

Multi-functional horticulture in the city region: options and challenges

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I. MAIN FORMS OF “MULTI-FUNCTIONALIZATION”

1. Diversification with non-agricultural activities:

- **Agro-tourism:** day recreation; lodging tourists
- **Care services:** during day; with stay on farm
- **Education:** training; eco-education; events
- **Eco-services:** biodiversity and landscape; urban climate & resilience; recycling and productive use of organic wastes / wastewater
- **Energy production:** wind, solar, biodigestion
- **Renting out space:** storage, stables, meeting rooms

The Fruitgaard: producing fruits + agro-tourism

De Fruitgaard (close to the city of Groningen) ecologically produces apples, pears, plums and cherries that are sold to top restaurants in the city

Tourists stay in the orchards during summer time (electricity, sanitary services, farm shop)



Anna's Hoeve: Fruits production + maintaining landscape and cultural heritage

Anna's Hoeve (near the city of Zwolle): receives a provincial subsidy for maintaining tall cone fruit trees and traditional fruit varieties



Menkveld: tree nursery + care farm

Menkveld (near the city of Apeldoorn) is a large tree nursery that also provides certified social care services for people with a socio-psychological problem in cooperation with the Municipal re-integration programme (meaningful work; self respect; responsibility and discipline; vocational training).



Bergerden: Vegetable growing + bio-fermentation

The *Bergerden group* of greenhouse vegetable producers (near the city of Nijmegen) jointly established a bio-fermentation installation to convert organic wastes from their own farms and from neighbouring pig raising farms into biogas, CO₂, N, PO₄ for own use and the market



2. Differentiating production from mainstream horticulture; short value chains:

- **“Special” products:** organic, “regional” products, “forgotten” vegetables, products for specific “niches”
- **On farm processing:** juices, jams, wine/spirits, cutting / packing vegetables, drying herbs, honey,
- **Direct sales of products to consumers and other end users (short chain):** farm shop, box scheme, farmers’ markets, web-shop; tea garden; catering services

De Cuynder: biological, “forgotten”, regional vegetables

De Cuynder (close to the city of Wolvega) biologically produces “forgotten” vegetables which are sold through a web shop for biological regional products in Friesland



Bio at home: Fruits and vegetables growing + home delivery

Bio at home is a cooperative enterprise that was created by 3 larger scale biological fruits and vegetable growers near Rotterdam that delivers food boxes directly from the 3 farms to the consumers' homes (on line orders and payments)



Verhage Fruit: fruits production + processing

Verhage Fruit (near Emmeloord, NL) produces various types of fruits (plums, pears, apples, cherries, apricots, etc.) and converts these in juices and eau de vie

Also guided tours + lunch



3. Innovative use of underutilised urban spaces

- **Rooftop** gardens and – greenhouses
- **Indoor farming** in retrofitted factories, ware houses and shipping containers and even residential houses
- **Recovery of vacant open spaces** in the city (brown fields, vacant building areas, derelict green spaces)

UF de Schilde: aquaponics farm on top of retrofitted office building

- On the rooftop: A 1200 sqm rooftop greenhouse with hydroponic systems producing specialty vegetables
- On the 6th floor: fish tanks + recirculation system (400 sqm).
- Smart integration with the HVAC systems of the building allows for an efficient energy and waste heat use.
- Products are delivered directly to various local quality restaurants and to households through a “Fresh Weekly Basket” scheme



GrowX: indoor farming in former factory

- *GrowX* (in Amsterdam) is a start up that will produce 180 tonnes/year in special vegetables and herbs in a vacant industrial building (1300 m², multi layers, led lights).
- Investment (1.5 million Euro) by Amsterdam Climate & Energy Fund and the National Greenfunds (nature and landscape conservation).



Rotterzwam: Mushroom production in former swimming pool on recycled coffee grounds

- *RotterZwam* (in Rotterdam) produces edible mushrooms in the dressing rooms of a former tropical swimming pool using as growing substrate coffee grounds and husks collected from roasting business in the region. They also extract enzymes from the used substrate.
- They also provide training to aspirant mushroom growers.



II Two tendencies / streams of innovation in European horticulture

- 1. Following the “state of the art”**
 - Mass production of uniform products at low cost price; specialised in one or few products only; year round production.
 - Application of “state of the art” advanced technology
 - Cost reduction through scale enlargement, automation / robotization, biotechnology
 - Focus on export; concentration in clusters close to a port / airport
 - Vertical integration into global long supply chains
 - Growing dominance of food industry and supermarkets in the chains
 - Banks / investors become co-decision makers
 - Mainly seeking technical solutions for environmental problems
 - Closed innovation; Patents
 - Tracking and tracing systems to enhance food safety and customer trust in their products
 - Internationalization of the larger horticulture enterprises

2. Multi-functionalization

- Production of a variety of quality products (often regional, fresh, perishable, seasonal) for like-minded citizens at fair price
- Choice of technology depending the other functions of the farm and related socio-cultural and environmental objectives
- Other ways of cost reduction: ecological production, recycling, volunteers / social labour
- Strengthening links with city region: customers, underused resources, services for citizens
- Development of short chains: producer2consumer
- Less dependence on conventional chains / actors
- Varied and lower cost sources of financing (crowd funding, CSA, etc.)
- Seeking social + technical changes to make the regional food system more sustainable
- Open innovation; learning by sharing
- Direct linkages between consumers and producers; local quality labels
- Regional & thematic networks

III. DRIVERS OF MULTI-FUNCTIONALIZATION

- **Farmers searching for additional sources of income** to complement meagre agricultural income or as alternative for off farm work in the city
- **Farmers searching for more autonomy and flexibility; reduction of dependency of banks and conventional market chains**
- **Farmers preferring alternative ways of farming; value orientation** (ecological production, more connected to city region/culture/landscape; more social contacts and responsibility)
- **Changing EU and national policies:** from subsidizing production to subsidizing societal services; Growing **support of local/regional authorities** for strengthening the local food system
- **New opportunities in the city region:**

New opportunities in the city region

- **Increasing consumer demand for sustainably produced, fresh, local/regional and seasonal products:** obtain healthy food from known sources, reduce ecological food footprint, support local family farmers, ..
- **Increasing demand of citizens for opportunities for social services:** recreation; care for mentally ill, children, elderly people; eco-education
- **Increasing demand of local / regional governments for eco-services:** maintain local biodiversity and landscape, excess storm water storage/infiltration, wastewater treatment, reducing urban heat
- **Availability of local underutilized / low priced productive resources:** nutrients in urban organic wastes and wastewater; excess heat, water, CO2 from industry; unused rooftops, old factories, offices, ...)
- **Opportunities to access new sources of financing** (crowdfunding, advance payments by CSA consumers, payments for eco-services, payments for social care services from insurance companies & social integration programmes, preferential food procurement by cities, green energy subsidies, climate change programmes,

IV. Multi-functional agriculture a marginal activity?

Multi-functional farms in the Netherlands:	2013
On farm sales *	3127
On farm Processing	1041
Agro tourism	2777
Care Farms	874
Educational farms	798
Energy production	1222
Child care	219
Renting out space	2809
Nature and landscape services	7404
Contract work for other farmers	4071
% of total farms	36 %
% of total farms (excluding nature & landscape services)	25 %

V Challenges for multi-functional entrepreneurs

- **Management challenges:** working in two or more activities with their own requirements (skills to learn, investments to make, markets to explore and access,)
- **Regulatory challenges:** Land use and building norms regulations; meeting hygiene and sanitary requirements and related costs. Rules for public procurement are sometimes interpreted in a way that is contra productive for local producers.
- **(re-)Learning the sales trade.** Entering into direct sales or on farm processing calls for new skills, and investments (on farm shops , processing units, means of transport).
- **Logistical challenges:** Certain direct sales systems (e.g. home delivery schemes) with relatively small vehicles to a diversity of consumers are high in costs and CO2 emissions (unless electric vehicles are used or shared systems are established: farmers markets, cooperative stores, regional food hub)

Networking challenges:

- a. *“sectoral” networking* with similar multi-functional farms (mutual learning/ innovation/ policy influencing), but now for at least two sectors
- b. *territorial networking*: in the city region with consumers, short chain partners (OAL labels, logistics, joint strategies), with municipal departments (Health, Spatial planning, Economic dept., Social dev. Dep, Environmental dept.).

Innovation challenges: difficult to obtain adequate support services; low level of research

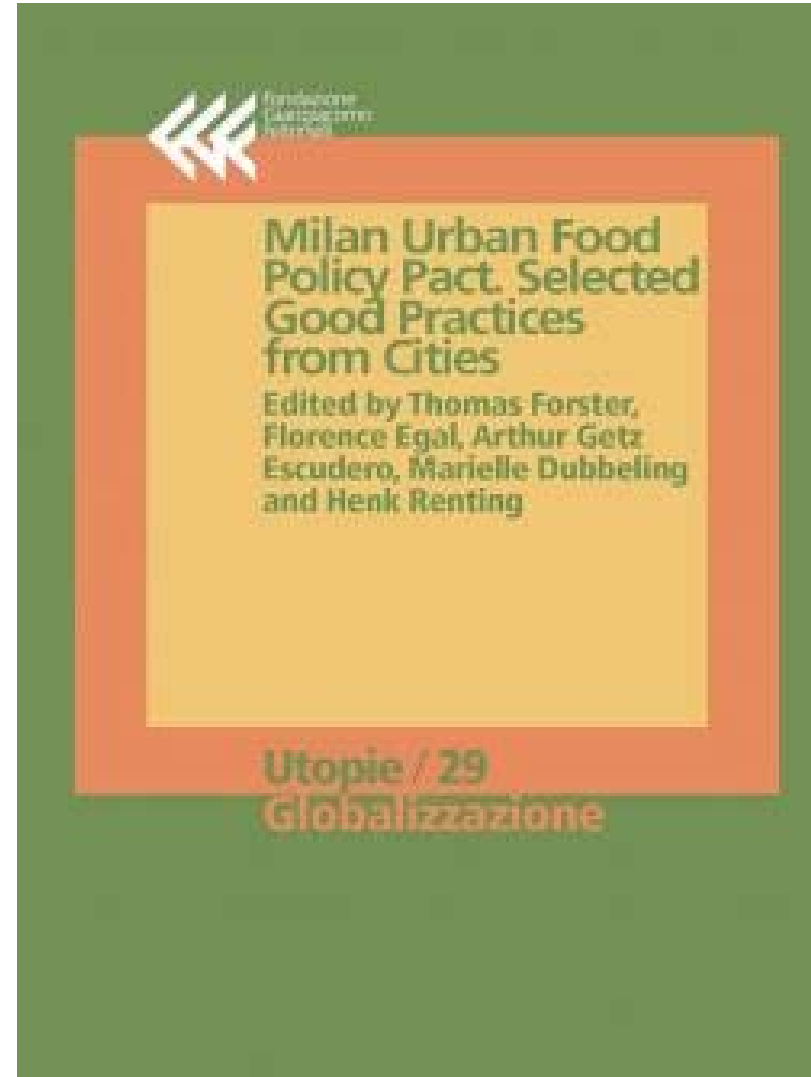
Growing awareness at city and regional level

Cities / regions increasingly recognise that they have **a strategic role** in developing a sustainable, inclusive and resilient food production and distribution system in the city region:

- Difficulties of the urban poor and disadvantaged to access affordable & nutritious food; growing malnutrition / obesity
- Growing ecological foot print of the urban food consumption
- Local small farmers struggling to survive in global market; too high dependence on the global food market and its fluctuations; need to stimulate the regional farming economy
- Cities acting as sinks of nutrients while resource scarcity is growing; need for resource recovery for reuse in local agriculture
- Recognition that urban and peri-urban agriculture can play an important role in urban adaptation to climate change and mitigating its impacts (floods, urban heat, ...) and in maintaining biodiversity and cultural landscape in the city region.

VI. Re-Regionalization of food systems

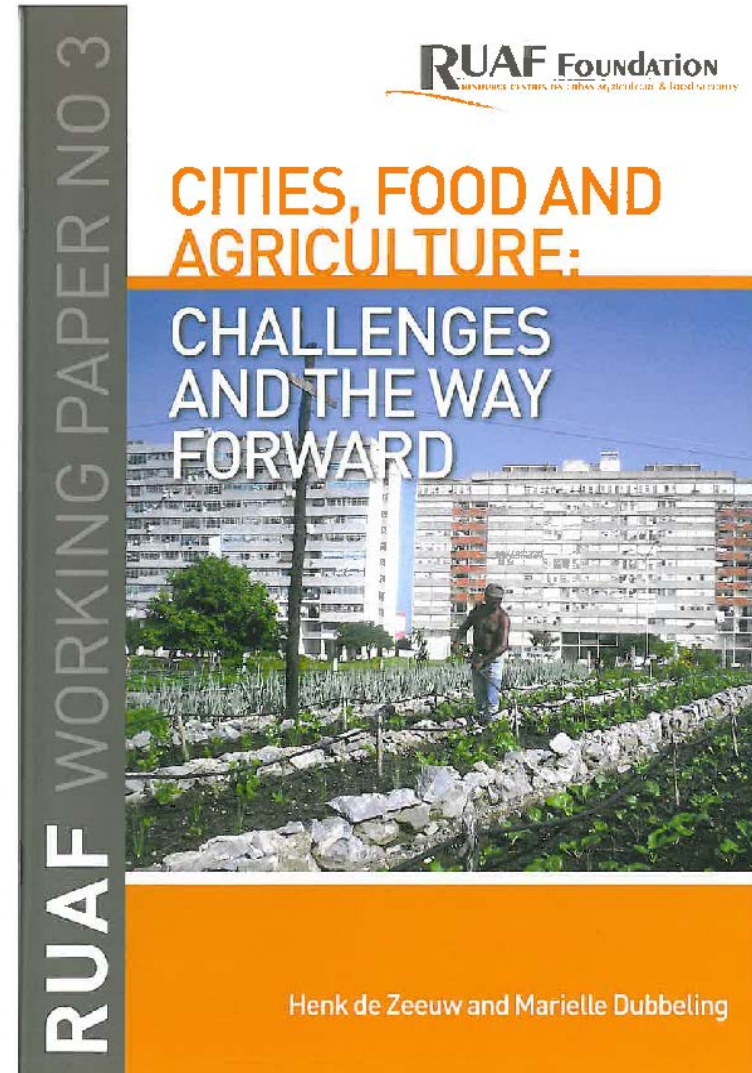
- Milan Urban Food Policy Pact and Plan of Action (2016) signed already by 123 cities
- Included in the UN Habitat New Urban Agenda and the Sustainable Development Goals



Developing the City region Food System

Many cities:

- Establish a multi-stakeholder **Food Policy Council** or city-region **multi-stakeholder platform** on food and agriculture
- **Map and analyse** the food system in the city region
- Develop a **joint vision** about the desired changes in the city region's food system
- Identify **strategies** and develop (multi-actor) **action plans** to realise the desired changes
- Create the **legal, institutional and financial framework** for the implementation of coordinated actions re. food and agriculture in the city region



Strategies

- **Linking urban and regional-rural spatial and development planning; strengthening urban-rural linkages; regional food system planning**
- **Promotion of networking and cooperation among local/regional producers and with other actors in the regional food system:**
establishing a regional food network; setting up producer groups for training, knowledge sharing & problem solving; fostering innovation; establishing quality systems for multi-functional farms; etcetera.
- **Facilitating business development in multi functional farms and short supply/marketing chains :** provision of technical advice, support for infrastructure development (vacant land or building, establishing a farmers market) and funding support (low interest matching funds, tax incentives) to food related start ups and innovation in local small and medium scale food enterprises creating green jobs;

- **Preferential local food procurement**
- **Payments for eco-services** provided by farmers in the city region
- **Facilitating transition to ecological farming methods and production of regional, seasonal and niche products**
- **Fostering agricultural diversification** and delivery of recreational, care and other services to citizens by local farmers
- **Providing regulations and incentives to stimulate recovery and agricultural reuse of nutrients and irrigation water from urban organic wastes and wastewater**
- **Accommodation of health hygiene regulations** in order to provide a hospitable but safe regulatory environment for local processing and distribution of food products (EU enabled this)
- **Modification of land use zonification codes and building regulations** to enable commercial food production within the build up city

To summarize

- **Multi-functionalization** is an important trend in horticulture in city regions and differs markedly from the dominant tendency towards “state of the art” horticulture
- **Three main forms** of multi-functionalization
- The **main drivers** for this trend
- The **wide variety of options** for multi-functional horticulture
- The various **challenges** for multi-functional farmers
- How multi-functional farming fits in the changes in the new EU policies and the **City region food policies and action plans** that are being developed in recent years
- The **main strategies** that are applied by local and regional authorities to foster development of sustainable city region food systems

THANK YOU



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