MULTIFUNCTIONAL LAND USE: AN OPPORTUNITY FOR PROMOTING URBAN AGRICULTURE IN EUROPE

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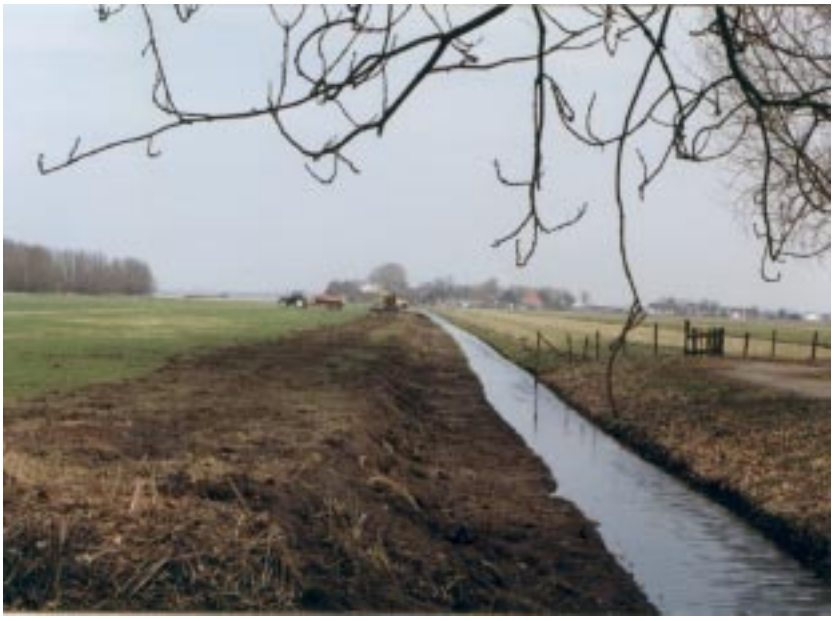

Figure 1 The Upper Bieslandse Polder.

Abstract
Politicians and planners are faced with many competing claims for the use of scarce land in and around cities in industrialised countries. Multifunctional land use – combining different functions within one area – offers a solution. The sole function of agriculture in industrialised countries has until recently been seen as food production. On the basis of a case study in the heavily-populated west of The Netherlands, in this article the authors demonstrate that urban agriculture can be promoted in industrialised countries by regarding it as one element of a land use combination that offers other valuable functions to society.

Introduction
Urban agriculture is often considered only appropriate for cities in developing countries. Potential for local food production in and around cities in industrialised countries is rarely considered. Policy to support its development is even rarer. In Europe, the focus of this article, this is certainly the case. Post-war European agricultural policy has concentrated on production of large quantities of cheap food to avoid hunger and to ensure social stability. Economic arguments dictated that such policy could be best realised through agriculture practised by as

Why is urban agriculture not promoted in Europe?
Many answers are possible but perhaps the main reason is the separation that has taken place between 'urban' and 'rural' over the last fifty years. In Europe, almost 80% of the population now live in urban areas (European Commission, 1996). Cities have become largely disconnected from their surrounding countryside. Post World War II agricultural policy in Europe has turned agriculture into a 'food generator' with which city dwellers have little affinity. The one-dimensional role of agriculture is now being challenged due to a number of factors: the enormous cost of the European Common Agricultural Policy, concern amongst consumers about food quality, worries about and the effects of pesticides and other chemicals used in food production on health and the wider environment, genetically modified crops and animal welfare issues (Pederson and Robertson, 2001).

few people as necessary on as large-scale as possible in order to reduce costs per unit and maximise output. Whilst successful in meeting its main aim, such policies have led to monoculture, in terms of both agriculture and ecology, as land use planning separated functions in order to maximise scale and efficiency.

Urban agriculture - food production in and around the city - did not fit this mould. Policy-makers considered it small-scale, and therefore inefficient and undesirable. Benefits to society from agriculture were seen as beginning and ending with food production (economic). Social and environmental benefits that (urban) agriculture could bring with it were ignored.

In Europe, the time now appears right for a change. At European Union and Member State level, the negative consequences of post-war agricultural policies are acknowledged, and the prohibitive costs of maintaining such policies in an enlarged European Union are recognised. Many farmers are faced with having to diversify their business to survive and are seeking a means of combining agriculture with another means of generating income. At the same time, in a globalising and urbanising world in which cities compete with each other to attract inward investment, local politicians are seeking to create high quality, healthy, attractive living environments for their own citizens, and to attract businesses from elsewhere. Urban planners, along with the rest of society, realise that a mixture of land use with its ecological benefits, more attractive landscape and environmental benefits in the form of reduced transport needs is preferable to the separation of functions. In short, at a time when European agriculture is faced with change, there is a growing need to meet a large number of societal needs on scarce urban land.

Multifunctional land use as a solution
The good news is that many possible win-win situations exist to meet the challenges faced by urban planners as they seek to create attractive land use combinations to meet the policy aims of various groups and satisfy the demands placed on scarce land in and around cities. Many of these combinations can be based on urban agriculture, for example:

- agriculture combined with crèche and educational facilities;
- reed production combined with recreation and wastewater treatment;
- aquaculture combined with water storage and recreation;
- production of added-value agricultural products such as cheese, jams and cosmetics, combined with recreation and tourism;
- urban forestry, which offers health and microclimate benefits, combined with energy crops and recreation.

A good example of how it is possible to combine land use functions in a heavily populated area is the case of the Upper Bieslandse polder in the city of Delft, The Netherlands.

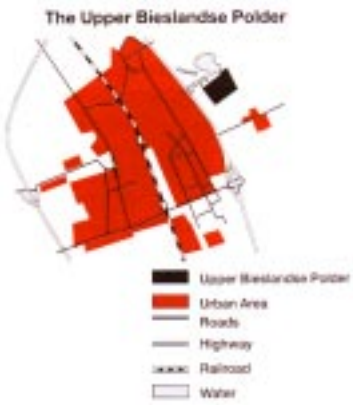

Figure 2

Map showing the location of the Upper Bieslandse Polder

CASE STUDY: UPPER BIESLANDSE POLDER, DELFT, THE NETHERLANDS

Introduction

Delft is a city of around 95,000 people in the densely populated South-Holland province of The Netherlands. Its lies ten kilometres to the north of Rotterdam, the world's largest port and ten kilometres to the south of The Hague, the country's seat of government. The region is home to approximately 3.4 million of The Netherlands' 16 million inhabitants. Population density is 1179 inhabitants per square kilometre (CBS). Not surprisingly, land is very scarce in the area. Every square metre has its designation under the country's planning system that operates at three levels:

- National government, which as well as setting national spatial planning (and environmental policy in the same ministry) is also responsible through other ministries for agricultural, water and transport policy, each of which has major impacts on spatial planning;
- Regional government (in the case of Delft the Province of South-Holland), which draws up a regional plan ('streekplan') in which spatial planning policy for the wider region is set out;
- Local government (in the case of Delft the Municipality of Delft), which must draw up a local plan ('bestemmingsplan') providing more detailed guidelines within which plans must be realised.

In theory, the lower governments should operate within the framework of the objectives set out in the policy of the higher levels. In turn, the policy of the higher levels of government should provide general guidelines within which plans proposed at lower levels can be realised. Of course, in a small, densely populated country like The Netherlands where land is extremely scarce it is not always possible to accommodate the wishes of all. The plan for mixed use of the Upper Bieslandse polder provides an interesting example of integration of land use functions and policy objectives.

The area

The Upper Bieslandse polder lies on the eastern urban fringe of Delft, as the crow flies some two kilometres from the city centre (see Figure 2). It comprises a total of some 35 hectares and before the realisation of the plan described in this article was farmed by six tenant farmers on one-year leases from the Municipality of Delft. Longer leases were not granted because the municipality wanted to be able to have access to the land at short notice in case it should decide to develop the area. (For some years rumours had circulated of plans for construction of a high value housing development on the site, even though the regional plan did not permit this.) For the farmers this gave rise to uncertainty and, with six farmers on 35 hectares, use of the land was inefficient in agricultural terms, even though each farmer worked land elsewhere in the area.

The plan
In 1996, one of the six farmers decided to act. Jan Duijndam had for some time been considering converting his business into an organic farm. At the suggestion of the municipality Duijndam teamed up with Jacques Schievink of the Delft Initiatives for Nature group (IND). The municipality realised that the two could help each other in the development of plans for the whole area. (The seeds of the plan for the polder had been sown by Schievink in 1995. His suggestion for ecological development and management of the ditches that regulate water levels for farmland in the polder had won the Delft municipality's environmental prize that year.) Discussions with the other farmers in the area on Duijndam's take-over of their tenancy rights followed. Agreement on the content of the plan was eventually reached between the six farmers and an independent provincial commission confirmed that Duijndam was the best candidate to realise the plan. (The other farmers continue to farm their other land in the vicinity.)

The Upper Bieslandse polder plan was finalised in March 1997 and, importantly, was adopted in the manifestos of a number of local political parties for the municipal elections of May 1998. Election of a new 'green' administration meant that the plan could go ahead. Work on the ground to implement the plan began in the winter of 1999-2000. Total costs of implementation, excluding maintenance, were around 250,000 Dutch guilders (100,000 US dollars).

The plan combines the following land use functions:
- (organic) dairy agriculture
- recreation
- nature (re)development
- (limited) natural water treatment

In addition, the development serves an important awareness-raising and educational function.

The economics
Duijndam now has a twelve-year lease of the ground from the municipality. He added 30 of the 35 hectares of the Upper Bieslandse polder to the 50 hectares he already farmed organically in the area, making his dairy farming business more economically viable. As for many organic products in Europe, organic milk commands a (slight) premium price in The Netherlands. His 120 cattle produce 700,000 litres of milk annually which must be transported to the north of The Netherlands for processing and packaging. In the future Duijndam intends to produce and market cheese and other speciality dairy products locally.

The remaining five hectares Duijndam devoted to nature development, setting aside land for traditional Dutch polder landscape features with an ecological function: a water meadow with fluctuating groundwater level, reed bed and marshy woodland. Each gives a habitat to wildlife that is under more and more pressure in the ever urbanising west of The Netherlands. The nature areas are laid out along the edges of the

site to make them visible for visitors making use of the footpaths, cycle paths and bridleways constructed as part of the plan. This also means that farming can be carried out more or less unrestricted in the centre of the area.

Whilst the land allocated to nature does not bring Duijndam agricultural income, it generates subsidies from the provincial government for land management that benefits nature development and recreation. In addition, Duijndam receives subsidies from the local water board ('waterschap') for his contribution to their integrated water management strategy. In effect, the farmer carries out the work of the others and gets paid by them for that work. Such subsidies deliver approximately 10% of the farmer's income.

Similar initiatives exist elsewhere in The Netherlands where local authorities have an obligation to provide a certain amount of water storage for water management reasons. By paying farmers to devote a part of their land to water storage the municipality 'buys off' its obligation relatively cheaply and, in effect, the farmer gets paid for cultivating water.

Conclusions

The case of the Upper Bieslandse polder shows that urban agriculture has much more to offer cities in industrialised countries than only food production. Through this combination of land uses and integration of policies between different organisations at different levels, Delft has obtained a viable organic farm, an attractive recreation area and has restored the opportunities for wildlife in the urban fringe. This in turn provides a valuable resource for environmental education in a densely-populated urban region. Essential benefits in environmental, health, education, recreation and nature terms are provided to the city and its residents.

In itself, the role of food producer may not be enough to convince local politicians and planners to allocate scarce urban land to agriculture. The additional benefits that urban agriculture has offer as 'host' to other land use functions must be made clear. In this sense, interpretation of the term urban agriculture should be broadened to include cultivation of useful products and performance of valuable tasks for society.

Benefits that such combinations of functions can offer are difficult to quantify in the conventional, narrow, financial sense but are substantial when looked at from the perspective of optimising the economic, environmental, health and social benefits of land use for society as a whole. Their positive effects should not be underestimated. Combining land use functions can deliver extra income for farmers from unexpected sources.

The Dutch planning system offers little long-term security (twelve years is not a long lease), but perhaps this is inherent in a situation where so many competing land use demands exist. Inclusion in local land use plans would provide urban agriculture with a firmer legal basis.

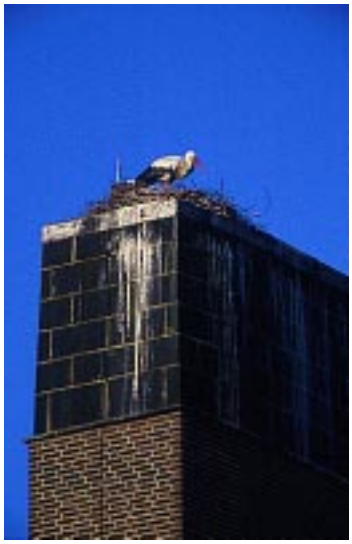

Figure 3

Stork on high-rise 500 metres from Upper Bieslandse Polder

Urban planners at local level do not, of course, operate in isolation but work within a framework of national and provincial policy. Such planning systems should help balance competing interests, optimise the benefits for society as a whole and not attempt to maximise the benefits for individual (solely economic) interests. Urban planners must translate politicians' (still too often) one-dimensional policies into three-dimensional spatial realities on the ground.

Realisation of multifunctional land use demands integration of planning policy between different levels of government. In the highly institutionalised planning systems common to most industrialised countries where national, regional and local plans are drawn up, such an approach even if sometimes difficult, should be possible.

Integration of planning policy should be accompanied by application of economic instruments favouring multifunctional land use, such as subsidies or tax breaks where possible. Farmers should be made aware of the possibilities of such support.

Integration of policy between different types of organisation is also vital. In The Netherlands, for example, independent water boards have a key role to play in water management. Any decision to combine a productive function of urban agriculture or aquaculture with water storage, recreation or a natural park would require agreement between, amongst others, the water board, the province and the municipality.

The success of the Upper Bieslandse polder can be at least partly attributed to the fact that representatives of three different groups of society – farmer, environmentalist and the municipality – realised the benefits of combining multiple land use in the area.

Finally, it is worth realising the limit of the powers of planners. For years now, two nesting poles have stood in the open space now farmed by Jan Duijndam in the Upper Bieslandse polder. The aim was to attract storks, a rare bird in The Netherlands nowadays, back to the area. Finally, this year the stork has returned to nest in Delft, not on one of the poles, but on a high-rise apartment building on the edge of the city 500 metres away!

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