

ENERGY – IMPORTANT LEVER TO RECONSIDER URBAN PLANNING, TERRITORIAL ORGANISATION AND MANAGEMENT

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ABSTRACT

“Sustainable districts are not limited to energy issues!“. This would have been surely mentioned during the two days of the workshop. The remark is relevant as well as the fact that it is actually the quality of life of its inhabitants that represents the main success factor of the sustainable neighbourhoods developed for – and often by – their inhabitants. However, without being too “energy focused”, doesn't the rise of the energy prices give birth to an approach according to which town organisation (reconsidered under energy and climatic constraints), would find a new sense while taking into account a reinvented quality of life?

Implicitly, the energy issues - which often include water - in the “sustainable districts” are often limited to the energy performance of buildings and to their energy consumption. One goes to the Vauban district (Freiburg) or to BeZed (London) especially to see low energy buildings or passive houses, renewable energy sources. However, sustainable districts do not resume to buildings! The energy performance of the tertiary sector and apartment buildings represents obviously an important aspect. Yet, what makes sustainable districts innovative is especially their design according to a definitely broader energy perspective.

Transport issues are tackled immediately after and one imagines various cycling paths and tramways which connect the Kronsberg neighbourhood to Hanover. One notices also the limitation of individual cars and parking places in these districts in order to avoid inaccurate use of urban space. All these sustainable districts are such well organised areas in order to reduce their urban footprint.

However, transport is only one consequence of the activities that induce it, like the current functions of the everyday life: shopping, bringing the children to school, leisure time, working, meeting others, etc. Being able to do all these activities on the spot or having the opportunity to use public transport to do so (therefore without energy consumption), represents one of the challenges of the sustainable districts, even for those which are rehabilitations of existing districts, like Vesterbro in Copenhagen.

“Having all on the spot” requires a certain urban density in order to make public and private services economically viable. The counterpart is that we should not confound density and lack of space, having close relationships with one's neighbours and lack of privacy, urban life and lack of nature, public spaces and green parks. The challenge the sustainable districts are facing is enormous: offering an alternative to vulnerable categories of urban population that are obliged to move to remote residential areas and thus being completely dependent on the individual car and increasing fuel prices. Only an attractive and pleasant city will be able to bring back isolated individuals to city life.

A quarter of the CO₂ emissions of a French household represents industrial and agricultural products it consumes, while a sixth of its CO₂ emissions stand for necessary transport to deliver these goods; therefore it sums up to 40% of its total emissions! Consequently, it is crucial that a part of the fundamental activities to urban life, take place locally. This is the example of the urban farm in Culemborg, the Netherlands as well as of the local markets or the short distribution path of food products. In addition, saving the agricultural land in the suburbs will avoid wasting unconstructed land in the cities whereas offering local products to the urban consumers as well as local employment opportunities.

Thus, sustainable districts are laboratories that reinvent city life via new approaches of urban design. They try to stop the urban irresponsibility regarding energy supply in a globalized world. Since the construction of the “big block apartments” in many European countries as a response to the rapid population growth during 1950-1980, sustainable neighbourhoods represent a serious attempt towards new forms of urbanism, bringing back the responsibility to the urban population concerning its impact on the natural resources and GHG emissions. At the same time, they limit the vulnerability of their inhabitants and their economic and social activities while placing the human factor at the centre of the urban design principles.

But in no situation, should the sustainable districts be used as a means of marketing for the elected city representatives and host only well-off social categories. This way, only a minor part of the urban population will be able to enjoy the benefits of these neighbourhoods conceived according to energy and climate constraints. Whereas the city, should benefit all!!

INTRODUCTION

For the first time in 2008, half of the world's population is living in urban areas. It is foreseen that the urban population will reach 5 billion by 2030.

Consequently, due to the growing population, rising urbanisation process, increase in consumption and in the standard of life, the energy demand has expanded at surprising rates.

With the growing oil prices, there is a general awareness concerning the oblivion that ruled over urban planning and management for the last decades (especially with the increasing use of individual cars) regarding urban sprawl and waste of precious land, regarding the energy consumption of cities and a short term vision as to the quality of life of the inhabitants.

Example

An orchestra supplier for classical concerts in the UK requires two small buses and a small wagon to transport an orchestra and equipment across the UK.

Due to rising oil prices, today the fuel bill for transport sums up to 10% of the total costs of setting the show.

The supplier highlights the fuel costs whenever he prepares the bill for the concert promoters in order to justify the higher costs.

The supplier is an unlikely victim of increasing oil costs as well as the concert halls and their audience.

The example above shows that victims of record oil prices are to be found throughout the economy, some being affected more than the others.

Today, the vulnerability of our urban environment forces us to reconsider the efficiency of urban models in terms of energy use. The relation between the development of our territories and energy is a strategic one: for years, our approach to energy supply has determined our sector-specific policies and urban zoning (e.g. commerce, transport, agriculture, residences, etc.). For a long time interdependent, territorial development and energy supply have more recently become strangers.

More than ever the consumption of natural resources and especially of fossil fuels is of great importance, as well as its consequences concerning the environment (consumption of resources, pollution), economic aspects (growing oil prices, increasing energy bills in the households) and social issues (inequity concerning access to limited resources like energy, water).

During the last decades, we stopped being aware of the link between the products we consume and the resources required to produce them, their provenience and the necessary transportation, distribution and marketing requirements to get them delivered.

Food and energy

For instance, concerning agricultural products, the above mentioned phenomenon is mostly due to the technological development of agriculture, leading to richer food production and supply, but also to more dependence on fossil fuels and environmental degradation.

Urban consumers are affected by increasing prices also due the ineffectiveness of the supply channels, requiring even more resources to be consumed to compensate for the losses caused by the unreliable distribution channels.

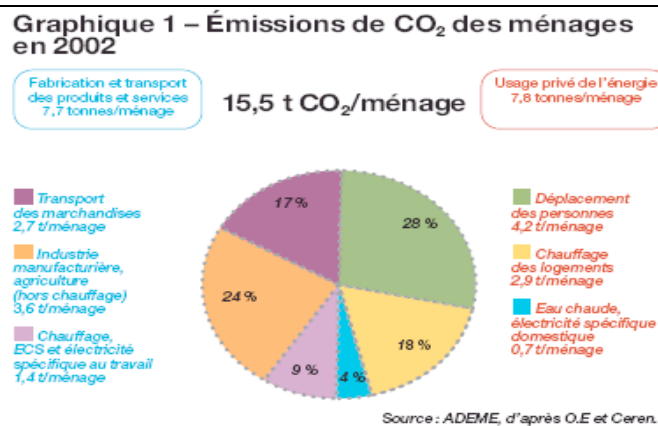
Consequently, nowadays, with the increasing oil prices and farming intensifications over the last 50 years, we are facing again agricultural constraints and serious problems of urban-rural configurations. In addition, meeting the food requirements of rapidly increasing urban populations is leading to pressure on agricultural systems and the environment.

Therefore, we are slowly aware of the need for a shift towards new urban land management and limits to intensification of agriculture. Cities need to be more and more self-reliant, taking advantage of resources available locally and strengthening again the urban-rural linkages. Therefore, today, we often hear speaking about the re-localisation of the economy and a circular economy approach.

Knowing that cities weigh a lot on the ecological footprint, it is inevitable to imagine different future scenarios for our cities, their transport schemes and their energy systems. Among these scenarios, we need to include also sustainable ones as the effectiveness and reality of sustainability is in our cities and towns.

Furthermore, considering the current situation, the energy questions, in this large extent, represent an important lever to reconsider all aspects of urban organisation and planning not only regarding the buildings, the transport system etc as individual sectors but also regarding the supply of goods, social aspects, creation of new jobs etc as practically every aspect of urban form and function has a direct impact on the consumption of energy.

According to a study recently published by ADEME¹, the graph shows that the CO₂ emissions related to the transport required (from the manufacturing to the consumption area) for the products bought by a French household represent approximately the same amount as the emissions related to its heating requirements!! This gives an enormous importance to the re-localisation of certain production and commercial activities. It represents a significant action field for the local authorities as it implies both economic aspects and local sustainable development policies. It becomes obvious that the energy aspects are relevant to reconsider the way we develop and organise our territories.



Cities are essential as they possess the unique opportunity to create a more efficient urban society by changing the way they supply and use energy, by planning cities differently, more energy consciously that is by inventing a new form of urbanism.

Some local initiatives are showing us the way forward combining low energy use with high levels of renewable and decentralised energy supply, attaching much importance to being pleasant and attractive places to live and work. However, these examples are still isolated. We are facing a big challenge where there is consensus that change is necessary but the level of involvement remains far from being sufficient to have a significant impact.

¹ French Environment and Energy Management Agency, www.ademe.fr

SUSTAINABLE DISTRICTS

The sustainable districts that have come into being over the last few years in cities like Hanover, Freiburg, Helsinki, London and elsewhere are all laboratories for our future. They all combine an integrated urban planning process with a (very) low energy use, high levels of renewable and decentralised energy supply. Furthermore, all attach much importance to being pleasant places to live in. Thus, they represent small scale pioneer patterns for reinventing and imagining different models for the future of our cities. Furthermore, they show that an eco-friendly lifestyle can be easy, affordable and attractive.

BUILDINGS AND ENERGY

In Europe 40% of the energy use is consumed by the building sector, more than by transport or industry. Nevertheless, significant energy savings can be made in this field.

All the necessary technology and methods exist already. Sustainable neighbourhoods like BedZed are making use of them and showing that eco-construction and green daily life can be simple, accessible and reasonably priced, while providing a good quality of life. For example, the heating requirements of BedZED homes are around 10% that of a typical home.



However, we will not insist on this aspect as it is one of the most well-known ones when talking about energy and sustainable districts.

But are all highly efficient buildings really sustainable? When it comes to the building sector, we often focus exclusively on the energy required to operate the buildings (low energy buildings, passive houses, use of renewable energy sources etc), but we often ignore the whole life cycle of the building, that is, we do not take notice of the energy needed during the construction process and/or of the energy-intensiveness of various building materials nor of the recycling and re-use potential of these buildings when they are not operational anymore: the embodied energy. Yet, often the energy consumed during the operational lifetime of a building is higher than the embodied energy during its life cycle.

BedZed (London - UK)

BedZED (Beddington Zero Energy Development) is the UK's first and largest carbon-neutral eco-community and is located in Sutton, a residential town 40 minutes South East from London.

Buildings are constructed from massive materials that store heat during warm conditions and release heat at cooler times. BedZED houses are arranged in south facing terraces to maximise heat gain from the sun, known as passive solar gain. 777 square meters are covered with solar panels. Each terrace is backed by north facing offices, where minimal solar gain reduces the tendency to overheat and the need for air conditioning. BedZED homes and offices are fitted with low energy lighting and energy efficient appliances to reduce electricity requirements.

BedZED receives power from a small-scale combined heat and power plant (CHP). The heat from the CHP provides hot water, which is distributed around the site via a district heating system of super-insulated pipes. To enable residents and workers to keep track of their heat and electricity use, meters are mounted in each home and office kitchen.

But BedZed constructions are not only efficient during their operational function. Special attention has been given to the whole life cycle analysis of the buildings. Therefore, all building materials were selected according

to their general environmental impact and thus one of the main selection criteria was a low embodied energy. Furthermore, construction materials were sourced from within 60 km radius of the site to minimise the energy required for transport. Whenever possible, BedZed is built from natural, recycled or reclaimed materials.

Sustainable neighbourhood design needs to take into account energy not only in the restraint field of the building sector, but also more globally, in other aspects of urban function.

TRANSPORT AND ENERGY

Many residents are worried about the increasing traffic in their neighbourhoods and the sneaking sprawl upon their cities. In many places, taking a walk or using the bike has become a frustrating, insecure and unpleasant activity. Speeding and excessive traffic causes people who might favour walking or biking to end up driving out of fear for their security. This lack of attractiveness and quality of life in the cities, determined people to move out to isolated countryside.



Sustainable neighbourhoods show that street life does not inevitably resume to the few steps taken between a parking lot and our destination. It is much more than that. Sustainable neighbourhoods are designed so that their residents feel that their district is not just an anonymous place to travel through from their homes to their work places, but it is a place where they can live and enjoy themselves.



Throughout these neighbourhoods, individual car use and car parking lots were limited, pedestrian zones were expanded, new bicycle parking spots and lanes were added, rapid and easy access to the city centre and railway station has been insured by comfortable public transport means overhauling cars into modern railway and bus systems. For the residents of these neighbourhoods it is part of their daily lives.

Therefore, inhabitants of these neighbourhoods think differently about urban life as in these places a sense of belonging and of community prevails by taking back the streets from the automobile and making them safe and pleasant for pedestrians to maintain the liveliness and safety of their neighbourhoods.

Vauban (Freiburg - DE)

In the South of Freiburg (3 km from the city centre), on the former area of a French barrack site, the Vauban district has been developed on 38 hectares of land in order to host more than 5,000 inhabitants and 600 jobs.

One of the main actions was car usage reduction in the city district with a noticeably higher quality of life: no parking at the doorstep (for large parts of the residential area, the development plan prohibits the building of parking space on private property); private cars are parked in a community car park located at the outskirts of



the residential area, cars being only allowed in the residential area for pick-up and delivery. The speed limit on the district's main road is 30 km/h, whereas in the residential area it is limited to "walking speed" (5 km/h). Shops and services can be reached by walking or cycling. For larger distances, residents may use a car from the car sharing association (1 500 members). Two bus lines and a tramway are connecting Vauban with the city centre, the main railway station and the "Hexental" recreation area.

Indeed, transportation is merely a consequence of what determines the travelling needs for our daily activities: shopping, entertainment, cultural and leisure activities, meeting places, taking our children to school, going to our work places etc. Sustainable neighbourhoods ensure all these facilities and services on the spot or they provide the necessary public transport and infrastructure to make them easy to get to.

Moreover, we observe that people are starting to move back to the city (maybe as the beginning of a general phenomenon) due to peaking oil prices and the frequent use of individual cars when living in remote places where no public services or leisure activities are insured.

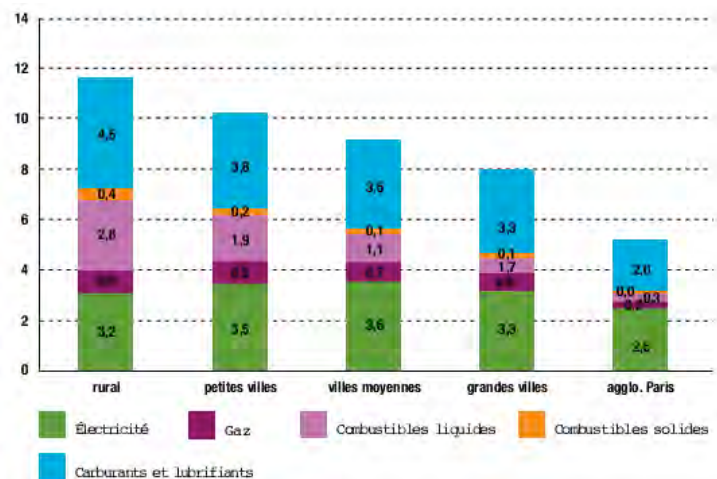
SOCIETAL ASPECTS AND ENERGY

As utility bills continuously increase, certain consumers face today one of the most pressing social and economic issues. It affects the health and wellbeing of millions of households and it reduces their quality of life. The pressure is much higher on the poorest and most vulnerable, for instance pensioners, unemployed and poor-employed persons. If the prices keep souring, in the UK, for instance, 5.5 million households (more than one in five) will be living in "fuel poverty"² according to Energywatch³.

In the UK, during the last 6 years, the percentage of the household income spent on unavoidable utility bills (like heating) has increased from 25% to 31%⁴.

The cities and their neighbourhoods are witness of the existence of the link between social inequity and environmental inequity. In the poorest neighbourhoods, social vulnerability is not limited to economic means, but the exposed people living in such neighbourhoods are obliged to get used to derelict buildings (implying elevated bills for heating prices), unhealthy environment, to use low quality services and public areas. Moreover, often many services and employment opportunities are lacking in these neighbourhoods therefore inhabitants are obliged to use their (old) cars to satisfy their daily needs. In the context of growing oil prices, this renders the population categories already at risk even more vulnerable.

According to a recently published study of ADEME⁵ (see graph), the poorest households need to foresee about 15% (having increased from 10% in 2001 to 15% in 2006) of their revenues for "energy-related" expenses, whereas the wealthier ones foresee only 6%. A Parisian's bill is 44% lower than that of an inhabitant at the countryside. This is due to the good public transport system in Paris and to the collective housing opportunities.



² Households spending more than 10 per cent of their income on utility bills.

³ www.energywatch.org.uk

⁴ www.capitaleconomics.com

⁵ French Environment and Energy Management Agency, www.ademe.fr

This significant gap between the weight of the energy costs in the budget of different households is even bigger now, as the study mentioned was conducted in 2006, thus before the peaking oil prices in 2008.

Therefore, the design of sustainable neighbourhoods is not only based on environmental principles, but takes into account the link between social and environmental inequalities as well and the protection of its inhabitants facing ever increasing energy prices.

This is demonstrated by the following two examples of refurbished sustainable districts: Vesterbro⁶ (Copenhagen - DK) and Weingarten⁷ (Freiburg - DE).

Vesterbro (Copenhagen - DK) – improving quality of life while reducing resource consumption, notably energy consumption

Vesterbro (Western Bridge) area was built between 1850 and 1920 and is located immediately near the city centre. The housing standard was very low: lack of central heating and warm water (64%), lack of toilets (11%) and of bathrooms (71%).

The district had a high concentration of socio-culturally 'vulnerable' people. Most of the residents disposed of a low income and the unemployment rate was around 20%.

In 1990 Copenhagen municipality decides to refurbish Vesterbro by taking into account environmental aspects. This is a major urban renewal programme (6-10 years). The district is mainly a residential area, comprising 23 five-six storey buildings (4 000 apartments) for 6 500 inhabitants as well as open spaces, offices, bars and enterprises.

After the first phase of the renewal project CO₂ emissions in Vesterbro were reduced by 14% (2,500 tonnes) per year.

- Energy: RES due to integration of solar panels, high quality ventilation system and insulation; efficient energy consumption in buildings; 20% savings in terms of heating. Individual energy consumption monitoring screens are visible at the entrance of each apartment.
- Water & sewage: 14% savings in terms of hot water despite additional bathrooms and toilets installed in the buildings. Sanitation facilities were all equipped with water saving fittings and rainwater is used for toilets (12 m³ from a 170 m² surface).
- Waste: separate waste collection system.
- Transport: cycling paths, many bicycle parking places. Most of the time Vesterbro inhabitants cycle or walk to work, supermarkets, schools etc
- Economic: creation of new employment opportunities offering unemployed people the chance to get on-the-job training and instruction. Unskilled labourers were employed on demolition and similar work in Vesterbro. These workers have been given a "headstart" in terms of seeking future employment in the construction sector by learning environmentally-friendly building, renovation and maintenance techniques.
- Social: use of common space in the buildings and of common gardens, various public and commercial establishments.

Due to the city's ongoing urban-renewal and clean-up efforts, the decayed Vesterbro is attracting chic restaurants, shops, clubs and customers. In the centre of it all, a new café square, Halmtorvet, has been constructed. An area where you might not normally go has become a must-go spot to see the latest trends.

Residents' involvement in the planning and refurbishment projects was key in the Vesterbro urban renewal programme. The Urban Renewal Centre is publishing a quarterly magazine on urban refurbishment and supports debates among inhabitants. The magazine is distributed to all residents free of charge.

⁶ http://www.energie-cites.eu/IMG/pdf/Sustainable_Districts_ADEME1_Vesterbro.pdf

⁷ http://www.energie-cites.eu/IMG/pdf/Sustainable_Districts_ADEME1_Weingarten.pdf

Weingarten (Freiburg - DE)

The district of Weingarten was built at the end of the 1960s due to housing shortage in the City of Freiburg and 15.000 people of different origin are currently living in the neighbourhood. It was built according to former standards: condensed and with many high-rise buildings. About 80 % of the flats were built for social housing and are property of the Freiburger Stadtbau GmbH housing company.

Weingarten-Ost contains about 840 flats with 2500 residents and was declared as refurbishment project in 1992 after intense efforts of the "Forum Weingarten 2000".

In 2005 the refurbishment of Weingarten-Ost was completed. The refurbishment was carried out over 11 years and covered the following:

- Reconstruction of the dwellings: new windows, heat insulation, refurbishment of the entrance area
- Neighbourhood improvement
- Construction of a footpath and bicycle lane, adventure playground for children, pedestrian-friendly deconstruction of the road

By conducting this renovation project, the city of Freiburg protected its inhabitants from the growth of energy prices. In 1983, the average energy consumption at Weingarten was of 156,7 kwh/m²/a and the energy prices mounted up to 8,20 €/m²/a; In 2003, after the renovation process, the average energy consumption was of 58,8 kwh/m²/a and the price of 7,99 €/m²/a.

Due to the radical increase of the energy prices the costs have not diminished considerable when comparing 1983 with 2003. If no refurbishment activities were conducted, the costs would have mounted up to 21,29 €/m²/a in 2003. The savings represent 13,31 €/m²/a.

QUALITY OF LIFE AND ENERGY: PLACES FOR PEOPLE

We often see cities and their neighbourhoods as unnatural and unhealthy, crowded places. During the years this way of perceiving urban life has caused what will appear to be a major environmental catastrophe: urban sprawl. Urban neighbourhoods were abandoned for suburbs closer to nature. But nowadays, this implies finding green areas further and further away from the cities and involves countless hours in the cars, driving along everlasting paved areas. Furthermore, in these suburbs, residential areas are usually cut off from the shopping areas and schools, leisure and cultural centres are all isolated in the midst of an ocean of roaring circulation while individual car is the only mean to get from point A to point B.



Previously it was assumed that all transport and transit requirements will be covered by the individual automobile and thus cities were constructed to respond to the needs of the ever-increasing quantity and speed of car flow. Nowadays sustainable neighbourhoods are planned and conceived for their residents and often by their residents; they are transformed from places for cars into places for people.

Sustainable neighbourhoods, ensure that all basic needs of everyday life can be satisfied on the spot or are all accessible on foot, bike or by efficient public transport system. But having all services and businesses at walking or biking distance implies sufficient density of buildings and functional mix in order to render these economically viable in the short and medium term for public and private stakeholders. But one shouldn't mix up density and lack of privacy; urban life and lack of nature, public areas and parks.

During the last decades, urban planners have zoned our cities according to the various functions and needs of our daily lives, having developed distinct areas for living, working, leisure activities, cultural activities, shopping etc. Nowadays, this affects mostly the low income households.



Sustainable neighbourhoods contribute to the general quality of life by offering a second alternative to socially vulnerable urban population categories, an alternative other than getting exiled in a suburb without identity and totally isolated, being completely dependent on car use and increasing fuel prices.

The first things visitors notice in a sustainable district are the bustling pedestrian zones and cycle paths, lively streets as well as the presence of nature in the heart of the neighbourhoods as one of our basic needs is also being into contact with the natural world. Combining density and nature while limiting the car use enables victims of “car-focused” urban design (like children or handicapped people) to be able to enjoy urban life without being dependent on someone to drive them.



All this makes sustainable neighbourhoods feel like such safe, pleasant and comfortable places to live in.

FOOD AND ENERGY

The systems that generate the global food supply are greatly reliant on fossil fuels. Enormous quantities of oil and gas are used as raw materials and energy in the production of fertilisers and pesticides, as well as energy during all stages of food manufacturing: from planting, irrigation, feeding and harvesting, through to processing, distribution and packaging. Furthermore, fossil fuels are indispensable in the construction and the repair of equipment and infrastructure needed to smooth the progress of this industry, including farm equipment, processing facilities, storage, ships, lorries and roads.

The industrialized food supply scheme is one of the main consumers of fossil energy and one of the greatest producers of greenhouse gases (when taking into account all aspects of the complex food manufacturing and supply process – as described in the example below). Therefore, with the growing oil prices consumers are hit by massive food inflation.

The example of the Swedish tomato ketchup showing the inefficiency of the food system

Several researchers at the Swedish Institute for Food and Biotechnology conducted a life cycle analysis for the tomato ketchup. The study considered the production of inputs to agriculture, tomato cultivation and conversion to tomato paste (in Italy), the processing and packaging of the paste and other ingredients into tomato ketchup in Sweden and the retail and storage of the final product. All this involved more than 52 transport and process stages.

The aseptic bags used to package the tomato paste were produced in the Netherlands and transported to Italy to be filled, placed in steel barrels, and then moved to Sweden. The five layered, red bottles were either produced in the UK or Sweden with materials from Japan, Italy, Belgium, the USA and Denmark. The polypropylene (PP) screw-cap of the bottle and plug, made from low density polyethylene (LDPE), was produced in Denmark and transported to Sweden. Additionally, LDPE shrink-film and corrugated cardboard

were used to distribute the final product. Labels, glue and ink were not included in the analysis.

However, there are many other steps involved in the manufacturing process of this everyday consumption item. These include the transportation linked to: the production and supply fertilisers, pesticides, processing equipment and farm machinery. It is possible that other components such as sugar, vinegar, spices and salt were also imported. Most of the processes listed above will also depend on derivatives of fossil fuels.

This example⁸ makes obvious the extent to which the food system is now reliant on national and international freight transport.

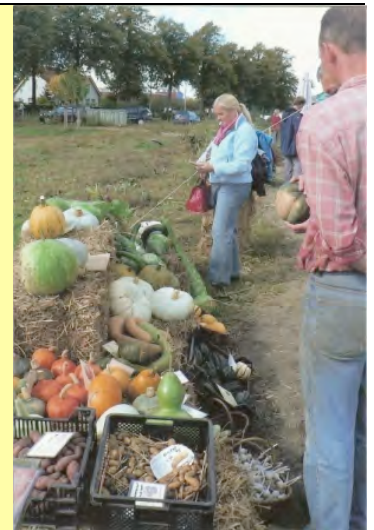
Sustainable districts are leading the way by promoting fresh and locally produced food. The example below shows the benefits of the “urban agriculture”⁹ concept applied in Culemborg, the Netherlands at the EVA-Lanxmeer¹⁰ sustainable district.

Urban Agriculture at the EVA-Lanxmeer sustainable district

The city farm in Culemborg contains a 2.4 ha horticultural and agricultural land and 2.8 ha comprising an ecological park, a permaculture experimental garden, greenhouses, a farm and a yard with tearoom.

Local inhabitants are pleased with the idea of urban farming as it is near the residential area, inhabitants participate in the food production and the farm has an educational purpose as well. Currently, several schools in the neighbourhood participate in outdoor lessons and several clients from the local health care centre are active on the farm. Fresh products are continuously sold on the farm and several harvesting festivals have been already organised.

Therefore, the city farm is also a meeting place for the inhabitants of the neighbourhood.



⁸ <http://login.tud.ttu.ee/material/piirimae/LCA/Case%20studies/LCA%20tomato%20ketchup.pdf>

⁹ http://www.idrc.ca/fr/ev-100638-201-1-DO_TOPIC.html

¹⁰ http://www.energie-cites.eu/IMG/pdf/Sustainable_Districts_ADEME1_EVA-Lanxmeer.pdf

CONCLUSION

So, is it relevant to reconsider all aspects of urban planning and management from the point of view of energy? Are energy and climate features truly a lever for change?

In the introduction, the hypothesis we presented considers that energy – seen under its broader sense and perspective – is potentially a significant lever for change and reorganisation of our cities and societies. We are confident that via the examples shown in this paper we have convinced the lecturer that the energy aspect could indeed represent a good opportunity to reconcile the expectations of the population with the perspective of an attractive and sustainable future.

Nowadays, when reading the newspapers, we see various articles on different aspects of urban life, production and supply, social aspects etc, illustrating situations and problems we've never thought of or spoken of before outside specialist audience and circles. Today we constantly hear about and are faced with these struggles, because of the rising energy prices that affect them. Therefore, what was invisible before becomes now visible as incoherence of different situations and urban planning ineffectiveness throughout the last decades.

During the last 50 years, our cities and our way of living were built based on largely available energy resources and on the individual car use. Thereafter, globalisation accelerated a sort of social Fordism, a separation between social and economic activities and land use as well as between these activities and their impact on the energy sources and GHG emissions. Low energy prices have led to a reckless way of development and unsustainable cities.

The rapid growth of oil prices reveals the deadlock in which we were tangled. Therefore, we are forced to re-imagine and re-plan our cities according to the energy constraints we are currently facing.

People are getting ever more conscious of the increasing oil prices and its consequences as this affects their everyday lives. Energy is as a result a social factor that implies taking immediate action.

We should not resume to energy seen exclusively in a sector-specific approach (building, transport), but see it in a broader manner therefore also in terms of production and supply of goods, social and societal aspects as well as quality of life. All this contributes to the attractiveness of our cities and is placing human needs at the centre of the urban planning process. Increased quality of life in cities, providing leisure areas (parks, green spaces etc), shopping and cultural areas close to residential quarters contribute to attracting the population back to the cities and limit the exile to the countryside and thus all that this implies in terms of transport for current daily activities.

In this perspective, energy is undoubtedly seen as an obvious lever for change in the current urban development trends.

Fortunately, we do not need to start from scratch and we possess all the required technologies and human capacities to move towards a new paradigm. Sustainable neighbourhoods are showing the way, but they are restrictive to certain urban areas, they represent ONLY laboratories as nowadays, less than 1% of the new construction areas are conducted according to the principle of sustainable districts. Therefore, efforts should be made in order to adapt and extend the innovative and successful practices of sustainable districts to the whole municipal level!

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