.

Some farmers carry out educational activities on their farms, such as school excursions (see Figure 5). Farmers, especially those running a farm shop, see it as a good opportunity to connect to consumers. However, farmers are often responsible for organising such a school day. In their view, they do not have the skills, knowledge or time to offer such activities. They are willing to offer the farm, but see it rather in the responsibility of the city to organise such activities from an organisational and educational point of view.

Fig. 5 School-on-farm activities (Source: myswitzerland.com)

Civil Society

Currently, the department for green space management supports urban gardening initiatives by providing land for which there is “no other use”. Initiatives themselves state that the city sees them rather as an experiment; they would like that the city acknowledges more their performances towards multifunctional land use.

City initiatives have started to search for agricultural land on their own by asking farmers and one initiative was successful in finding a farm that was willing to support their ideas. One leader of an initiative sees a general interest of farmers for cooperation but, given that agricultural land is rare and under pressure in city area, *no farmer wants to make experiments*. Initiatives start small, and always with a lot of effort and motivation by some people. There are no professional

facilities in the beginning. One farmer however expressed interest for cooperation, but such an activity needs some professionalism right from the beginning, when establishing infrastructure, such as water systems on the premises, toilet facilities, etc. One farmer argues that he does not have the capacities to provide such facilities.

3.2.2 Opportunities

Public Policy

The City of Zurich has installed different facilities to put across “Green knowledge”. There are some so called *farm schools* and *nature schools* installed in the city region. There is also a Swiss wide association called “School on farm” (see chapter 3.2.4) which is offering a diverse educational program on farms. The farmers participating in this program often have attended pedagogic courses, the courses are offered together with school teachers. However, as the availability and time of the farmers in the city are limited, other ways to spread “Green knowledge” is searched by the city policy. One idea is to support local bottom-up initiatives of people in smaller town quartiers/districts, who want to create kind of hobby farms (with small animals, fruit trees, berries etc.) (“Quartierbauernhöfe”). Such future activities have the chance to create more awareness among city dwellers for multifunctional land use beyond agricultural land as recreation area. Against the background that farmers are dealing with ignorant dog keepers, bikers, outdoor parties and with a huge increase of littering; such hobby farms might be a way to create more awareness also for such kind of problems.

As mentioned in chapter 2.3, allotment gardens in Zurich are facing an over-ageing problem with gardeners often older than 60. Though gardening in allotment gardens is followed by strict rules, there is a waiting list of three years to get an allotment plot in one of the allotment zones. According to interviewees, particularly people with migrant background are very interested in gardening and producing food in allotment gardens, while other people prefer using the garden for leisure activities. On the other hand, there are young people, and often families who have an interest in gardening and producing food, but, do not want to participate in traditional gardening associations with strict rules. Diverse actors from the civil society and from the policy administration level mentioned to see it in the responsibility of the city to satisfy the interests of the different groups either by finding a model to combine traditional allotment gardening with new forms of urban gardening or to find new areas for urban gardeners.

Market

Currently 40 % of all agricultural land within the city region of Zurich is cultivated organically. Farmers in the city region have found different sources of income; these range from direct marketing to environmental measures or providing services, such as cutting hedges for private gar-

deners, and thus probably might be interested in multifunctional land use in the city region Zurich. Farmers now receive money for environmentally oriented measures and activities: not only from the state (as direct payments) but also from labels (organic or IP-Suisse).

The city is fostering multifunctional land use activities through advice and financing of e.g. fruit trees within the program “10,000 fruit trees for Zurich”. The farmers are then cultivating these trees according to biodiversity measures.

At this point it needs to be stated that there is good cooperation between city representatives and farmers on city owned farms. However, farmers have found their own fields of interest and opportunities towards multifunctional land use. One representative of a nature conservation agency mentioned an increased interest of farmers towards multifunctional land use activities. One reason is that there are more and more projects at the community level that support biodiversity measures; which provide more opportunities for farmers to find a way to participate.

Civil Society

As the number of urban gardening initiatives is growing, there is need for successful projects that can serve as an example for other initiatives. One urban gardening initiative, which is running a CSA on a private farm in the city region Zurich started in 2009 and has become one of the showcase projects within Switzerland. The project has employed two gardeners that bring in expertise in organic farming and is very active in communicating their activities and in connecting with other urban gardening initiatives. The initiative is currently working on ways to best communicate their experiences to other start up initiatives and to encourage farmers to engage in CSA.

3.2.3 Priorities

Public Policy

The City Council, together with the department for green space management (Grün Stadt Zürich), is keen to support more sustainable urban agriculture, such as through conversion to organic and integrated farming along with additional requirements with regard to biodiversity and high animal welfare standards. Another project; called “green spaces – green knowledge”, enables school activities on farms. Furthermore, the city nursery (“Stadtgärtnerei”) is considering conversion to organic farming practices, which will also include the conversion of their ornamental production.

One aim of the strategic premises of the current legislative term is to “*collaboratively shape the city and districts”*. More recently, the city has organised several future workshops, in which potential projects on urban agriculture have been proposed and are now discussed by the Council.

GSZ has organised a workshop with farmers to identify possibilities to support "green knowledge" on farms such as a "School on Farms" project. Furthermore, it is planned to support bottom up initiatives by neighbourhood groups in Zurich to create small local recreational farms. One example is the re-planning of a former allotment garden area, which had to be restored due to soil damage. The city is currently planning to reopen the area for urban gardening activities in which all participants have a chance to participate and to decide on the design of the current open space. Another approach is to increase "green knowledge" by fostering farms in each district which are open for educational activities ("Quartierbauernhöfe"). The aim is to carry out a participatory process and to find out whether the participants are interested in such offers.

Participation is also desirable in of the consideration of environmental measures. Nature conservationists and GSZ could enhance the acceptance by farmers of biodiversity measures by communicating the meaningfulness of such measures and by including farmers in strategic decisions. Acceptance however also needs to be fostered among residents, as positive feedback on visible biodiversity measures, such as species-rich meadows, encourage farmers in their environmental activities.

Market

Farmers have different multifunctional activities in place. Some can be defined as a hobby, since offering education activities on farms only brings a very small share of their income or only indirectly as possibilities to gain new costumers for their direct marketing activities.

Carrying out environmental measures can be a profitable income source, but not all farmers are willing to implement such measures. According to one interviewee, there is a difference between city-owned farms and other farms within the city. More educational and financial incentives are necessary to support environmental friendly farming (such as organic): also beyond city owned farms, and the benefits of such multifunctional measures need to be communicated. One representative of a nature conservation agency mentioned that the measures need to make sense for the farmers: whether they do it out of intrinsic motivation or for profit.

One approach would be to combine biodiversity and marketing. In the city region of Zurich there are many fruit trees that remain unharvested. Combining the cultivation of such trees, which is very labour intensive, with marketing activities, such as cider production, would be a possibility for combining multifunctional land use activities. Representatives of the city however do not see the initiation of such activities as being within their competences, but rather it should be the farmers who would need to become active. To reduce the workload of additional activities, more cooperation between farmers is necessary. On the other hand, strategic partnerships with organisations beyond city departments are also necessary to encourage multifunctional land use

activities. An example of such a partnership is between a farmer and a local caterer who is carrying out school days on his farm.

Civil Society

Civil society organisations consider an increased participation by urban residents in multifunctional land use issues as important. Furthermore, policy and market actors also highlighted the need to involve more consumers. New platforms for communication are considered as being necessary. Platforms such as on-farm festivals could enhance the connection between agriculture and society.

Furthermore, civil society organisations have expressed the need to encourage more participatory projects between farmers and consumers with the aim of converting "consumers to co-producers", such as in CSA models. One initiative builds strategic partnerships beyond the city policy level in order to directly engage farmers and raise their interest in common activities.

3.2.4 Examples of best practice

City department "GSZ - Grün Stadt Zürich"

Offices for agriculture, land use planning and nature conservation are unified within the department for green space management (GSZ). Organic farming practices, green knowledge support, and environmental conservation measures on agricultural premises are measures that have been supported for many years and will form the basis for "green" multifunctional activities in the future.

Program "School on farm"

The School on farm program is a collaborative effort between the agricultural department, farmer association, GSZ and the teachers' academy in the Canton of Zurich. It is organised as an association, with 30 participating farms in the Canton of Zurich. The program is run by teachers, who offer specific information to schools in order to motivate them to attend one of the educational programs on a farm.

Urban gardening initiatives

There are several urban gardening initiatives in the greater Zürich City area (e.g. "Ortoloco", "Dunkelhölzli", "Seed City"). The more professional of these are engaged in CSA (community supported agriculture) initiatives and involve from 100 up to 400 consumers. Others see their focus more on education and awareness-raising of residents.

3.3 Closing the cycles of organic waste, water and nutrients

The recycling of organic waste, water and nutrients is an important issue; both on Zurich city level as well as on cantonal and federal level.

3.3.1 Blockages

Public Policy

The interviewed persons dealing with nutrient and organic waste; in particular from administration and private companies, mentioned that waste disposal and nutrient recycling are relatively well organised in the Canton Zurich as well as in Zurich city. However, they identified areas, in which improvement is still necessary and possible. In particular the cantonal and city administration dealing with organic waste was very supportive of the preparation of a more in-depth study on a specific challenge of organic waste disposal in the Zurich area, which started in autumn 2013 within this project.

Incorrect disposal of organic waste by some waste producers is a problem. Although a large quantity of organic waste in Canton Zurich is recycled, there is still too much organic waste that is burned. The responsible cantonal office estimates that around 20 % of the content of a household garbage bag consists of organic waste, which could be better recycled, for example in a biogas plant. The remaining solids after the biogas process could be transformed into quality compost for gardening and the biogas sludge could be recycled to the farms in the urban and peri-urban area.

Nutrient recycling is also insufficient. Sewage sludge contains a lot of nutrients, which could be used in agriculture for fertilisation. However, sewage sludge it is not allowed to use as fertiliser due to contamination with heavy metals, drug residues, hormones and pesticides, so it is therefore burned. The ash from burnt sewage sludge is stored until the technology for extraction of nutrients will be capable for large-scale operations. More research is needed for phosphorous recycling and it is expected that the extraction of phosphorous from the ash will be possible in 2015.

Market

One of the main challenges (and also sometimes a blockage) mentioned in the interviews were the high costs and labour for waste disposal. Another difficulty is to find a consensus between different (and sometimes competing) waste producers and waste recyclers on the one hand and the policy makers and administrators on the other. Those companies or organisations which take wastes are not willing to pay much for waste collection because the recycled products have (until now) a too low monetary value. This is particularly the case for compost or biogas slurry.

This makes it difficult for private businesses to sufficiently profit from recycling. Similarly, companies that produce organic waste (e.g. food processors) are unlikely to be willing to pay for appropriate disposal of something if they have no use for the recycled product. The fact that many organic wastes contain too many unwanted substances (contaminants) makes it even more difficult to find satisfactory solutions for waste problems.

Civil Society

There is too little appreciation of compost and other transformed organic waste for use in agriculture and horticulture. Recycled products from organic waste should have a higher value as these can provide a substitute for valuable fertilisers. However, farmers do not have to pay for compost and sometimes even get money if they collect compost (which covers at least their transport costs). The problem is that biogas and compost plants get a large part of their income from waste disposal and not from recycled products.

3.3.2 Opportunities

Public Policy

On a national level, the issue of shelf life dates for food has been raised by private market actors, which highlights that this is one of the main reasons why there is still a high percentage of food wasted. Food waste is estimated to be at least 30 % but with differences depending on the product group.

In particular, one of the supermarket chains initiated a group of actors (other retail companies and processors), which started a dialogue with the Federal Administration responsible for the food law to allow a longer out of date period (shelf life) for those food products for which food safety issues are not a serious problem (e.g. cereals).

Market

For most of the market actors who were interviewed about the recycling and waste issues, it is important to put more emphasis on the self-responsibility of people and of companies instead of expecting too much from the state. Creative solutions are needed, e.g. one large supermarket has initiated a better coordination within the food retail sector by providing “outdated” food to social institutions (food distributed almost for free to economically disadvantaged people).

Some private operators (involved in organic waste recycling) expect better business opportunities from a better separation system of the different types of “green waste”. It might not make sense to use all organic waste for biogas production, when specific compounds could be better

used to make quality compost or to have a higher efficiency gain by using the more wooden parts for other uses such as direct heating.

Civil Society

The civil organisations could play an important role in information campaigns of how to reduce and avoid waste, e.g. in public-private partnerships. In particular the new urban agriculture/garden initiatives highlight that they are able to reduce food waste within their responsible field of action: for example by higher flexibility regarding size of the products, discounts in case of product over-supply, and recipes for also using less wanted meat parts of animals.

Some experts mentioned that it is important to improve the value of compost and biogas by-products (solids and liquid slurry from biogas plant).

3.3.3 Priorities

Public Policy

In general, the organic waste situation is relatively well documented by the cantonal administrative unit dealing with waste and water (AWEL).

Based on the interviews, we conclude that, while the big supermarket chains have developed waste concepts, organic waste from the gastronomy sector, small food retailers, private households, smaller horticulture farms and hobby animal farms (mainly from horse stables) could be better used and transformed.

The Zurich City Council has built a new and efficient central biogas plant “Werdhölzli” (see chapter 3.3.4), near the already existing large sewage sludge plant within the city, which was opened in mid 2013. This is combined with a new collection system; both of green waste and food waste, on a subscription basis.

Market

One of the main problems with organic waste disposal is the cost-benefit-calculation. The larger companies, which cause a lot of waste, generally recycle significant amounts of waste and nutrients already. However, waste disposal causes proportionally high labour costs (e.g. for collection, separation and treatment) for smaller companies/operators. This could explain why too much food waste is still found in the ordinary garbage and finally directly burned. Therefore, creative and economic solutions are needed that not only favour a few large recycling companies.

Civil Society

As food waste has recently become a major topic in the media (newspapers, movies, social media), there is now much more public willingness to find solutions. However, the interviewed experts and stakeholders see it as a high priority to better inform the public about waste issues. Some of them felt that the city puts too little effort into making consumers and citizens aware and knowledgeable on how to avoid and reduce waste.

3.3.4 Examples of best practice

The Machine-Ring Zurich

The Machine-Ring Zurich organises diverse farmers groups on the topic of compost. Currently, there are two decentralised projects to produce biogas from farmyard manure and wastes (not in competition with food). One started in 2013 and the second will commence construction in 2014. Machine-Ring Zurich understands the recycling business as an additional income source for farmers, and the main purpose is to maintain added value in agriculture. They argue that existing structures should be used in a more cost and energy efficient way, such as by organising and coordinating the collaboration between existing compost sites, gastronomy sector waste processors, intensive animal farms and the new planned biogas plants. The Machine-Ring Zurich offers a nutrient pool for the Zurich Canton and also serves as neutral coordinator. The Machine-Ring Zurich mostly participates in local initiatives with a minority financial share and generally helps in the administrative coordination.

New biogas plant *Werdhölzli*

In March 2010, the City of Zurich decided to build a new biogas plant, which is the biggest in Switzerland and which starting in mid 2013. A public-private shareholder company: the Biogas Zurich AG runs the operation with the majority of shares belonging to the City administration. The biogas is of petroleum gas quality and can be used for heating and producing electricity, while the waste heat can be used directly for heating. The remaining solids and biogas slurry is recycled back to farms. In addition to the City of Zurich, several communities of the nearby Limmat valley also participate in this project.

3.4 Overview of synergies

In this chapter the synergies and the interaction between the three themes of the project are outlined: looking at the blockages, opportunities and priorities.

3.4.1 Blockages – where missing interaction leads to this

One of the crucial overall blockages is that there is no overall understanding of sustainability with regard to food and agriculture. The vision of a “2000-Watt-Society” remains too general and does not really address agriculture and the food system of the Zurich city as it is more focused on energy, CO_2-reduction and efficient resource use. It would have been important to also translate the energy saving goals to include food provisioning, consumption and farming as well as recycling of nutrients and waste.

Several of the interviewed stakeholders and representatives of the administration mentioned this missing overall concept of sustainability, and as a consequence the missing operationalization of such goals for Zurich city. As a result, quite different kinds of concepts and goals exist, which are also sometimes contradictory, such as buying cheap food in terms of public procurement activities versus sustainable food provisioning from local/regional sustainable farms. There is a need to find a consensus on at least some key criteria and indicators, which could be used for all three areas: sustainable food provisioning, multifunctional land use and nutrient recycling/waste.

There is also an absence of a platform between departments and public and private actors in which discussion and debate to find a common strategy can take place. Some criteria of seasonality, less meat, organic, and fair trade are partially considered in public procurement tenders but these were identified as being insufficient by actors within the city administration. A broader political and participatory debate about criteria for sustainable food procurement would be desirable.

However, with regard to short food supply chains, there are a few interesting private initiatives which could be integrated in the development of a common food policy with related criteria and indicators. Until now, the city administration does not play an active role in linking food provisioning; for example with the supply from their own farms, which mostly produce organically. There is also still no explicit role given to the new urban gardening/agriculture initiatives by the city administration, although this theme is often addressed in the media.

3.4.2 Opportunities – shared or conflicting

The missing criteria for sustainability could also be a chance to form a platform between the public and private actors and to develop a common vision for sustainable food provisioning: linking with the discussions about the planned new concept for agriculture 2030.

The new civil food networks and urban gardening initiatives, which are already cooperating with each other, can also be seen as an opportunity to better link agriculture and food provisioning with multifunctional land use. The fact that there is already a good cooperation between the local administration in charge for agriculture and the local farmers is a good starting point for the development of a sustainable food and agriculture concept.

3.4.3 Priorities – shared, contrasting or conflicting

The city administrators have a priority to develop the ecological sustainability of food provisioning, while the economic sustainability is important for market actors. Nevertheless, there is a shared understanding that there is a need to create a better consciousness of food and agriculture in the general population. These shared priorities could provide a basis for closer cooperation between public, market and civil society actors; for example for common campaigns and communication measures, in which the different backgrounds and goals of the institutions and organisations could be complimentary.

4. Report of the first Zurich city workshop

The Zurich city workshop was held over 3.5 hours on the 23rd of May, 2013 in the city-centre of Zurich with 14 participating experts: mainly representatives from the fields of “food” and “resources”, and including representatives of policy agencies, market actors, and civil society. Interviews were conducted with 12 of the participating experts prior to the workshop in which several actors had expressed the need to specifically address issues related to the themes “short food supply chains” and “resources, recycling” in the Zurich city region.

As an introduction to the workshop, we presented preliminary results of the research based on a discussion paper that was sent to the participants prior to the workshop.

Topics addressed in the workshop

The idea of the workshop was to complement the insights gained from the interviews. Important topics that came up in the interviews very much focused on issues, such as the challenges, barriers, and motivations of the interviewee as a representative of an organisation, initiative, or project.

Several of the topics discussed in the workshops were more general and brought new perspectives on the activities and necessary activities in the SUPURBFOOD project. These general points, such as food scandals abroad encouraging demand for regional products or Swiss tax regulations protecting Swiss agricultural market from cheap imports, were not specific to the city region of Zurich.

The workshop participants nominated positive and negative impact factors and approaches for improvements in terms of “resources/recycling” and “multifunctional land use”. They were mainly concentrated at the city level, while topics in terms of “food” were often discussed with a more general, or national, perspective.

The participants considered the following issues to be important:

- Definition and labelling of sustainability criteria. There is a need for clear definition of what the term ‘sustainability’ means (criteria and indicators) at all levels (from policy strategy to information on product packages) and clear definition of the sustainability requirements for canteens.
- Raising awareness of consumers, such as support of communication platforms between farmers and consumers. There is a need to raise consumer awareness for local food, seasonality, reduction of food waste etc.
- Policy instruments, such as tax regulations e.g. tax increase on synthetic fertilisers.

- Support of participatory projects for consumers, such as animal husbandry mentoring and CSA.
- Communication and media, such as realistically communicating issues related to agricultural production.
- Marketing, such as support of more collaboration between farmers and other market actors.
- More scientific studies are necessary, such as analyses of ecological footprints of food shopping baskets.

The first two topics were particularly prominent in the workshop. The need for definition and labelling of sustainability criteria was also mentioned in several interviews, although mainly from a policy perspective (*the city policy makers need to define what sustainability means*). The topic of consumer awareness came up only in the workshop where it was broadly and very prominently discussed by all participants.

Contentious topics

Generally, there were few topics that were contentious. Different opinions were only mentioned with regard to the aspect of land use: Local civil society organisations expressed the need for more arable land to be used for vegetable growing and for less meadows for input intense milk production. One farmer disagreed by mentioning that the soils around Zurich make the cultivation of vegetables difficult and that milk production is acceptable if it is based on grass feeding systems.

There were several claims made towards city policy. One representative of the city explained their position and their possibilities to act but also emphasised some conflicting goals.

Concluding remark

Overall, there was a good working atmosphere in the workshop that could be described as consensus orientated. Some representatives already knew each other, while others did not but, during the interviews, expressed interest in establishing contact with specific actors. The workshop was a very good platform that gave an opportunity for new contacts and collaborative future efforts within and beyond the SUPURBFOOD project.

5. Conclusions

The analysis of the Zurich city region has shown interesting developments but also several blockages (problems or challenges), opportunities and priorities (see Table 1).

There are an impressive number of initiatives and organisations in the city dealing with agriculture, sustainable food provisioning, and closing nutrient cycles. However an overall sustainable food strategy for the City of Zurich is missing. The three themes (i) food provisioning, (ii) multifunctional land use, and (iii) recycling of nutrients and waste are not really linked to each other. A major difficulty is that different departments of the city administration and different elected politicians are responsible for these themes.

Nevertheless, the overall goals of the “2000-Watt-Society” and the overall sustainability goals of the city can be the starting point for a more in-depth reflection on how to develop urban food and agriculture policies and to create synergies.

The following main conclusions can be made:

- Sustainability aspects in the public procurement of food, as well as in the land use practices, need more attention in the future. There is a need to define criteria for sustainable food provisioning. Urban agriculture and gardening initiatives need different forms of support due to their contribution to social integration in the city as well as to a more sustainable consumption of food. It would be desirable to give land use security in a longer perspective to such initiatives to enable them to make more long-term investments.
- More efforts are needed to avoid and reduce food and green wastes and to re-use them in an efficient and differentiated way, which is not only economically reasonable but ecologically sound.
- More cooperation is needed between different actors of the policy, market and civil society around a sustainable food and land use policy.
- The self-responsibility and motivation of the actors should be strengthened and administrative burdens should be reduced.

Table 1 gives an overview on blockages, opportunities and priorities towards a sustainable development in the three focus areas of the project.

Tab. 1 Zurich City overview table on blockages, opportunities and priorities

	Governance			Market			Civil		
	Blockages	*Opportunities*	*Priorities*	*Blockages*	*Opportunities*	*Priorities*	*Blockages*	*Opportunities*	*Priorities*
Shortening of food chains	Low political pressure towards sustainable food	Current policy framework of city supportive for sustainable food	Interest of individuals in city administration in creating an overall food strategy	Lack of food volume alone from city farms	Rising demand for good quality food from local farms	Potential for more local food in public and private restaurants	Insufficient commitment from public bodies	Interest of media in garden initiatives	Getting more members to form a critical mass
	Different responsibilities and foci of city departments	Clear commitment of city policy towards agriculture	Need to better connect diverse actors and organisations	Different concepts for local and sustainable food	Diversified city farms with direct marketing	Need for intermediaries for coordination of food chain activities	Most activities of civil network base on voluntary work	Consumer organisations are well connected, potential to gain influence in society	Importance of awareness rising for sustainable food
	Lack of criteria for “sustainable food” and embedment of short food chains	Good existing cooperation between city dept., farmers and urban gardeners	Need for a common understanding of sustainable food	Logistics for food distribution within the city are not sustainable	Willingness for cooperation of farmers although time limits	Data on amount of food from local farms needed	-	-	Civil food networks – need to get more public recognition

	Governance			Market			Civil		
	Blockages	*Opportunities*	*Priorities*	*Blockages*	*Opportunities*	*Priorities*	*Blockages*	*Opportunities*	*Priorities*
The multi-functional use of land in urban and peri-urban areas	Concept of multifunctionality not shared by all groups	Promotion of green knowledge as e.g. School on farms	Support of bottom up initiatives and participatory processes	Conflicting goals of farmers: production versus ecological measures	Already implemented organic farming practices on city farms	Financial incentive for more environmental friendly farming (like organic)	Urban gardening initiatives seen not sufficiently recognised by city policy	Successful urban gardening initiatives are motivating others	More participatory projects with civil society actors
	Conflicts of interest on land	Unified “green” interests within the responsible city department	Support of biodiversity measures	Limitation of farmers for schools on farm	Increased interest of farmers towards multifunctional land use	Combination of biodiversity and (event)-marketing	Limited and only short term support for urban gardening initiatives by city policy	-	New Platforms for communication
	-	New areas for urban gardeners	-	Missing incentives for farmers for more ecology	Diverse services offered by farmers (direct marketing, school on farm, etc.)	Forming strategic partnerships	-	-	-

	Governance			Market			Civil		
	Blockages	*Opportunities*	*Priorities*	*Blockages*	*Opportunities*	*Priorities*	*Blockages*	*Opportunities*	*Priorities*
Closing the cycles of organic waste	Insufficient disposal of organic waste	More organic waste could be better used – not burned	Adapted shelf-life require-ments could reduce food waste	High costs and labour for waste dispos-al	Cost-benefit-calculation organic waste disposal	More empha-sis on self-responsibility and business opportunities	Too little ap-preciation of high quality compost due to cost rea-sons (e.g. in public gardens and on farms)	Better inform the public how to avoid or reduce waste	Involvement of civil organisa-tions in public campaigns

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Annex

Annex I - Social Media analysis

The literature search on Social Media was carried out from November 2012 to April 2013. In our literature search, we not only focussed on social media but also on private and public websites, online newspaper articles, TV and radio contributions. We generally intended to find out, and to describe, how the topic of food and urban agriculture is discussed and framed in the City of Zurich. The literature that was found can mostly be classified as information or as publicity for certain initiatives and activities. However, media with comments by viewers and discussions or blogs were rarely found.

Most literature was found in magazines and newspapers. Sometimes the same articles appeared on different websites. Although there are several Facebook sites with the topic of food in Zurich, Facebook comments made by citizens mainly refer to articles in newspapers. In this regard, Facebook is mainly used for referring to certain events, other interesting initiatives or newspaper articles. Therefore, our focus in the analysis was on selected articles/websites.

The following paragraphs provide a more general overview of the kind of literature found.

The literature found can be located around five topics:

- Food and culture,
- Food and health,
- Food and environment,
- Producers and distributors,
- Urban agriculture.

Food & culture (18 websites / articles found)

The information found ranged from different food products to eating habits or consumer trends. Information about specific food products and vegan/vegetarian life style was very prominent; in particular linked with information about shops or restaurants. There was a lot of information found in daily newspapers (e.g. 20 Minuten, Blick am Abend), but also on some private Facebook sites. A lot can be classified as information or marketing for private businesses (such as restaurants).

Food & health (14 websites / articles found)

Most information was found on websites of newspapers although they are not specific to the city region of Zurich. Information about food & health can be found in international blogs as well. There are overlaps with the topic “food & culture” in particular with eating habits such as vegan lifestyle or reduced meat consumption. Again these websites and articles mainly serve the purpose of information.

Food & environment (34 websites / articles found)

Most information on the topic of ‘food and environment’ was found at the national level. A lot of information is provided by radio and television. Currently, the most important topics currently are food waste and waste management. Contributions in articles mainly refer to the critical development of increasing food waste.

Producers & distributors (56 websites / articles found)

Literature about local producers and distributers was mainly found in regional newspapers of the city region Zurich. The contributions on websites and in articles often refer to the viewpoints and concerns of specific producers or distributors (e.g. the Swiss retail chain Coop). Topics range from food scandal issues to portraits of farmers in the city region of Zurich.

Urban agriculture (42 websites / articles found)

The topic of urban agriculture was the most prominent topic found, where different viewpoints of actors were expressed. The main bulk of information was found in newsletter articles which were often controversially commented by citizens. The main focus of the Social Media analysis will therefore be given to this topic.

There are few Facebook sites and blogs in which urban agriculture is discussed or commented in terms of city region Zurich. There are far more international blogs. However it is not clear to what extent these contribute to the discussion of the topic in Switzerland or the city region Zurich (for that reason they have not been cited). The discussion, feedback, comments and reactions of the involved actors often argue controversially about the topic.

Another bulk of information simply refers to urban gardening tips for gardening activities on the balcony or “guerrilla gardening” (under this name several websites and blogs related to urban gardening were found).

Content discussion of urban agriculture

Urban agriculture is branded as a new trend in Zurich; therefore newspaper articles mainly refer to initiatives in Switzerland such as projects in Basel or to international projects as in New York

or in Africa. Generally speaking, urban agriculture is usually discussed very positively or neutrally, but sometimes also critically. One topic found, which was discussed a lot and also very controversially, is the urban gardening system *aquaponic*. This is a system where food is mostly grown on roofs of large buildings. Nutrients are supplied by fish which are also located on the roof in a pond. There is a group of urban gardeners which run this system as a business; they claim it to be an efficient system of using and re-using resources. On the other hand comments of viewers claim it to be an inefficient waste of resources (in particular energy for heating). Referring to some viewers, roofs should be better used for solar panels in order to guarantee sustainable energy provisioning. On the other hand urban gardening activities on the ground were also sometimes considered to be inefficient, with contributors stating that soil should be used by professionals to grow food and not to satisfy hobby gardeners. Furthermore some texts expressed concerns related to pollution of urban food with heavy metals: in particular if food is cultivated on roundabouts or right next to streets.

It seems that there are two kinds of developments. On the one hand there are citizens who garden primarily out of social or ecological reasons. On the other hand urban agriculture is also seen a business model; although not predicted to become as important in Switzerland as it is abroad. Such a business model is also interesting for companies, as one Swiss agri-company that sells synthetic pesticides has already shown interest in this technology.

Articles and discussions specifically related to the Zurich city were rare, because urban gardening is not yet developed. Urban gardening is seen as a new trend, although some commentators argue that it is not a new idea; allotment gardens have a long standing tradition in Zurich and are producing far more food than it is currently produced in new urban gardening initiatives.

Who are the main actors of the discussion around urban agriculture?

Media is a prominent actor in the context of Social Media. A considerable number of online newspaper articles or TV and Radio contributions refer to urban agriculture. These very often focus on discussing the motives for citizens to participate in urban agriculture, highlight specific initiatives internationally but also Zurich wide, or mention the technical feasibility especially in terms of the *aquaponic* system.

Urban gardening initiatives and their representatives are the main actors referred to in articles but are often also active in running a homepage or Facebook site. They provide information about their activities and publish links to other initiatives, events or articles where they have been cited. It appears that their official web appearance is not the place where a huge amount of discussion is taking place.

Citizens and their motives for participating in urban agriculture are mostly referred to in media. It appears that citizens actively contribute to the discussion of urban agriculture by writing comments on newspaper articles.

Local governance is mainly referred to by media as describing the activities they take or by citizens who critically reflect on their activities. The department in charge for green space management in the City of Zurich runs a Facebook site on urban agriculture: presenting activities and posting events or links about diverse urban gardening initiatives.

NGO's are active in running websites and Facebook sites but mainly take the position in providing guidance for gardening, such as educating people about traditional seeds provided by the association "Pro Specie Rara".

Scientists are mainly cited in articles. They are represented as the experts of knowing the motivations for citizens to participate in urban agriculture or they talk about the feasibility of urban agriculture. They usually do not actively participate in the discussion.

Businesses/Market actors are diverse. On the one hand there are single persons running Facebook sites around the topic of gardening that pursue a commercial interest: often marketed as urban gardening as a trendy fashion. On the other hand there are farmers that are mainly referred to in articles but do not actively participate in the discussion. Other businesses are of minor importance.

Main rhetoric, main words in use

Citizens are the main actors of urban agriculture referred to as: children, young people, retired people, families, students, urban population, and people of distance to nature, different generations and nations. Citizens are represented in participating in urban gardening initiatives or are interested in cultivating urban green spaces as on balconies.

The main other aspects refer on the relation of urban agriculture to citizens (society) as:

Motivations for citizens to participate are mainly described as rather egoistic reasons as fun, produce healthy food, common activities with other like-minded people, searching for sensuality, being able to experience physical work, to directly experience the result of the work, to make decision for themselves, stepping out of the daily routine and to satisfy primeval needs.

Nature is referred to only in the context of the human being in relation to nature. Through urban gardening people can experience nature and can re-acquire the lost understanding and connection to nature in terms of "back to nature" and/or "green knowledge" (slogan of the City Zurich administration dealing with green spaces).

Space related aspects of urban agriculture are very prominent. Urban agriculture is often defined as space or place for possibilities in giving people a different function and a different perception of space in urban areas and to enliven urban space. Urban agriculture also has an important element of landscaping; an alternative to traditional usage of space and forming a peace of nature. Furthermore, urban agriculture is sometimes seen as a counter reaction to the increasing urbanization. Space is not only referred to in a physical point of view but also in giving people space for themselves.

Food production is only referred to as the experience of how food is growing, to actively participate in food production and to get more appreciation for local food production.

Local governance is referred to in a variety of ways. There are citizens who positively react to the activities of the city related to urban agriculture. Others are critical in that they claim politics should not take over grassroots ideas: There are certain activities that should stick with grassroots initiatives and should not be formalized in terms of having control over everything that is happening in the city without leaving space for grassroots activities. Initiatives want appreciation and do not want to be seen as carrying out green space management for free.

Meanings of urban agriculture

Urban agriculture from an ecological perspective

Urban agriculture is referred to as a kind of place of paradise, where it is possible to create ecological diversity in opposite to other green urban public spaces, and to produce food based on a small ecological footprint due to the elimination of transport.

Urban agriculture from a social perspective

This is the main perspective expressed. Urban agriculture is seen as a way to enjoy life, to enjoy ones self and to find ways out of the technocratic and rationalized daily routine in a socially diverse and interesting space. It is furthermore a place that enables participation and contact with like-minded people. Participating can be possible on the one hand in actively shaping urban spaces, and in enabling participation of diverse social and cultural groups on the other. It enables participants to experience new forms of democracy and gives possibilities of governing processes that can be directly influenced.

Urban agriculture from an economic perspective

Compared to other countries, urban agriculture is not carried out due to an economic need. Self-supply is of minor importance. Urban agriculture is more seen as a counterpart to globalized food processes and uniformity. It is seen as a way to react upon the industrially produced

and imported food and to rebel/protest against the structures of the agribusinesses: especially related to the introduction of GMOs.

Summary

Urban agriculture is a development that involves a wide range of actors, motives and types of gardening from a technical and social perspective (urban gardening on ground versus specialized roof top systems). The further development of urban agriculture will very much depend upon whether it will move beyond its currently perceived status of a trendy lifestyle. Moving out of the niche will also be dependent on whether urban agriculture will not only be seen as social experience but also as a business opportunity.

Annex II - Network analysis

In each interview we asked the interviewees about their partners, and about the organisations/persons they cooperate with and that are important to them. For confidentiality reasons, the results are not highlighted in this report.

Annex III – Sources of data

This report is built on the following data sources:

- 26 interviews with actors in the city region Zurich from local governance, market and civil society.
- Secondary data as reports from public institutions, planning documents etc.
- Social media analysis as described in Annex I.

The actors interviewed can be defined as following:

Local governance: 8 actors from local governance were interviewed - 2 of them from city level in charge of resource management, 3 from city level in charge of green space management, planning and nature protection, 2 from city level in charge of health and food, 1 from the cantonal level in charge of agricultural administration.

Market: 10 market actors were interviewed - 3 farmers, 4 retailers, 2 caterers, 1 market actor from the resources/recycling business.

Civil society: 8 actors from civil society - 4 urban gardening/CSA initiatives, 1 actor representing allotment gardeners, 1 environmental NGO, 1 educational association around the topic of “green knowledge”, 1 consumer organisation.