# STATE OF THE ART

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## FOREWORD

This state of the art paper intends to gather selected existing knowledge, research and policy about sustainable food in European urban communities. It also refers to internationally relevant examples.
The conceptual framework relies on the analysis of Food and Agriculture Organization (FAO) and European commission studies especially the Standing Committee on agricultural Research. This paper is divided in three parts:

- **Global context and main issues of sustainable food in urban communities**
- **Food system stakeholders and policies**
- **Challenges for communities: spatial and human dynamic of food**

## INTRODUCTION

It seems that there is no official definition of "sustainable food". One of the more frequently encountered could be from the British Sustainable Development Commission (2005) that considers food and drink sustainable if it:

- *"Is safe, healthy and nutritious, for consumers in shops, restaurants, schools, hospitals…*
- *Can meet the needs of the less well-off people.*
- *Provides a viable livelihood for farmers, processors and retailers, whose employees enjoy a safe and hygienic working environment whether nationally or abroad.*
- *Respects biophysical and environmental limits in its production and processing, while reducing, energy consumption and improving the wider environment; respects the highest standards of animal health and welfare, compatible with the production of affordable food for all sectors of society.*
- *Supports rural economies and the diversity of rural culture, in particular through an emphasis on local products that keep food miles to a minimum".*

Another definition from Sustainable Food lab organization[1] permits to encompass all actors involved in food system: *"We define a sustainable food system as one that realizes its purpose of guaranteeing a right to food and respects food sovereignty, that makes sufficient and healthy food available for all at an affordable price, that reflects all productions costs and internalizes external environmental and social costs and benefits in end prices, that uses resources (including natural resources such as soil and water, as well as human resources such as labor) at their rate of recovery and that respects different aspects of the food-culture. All actors of the food chain and governments should contribute to achieve this sustainable food system."*

The purpose of this paper is to describe and analyze what the scope is for cities that question the food system in their territory.

The first part will intend to present the global context: how the occidental food system is questioned by new environmental issues and what the actual effects or events in cities are. The second part aims to introduce the large field of stakeholders and how they take place in food topic. The third part will focus especially on cities actions and initiatives: how cities can promote sustainable food all along the local food chain by supporting urban and peri-urban agriculture, local organic quality food distribution channels, and shift in eating practices of their population.

[1] http://www.sustainablefoodlab.org

# *I. GLOBAL CONTEXT AND MAIN URBAN ISSUES*

The international economic growth crisis is seen as a major issue in industrialized countries. With restrictions and lower incomes, they try to find solutions in order to create new conditions for growth. They also have to protect the more tenuous populations. Following the issues of housing and jobs, food is the first preoccupation of most people. The actual food context is questioned by environmental challenges and consumption patterns that could seriously affect social conditions.

## 1. Food security, a debate for public policies over the world

> *"Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. Food security covers availability, access, utilization and stability issues, and — in its focus on individuals — also embraces their energy, protein and nutrient needs for life, activity, pregnancy, growth and long-term capabilities."*[2]

Food is a condition of life. After the fifties and war privations, the development of agro industry thank you to science and technology, liberated men from famines in industrialised countries. Whereas south countries still have troubles in malnutrition and agriculture management.

In 2008, an expected increase of cereal prices[3] creates a food crisis in developing countries. It also disturbed largely the economy of developed countries. This crisis, due to the combination of very bad conditions for world agriculture combined with peak oil (that increase oil cereal production at the expense of human food production) and speculation put an end to the certainty that has given industrialized countries a sense of protection. As Kevin Morgan and Roberta Sonnino[4], researchers at University of Cardiff have noted, "a third of countries where food price riots occurred were in middle and high income countries. Food security is no longer an issue confined to low-income countries."
With world population growth expected of more than 9 billion[5] people in 2050, a new debate is open to create a food system that would feed every men and respect environment.

## 2. Environmental issues to challenge[6]

Beyond population growth perspective for 2050, new environmental challenges will have to be faced. Climate change to greenhouse gases that are already in the atmosphere is expected to worsen. Food growing is already significantly affected by climate change, particularly through reduced and unpredictable rainfall, increasing temperatures and heat waves, and extreme weather events. In figure 1 exhibits the probable changes for European territory.

[2] United Nation commission on sustainable development, Rio + 20
[3] Achieving food security in the face of climate change, November 2011
[4] Morgan, K. and Sonnino, R. (2010) The urban foodscape: world cities and the new food equation. Cambridge Journal of Regions, Economy and Society. Oxford University Press, UK. www.cjres.oxfordjournals.org)
[5] IEA, 2008 in EEA, The European environment state and outlook 2010, consumption and the environment, 2012 update
[6] Sustainable food consumption and production in a resource-constrained world, The 3rd SCAR foresight Exercise, 2011

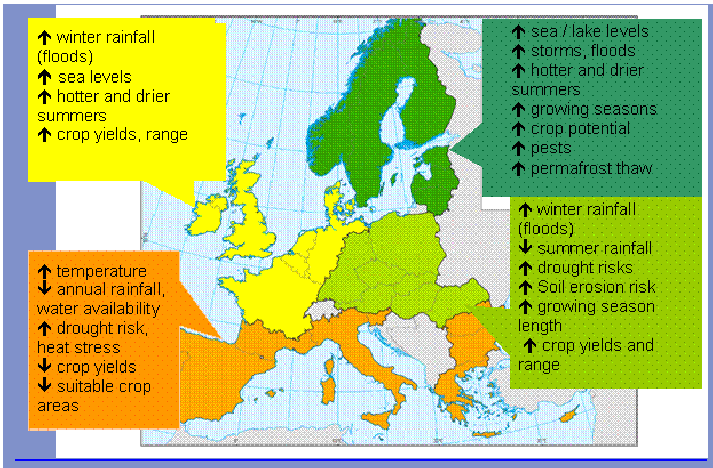



**Figure 1 : Projected impacts from climate change in different EU regions**[7]

Scarcity and cost of critical resources are big issues for the food system. Water, non-renewable sources of agrochemicals and natural fertilizers as Phosphorus and Nitrogen could lack. Peak oil particularly due to depletion of deposits is seen as a major problem. In fact, cost and availability of fossil fuels are critical to the food system: fuel on farms, dependence on fossil fuels and the manufacturing of fertilizers and agricultural chemicals, in the delivery of food, including both movement of food through supply chains and how consumers access their food.
Availability of agriculturally productive land, particularly "peri-urban" agricultural land is coming under increasing pressure from competing uses, particularly to accommodate growing urban populations.

According to the 3rd Standing Committee on agricultural Research foresight Exercise [8] (SCAR), scarcity of resources is characterized by "interconnected and highly dynamic issues in a crisis context which depth and scale are still not fully known". If climate and environmental perspectives are still fuzzy, the environmental impact of food chain and occidental diet are strongly questioned.

## 3. Unsustainable food chain and occidental diet

There is no ambiguity on the fact that both the food system and occidental diet are unsustainable[9]. In a context of globalization, the occidental food system has strong impacts on environment, uses lot of resources and is very dependent on petrol.

First of all, intensive agriculture that permitted to increase yields crops since the fifties; damages arable lands and makes agriculture dependent on chemical fertilizers and fuel for mechanization. The industrialized countries policies (almost Europe and United States) support agricultural world and farmers with subsidies. Those policies create imbalanced effects on developing countries and disturb south countries crop production. In the last past decade, price volatility[10] and speculation create an unsecure food context at an international level.

[7] Source : http://ec.europa.eu/agriculture/climate-change/index_en.htm
[8] Sustainable food consumption and production in a resource-constrained world, The 3rd SCAR foresight Exercise, 2011
[9] EEA, The European environment state and outlook 2010, consumption and the environment, 2012 update
[10] FAO. 2009. State of Agriculture Commodities Markets.

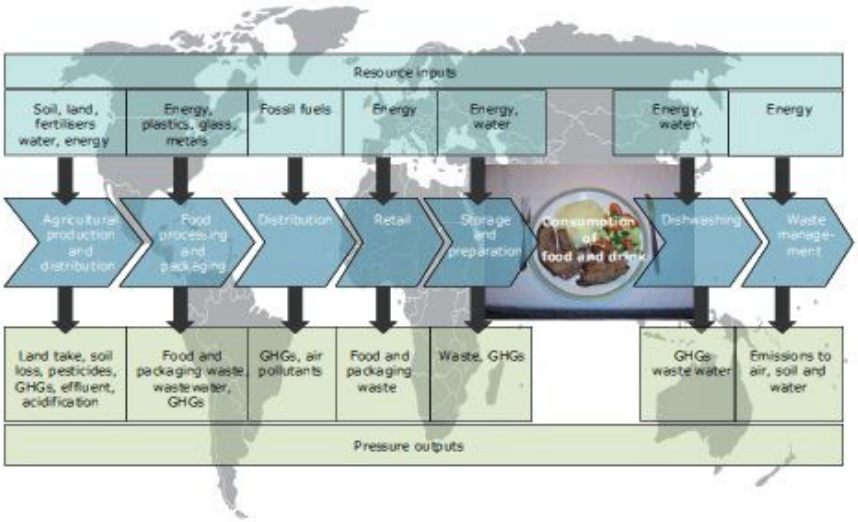



**Figure 2 : How the food and drink value chain impacts the environment** [11]

Source: compiled by EEA-ETC/SCP

Moreover the whole actual food chain is based on "just in time" procurement and transports low prices that strengthen dependency on petrol.[12] With higher income level in developed countries, people turn to look for special products from other regions or distant countries. This evolution in diet was an opportunity for enterprises to develop a new offer of products. Past low costs oil permitted to increase transport miles.

Indeed, there is a strong link between food supply chain and consumers' habits. From 1990 to 2005, European citizens have changed their consumption patterns by increasing consumption of imported fruit by 11%, eating more prepared food and devoting less time to cook, eating take away food, drinking more bottled water. Imported food has also increased: plus 120% for meat from 1990 to 2007, plus 83% for cereals, 174% for frozen vegetables and 92% for bananas.

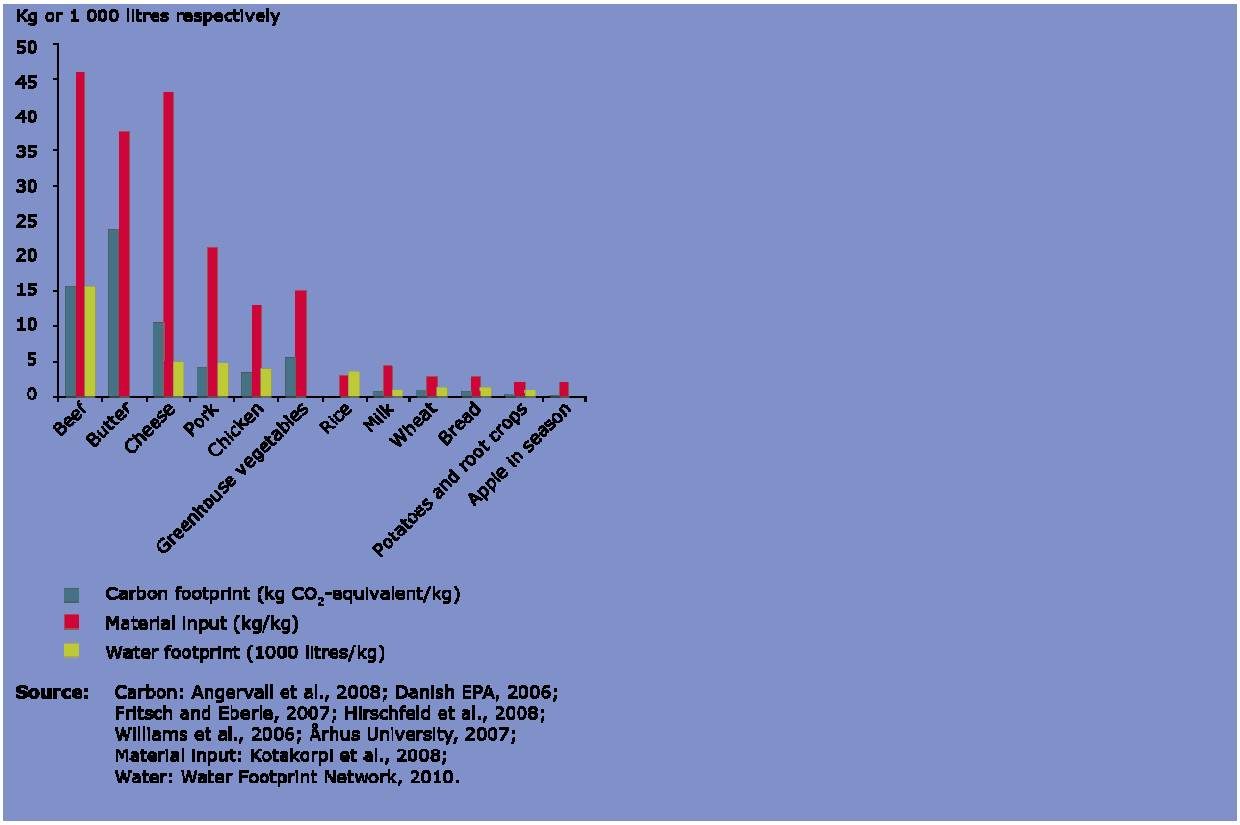
Those trends have huge environmental impacts: need for freezing, packaging waste, long distance food transport especially air and road.
In 2007, consumption of food and drinks in household in Europe 27 is estimated to cause:

- 16% of GHG emissions – 22% with restaurants and hotels
- 34% of acidifying emissions – 41% with restaurants and hotels
- 16% of tropospheric ozone precursors – 21% with restaurants and hotels
- 34 % of material resource activated by national consumption – 41% with restaurants and hotels

Meat and dairy product are the most impacting products as figure 3 describes it.

**Figure 3 : Carbon, material and water footprint for different types of food**

[11] EEA, The European environment state and outlook 2010, consumption and the environment, 2012 update
[12] Esnouf, C., Russel, M. et Bricas, N. (Coords), 2011 : duAlIne – durablité de l'alimentation face à de nouveaux enjeux. Questions à la recherche, Rapport Inra-Cirad (France), 236p.




Diet changes are also characterized by the explosion of "junk food" consumption. Food full of sugars and fats have loud consequences on people health (obesity, cardiovascular diseases, diabetes of type2) and can have strong costs for countries' health spending.
The recent definition of "sustainable" diet takes into account the role final users play in the act of consumption. *"Sustainable Diets are those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources."*[13]

The last strong impact of food comes from waste and loss in the food chain. There are various causes to waste in industrialized countries[14]: over production, "high appearance quality standard's (shape and size), large quantity on display and wide range of products in supply. FAO report says, *"Abundance and consumer attitudes lead to high food waste"*. Because consumers can afford food, they undervalue it and are not focused on use-by date. *According to the Preparatory study on food waste across Eu27*[15], there seems to be a "lack of awareness" of environmental impact of waste food, also a lack of knowledge on how to use food efficiently (oversize plate, storage, preferences in taste – for example apple and potatoes skin are wasted as bread crust). Misinterpretation and confusion over date labels are also a cause of waste. Moreover, lot of restaurants in Europe and United States propose fixed priced that encourage the consumer to fill their plate with too many food.

Thus, growing amounts of healthy and edible food is lost along the entire food supply chain16. The environmental impact is very strong: "For every kilogram of food produced, 4,5 kg of CO2 are released into the atmosphere. In Europe the approximately 89 Mt of food wasted produce 170 Mt CO2 eq./yr, broken down thus: food industry 59 Mt CO2 eq./yr, domestic consumption 78 Mt CO2 eq./yr, other 33 Mt CO2 eq./yr. The production of the 30% of food which ends up not being consumed accounts for an additional 50% of use of water resources for irrigation, while producing a kilogram of beef requires 5-10 tonnes of water."

## 4. Food issue and cities

[13] International scientific symposium biodiversity and sustainable diets united against hunger, FAO, 2010
[14] FAO. 2011. Global Food Losses and Food Waste: Extent, Causes and Prevention. Rome
[15] Preparatory study on food waste across EU 27 technical report - 2010 – 054, October 2010
[16] European Parliament resolution of 19 January 2012 on how to avoid food wastage: strategies for a more efficient food chain in the EU (2011/2175(INI)

As Kevin Morgan and Roberta Sonnino[17], researchers from University of Cardiff notices it, the actual trends about food from an international sight are:

- Higher and more volatile prices,
- Changing consumption patterns,
- Food security that become a national priority,
- Effect of climate change on agro system,
- Growing conflict on natural resources including land, water, forests, etc

With 73% of urban population in Europe, food system that used to behove to rural issues come into the debate for cities sustainability.

Various aspects of the problem could be enlightened18:

- Dependency on agro industry sector and importations (ex: community "Ile de France region" imports 6000 tonnes of food each day).
- The urban sprawl in Europe that had 3 million hectares disappeared between 1961 and 2003.
- Nutritional exclusion of low-income households that live in poor areas unwell connected with food retailers.
- Food industry miles that burden the carbon balance combine with the increase of household food miles procurement. Food chain is responsible of 40% of London global emissions.19

With reference to 2008 food riots, it seems that disturbances mainly happen first in cities. Indeed, they remain the place of public expressions and a level of action for inhabitants. In order to defuse potential crisis due to these global food trends, international organizations and local governments open debates and new framework to rethink food security and environmental issues.

# *II. FOOD SYSTEM STAKEHOLDERS AND POLICIES*

Food affects and concerns all kind of organizations: international and national policymakers, farmers, families, citizen organizations, industry sector…etc. This subject creates many debates between agro industry sector and other movements that denounce the externalities of the actual food chain. Nevertheless, all stakeholders call for changes in front of environmental issues.

## 1. Food policies toward green growth and sustainable development

Nearly all recent reports focusing sustainable food system insist on the concept of "resilient food" as a core concept. Resilience is "the ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self- organization, and the capacity to adapt to stress and change."[20]

## 1.1 Acknowledging food as key issue for sustainability at international level

Green economy is seen as a new development strategy. Green growth is narrower subject than sustainable development. It does not replace it. According to OCDE[21]: "Green growth strategies need to encourage greener behaviour by firms and consumers, facilitate smooth and just reallocation of jobs, capital and technology towards greener activities and provide adequate incentives and support to green innovation". In that context, food issues stated in first part could meet solutions and make food chain more sustainable and base for green economy.

- OCDE proposes a report[22] on green cities program in order to foster economic development by green growth. In this new strategy, environmental impacts (cost in energy, water, land) shall become a center value to transform economy by on a hand creating new activities and new jobs, and on the

[17] Morgan, K. and Sonnino, R. (2010) The urban foodscape: world cities and the new food equation. Cambridge Journal of Regions, Economy and Society. Oxford University Press, UK. www.cjres.oxfordjournals.org)

[18] Esnouf, C., Russel, M. et Bricas, N. (Coords), 2011 : duAllne – durablité de l'alimentation face à de nouveaux enjeux. Questions à la recherche, Rapport Inra-Cirad (France), 236p.

[19] London Agency, 2006

[20] Walker, B., et D. Salt, Resilience Thinking: sustaining ecosystems and people in a changing world, Island Press, 2006

[21] OCDE, Toward green growth, 2011 http://www.oecd.org/greengrowth/48224539.pdf

[22] OCDE, Cities and Green Growth: A Conceptual Framework, 2001, http://www.oecd.org/regional/regionaldevelopment/49330120.pdf

other hand new taxes on waste or pollution. In 2007, OCDE organized a conference in order to think a new order in food chain[23]

- United Nation published a report on green growth for cities and communities[24]. It calls for greening areas in city and reinvent links between urban and rural areas. ICLEI - Local Governments for Sustainability is an international network toward resilient cities. A special workshop on resilient food system[25] and urban agriculture took place in Bonn in 2011 and 2012 and presented results in urban agriculture. It has been time since the focus on local urban agriculture was identified. Indeed, in 1996 United Nations published a report call "Urban Agriculture: Food, Jobs, and sustainable cities"[26].
- FAO with the report "Food, Agriculture and cities, challenges of food and nutrition security, agriculture and ecosystem management in an urbanizing world"[27] enlighten the challenge in relinking rural and urban areas and perform multi-level governance for reintroduce local produced food in cities.

[23] http://www.foodeconomy2007.org/UK/
[24] UN Habitat, Tufts, R,; Kehew, R.p Rudd, A; Petrella, L. 2011. *Urban Patterns for Sustainable Development: Towards a Green Economy* http://www.unhabitat.org/downloads/docs/9539_39812_3077_alt.pdf
[25] Cities and Adaptation to Climate Change workshop on resilient Food systems for Resilient Cities, June 2011, Bonn http://resilient-cities.iclei.org/bonn2011/)
[26] UNDP. (1996). Urban Agriculture: Food, Jobs, and Sustainable Cities. United Nations Development Program, New York
[27] FAO, Food, Agriculture and cities, challenges of food and nutrition security, agriculture and ecosystem management in an urbanizing world, http://www.fao.org/fileadmin/templates/FCIT/PDF/FoodAgriCities_Oct2011.pdf

Table 2: Dimensions of implementing a food system approach, from local to global level

| Food system pillars and main institutions/actors | Local Authorities | National / sub-national / regional government | Civil Society, including private sector (farmers and retailers) | Associations of local authorities (ICLEI, UCLG, etc) | FAO and other UN-organizations |
|---|---|---|---|---|---|
| People-centred | public procurement mechanisms linked with food and nutrition security<br>nutrition education components | Right to Food framework<br>integrate food and nutrition security into health and social policy<br>integrate the food system dimensions/ components into development policy | consumers-producers linkages<br>consumption patterns / sustainable diets<br>social resilience | involve association of consumers and food related private sector partners | Right to Food – human rights based approach<br>PNTD – land tenure<br>nutrition education, food safety<br>include city-related stakeholders<br>enhance urban-rural linkages aspects |
| Risk management and ecosystem management | territorial approach and urban-rural linkages<br>climate change adaptation and mitigation | linking the relevance of sustainability and resilience with NR management for food and nutrition security | Climate Change adaptation practices<br>urban-rural linkages for ecosystem services, waste management, green labelling, etc. | further involvement in NR management platforms supporting FNS dimensions | land, forest and water management for food and nutrition security expertise and best practices<br>rural-urban linkages and territorial, regional development strategies |
| Planning | including food and nutrition security into urban planning<br>food system management and monitoring mechanisms at local level | include multi-level planning for FNS strategies | inclusion in official participatory mapping and planning mechanisms<br>Community-led planning<br>Private sector responsibilities (CSR) and sponsorship | enhance FNS dimensions<br>strengthen multi-level strategies and design | mainstreaming food and nutrition security at different planning levels, including investment<br>FNS aspects to be integrated in relevant planning activities |
| Governance | local food councils<br>multi-level governance to be driven by urban-rural linkages | participatory mechanisms of designing policy and strategies of FNS | advocacy for FSN related aspects with policy makers and governing bodies<br>contributions to participatory processes | reinforce presence and role of local authorities in international fora | enhancing collaboration and joint partnership to be focused on FNS |

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**Table 1: dimension of implementing a food system approach from local to global level**

With new health and environmental issues, United States[28] or Australia has point the importance of food system regulation. They intend to lead people towards changes.

**Australia National Food Plan [29]**

"*Australia's food system is shaped by global and local factors such as population growth, changing food preferences, economic conditions, climate change, competition for natural resources and diet-related health issues. In coming decades there will be both opportunities and challenges for those involved in growing, processing, moving and selling food—and for all of us as consumers. The National Food Plan aims to strengthen our food system so we can all respond to these opportunities and challenges.*

*The National Food Plan will provide an integrated approach to food-related policies and programs for the benefit of food businesses and consumers. This will ensure Australia has a sustainable, globally competitive, resilient food supply that supports access to nutritious and affordable food.*"

## 1.2 A transition pathway in Europe

Since 1962 and creation of Common Agriculture Policy (CAP), food policies are conceived to make agriculture more efficient from an economical point of view by focusing on high quality. CAP is said to have strengthen food security for Europe.

Many efforts are made to guarantee good conditions for agricultural production with regulations on farming quality[30]. Furthermore, European Union have created regulations to inform consumers: certification schemes, traditional specialties guaranteed, geographical indications, production and labeling of organic products, organic farming, food and feed (GMO), improving communication on agricultural product quality.

[28] http://michaelpollan.com/articles-archive/how-change-is-going-to-come-in-the-food-system/
[29] http://daff.gov.au/__data/assets/pdf_file/0008/2175155/towards-a-national-food-plan-for-australia-a-summary-of-the-green-paper-2012.pdf
[30] http://ec.europa.eu/agriculture/quality/index_en.htm

Some general tools exist and can foster sustainable food consumption as green public procurement. **"***In 2003, the European Commission recommended that Member States adopt national action plans on Green Public Procurement by the end of 2006(…)".*

In 2008, the European Commission's Action Plan on Sustainable Consumption and Production (SCP) proposed a framework for a shift in consumption and production patterns. The **European Retailers Forum** was created to involve the retailers in the promotion of sustainable consumption and production. As in industrial sector, the European commission called for a foresight study that should enlighten a new food policy: **"*Sustainable food consumption and production in a resource-constrained world*"** (February 2011).

Two narratives are developed: the first one is "the productivity narrative". It is based on the belief that science has the potential to develop technologies that can boost productivity whilst addressing resource scarcities and environmental problems.

The second one "the sufficiency narrative" is based on the belief that science has potential to develop technological solutions that are productive, reduce resource use en preserve biodiversity…However to stay within the capacity of system Earth, demand increases need to be mitigated through behavioral change and structural change in food system and supply chains.

In front of the two narratives, the conclusion is to preserve all options and make a synthesis. This report enlightens the importance of local context toward a resilient food system.

With the creation of the **European Food SCP Roundtable**[31], composed by 24 members representing the food chain, European commission is on the way to organize a transition pathway. This initiative aims "to establish the food chain as a major contributor towards sustainable consumption and production in Europe". Moreover, several resolutions of European Parliament resolutions have been created related to sustainable food consumption and production:

- Resolution of 19 January 2012 on how to avoid food wastage: strategies for a more efficient food chain in the EU (2011/2175(INI)
- Resolution of 23 June 2011 on the CAP towards 2020: meeting the food, natural resources and territorial challenges of the future
- Resolution of 18 January 2011 on recognition of agriculture as a strategic sector in the context of food security

According to Euractive[32] information a new general European global food policy could be created in 2013. This policy would take in account the entire food chain "from farm to fork".

As for funds, the structural European programs are: LEADER and LEADER+, FEDER, FSE, FEADER. Many topics related with agriculture in rural areas can have support, for example labelling for organic farming by FEADER. Concerning the subject "food in urban communities", we could not find specific structural funds. It seems that agriculture is seen as a rural issue. Urban issues are often related to planning, social issues, and education. Food is more often related with Health and consumption.

The European Commission and the Committee of Regions (COR) work on multi-level governance with applications to food and nutrition security for urban and rural communities.

The other main tool for sustainable food is the next reform of **Common Agriculture Policy (CAP**) in 2014. Stakeholders from civil society ask for big changes and reforms of the agro industry sector and actual food system. The synthesis of public consultation[33] describes various propositions among whom foster local food production and enhance the linkage between urban and rural areas. In 2006, researcher from INRA published an interesting paper[34] that mentioned the need of coherence between promotion of low carbon diets (with less meat and dairy products) and CAP orientations in supporting livestock. In 2010 a network of European and National organizations involved for a shift in agriculture rules published: "*For a new European Agriculture and food policy, that meets the challenges of this century*".[35] This report aims to: "*promote a new international framework for agricultural markets on a democratic basis*".

[31] http://www.food-scp.eu/
[32] http://www.euractiv.com/fr/node/513731
[33] http://ec.europa.eu/agriculture/cap-post-2013/debate/report/summary-report_en.pdf
[34] Courrier de l'environnement de l'INRA n°53, décembre 2006 83, Vers une alimentation durable ? Ce qu'enseigne la littérature scientifique, Barbara Redlingshöfer
[35] http://www2.dijon.inra.fr/esr/pagesperso/trouve/For%20a%20new%20European%20agriculture%20and%20food%20policy.pdf
Network of European and national organizations from various sectors : European Coordination Via Campesina, Friends of the Earth Europe, European ATTAC network, European Agriculture and Health Consortium, EU Greenpeace Unit, Food and Water Europe, Flemish platform VODO, Platform ABC the Netherlands, Oxfam solidarity Belgium, Terra Nuova, Hungarian Alliance for food sovereignty, UK Food Group, German Seeds action network

With the cooperation of European Commission Slow Food Europe and ARC2020[36], a conference in the European Parliament will take place in September 2012. The point will be to discuss about "more democratic, fair and greener CAP"[37]. This conference will be introduce by "the good food march" from Munich to Brussels in order to raise awareness on a crucial European debate.

## 1.3 Food public policy in national level of governance

At a national level in Europe, food sustainability is mainly linked with health issues whereas agriculture is usually linked with growth, sufficiency and environment issues. Indeed, in front of increase of obesity and overweight level in west Europe, nations develop strategies to inform citizens of the risk of eating fat and sugar food. For instance, National food agency in Sweden[38] created a Keyhole symbol to help citizen to choose the best food and identified healthier food products within a product group. In Belgium, a National Food and health Plan[39] is currently guiding professionals of education and health.

In France, alimentation and overweight is a major issue moreover for low incomes population. Programs for alimentation have been existed since the eighties. Recently, French government[40] creates a law that obliged private television advertising to add messages: "*Eat and move*" or "*Eating sugar food is not good for health*" New versions[41] take into account environmental and global issues for sustainability.

Indeed, climate change goals are now part of food debate. For example United Kingdom has a strong action toward population and industrial sector. DREFA, the government organization for agriculture regularly published data on food (consumption, waste…). Campaigns to make people aware of the issues are on "sustainweb", a website focus on sustainable food[42]. For professionals, "The food chain sustainability" is a national interest group, funding by DEFRA. Thus, food is related with engagement to low carbon strategy.

An original initiative of Denmark government[43] is to tax high fat food if they contain more than 2.3% of saturated fat.

## 2. Food research and network

As "*SCAR*" report[44], mentions it there is a need to focus research on resource conservation and knowledge base economy in order to get a better understanding of the complexity surrounding scarcity and new pathways for sustainable food. In most of European countries, government has developed for long time data bases and research centers on agriculture. Thereafter are some research centers or networks relevant on the urban sustainable food topic.

The RUAF Foundation is an International Network of Resource centers on Urban Agriculture and Food security actually active in 21 major cities in 15 countries. RUAF supports capacity development of staff of the Municipality and other stakeholders and facilitates action research and multi-stakeholder policy formulation and action planning on urban and peri-urban agriculture. http://www.ruaf.org/

*"Urban, peri-urban and regional food dynamics: toward an integrated and territorial approach to food"*

Purefood is a researcher's network on food systems supported by European commission Seventh Framework until 2014. Four research projects are about sustainable food supply chain *("Consumers as*

[36] http://www.arc2020.eu/front/arc_in_a_nutshell/
[37] http://www.slowfood.com/sloweurope/pagine/eng/application/conferenza.lasso
[38] http://www.slv.se/upload/dokument/mat/nyckelhalet/s%C3%BDmbolen/design_manual_for_the_Keyhole_label.pdf
[39] http://www2.spi.pt/fahre/docslibrary/belgium_nationalFoodandHealthPlan.pdf
[40] http://denmark.dk/en/lifestyle/food-drink/
[41] http://agriculture.gouv.fr/IMG/pdf/PNA-09022011.pdf (February 2011)
[42] sustainweb.uk
[43] http://denmark.dk/en/lifestyle/food-drink/
[44] Sustainable food consumption and production in a resource-constrained world, The 3rd SCAR foresight Exercise, 2011

*drivers of innovation in new food networks, "Communication, media & sustainable food supply chains", "The role of new food enterprises in reshaping food supply chains", "Greening the Conventional Chain"*).
Four more are about public food procurement (among whom "*Shaping Sustainable Food Chains through National Procurement Policies", "The Challenge of Scaling Up*)
The third topic deals with Urban Food Strategies: *"The role of food movements in food regime change", "Enabling integrated food policy within urban governance: key components for policy and institutional design", "Food security and public action for municipal and rural resilience"," Comparative analysis of urban food strategies in European cities".* http://purefoodnetwork.eu/

Purple is a network about strategy for peri-urban communities with European Committee of Regions.
*"Peri-urban areas have the potential to feed more of the EU's citizens particularly those living in adjacent urban areas and have a crucial role to play in meeting today's food challenges. These challenges are clear: growing transport and energy costs; concerns about transport impacts such as animal welfare, pollution, congestion; the need to connect consumers and producers; and improving resilience to food crises – global and local."* Declaration to the EU Agriculture Ministers Informal Council, Annecy, 21, 22, 23 September 2008
http://www.purple-eu.org/home/

Researches on food are also produced by The European Food Information Council, a European platform that aims to inform people of food patterns and good practices. Actual projects are:

- Connecting stakeholders with interests in food to improve multidisciplinary dialogue
- Closer co-operation to strengthen the global competitiveness of the European food sector
- New dietary strategies for healthy ageing in Europe
- Affordable, nutritious foods for those at risk of poverty
- Benefit and risk communication (about food)
- Towards sustainable food research
- Personalized nutrition: opportunities & challenges
- Dietitians ensuring education, teaching and professional quality
- Interventions to Promote Healthy Eating Habits
- European micronutrient recommendations aligned
- Food Labeling to Advance Better Education for Life
- Investigating health issues in children and infants
- EU Platform for Action on Diet, Physical Activity and Health

http://www.eufic.org/


LiveWell for LIFE is a continuation of the research the Rowett Institute did with WWF-UK in 2010-11. The LiveWell Plate builds on the concept of the "Eatwell Plate" – a visual communications tool created by the UK Food Standards Agency to promote nutritionally healthy diets. The research looked at the compatibility of dietary recommendations for health with environmental sustainability criteria. http://livewellforlife.ning.com/

Corpus is a network that links policymakers and researchers on sustainable lifestyles. Food is the first of 3 topics with mobility and housing where evidence based policy making practices and innovations have been reviewed, foresight exercises developed and knowledge brokering approaches and tools investigated.
http://www.scp-knowledge.eu/

GreenCook is aimed at reducing food wastage and to make the North-West Europe a model of sustainable food management, by in-depth work on the consumer / food relationship thanks to a multisectoral partnership. http://www.green-cook.org/?lang=en

Research is more often funded by European or national funds or private organizations (for example WWF for live well plate). Many researches are about how to create a sustainable diet or sustainable behavior for consumers.

## 3. Civil society organizations

Organizations of citizens or farmers groups play also an important role in the food policy debate. They claim for new rules in the food system and make propositions as seen in the CAP actual reform process. Selected citizens' organizations and farmers involved in urban food topic are described below.

La via campesina is an international movement born in 1993. It represents 150 local and national organizations in 70 countries from Africa, Asia, Europe and the Americas it is to say 200 million farmers. The main goal of the movement is to realize food sovereignty. It ensures that the rights to use and manage lands, territories, water, seeds, livestock and biodiversity are in the hands of those who produce food and not of the corporate sector. Therefore the implementation of genuine agrarian reform is one of the top priorities of the farmer's movement. http://viacampesina.org/fr/

Slow food is a global, grassroots organization with supporters in 150 countries around the world. It was founded in 1989 to counter the rise of fast food and fast life, the disappearance of local food traditions and people's dwindling interest in the food they eat. For example "*The ark of the state*" [45] aims to rescue disappearing food specialties. Groups "*document, catalogue and safeguard small and quality agricultural diversity threatened, or potentially threatened, by extinction. The products chosen to be safeguarded include plant species, varieties and ecotypes as well as autochthonous or well-adapted animal populations in a specific territory*."
Slow food action is also oriented toward improving users' capabilities to recognize food quality for example with "taste training ateliers". At the moment, slow food count about 100 000 members joined in 1300 "convivia" (meeting groups) worldwide, as well as a network of 2000 food communities who practice small-scale and sustainable production of quality foods. http://www.slowfood.com

**TRANSITION TOWNS** is a movement founded in 2005 by Rob Hopkins, teacher at kinsale University in Ireland. This network intends to propose solutions to response to peak oil and climate changes. It also tries to raise awareness about sustainable living. The philosophy is based on permaculture which is a new kind of thinking ecological: work with nature and not against it. The aim of Transition Towns is to recreate conditions for a local living, reconnect men with nature by fostering dynamics among communities in towns. The philosophy of action is not only about food but also in housing, money, planning. The movement counts now

[45] Sources: L'Arca, 2001. Il grano Saraceno della Valtellina. Quaderni dei Presidi Slow Food 2001; Di Napoli Raffaela and Davide Marino, 2001. Biodiversità e sviluppo rurale. http://www.fao.org/docrep/005/ac784e/ac784e-03.htm

more than 195 projects based in Europe (most of them are in UK) from largest cities to small villages engaged into a transition process toward more sustainable ways of living. http://www.transitionnetwork.org

## 4. Initiatives of private sector

**The Sustainable Agriculture Initiative** (SAI) Platform created in 2002 (with 30 members among which Nestlé, Unilever and Danone) is a food industry initiative supporting the development of sustainable agriculture worldwide.
Among the latest services and deliverables produced, the SAI Platform published "Principles and Practices for the Sustainable production of Arable and vegetable Crops, Coffee, Dairy and Fruit"; a Benchmark Study of Agriculture Standards and a Short Guide to Sustainable Agriculture. http://www.saiplatform.org/

**Sustainability in the Food Supply Chain** provides an international platform for industry professionals to identify ways to overcome sustainability challenges within the supply chain. It gives an insight in the most recent developments within the sector. http://sustainability.agraevents.com/

In conclusion of this part, it seems that *urban food* is getting into debate from the very top organizations as United Nations and from local actions. In fact, the urban food issues are really taken into account with citizens and communities initiatives at a local level: associations, city councils or local authorities as Regions. European policies and National debates are still in a phase of research among the topic. It seems that no specific supporting policies have been proposed yet to help cities developing programs.
Nevertheless, many tall and smaller cities have developed initiatives and interesting local policies with proper funds. How did they start? What are their actual tools and partners? What do they need to improve their action?

# *III. SPATIAL AND HUMAN DYNAMIC OF FOOD FOR A RESILIENT FOOD SYSTEM*

Spatial organization of food has been regarded by researchers for a long period of time. They were mainly focused on food supply chain: transport, economic specialization of territories, agricultural questions. With new environmental and health issues, urban food system calls a holistic view. Currently, it also interests new kind of researches: urban planning, sociology…etc. The subject is all the more attractive that many social innovations have been growing at local scale in the last decade.

The different initiatives could be describe in two focuses: creating conditions for growing local food in a "urban rural continuum" and foster awareness about local and healthy food by fostering changes in all actors behaviors.

## 1. Create a "urban rural continuum"

FAO's report "*Food, agriculture and cities*"[46] explains the concept of "*urban rural continuum*" that could characterized the relationship between rural and urban landscapes. According to FAO the relationships between urban and rural landscapes are often "divided, in conflict and separated by cultural and political realities". 3 domains are in evidence that summarize quite well the different dimensions of potential relationship between urban and rural territories. Depending on being developed or developing countries the socio economic core issues are not identical.

[46] FAO, Food, Agriculture and cities, challenges of food and nutrition security, agriculture and ecosystem management in an urbanizing world, http://www.fao.org/fileadmin/templates/FCIT/PDF/FoodAgriCities_Oct2011.pdf

| *Domain* | *Dimension* | *Core issues* |
|---|---|---|
| **Food and agriculture** | Agrobiodiversity | Cities can provide nutrient dense perishable foods and support rural production of other staple foods, integrating local, regional and global supply |
| | Livestock and aquaculture | Livestock and aquaculture provide important protein sources in urban-rural landscapes, especially in small scale livestock raising and fresh/salt water fish farming |
| | Food market | Markets (formal and informal) are the primary spaces where rural production meets urban consumption (formal and informal markets) / sources of food, employment, and income |
| | Food loss and Waste | Post harvest food loss and post consumer food waste is a key strategy for urban food security and should be a top priority for urban managers |
| **Natural resources management** | Soil and water | Soil resources in urban and peri urban areas can be compromised in different ways than in rural areas. Water conservation and re-use for food production can serve both urban and rural production / competition for water uses is a concern for UPA |
| | Land tenure | Tenure in urban, peri-urban and rural areas for food production, handling and markets for cities must be addressed with new policy and support, combining local and national strategies |
| | Energy | Energy from and for agriculture can be a source of important supplemental energy for production and consumption |
| | Forest and trees | Urban forests are important for fibre, biodiversity and food crops, especially when integrated in urban-rural corridors and parklands (greener cities) |
| **Socio-economic and health factors** | Hunger and malnutrition | Hunger and malnutrition in rural and urban areas is expressed differently and demands both linked and targeted approaches to buffer price volatility and the risk of disaster |
| | Shifting diets and health | Access to perishable fruits and vegetables is a critical intervention for healthy diets and cities can provide incentives for producers in and near cities to provide healthy food for both urban and rural people |
| | Food safety and street food | Food and water contamination in urban areas requires application of sanitary standards and practices that help support local producers (urban and rural) and protect the health of consumers. |
| | Migration and labour | Rural-Urban linkages and impacts on food system are one of the most urgent pressures on public services, including food supply for cities. Holistic approaches linking rural to urban and urban to rural migrations with a focus on women and youth can help to rebuild healthy and vigorous food systems in and around cities. |

**Table 2: Components of food system across the urban rural continuum**

Two visions could be distinguished to perform a local food system: urban agriculture that would stand in the heart of the city and close peri-urban and rural agriculture that both could procure food and involve cities inhabitants in the act of producing.

## 1.1 Maintain link with peri-urban agriculture

Some cities has traditional link with close rural areas and has maintained this link thanks to urban planning land tenure to protect close arable lands and support local farmers and organizations.

**Barcelona**

Baix Llobregat Agricultural Park, located in the Llobregat Delta, (10 minutes west of Barcelona) is the traditional main food supplier of the Region. The park has a superficy of 2930 hectares surrounded by high quality fruit and vegetable crops (open air and green house production). The Provincial Council of Barcelona; the Country Council of El Naix Llobregat, the Farmer's Union in Catalonia and 14 municipalities' owners of lands administrate and develop the project.

http://www.diba.es/parcsn/parcs/plana.asp?parc=9&m=297&o=1

**Portland protect land for food production**[47]

In 1979, Portland established an urban growth boundary to protect farms and forests surrounding the metro area from urban sprawl and promote efficient use of land inside the boundary. Local governments have developed programs to support regional Food economies to strengthen the viability of producers and resist development pressure.

[47] Donovan J, Larsen K and McWhinnie J. Food-sensitive planning and urban design: A conceptual framework for achieving a sustainable and healthy food system. Melbourne: Report commissioned by the National Heart Foundation of Australia (Victorian Division), 2011, http://www.heartfoundation.org.au/SiteCollectionDocuments/Food-sensitive-planning-urban-design-full-report.pdf

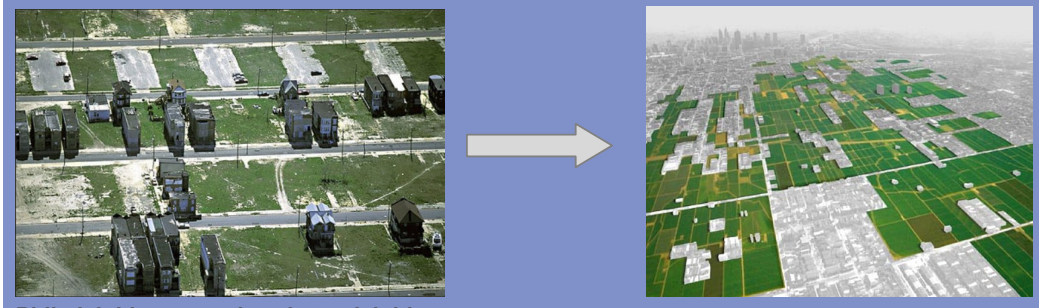
United Nation Habitat[48] and ICLEI call for a "*new green mosaic*", a conceptual framing for urban sustainable development that may reconnect rural to urban areas through open spaces for recreations, small allotment crop…etc. The Victorian Eco-Innovation Lab in Australia proposes urban design/planning principles close from this idea. Figure 3 and 4 illustrate it.

"**The concept 'food sensitive planning and urban design'** (FSPUD) coined and articulated by VEIL in 2008 (…). Food sensitive urban design is an approach to planning and urban design that explicitly addresses the way food is produced, moved, processed and consumed, to create places that make it easy for people to meet their food needs and focuses on the following overarching principles: health and fairness, sustainability and resilience, livelihoods and opportunity, community and amenity."

1. Land use policies to protect farming use
2. Buffer of appropriate land uses between residential and agricultural land to protect both, and potentially enhance amenity and micro-climate
3. Consideration given to the impact of lost agricultural land when land use change
4. Appropriate zoning to establish land uses for city farms where people can learn about food production, share equipment and information, and to provide a local attraction. City farms also incorporate facilities to distribute and process produce from productive streetscapes.
5. Development densities optimized to minimize land take whilst ensuring access to recreation and productive space for Food growing.
6. Productive streetscapes incorporating olives, apples, oranges, nut trees and root crops in the nature strip utilizing treated run-off from streets for irrigation.
7. High amenity strategic walk way / cycle way networks to optimize access to food.
8. Town square incorporating farmer's market and demonstration garden, highlighting aesthetic contribution of food plants and educating people about their use.
9. Land uses organized to provide an integrated network of green infrastructure that meets the city's need locally and minimizes downstream environmental impacts

**Figure 4: Some examples of strategic planning measures applying Food Sensitive Planning and Urban Design' principles**

Planning is one of the relevant tools to increase quality spaces and diversify land tenure. Below, wasteland rehabilitation's project in Philadelphia gives example reintroducing green spaces.



**Philadelphia regreening: farmadelphia**

Finalist Competition: "Urban Voids: Grounds for Change" Sponsor: City Parks Association and the Van Alen Institute.

[48] UN Habitat, Tufts, R,; Kehew, R.p Rudd, A; Petrella, L. 2011. *Urban Patterns for Sustainable Development: Towards a Green Economy* http://www.unhabitat.org/downloads/docs/9539_39812_3077_alt.pdf

## 1.2 Develop urban agriculture

SCAR mention "*new forms of sustainable viable food production*" in urban agriculture and glimpse the potential in modernizing urban gardening for the "*production of fresh fruit and vegetables, as well as small birds, animals*". Thus urban and peri-urban areas are recognized to have very good soil quality[49] excluding industry polluted soils.
For example private gardening is part of culture in many European countries. During second war world, people in France or in United Kingdom assured food procurement with self-production food.

**London**

London Food Link is a network of 285 organizations and individuals that work towards increasing the availability of sustainable Food in London, tackling the barriers preventing access to healthy and sustainable Food for all Londoners, protecting and celebrating London's diverse Food culture. Currently 30,000 people in London rent allotments to grow vegetables and fruit, and 14% of households grow vegetables in their garden.

http://www.sustainweb.org/londonfoodlink/

The food production in towns is close to consumers and may reduce the footprint of food system if done in respect of propitious crop conditions (local species and products). To make it possible and upscale initiatives, FAO talks about new paradigm: "*sustainable intensification*"[50] that could diversify supplies of food without constrain actual food supply chain necessary to ensure food security. New urban adapted agricultural technics offer solutions as well as architecture that propose new concepts.

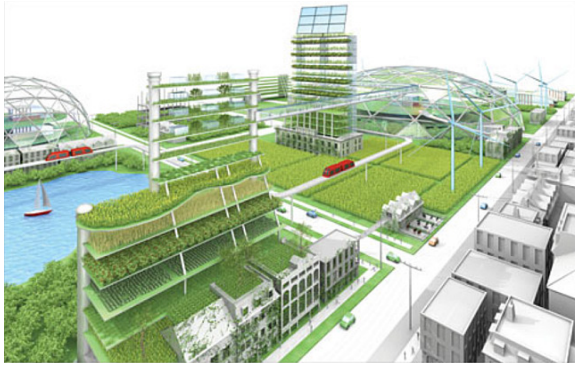
**Renewal technics**
Technics like:
- aquaponic,
- hydroponic,
- aeroponic,

intend to cultivate vegetable without lot of land that is expensive in urban areas.

Initiatives and Architectural projects present new forms of urban building that integrate food production like urban farms[51] that use new forms of crop culture.

**Detroit**

Nearby … "a project of farm in Detroit (the world's largest urban farm), its business plan calls for 'the deployment of the latest in farm technology, from compost-heated greenhouses to hydroponic (water only, no soil) and aeroponic (air only) growing systems designed to maximize productivity in cramped settings. Visitors will be able to "walk down the row pushing a baby stroller," he promises. The farm will focus on high-margin edibles: peaches, berries, plums, nectarines, exotic greens and heirloom tomatoes."



Roof gardening[52] and vertical gardening[53] are also interested initiatives for urban agriculture.

[49] Netherlands Environmental Assessment Agency and Stockholm Resilience Centre, 2009
[50] FAO. 2011. Save and Grow: A Policymaker's guide to the sustainable intensification of small crop production. http://www.fao.org/ag/save-and-grow/index_en.html
[51] http://inspirationgreen.com/urban-ag.html
[52] http://www.ecologieurbaine.net/sites/www.ecologieurbaine.net/files/imce/toitures_vegetales_implantation_de_toits_verts_en_milieu_institutionnel_2007.pdf
[53] http://ediblegardensnw.wordpress.com/category/vertical-gardening/

**Montreal**

UQUAM, "Verdit Toit" and Montreal urban Ecology Centre published a technical study that questions green roofs in the city. It gives clue to implement green roofs on institutional buildings.

**Sweeden**

Vertical gardening innovation

If urban agriculture is a good way to increase local food production and reconnect people with food, it has to be done with precautions. A recent environmental study on growing fruits and vegetables green roofs in Berlin, states that the rate of pollution is significantly high. The studyart of reason due to car exhausts.

It seems that some cities have progressively adopted a holistic view on food system. They often start from one or two specific issues (health, land tenure, low carbon strategy, labour…) and progressively open debate toward other topics.

**New York City global food policy**

New York City has been one of the first city early involve in local food policies. Begun on health issue, the municipality has developed a range of measures in order to take all characteristics of food issues:

- Healthy Food Access and Awareness: Improving Healthy Retail Access, Promoting a Healthy Diet, Nutrition Education, standards for healthy food
- Promoting food security program: food stamps to buy food at farmer's market, emergency food line, Schools meals
- Food system sustainability: Promote walkable destinations for retail and other services, Facilitate urban agriculture and community gardening, Promote green space on remediated brownfields, Continue the watershed protection program, Launch a study of New York City's food distribution pathways, Create additional opportunities to recover organic material, including food waste

http://www.nyc.gov/html/nycfood/html/home/home.shtml

In a context of innovation toward sustainable urban food, one of the main challenges is up scaling the different initiatives to create a real dynamic around food. Even if all conditions for local food procurement are gathered, it seems that fostering demand for fresh vegetable and food is a core issue.

## 2. Foster global organisational and cultural changes toward sustainable behaviours

Cultural transformations have been strong since the eighties. Changing behaviours in household consumption is a hard task. Cities do not have always all keys to answer and need action from national or international policy. Nevertheless some tools can be efficient if use with all territory stakeholders. Public food procurement, employment policies and information campaigns may have progressively good results in transforming urban food system.

### 2.1 Public food procurement and healthy practices

Most of the cities involved in food policies watch public food procurement as a good lever to raise awareness on health issues. Public administrations services (primary schools, sometimes secondary schools, hospitals…etc.) represent opportunities for local and healthy food. The "school public plate"[54], constituted by resilient food (environmentally respectful, locally produced when possible) is a nutritive and equilibrated meal served in canteens. It is a strong tool for changing food consumption patterns.

[54] Kevin Morgan and Roberta Sonnino, State of the world, Rethinking School Food: The Power of the Public Plate, 2010, http://blogs.worldwatch.org/transformingcultures/wp-content/uploads/2009/04/Rethinking-School-Food-Morgan-and-Sonnino.pdf

**Public food procurement in Roma: "All for Quality food program"**

Involved in In January 2010, Rome's Council adopted a decision on GPP for food and canteens. More than 144,000 meals are served daily across 550 nurseries, primary and secondary schools. 92% are prepared on site with 69% of them including organic food. A vast number of nutritionists and dieticians advise and monitor the service, which also counts on the involvement of canteen commissions comprised of parents and school canteen staff[55].

http://ec.europa.eu/environment/gpp/pdf/news_alert/Issue14_Case_Study34_Rome_food.pdf

Thus, communities have possibilities to insert "sustainable clauses" in procurement proceedings. The public plate is not only a way to lead children toward awareness of food; it also creates real markets for new kind of food. If "local" food is not recognised as a criteria in public procurement, labels can be taken into account.

## 2.2 Local food procurement linked with culture and employment

According to the third SCAR foresight exercise[56], communities are seen as a scale for action. It enlightens the opportunity of fostering the link between people and farmers. Actual "experimentations" could relink population with food production and make them better informed on markets. The recent term "Locavore" indicates a person that procures food in an area from 100 to 250 km around the location.
Since the nineties, research look at re-localisation of food system. Debate between researchers lead to questioned local food system in order to know about local food sustainability. US researcher[57] shows that local food is seen to be "*fresher looking, fresher tasting, of higher quality, and a better value for the money* ».

**Local food procurement**

In United States, Community Supported Agriculture[58] has grown from 50 in 1990 to 1000 in 2008[59].

In France, AMAP[60] is a system that connects groups of inhabitants to a farmer who delivers them fresh and local products. The originality is that the group is involves in the food production process.

**Nutrire Milano**

In Milan, Slow Food, universita degli Studi di Scienze Gastronomiche ans Politecnico du Milano intend to create a metropolitan food chain and promote the short supply chain. This holistic food project, which involves food retailers and caterings operators, calls for a food chain supported by traditional farming practices.

http://www.nutriremilano.it/

Considering the future mainstream of green growth proposed in international United Nations and ODCE reports, the development of urban agriculture could be a good level to develop employment.

**Brussels urban green agriculture**

An original cooperation gathers low carbon environmental strategy and employment sector in Brussels. Thus Brussels Region is expected to generate about 7.700 jobs with development of green roofs agriculture on 1303.2 hectares. The first step is to create a urban farm in Anderlecht area on a 3000 m² roof that will offer 10 news jobs. Urban farming employments should become an opportunity for young and unqualified job seekers.

In London, a project also relates urban food production with employability[61] and states that getting involved in gardening can help people to get better skills and reconnect with society. Other projects around Europe have same goals.

If employment and employability is a way to reconnect people and inhabitants with food topic and make then active in social life, education and information campaigns are still necessary to get larger debates.

## 2.3 Information and education campaigns on food and/or low carbon strategy

[55] FAO, Food, Agriculture and cities, challenges of food and nutrition security, agriculture and ecosystem management in an urbanizing world, http://www.fao.org/fileadmin/templates/FCIT/PDF/FoodAgriCities_Oct2011.pdf
[56] Sustainable food consumption and production in a resource-constrained world, The 3rd SCAR foresight Exercise, 2011
[57] Hardesty S.D, 2008. The growing Role of Local Food Market. American Journal of Agricultureal Economics 90 (5): 1289-1295
[58] Brown C, Miller S, 2008. The Impact of Local Markets: a Review of Research on Farmers Markets and community Supported Agriculture (CSA). American journal of Agricultural Economics, 90 (5): 1298-1302
[59] Hardesty S.D, 2008. The growing Role of Local Food Market. American Journal of Agricultureal Economics 90 (5): 1289-1295 http://agecon.ucdavis.edu/people/faculty/shermain-hardesty/docs/the-growing-role-of-local-food-markets.pdf
[60] http://www.reseau-amap.org/
[61] http://www.skillsdevelopment.org.uk/pdf/Roots_to_work_full%20report.pdf

As noticed in first part, strong diet changes occurred in the last past decade. To offer local fresh food is not enough to have people eat more vegetables and less meat. Important issues could be enlightened to change behaviors:

- *Reconnection with food needs*

In the last century, there has been a nutrition transition (that occurs nowadays in developing countries) toward protein diet. This was characterized in European policy by subsidizing livestock producers (dairy, butter and milk, meat) whereas fruits and vegetables producers were not supported.[62] To make people aware of what they need to live, nutritive information is recognize as a good tool. In Dualine study, the authors state that, in the eighties, the scientific publications about cholesterol and all communication on it had effects on certain food consumption as meat, butter…etc. To get a chance to change individual behavior those messages have to be validated and consensual in medicine world and policy.

- *Prevention social inequity*

It seems that health costs (heart diseases, Diabetes type II…) is becoming louder around occidental countries. The actual trend is the creation of deeper gaps between high and low incomes people in front of health and food. Medicine prevention from national and local campaigns are indispensable tools (as healthy public plate in canteens) to encourage consumption shifts. The problem could also be seen in places.
Considering those issues, solutions could be found in linking food with affordable prices, accessibility and conviviality in order to create a convivial shift. In this aim, retailers can have a role to play. Indeed, if retailers can advise consumers on sustainability of food, they can also propose fresh, local food.

**NYC green carts**

Green Carts are mobile food carts that offer fresh produce in certain New York City neighborhoods. Since the program's start in 2008, nearly 500 vendors have opened Green Carts in City neighborhoods, helping many New Yorkers buy fresh fruits and vegetables close to home.

http://www.nyc.gov/html/nycfood/html/home/home.shtml

Other initiative could be helping business to implement in specific areas close to low incomes inhabitants.

**The Pennsylvania Fresh Food Financing**

" The Fresh Food Financing is a state-wide economic development initiative that aims to attract fresh Food retailers to urban and rural underserved communities. The FFFI provides grants and loans to qualified food retailers to help meet costs. Funds may contribute to land acquisition, construction, equipment financing, capital grants for project funding gaps, and funding for workforce development. (…) Eligible stores are located in a low to moderate income census tract, provide a full selection of fresh Foods, and locate in areas that are currently underserved. By 2009 the scheme had brought an additional 5,000 jobs and 1.6 million square feet of fresh Food retail space to the state of Pennsylvania. From 2010 this model has been adopted at a Federal level and is being rolled out across the United States."

http://www.thefoodtrust.org/php/programs/fffi.php

- *Reconnection with taste*

In the context of actual food chain mainly based on agroindustry system, the risk is to have a trend of standardization in taste and diets. Conserving originality in food is also part of people culture. Slow Food "convivia" work on this topic. The organization has an education website[63] for children and adults and convivial meetings around food taste. The question remains: how to link those initiatives with people that do not feel like participated because of cultural gap?

- *Connection with environmental issues*

With the development of various initiatives and large communication on sustainable development and agenda 21 in cities since the nineties, food topic can be an understandable and less technical way to raise awareness on climate changes and other main environmental issues.

**Manchester delivery plan**

"Manchester Sustainable Food Delivery Plan is the city's first Sustainable Food Delivery Plan. The 14 food related actions contained with MACF have been considered for their impact on carbon reduction, increasing food resilience and food democracy and refined into 5 key themes. The plan is intended to span the next ten years and pave the way for actions beyond 2020."

http://www.feedingmanchester.org.uk

**Lille biogas canteens and urban transport plan**

Since 1992, Lille in France is doing waste collect and recovery of the organic fraction. After technical research, the city council has chosen to develop methanation that need green and food waste. In 2006, schools and colleges were

[62] Esnouf, C., Russel, M. et Bricas, N. (Coords), 2011 : duAllne – durablité de l'alimentation face à de nouveaux enjeux. Questions à la recherche, Rapport Inra-Cirad (France), 236p.
[63] http://www.slowfood.com/education/

involved in this selected waste collect. In the urban transport plan has 200 buses that circulate thank you to waste. Prevention campaigns are

# CONCLUSION

In a world transition with new environmental, economic and social challenges, unsustainable food supply chain that demands oil, fertilizer and resources is no longer affordable for nations and can be dangerous for people health because of pollution it creates and unhealthy products it proposes. Food is a major issue that no longer belongs to national or global level. Because of their strategic places, urban communities can have a key role in transforming the food supply chain.

Indeed, communities are close from the campaigns where food is grown and close from the consumers that are also its inhabitants. They know them for having long developed tools to bring them better living conditions in education, planning, housing...etc. Knowing that food growth and food consumption and waste are the main impacting facts for greenhouse emissions, communities are able to easily identify the numerous stakeholders for these actions in their territory and directly exchange with them to understand better their behavior.

The “urban continuum” concept is also very useful to understand how to reconnect people with food; this reconnection can pass by recognition of land use and scale. With urban sprawl, distinctions between urban spaces and campaigns are thinner and could be relinked. The Veil’s Food Sensitive Urban Planning brings tools to imagine new urban organisation that could recreate those lost links. The originality of this proposal comes from the development of a holistic view where urban spaces testify of the urban food system. This view shows where and how food is growing, how it is delivering, and where it can be enjoying.

The different experiences quoted in this paper show that a holistic vision can have good effects on economic sector because thinking a new system makes appear new opportunities and new kinds of uses for people. For instance, agriculture used to be the major economic sector for employment before the arrival of agroindustry and intensive agriculture. Reconnected cities with campaigns can lead to create or to re dynamise businesses in all stage of food activities and specially in the growth and the retail.

Food system that seems so huge regarding to world scale and international issues become understandable at urban communities scale. Local public policies can change how food is grown and how it is consumed in creating conditions for a local sustainable food supply chain. Acting on food and talking about food contribute to change representations on it and give meanings back to food growth and food consumption.

http://www.sustainablefoodlab.org
United Nation commission on sustainable development, Rio + 20
Achieving food security in the face of climate change, November 2011
Morgan, K. and Sonnino, R. (2010) The urban foodscape: world cities and the new food equation. Cambridge Journal of Regions, Economy and Society. Oxford University Press, UK. www.cjres.oxfordjournals.org)
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Source : http://ec.europa.eu/agriculture/climate-change/index_en.htm
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European Parliament resolution of 19 January 2012 on how to avoid food wastage: strategies for a more efficient food chain in the EU (2011/2175(INI)
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http://www.foodeconomy2007.org/UK/
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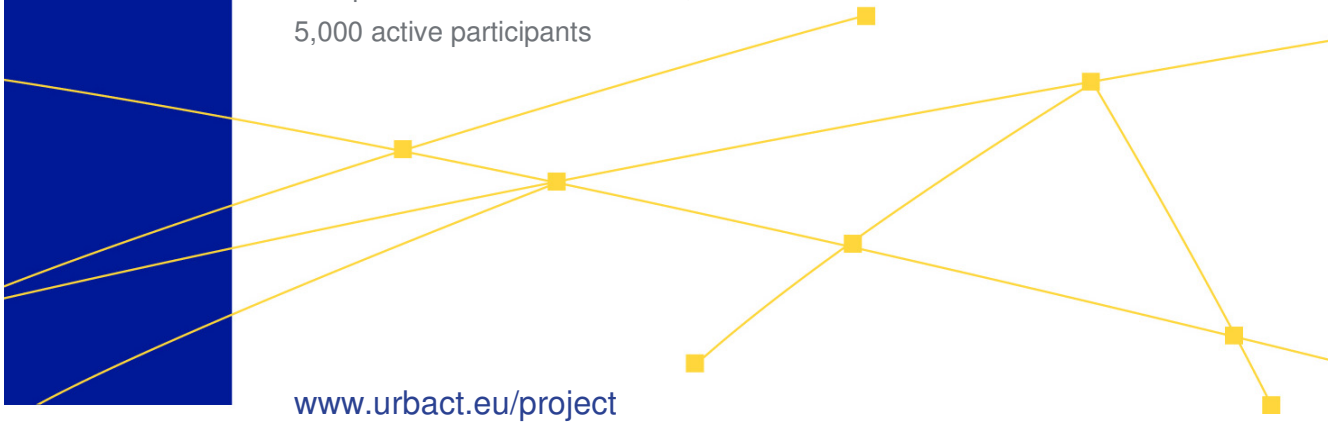
URBACT II

**URBACT** is a European exchange and learning programme promoting sustainable urban development.

It enables cities to work together to develop solutions to major urban challenges, reaffirming the key role they play in facing increasingly complex societal challenges. It helps them to develop pragmatic solutions that are new and sustainable, and that integrate economic, social and environmental dimensions. It enables cities to share good practices and lessons learned with all professionals involved in urban policy throughout Europe. URBACT is 181 cities, 29 countries, and 5,000 active participants



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