Environmental Planning and the Compact City
A Dutch Perspective

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1. INTRODUCTION

In The Netherlands the compact city policy was welcomed as a spatial concept during the mid eighties. The compact city concept meant a strengthening of the city as a place to live and to work in. It should also be the answer to the two most important problems the economic hart and denser populated part of The Netherlands is facing; a fast urbanization of open space and a continues increase of mobility. Therefore it was hoped that the compact city will not only contribute to the spatial quality of the urban area and the country side. It should also have a positive effect on the environmental quality, partly because of an expected reduction of traveling distances. Although the compact city concept was embraced as the answer to major issues urban planners had to deal with in the eighties, urbanization and mobility are today more than ever issues to be dealt with! Now, in the nineties, Dutch planners have to locate more than a million houses which have to be build in the near future. This enormous task confronts Dutch planners with dilemmas of the compact city concept, which is basically a conflict between spatial and environmental policy making.

2. THE COMPACT CITY CONCEPT

During the mid eighties 'concentration' became a leading factor in Dutch urban planning. Concentration was preceded by periods of deconcentration and concentrated deconcentration (Faludi and Van der Valk 1994). Deconcentration during the sixties proved to be too encouraging to (sub)urbanization of the country side. In the seventies concentrated deconcentration had to be the answer, but two major oil crises proved different. The concept of the seventies was too expensive to maintain, and was converted into a policy of spatial concentration (Van der Cammen and De Klerk 1993). In The Netherlands and beyond, the concentration policy became known as the compact city policy.

The National Physical Planning Council, the planning department of the Dutch Ministry of housing, physical planning and environment, defined the compact city policy as "(more than before) aiming at concentration of functions (living, working, provisions) in the city" (NPPC 1985). The compact city concept was expected to influence not only spatial developments. A positive effect on the environmental quality was expected as well.

For historical reasons Dutch cities are already reasonably compact. Till mid nineteenth century Dutch cities were enforced by law to have defence walls, which contributed highly to the compactness of inner cities. Also the long tradition of city planning in The Netherlands explains the relative compactness of Dutch cities. In the eighties scarcity of space made planners (again) aware of the continues need for compactness in urban planning, which meant in fact a revival of the compact city.

Although scarcity of space is an important reason to adapt a compact city policy, the concept deals with the structuring of functions within the city as well. The compact city concept can be characterized as follows (Bartelds en de Roo 1995):

- intensive use of existing urban areas;
- concentration instead of dispersion of functions;
- mixing instead of separating functions;
- building in high densities.

Dutch urban planning policy is "aiming for a good living and production climate, the utilization of the available capacity of the urban area for housing, working, recreation and care taking and the mix use of these functions" (VROM 1983; 10). Compactness is the key word in this policy, and is focussed on:

"- support of urban capacity;
- mobility reduction;
- support of bike and public transport;
- limiting the urbanization of the country side" (VROM 1993; 6).

Closeness and accessibility became important criteria for new urban developments. In 1990 the Fourth physical planning report Extra part one (VROM 1990) was published, giving a perspective of new urban developments till the year 2015.

Although compactness was seen as the only acceptable answer to stop further urbanization of the country side the number of houses that has to be build till the beginning of the next century is phenomenal and it will be impossible to have this all located in existing urban areas.

Part one of the Fourth report talks about 835.000 houses to be build between 1995 and 2015 (VROM 1990; 25). After the Fourth report part one was published the estimated number of houses to be build only increased. The latest estimates are above one million houses! (VROM 1993) Knowing that the population size in The Netherlands is about 15 million inhabitants and is growing only marginally one might conclude that the Dutch are building mainly for smaller households. In Amsterdam, the capital of The Netherlands, most of the households are single person households.

Closeness is probably the most important compact city criteria (Bartelds and De Roo 1995). Based on closeness to the city center priority is given to where new developments have to take place. In order of priority housing developments have to take place within existing cities, next to existing cities, and further away in connection to existing urban areas (Needham et al. 1994; 29). About one third of the housing program has to be worked out within cities. Roughly another third of the program will lead to a further expansion of the city, because housing developments will lead to the construction of new

neighborhoods as well. Also the last one third will contribute to a further urbanization of the country side.

The four main urban areas accommodating the cities Amsterdam, Rotterdam, The Hague and Utrecht are all located in the spatial and economic heart of The Netherlands called the Randstad. The Randstad is located around the so-called Green Heart, which is preserved open space and used for agricultural, ecological and recreational purposes (Faludi and Van der Valk 1994). The four urban areas being part of the Randstad have the biggest concentration of population and are the economic centers of The Netherlands. Commuting issues and accessibility difficulties in these areas are hard to deal with and are daily topics in the news. And, of course, the main part of the housing program has to be worked out here.

3. DILEMMAS OF THE COMPACT CITY

The more compact a city will be the closer functions are located near each other. From a spatial point of view this might be seen as a contribution to the variety and multifunctionality of a city. Though, from an environmental point of view a compact city might lead to considerable conflicts between environmentally intrusive activities and environmentally sensitive functions. The more intrusive a function or activity is the further away it should be located from sensitive functions. This means that intrusive (urban) activities simply need more space than the site where these activities take place. Some distance should be taken into account to keep these functions away from environmental sensitive areas, such as residential areas. Nowadays there is political pressure to build as much as possible within the existing boundaries of a city. Understandably urban planners will find it difficult to include environmental constraints in their spatial plans, facing the task to build 'compact'.

Dutch compact city policy is confronted with spatial and environmental policy dilemmas which can be a constraint to spatial and economic developments in urban areas, and which will effect the environmental quality of these areas in a negative way (Bartelds

and De Roo 1995, VROM 1993b). Issues that are specially related to these dilemmas are inner city activities, such as industry and recreation, the restructuring of former industrial sites, soil pollution, inner city traffic and transport, the use of inner city open space, and so on. Most of these issues are about environmental spillovers which are in conflict with environmental rules to maintain a reasonable quality in residential areas (De Roo 1993).
Far the most of the dilemmas of the compact city are more or less related to environmentally intrusive activities and their (environmentally sensitive) surroundings or are related to (constraining) intentions to planning sensitive functions on locations facing an amount of environmental load.
Amsterdam, the capital of The Netherlands, is asked by the Dutch government to build 20.000 houses in the coming years (VROM 1990; 45). Amsterdam is surrounded by a green belt, water, industrial sites and the Amsterdam Schiphol Airport, and is therefore limited to expand. To prevent urban sprawl a new neighborhood (15.000 houses) will be build by reclaiming land from the IJ lake opposite to the city center (Amsterdam 1994). Another attractive site for city development are the old and neglected harbors called the Houthavens on walking distance from downtown Amsterdam (see figure 1). The restructuring of the Houthavens from low quality industrial and transport activities into multifunctional and housing activities will improve the spatial quality of this part of Amsterdam to a great extent (Amsterdam 1994b). It will also be a positive response to the compact city policy, and it will give Amsterdam a new waterfront which will effect the image of Amsterdam as a whole. Unfortunately opposite to the Houthavens the industrial site Westpoort is responsible for a number of environmental spillovers. According to the current environmental standards both odor and noise in the Houthavens are too high to allow residential use of the area, and are stagnating the execution of the spatial plans (Amsterdam 1995). At the moment Amsterdam is suggesting to redefine environmental quality (and therefore environmental restrictions) by using more indicators in addition to environmental load, and to introduce 'compensation' as a possibility to create at least an acceptable quality to live with (Amsterdam 1994b).

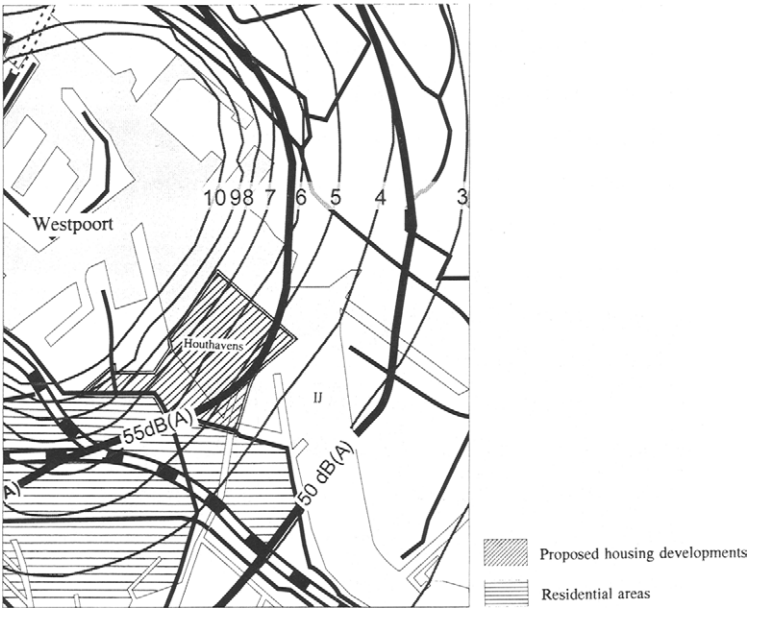

Figure 1. The Amsterdam Houthavens Housing project is located within the environmental zones for noise (< 50 dB(A) = acceptable, > 55 dB(A) = unacceptable) and odor (< 1 g. 99.5% = acceptable, > 10 g. 98% = unacceptable).

More or less the same situation can be found in Rotterdam, having one of the biggest harbors in the world within its city boundaries. Major inner city developments are on going to locate about 16.000 houses inside Rotterdam its boundaries (VROM 1990; 49). Most of the developments are concentrated in locations like Kop van Zuid and Katendrecht, old harbor areas near and opposite to the city center. In part of these harbors industrial and transport activities are still taking place. These activities are interfering with the plans of the municipality, who now wants to relocate most of these activities to the Waal-/Eemhaven, a site further away and more suitable for harbor related activities. Unfortunately the environmental zone for noise around the Waal-/Eemhaven does not allow a further rise of the noise level produced in the Waal-/Eemhaven (see figure 2). The municipality of Rotterdam now argues that an increase of noise by 5 dB(A) should be allowed because the net results would make it worthwhile

(Rotterdam 1994). Rotterdam was hopeful that the increase of noise, which has a negative effect on residential areas located near the Waal-/Eemhaven, will lead to a reduction of environmental spillovers in the redevelopment areas, allowing thousands of houses to be build. Although a number of uncertainties are still unanswered the national government accepted this reasoning, and changed the Noise abatement act for this and similar cases (Second Chamber 1991).

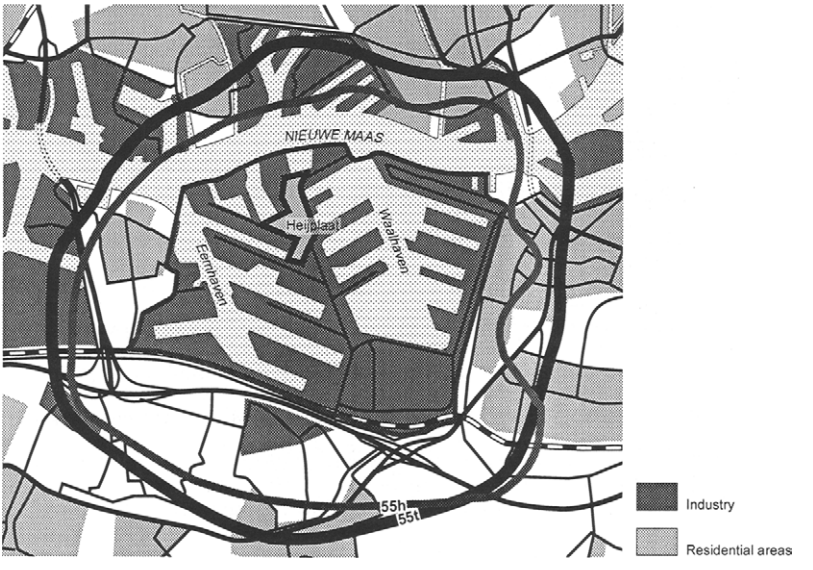

Figure 2. Rotterdam wants to expand activities in the Waal-/Eem harbor, which will influence the noise output of the harbor area and effect residential areas (55h = actual load, 55t = expected noise level).

Not only Amsterdam and Rotterdam, the largest cities in The Netherlands, are having difficulties to find suitable locations for their urban development plans. In Arnhem, a city of 200.000 inhabitants, environmental zones are such that construction of housing should be prohibited everywhere within the city (Boei 1993). That is according to environmental standards for toxic substances and odor. This situation is seen as highly unacceptable, because Arnhem too has to take its part in the immense housing program of The Netherlands. The Drechtsteden, a cluster of cities south east of Rotterdam and one of the main economic centers of The Netherlands, has a number of potential

locations which might be turned into attractive residential areas. A well though-out integrated environmental scan of the area showed however major 'black areas'. The research was based on a number of environmental aspects, such as noise, odor, carcinogenic and toxic substances, external safety and soil pollution (Voerknecht 1994). Groningen, the capital of northern Netherlands, also wants to take its share in the Dutch housing program. And as other municipalities Groningen is favoring the compact city policy. A number of abandoned sites within its city boundaries are appreciated as locations where housing development can take place if not the soil was heavily polluted. A lack of financial means is one of the main reasons preventing spatial developments in the near future. At the moment Groningen has started building houses in the country side, on the edge of the city (Groningen 1996).

This five examples are given as examples of Dutch dilemmas of the compact city policy. From these examples the following conclusion can be made: In almost all of the cases where conflicts arise between spatial wishes and environmental restrictions a densening and/or a change of functions or a change of (size of) activities takes place or is at hand.

In The Netherlands about all spatial change of functions takes place through government planning. When planning spatial developments environmental issues have to be taken into consideration. The measuring and mapping of environmental loads (mostly from industry, traffic and leisure activities) might lead to the conclusion that The Netherlands is far more polluted than expected. Unfortunately most of the pollution can be found in and around cities. And cities are at the moment seen as places where major developments should take place to prevent urbanization of the country side and to fulfill the need for housing in the near and far future.

A number of developments which lead to a densening and/or a change of functions or an expansion of activities give rise to stagnation or can't take place at all, because the actual or expected environmental quality is seen as unacceptable. Often these developments are desirable from a spatial point of view.

Dilemmas of the compact city do occur because seemingly two policy intentions can't be fulfilled easily at the same time. One of the intentions is to keep cities as compact as possible. The other intention is to maintain at least an acceptable environmental quality,

a quality that is based on the actual or expected environmental load.

4. THE TRADITIONAL WAY OF DUTCH ENVIRONMENTAL POLICY MAKING

In the beginning of the seventies Dutch policy makers became convinced that corrective and ad hoc policies were no longer enough to deal with environmental issues. In the Urgency report from 1972 (VM 1972) a strategy was developed based on compartment wise sanitation of the environment. This more or less meant a sectoral policy approach for soil, water, air, noise et cetera. For all these environmental sectors aims, goals and objectives were created, including quantitative standards based on dose/effect relations.

During the eighties the compartment wise approach to deal with environmental issues was put aside. This approach was found not effective enough. Instead of a reduction of environmental pollution a diversion of pollution was seen between the compartments. A more integrated approach had to be the answer to this problem. This integrated approach got shape on the basis of environmental themes, such as acidification, climate change, drought, eutrophication, disturbance and so on. Based on these themes or environmental topics policy was made to deal with sources of pollution and its negative effects. This meant policy making concentrating on the polluters or target groups (source), such as industry, agriculture, consumers etc. and policy making to protect environmentally sensitive areas (effect) (VROM 1989, VROM 1993b). This integrated approach of environmental policy making proved to be more effective than a compartment wise approach.

What didn't change during the eighties was the use of environmental zoning. On the contrary, after a more or less successful introduction of the Noise abatement act in 1979, the national government was convinced that an expansion of the environmental standard program could be helpful to separate environmentally intrusive activities and environmentally sensitive land uses.

Quantitative environmental standards are relatively easy translated in spatial zones,

pointing out areas where the environmental load is seen as unacceptable (within the zone) and where environmentally sensitive areas, functions or activities can be accepted (outside the zone).

The comfort of using standards and zoning almost logically leads to a new and innovative initiative at the beginning of the nineties. An integrated program for environmental zoning was introduced by the national government, taking into account different environmental loads, such as noise, odor, external safety and air pollution, at the same time (VROM 1990b, Van der Gun and De Roo 1994).

The popularity of the environmental standard was not solely based on the easy, almost mathematical way it can be translated into spatial zones. There is definitely another reason at least as important. Standards and their translation into zones fitted very well in the environmental policy hierarchy that existed already from the moment environmental policy was introduced in The Netherlands. Since the beginning environmental policy was initiated and worked out on national level, while the implementation was left to local and region authorities. Environmental standards therefore were introduced on national level, leaving the translation into spatial zones, the abatement of local intrusive sources, the issuing of permits and the implementation of the spatial environmental zones in the local land use plans to the provincial and municipal government (Borst et al. 1995).

In this centrally based system environmental standards became a strict framework where other policy sectors such as spatial or physical planning should remain within.

This all goes well as long as there is not too much difficulty on local level implementing the standards, which will lead to a sustainable separation between intrusive and sensitive functions. From the beginning of the nineties on it became clear that - unfortunately - this was no longer the case (Miller and De Roo 1996). The compact city policy was interfering.

5. NEW STRATEGIES IN DUTCH ENVIRONMENTAL PLANNING

Although the number of critics against the centrally oriented environmental standard system is growing, the analysis of a number of cases proved that these standards can be implemented most of the time without a decline of spatial quality (Borst et al 1995). There are also a number of cases where environmental standards can be implemented with a bit of struggle and an acceptable portion of financial input. Knowing these conclusions one might conclude that the critics are maybe less interested in the environmental quality of an area, and that their critique should be explained by the wish to gain more political control on local level; more political control on local level means a less tight environmental framework and more freedom for local decision making. There can be doubts about the way critics are against the system of environmental standards, on the other hand there is no doubt that there are a handful projects in The Netherlands where standards are not the right answer to deal with the unacceptable environmental situation.

In these projects, like Arnhem and the Drechtsteden, large parts of residential areas have to be demolished if standards and zones are implemented. Seen from a spatial, social and economic point of view this situation is unacceptable (Borst et al 1995).

Looking at the analysis above, where three types of conflicts are identified based on the usability of standards, *complexity of the local situation* might be the key to new and workable strategies solving spatial and environmental conflicts in compact areas. The more complex a situation becomes the more difficult it will be to implement standards without effecting other than environmental qualities of an area, such as spatial, social and economic qualities.

Environmental conflicts can be seen as complex when there is a multiple mixture of loads, from different sources, having an above local dispersion, which will have consequences for existing functions and spatial developments if no substantial actions are taken.

When environmental conflicts in compact cities are seen as extremely complex, and when costs/benefit analysis makes clear that actions to be taken from an environmental

point of view based on centrally imposed standards are far beyond reason, and when other than environmental qualities will be effected negatively, some excessive load should be accepted. In these cases the excessive load in an environmentally sensitive area should be compensated effecting the livability of that area in a positive way. This is the latest change in Dutch environmental policy system, which means in a way the acceptance of the complex reality of the compact city by the national government (VROM 1995).

Environmental standards will remain an important instrument for creating a sustainable separation between intrusive and sensitive functions, but no longer it will dominate spacial developments entirely. By this change of national policy the idea is accepted that local authorities rather then the national government have a better idea of spatial and environmental ins and outs of locally complex and often unique situations. This also means that local authorities should decide, in consultation with higher authorities, which environmental framework is acceptable taking into account the developments that are needed in the compact city.

Lately, this change in responsibility has become more or less official. A few more, but less official changes dealing with environmental policies can be seen in the Dutch political landscape as well. One of the changes is a widening of the definition of environmental quality. Environmental quality as used above can be seen as the direct translation of the negative environmental load in an area. Policy based on this kind of quality measurement is highly restrictive.

The idea is that additional measures taken to improve the livability of an area or which will contribute to sustainability should be taken into account as well. This change in defining environmental quality should lead to a more progressive form of environmental policy making.

Also the introduction of an objectives approach next to the standard approach can be seen as an interesting innovation (Miller and De Roo 1996). So far environmental issues with a spatial effect were seen as a source/effect relationship where standards are used to translate the environmental issue into space consuming zones. Every source/effect relationship was seen independent from other conflicts and policy programs. When

policy is developed on the basis of an objectives approach each environmental issue is no longer standing on its own, but will be taken into a wider perspective (Amsterdam 1994b). In this case standards are no longer strict frameworks for spatial initiatives, but are replaced by broadly defined objectives determining the environmental outcome. This could mean that the environmental quality is not a target to be reached in the short run, but could very well be a target that can be reached through spatial planning, taking more time but creating more opportunities as well. An objectives approach does not only create more local flexibility, but takes the context of the environmental conflict into account as well. Of course it can't be expected that the objectives approach can replace the standard approach including its positive aspects. But it might help defining a more comprehensive policy where both approaches might function next to each other, supplementing each other or replacing each other, depending on the local situation.

6. CONCLUSIONS

Policy dilemmas in Dutch compact cities do occur because enormous housing programs within the city limits are not easy to work out while taking environmental restrictions into account. The dilemmas are (partly) a conflict between spatial and environmental policy making. The environmental policy system in The Netherlands is highly central oriented, with a strong focus on environmental standards. Therefore spatial developments have to take place within a strict environmental framework. Unfortunately strict and generally used environmental standards are not always the best instruments to solve environmental conflicts in urban and compact areas. The local and often unique character of these conflicts have to be taken into account, especially when the complexity of the conflict is high. More responsibility should be given to local authorities:

- to benefit from local knowledge when solving environmental conflicts;
- to find solutions geared to local and unique situations;
- to have the possibility to include the conflict in a local context;

- to be able to define quality targets which can replace environmental quality targets if proven unfeasible.

The number of cases are limited in which the environmental standard approach will have to be replaced by a locally defined objectives approach to get a better outcome for conflicts to be solved. In other cases a locally defined objectives approach might prove to have a surplus value next to or supplementing the traditional and central based standard approach. If local authorities choose to work on the basis of an objectives approach undoubtedly they will have to put far more attention to strategic planning than they were used to when working with a centrally based standard approach. Strategic planning for spatial and environmental policy on a local level means local protection through local planning and development, which might very well lead to new developments in dealing with dilemmas of the compact city.

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