

Patterns of Harmony and Conflict between Horticulture and Urban Growth in The Netherlands

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The origin and growth of the horticultural agribusiness complex of The Netherlands is closely related to urban expansion. When market gardens had to be cleared for the construction of new housing areas their owners could reestablish themselves in nearby areas with enough space for larger and more modern holdings. This centuries-old cycle might now be broken as the growers have invested so heavily in greenhouses, that public acquisition of the land for conversion into residential space would become too expensive.

This paper outlines the nature and magnitude of the emerging conflict in specified areas. It proposes a planning approach whereby the landowners/growers play a far more active role in the rural-to-urban land conversion process. This approach is inspired by the Land Readjustment ('Kukaku-seiri') projects that have been carried out in Japan for many decades. A number of research questions on the economics, design, equity, and practicability of such an approach in a Dutch context are discussed.

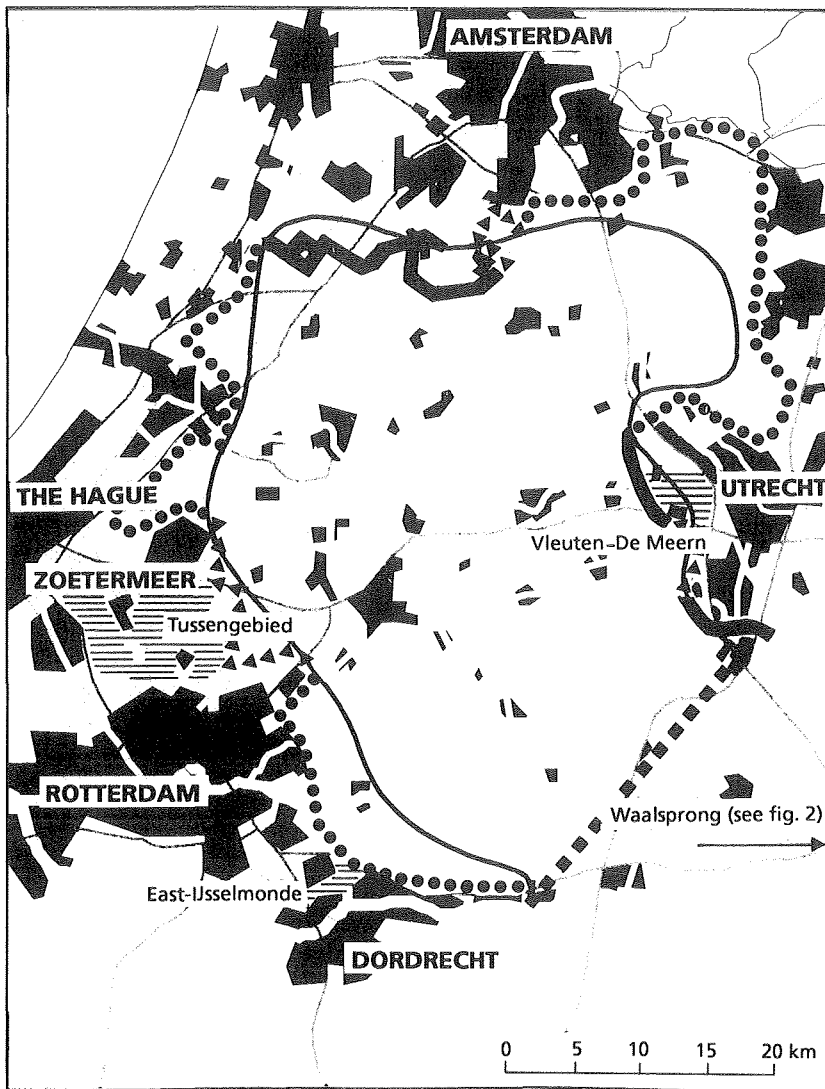
The Netherlands has a strong tradition of separating rural and urban space: planning efforts aim at the creation of compact villages, towns and cities on the one hand and open countryside on the other. In the Western part of the country this resulted in the two, related concepts of 'Randstad Holland' with its 'Green Heart' (Fig. 1).

In many places this planning ideology is at odds with developments taking place in real space. Several towns and villages in the Green Heart have been allowed to grow beyond the level of rural service center and accommodate ten thousands of commuters as well as (inter-)national industrial or trading companies. The intensification of agricultural land use has also given some rural areas a particularly urban appearance: the Green Heart contains large concentrations of greenhouse horticulture, most of them adjacent or very close to the urban agglomerations of Amsterdam, Rotterdam, The Hague and Utrecht.

Despite the genuine attempts to accommodate any new urban function within the built-up areas by recycling the urban space, certain functions will always be forced out into what was expected to remain rural. Like any other country, The Netherlands is therefore faced with planning uncertainties in its rural-urban (rurban) fringes.

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Figure 1: The unstable boundary between the 'Randstad Holland' and its 'Green Heart'.



- Enlargement of Green Heart
- ▲▲▲▲ Tentative boundary, subject to modifications of VINEX (1991) concerning urbanization
- Boundary since 1989
- New boundary (1991)
- ==== Conflict-area green-houses ↔ urban growth

This paper proposes a way of dealing with these uncertainties in a more organized way. The proposed planning approach gives the joint owners and users of agricultural land in an area with an 'urban shadow' over it more control over

what is happening with their land, without holding those in need of new urban space at ransom. This approach has worked successfully in Japan for many decades (Minerbi et al., 1986) and after some adjustments should be equally appropriate to The Netherlands, at places where rural and urban development plans clash with one another.

THE STANDARD APPROACH

Most land required for urban growth in The Netherlands tends to be used for grazing. Farmers have not invested too heavily in such land and local authorities are normally provided with sufficient financial means to operate actively in this land market. Most local authorities also make sure they own some farmland, which they can offer to farmers whose land they need in the public interest. Once an agricultural area is zoned for urban functions it becomes the duty of local authorities to acquire the land as quickly as possible. The price is negotiated with the farmers and normally ends up slightly higher than the agricultural market value. This price is also higher than what the farmer would get from compulsory acquisition. For normal grassland and cropland this system works quite satisfactorily, even when substantial farm buildings have to be purchased and destroyed in the process. An additional factor easing the acquisition of farmland for urban growth in The Netherlands is the availability of fertile land in new polders (as long as this lasts). In other words, good alternatives are available for those farmers who want to continue their enterprise, but whose land happens to be situated where urban growth is to take place.

PROBLEM CASES

This standard planning approach becomes ineffective in the face of two kinds of opposition, one ideological and the other financial. Regularly one hears provincial administrators lament that the Randstad Holland is 'administratively full': that it has become impossible to find space for urban functions without meeting strong, organized and convincing opposition. Much of the cheapest land, normally owned by dairy farmers, is often beyond reach because it provides 'amenity' to adjacent urban residents. In these cases, the latter support the powerful nature conservation lobby and the farmers who would rather continue their specialized, profitable enterprise on farms that have been within the family for many generations. Their land has often been zoned for decades as rural preservation areas: buffer zones like the 'Green Belts' around cities in the U.K. Physical planners have to come forward with very convincing, new arguments when they want to get permission from provincial and local councils to change the zoning from rural to urban land uses.

Support from the general public for urban development is much easier to get if the landscape is uninteresting, ugly or already urbanized. Examples include areas dissected by motorways and other transportation axes, vast expanses of dry arable land, and older greenhouse complexes. Dissected areas may well be too small or too noisy for urban development. Arable land has in the past been (and is likely to remain) a target for successful rezoning. This is exemplified by the rapid development of Zoetermeer, a booming satellite town of The Hague in what was originally supposed to be part of the Green Heart. The same applies to the surroundings of Schiphol (Amsterdam) Airport.

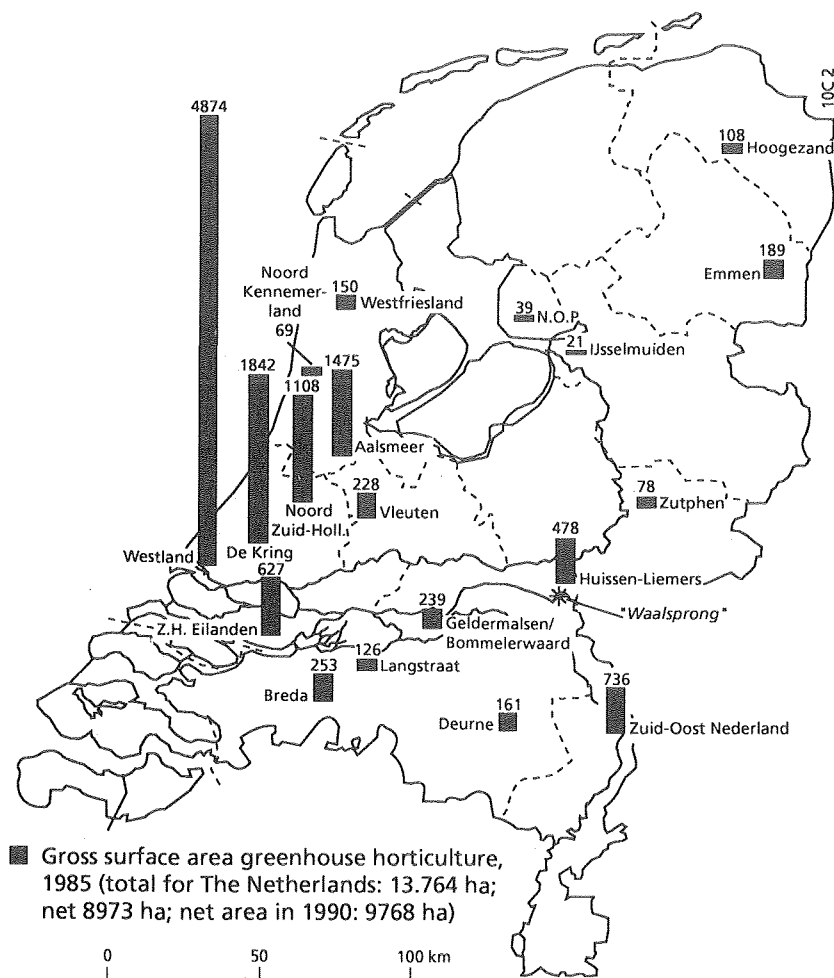
The second reason for the standard planning approach to break down is found in areas with intensive horticultural production. Here prices of land become prohibitive for acquisition by local councils, especially if the latter intends to build a high proportion of low-income dwellings. Greenhouse areas in particular developed in close proximity to the markets in the Randstad and to transport centers for export. In these concentration areas (Fig. 2) ancillary facilities such as training, experimenting, marketing and the supply of a variety of inputs gradually became more and more geared to greenhouse horticulture. An additional, less important reason why these areas blossomed, is that the farmers could use the money from selling (part of) their farm for urban functions to intensify the use of their remaining or substituting land: greenhouses. When this land is needed at some later date for urban uses, these farmers quite rightly claim large sums in compensation for the loss of their investments. The instances are rare (and therefore quite famous) in which a large city like Amsterdam or The Hague has been able to set aside the funds for such compensation and for the acquisition of this land.

In 1992 there were at least four areas with substantial concentrations of greenhouses, in which the nearby city or the provincial authority was trying to find money and political support for converting the land into new urban space. They face strong opposition from the local farming community and the Ministry of Agriculture, Nature Management and Fisheries who are, at the same time, involved in rural reconstruction projects for these areas:

East IJsselmonde

This area is part of a so-called rural reconstruction project, which covers a 265 ha. buffer zone between the agglomerations of Rotterdam and Dordrecht (Fig. 1) and secures at least 100 ha. for permanent horticulture, partly under glass. The remaining 165 ha. would be turned into a parklike landscape. After agreeing in principle with this plan the provincial authorities came forward with a claim that 4,000 dwellings needed to be built in the same area, requiring about 120 ha. and replacing most, if not all, existing greenhouses.

Figure 2: Location of main greenhouse complexes in The Netherlands.



Data from Bodemstatistiek 1985, Central Bureau of Statistics, The Hague, 1988.

Tussengebied

This means literally 'in between area' and covers the rural triangle between The Hague, Zoetermeer and Rotterdam (Fig. 1), which is about 5,000 ha. At present there are five villages, each acting as a center for an increasing number of greenhouse farms. In a way, the area operates as a rural-urban no-man's land. Nevertheless, much effort has been made to improve production circumstances for horticulture, so that the area can provide an overspill for the very crowded, nearby Westland Glass District. While rural reconstruction projects are in preparation for various sections of the area, covering about 3,000 ha. of greenhouses,

the provincial authorities launched a tentative plan in 1990 for the construction of as many as 60,000 dwellings. Apart from the 1500 ha. for housing and almost 1,000 ha. for commercial and institutional uses, this plan would also provide for 2,000 ha. of parkland. Expansion of horticulture would then be shifted to presently open countryside further east into the 'Green Heart'. In the institutional framework for land use planning in The Netherlands, it seems virtually impossible to ally the strong, often mutually opposing vested interests behind such a dramatic structural change.

Vleuten-De Meern

This is an area west of Utrecht (Fig. 1), the fourth largest city of The Netherlands. It is traditionally part of the Green Heart, but now affected by claims by the city of Utrecht that the land is needed for 20,000 dwellings. Within the area, which covers about 1,000 ha., a cluster of old, uneconomic greenhouses is in the process of being reconstructed in order to give the glass structures a new economic life of at least 15 years. This scheme is heavily subsidized by the Ministry of Agriculture, Nature Management and Fisheries and the area as a whole was earmarked for widespread expansion of horticultural activity. A general agreement exists over 15,000 out of the targeted 20,000 dwellings: Vleuten-De Meern municipality has committed itself to create room for 15,000 dwellings without sacrificing the greenhouse complex, but 20,000 would be too much (VINEX, 1991). Although the parties are close to a compromise, a highly unproductive stalemate is at least as likely.

The Waalsprong prepared by the city of Nijmegen

Meaning literally 'leap across the Waal', this old city on the south bank of the Waal river near the German border (Fig. 2) has run out of suitable space to accommodate further growth south of the river. It has recently launched an ambitious plan to cross the river, but the land on which at least 10,000 dwellings are supposed to be built has just received the go-ahead for a rural reconstruction project involving, among others, the modernization of a greenhouse concentration in the affected area. More than 100 ha. was set aside as 'overspill' for enlarged, as well as additional, greenhouses and the local community is up in arms against urban land claims.

Common to all the areas is the fact that greenhouse horticulture developed in harmony with the nearby cities: traditional and new suppliers of fresh fruits, vegetables and flowers to the nearby city and its economic hinterland. All had also adapted and modernized their operations, or entered the field with new crops or new techniques. New investments were financed partly through accumulated profits with earlier production, partly through the previous sale of farmland for urban growth, and partly through loans. In the process, the actual horticultural fields were often shifted and on the new location heavier investments were

made than those abandoned on the former locations. Gradually, the level of investment became too high in these greenhouse areas for the standard approach of the acquisition of rural land by public authorities and its preparation in bulk for urban development. The magnitude of this problem is illustrated by the fact that the 1991 Memorandum on Physical Planning of the central government contained an exceptional statement, that no agreement or compromise could be reached on this matter with, and between, the relevant provincial, local and sectoral authorities: the central government would prefer the total replacement of the affected greenhouse complexes by housing but 'judgement is up to parliament' (VINEX, 1991). This sign of weakness was followed by a national debate over 'building on glass' in the mass media with newspaper headlines such as 'Alders [= the Physical Planning Minister, vdB] plays fashionable game with greenhouse horticulture', 'Restraining cars requires building on Westland's glass', 'Alders wants to slowly fumigate horticulturists', 'Utrecht's urge to annex meets resistance of horticulturists', 'Horticultural land has to yield to the crowded city of Utrecht.'

THE PRINCIPLE OF THE 'KUKAKU-SEIRI' APPROACH

In a paper on land use conversion in the rurban fringe of Japanese cities (van den Berg, 1990), one planning technique discussed was 'Land Readjustment', locally referred to as 'Kukaku-seiri'. Outside Japan, experience with this technique was gained in the United States, Korea, Taiwan and Indonesia (Doebele, 1982; Minerbi et al., 1986). The technique of Kukaku-seiri gives most of the initiative (and also the costs and benefits) of rural-to-urban land conversion to an association of local landowners/farmers. The authorities merely check whether the plan prepared by such an association meets their standards and requirements. Except for special investments like non-local roads and low-cost housing, where state subsidies apply, these projects pay for themselves and tend to give the landowners a good return on investment in comparison with either continued farming, or ad-hoc, individual house-construction on farmland. In Japan each year, about 6,000 to 7,000 ha. of agricultural land is prepared for urban development through Land Readjustment. Various agencies and consultants help implement such projects as a matter of routine.

In principle, all land in these project areas is to be 'readjusted' for urban use. It is, however, interesting for the kind of problem areas discussed above that since 1981, when the Japanese Agricultural and Housing Association ('Noju-Kumiai') Act of 21 November 1980 was applied to deal with urban agriculture, about 17 projects have been under preparation in Japan, whereby part of the area will be prepared for continuation of farming activities. This new development could be interpreted as a formalization of what already existed: many landowners who participate in a Kukaku-seiri project prefer to continue farming on most of their land even after it has been prepared for urban occupation. Rather than allowing

these agricultural lots to appear randomly throughout the urban neighborhood, under the new approach belts and blocks of (partly collective) farmland are identified, which could then also perform more of an amenity function.

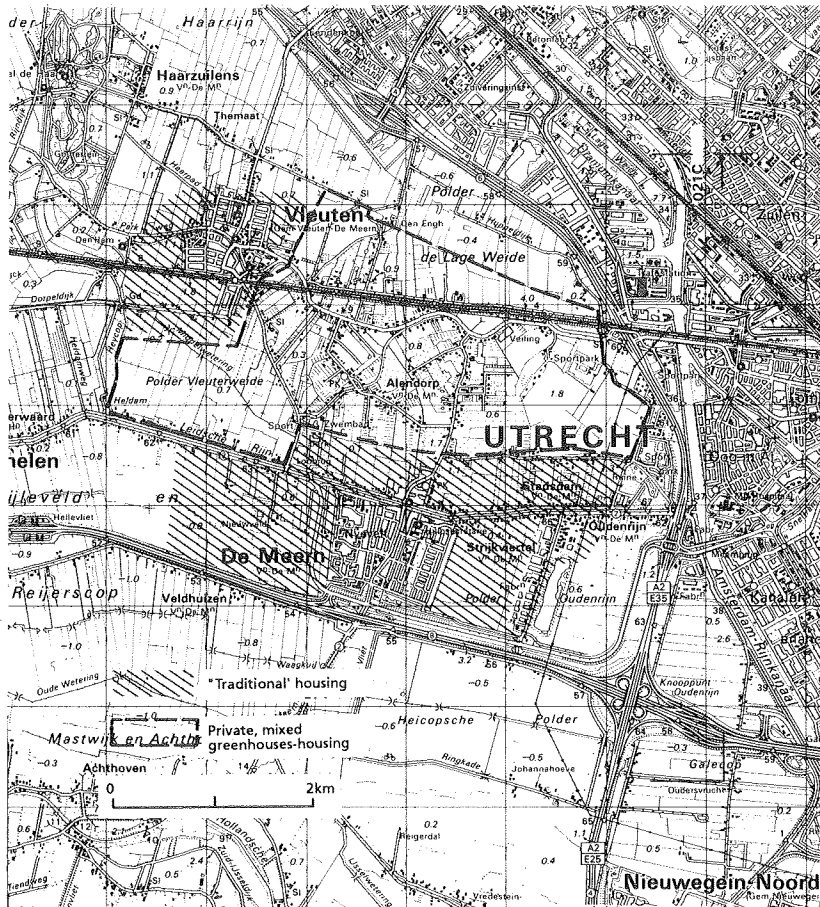
How Kukaku-seiri could help in a problem area like Vleuten-De Meern

The main problem in our Dutch cases seems to be the combination of stagnation and capital destruction for the growers with extremely high costs to the government for obtaining this land. It therefore seems worthwhile to consider any method of reducing public expenditure. Kukaku-seiri does so by enabling the agricultural landowners to play a more active role in the rural-to-urban conversion process and has been fairly successful in this respect in Japan. However, there are two reasons why such a change of approach would be revolutionary within the Dutch planning context. One is, that agricultural landowners have so far only been assisted through land consolidation projects in order to become more efficient farmers with a bright future in agriculture. Dutch rural planning is geared towards the further professionalization and specialization of farmers, who should not (and according to the ideology don't want to be) distracted by things like real estate development and land speculation. The other revolutionary element is that, so far, municipalities have had a virtual monopoly in the rural-to-urban land conversion process: land speculation by the private sector is virtually ruled out, because in The Netherlands local councils are given priority when it comes to buying land on the rural market and selling it (after land preparation) on the urban market.

Assuming that the stalemate situation in Vleuten-De Meern is considered serious enough to allow for some experimenting, how would we go about with this new form of public-private partnership? As a first step, the land for which the new approach is expected to be relevant needs to be distinguished from the land that can be developed with our traditional methods of urbanization. Figure 3 shows a section of a draft of the 1991 provincial physical plan for the area. The blocks 'possible residential area' and 'possible work area' are on land with hardly any horticultural development. For these areas the traditional instruments for urbanization would be adequate. The provincial development plan, which is acceptable to the local council of Vleuten-De Meern, but not to the city of Utrecht, would cater for only 15,000 of the required 20,000 dwellings.

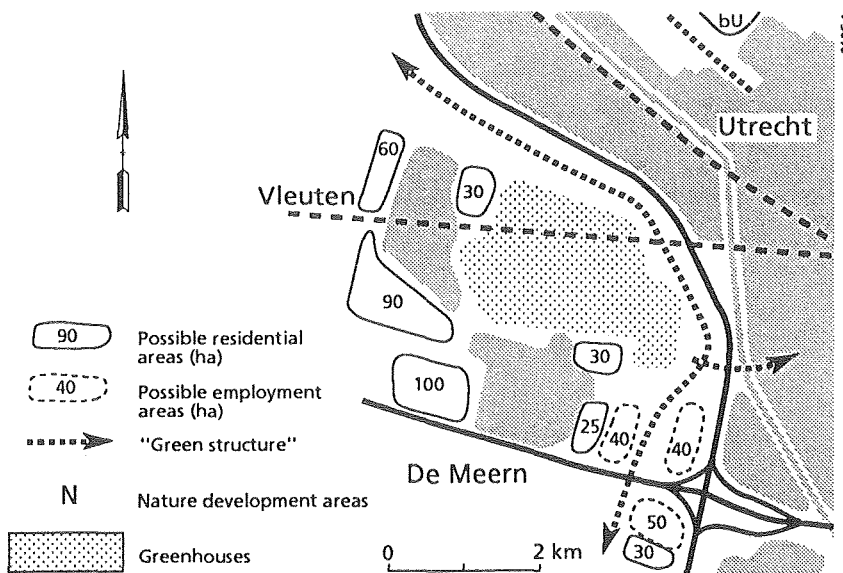
Figure 4 shows how this proposed 'banana-shaped urban finger' could be split into two, thereby providing the horticulturalists with easier access to their colleagues further west. The southern belt (De Meern) could be perceived as a strong 'finger' of the urban agglomeration of Utrecht: an urban/suburban residential environment. The northern belt (Vleuten) is presently more of a rural service center and could very well maintain its rural character despite the expected increase of population. The middle part of the 'banana' (estimated to hold 4,000 dwellings) could then be considered to be part of the proposed special project area.

Figure 3: Planned developments west of Utrecht according to a draft Provincial Physical Plan of 1991.



As a second step, the plan objectives must be formulated. In order to meet the urban housing demands of Utrecht the target for this pilot area would be 9,000 new dwellings, to be reached by the year 2005–2010. To meet the requirements of the agricultural sector a future for at least 100 professional, modernizing greenhouse growers must be guaranteed, who would require 300 ha. between them. In addition, the proposed local association of landowners would be responsible for the required infrastructure, including landscaping and recreational facilities. Shops, schools and medical facilities will be provided in the two adjacent urban belts of Vleuten and De Meern. At a density of 40 dwellings per ha. the landowners will thus be asked to identify 225 ha. where houses could be built.

Figure 4: Demarcation of proposed pilot association area development project.



Provided the total space available is sufficient to meet these targets (Table 1) the next step would be a rough comparison of the economics of the traditional and the new approach. The main difference is as follows: if the area is to be developed by a public authority all relevant land plots would have to be purchased from the present owners. The local authority would have to borrow money and pay interest until after the land has been developed and sold to urban users. Even if the land purchased only contains very old greenhouses or consists of grassland, it would still be expensive. The owners can claim they could otherwise have used them for greenhouse construction, whereas they now have to start somewhere else. This interest (which becomes a severe burden on the municipal budget as

Table 1: Approximate (estimated) gross surface areas in the present and future situation for the area Vleuten-De Meern

LANDUSE	AREA (ha.)	
	<i>Present</i>	<i>Future</i>
Housing (at 40 dwellings per ha.)	10	225
Greenhouses	100	400
Roads	50	100
Open space	640	75
Total	800	800

soon as the development is delayed for one reason or another) would not have to be paid by anybody if the owners were to keep the land until after the project.

Once the spatial and economic viability of the project has thus been ascertained, it is necessary, as a fourth step, to involve the local landowners. After a series of meetings to explain and discuss the nature of the project a firm decision should be reached on the following:

- the landowners (horticulturalists and others) form an association, which will have a final say in which land is made available at what date for the various non-agricultural functions (mainly housing, roads and parks);
- the association engages professional staff to make sure that an attractive physical plan is produced for a residential environment amidst greenhouses, which meets requirements of infrastructure and cost effectiveness;
- after the plan is drafted the members of the association decide by vote whether to adopt or reject the plan, in the same way as is normally done in rural land development projects;
- the landowners keep most of their land until after completion of the redevelopment (land readjustment) project.

In exchange for this powerful position in terms of phasing and directing the project, and for the increased market value of their land after land readjustment the landowners would have to make the following concessions (as is the case with *Kukaku-Seiri*):

- after the physical layout plan for the area (in which their investments are spared as much as possible) is approved by a (two-third?) majority of the members of the association and by the local authorities, the landowners make available (free of charge) a fixed percentage of their land. Part of this would be used for roads and public facilities such as local parks. In rural land development projects in The Netherlands this reduction is limited by law to 5%, but in areas for urbanization this percentage is expected to be much higher;
- the landowners pay for the costs of urban land preparation. This is done through the sale by their association of 'reserved land'. This is also deducted from the original holdings at a fixed rate and amalgamated in the course of the project as a number of lots for sale on the urban market. In Japanese projects the total land reduction rate can be as high as 30 to 40%;
- the landowners accept government conditions regarding densities, plot sizes, height of buildings, etc.

Unlike in Japan a 'public-private partnership' of this nature would not be acceptable in The Netherlands, if no final dates for the availability of land for urban uses could be guaranteed. This could be achieved by a set of premiums and penalties relating the economic age of agricultural investments at the onset of the land readjustment project (i.e., when the association is formed) to the dates at

which the landowners make their land available. People would also be very concerned about the resulting urban land prices. The market should remain sufficiently open for prices to remain reasonable.

QUESTIONS FOR FURTHER RESEARCH

A project of this nature raises a number of interesting research questions. Four groups of questions are distinguished:

1. **Economics:** Is the new 'association area development approach' cheaper than the (traditional) 'public acquisition, development and resale approach'?

As stated earlier, the main gain expected from the new approach is, that no land needs to be purchased (and hence no money needs to be borrowed) prior to execution of the plan. A second advantage is, that it is less likely that landowners will be asked to demolish buildings which they intend to use for many more years: less capital destruction than with the traditional approach. But how big would be this difference? And how would the costs and benefits of development of the area under the two methods be divided between private and public interests? In Japan, the *Kukaku-seiri* method has successfully defended public interest without discouraging private landowners to embark on projects for urban land preparation. Public authorities not only get public land free of charge but also pay nothing or very little for the construction of roads, sewers, etc. In exchange, the private sector gets all the profit from the sale of urban lots. In the Dutch context such an extreme solution would probably not work as the speculative value of the land involved is far less than in Japan. Sharing of costs and benefits by the two parties seems more likely.

2. **Compatibility (design):** Is a juxtaposition of residential neighborhoods and greenhouses at all possible? Would people without personal or professional connections with horticulture be willing to live amidst greenhouses (traffic, spraying, etc.)? And would a modern grower not feel too constrained by a compact residential environment around his greenhouse?

Here lies a big challenge for (landscape-) architects not only to design an attractive living environment for the required number of dwellings and horticultural enterprises, but also to visualize the gradual intensification of land use in this area over the next two or three decades. Table 1 gives a rough breakdown of the main land use categories for the Vleuten-De Meern area (Fig. 3).

If we would vary the residential density and/or the total area (extension to the north and/or to the west), different quantities of open space could be created in the plan.

3. **Equity:** How would it be possible to distribute the costs and benefits fairly among the various landowners in the area, whose starting positions (both from a geographical and a business point of view), aims and objectives are very different?

In The Netherlands much experience has been gained with the organizational aspects and the relevant calculations for land consolidation and redevelopment projects in rural areas. But in a project of this nature, with a mixture of urban and rural functions, the situation is far more complicated. But we can benefit from the standard procedures developed under *Kukaku-seiri* in Japan. These include the calculation of:

- the value of the land-input of each participant in a project of this nature;
- a fixed land-reduction rate for all participants, which follows from:
 - (i) the requirements for public space according to the plan, and
 - (ii) The amount of 'reserved land', i.e., the area to be sold jointly by the participants to various urban users in order to cover projects costs;
- the amount of space for each landowner in the plan, depending on his future plans as a horticulturalist or otherwise: for instance, if he wants to increase his farm from 1 to 4 ha., he would have to 'pay' in terms of shares in the (more valuable) residential space. If his colleague reduces his holding from 5 to 2 ha., he will be compensated by more shares (lots) in a residential zone.

Efforts are being made to have these questions answered in the next few years.

4. **Practicability:** As long as a pilot project is not yet embarked on, the only way to find out if it could work is to 'simulate' with a selection of landowners in an area like *Vleuton-De Meern* the work of such a 'local committee for rural land development' (following the Dutch terminology for land consolidation projects; in Japan the term 'land readjustment association' is used.) This panel would be asked to react (individually and in group discussions) to the various stages of the plan proposals. Their reactions would be incorporated each time in the next phase of the (hypothetical) plan proposals.

CONCLUSION

Urban growth and horticulture are conveniently intertwined. Their relationship tends to be harmonious, but occasionally conflicts occur with an outcome that could be disastrous to at least one of the parties. For instance, it is now considered impossible to avoid all greenhouse complexes adjacent to cities in The Netherlands when it comes to urban growth in the early 2000s. For agricultural planners, as well as local administrators or originally rural municipalities in the

urban fringe, this is hard to understand and to accept. Four such greenhouse complexes are presently earmarked for residential neighborhoods. The amount of capital destruction could be enormous.

There is much hope, however, that not only money can be saved, but also a more positive attitude among local farmers can be generated, if the latter are given an active role in the urbanization process. This may, perhaps, result in a more scattered type of residential development, around clusters of greenhouse farms with occasional meadows and water reservoirs. But such an environment would not necessarily be unattractive or result in a lower total number of new dwellings. Its big advantage is, that for a minimum number of horticulturalists, a future can be secured without major relocations.

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