

Analyzing urban planning in the Netherlands for dissemination of know-how and experiences

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ABSTRACT: The Netherlands, like all other countries, has faced many urban problems but placed a great deal of effort to tackle bottlenecks for sustainable development. Within the last fifty years, the country has proved its planning scheme and developed its planning doctrine, so called “Dutch Model”. It takes its power from the integration of all relevant governmental departments and also engagement of all stakeholders. In many aspects they have yielded very successful outcomes but there are also limited results. From this perspective; land use, transport and environmental planning in the country was examined by the authors. The experiences and know-how of planning in the Netherlands are introduced and analyzed to disseminate policy concepts and instruments to other countries which are passing through crucial urban development and facing similar barriers of spatial, transport and environmental planning towards more sustainable urban development.

RESUME : Aux Pays-Bas, comme tous les autres pays, ont eu à beaucoup de problèmes urbains mais ont placé effort d'aborder des goulots d'étranglement pour le développement soutenable. Dans les cinquante dernières années, il a prouvé son arrangement du projet et a développé sa doctrine du projet, prétendu “Dutch model”. Il prend sa puissance de l'intégration de tous les départements gouvernementaux appropriés et également de l'enclenchement de tous les dépositaires. Dans les chemins différents, ils ont rapporté des très succès mais il y a des résultats également limités. Par cette raison ; le projet de l'utilisation de la terre, du transport et l'environnement dans le pays ont été examinés. Les expériences et le savoir-faire du projet en Pays-Bas ont présentés et analysés pour disséminer des concepts de politique et des instruments à l'autres pays qui traversent le développement urbain crucial et font face aux barrières semblables de spatial, au transport et au projet environnementale vers un développement urbain plus soutenable

1 INTRODUCTION

The Netherlands, like many other countries, have faced some urban problems after the Second World War and especially together with economic growth since 70s. However, they have been aware of the significance of sustainable development when developing urban policies, and have experienced some favorable outcomes as many experts of the field believe so. Despite the fact that country has been successful compared to some other countries, it is still encountering problems against the sustainable development such as urban sprawl, urban decline and increasing share of private car trips.

The authors examined the Netherlands' urban planning, known as “Dutch Model”, to find answers to two main questions; “How they did?”, “How successful the outcomes were?”. Besides, this paper will also have a look at the future challenges for a more sustainable development through land use, transport and environmental policies in the country. Therefore, following national planning schemes will constitute the scope. “Second Transport Structure Plan (STSP)”and “Fourth Policy Document on Spatial Planning” for the term of 1990-2000; “National Traffic and Transport Policy (NTTP)” and “Fifth Policy Document on Spatial Planning” for the term of 2000-2010. Finally; spatial, transport and

environmental planning in the Netherlands will be concluded to disseminate the know-how and experiences of policy concepts and instruments to the others. Since, many countries are progressing similarly as the Netherlands did and is still doing so; the authors believe that transferring of knowledge will be to the benefit of especially developing countries.

2 SPATIAL PLANNING IN THE NETHERLANDS

The Netherlands is rather a small sized country with the area of 41,526.28 km² and with today's population of 16 million. However, it is one of the most urbanized countries and the average population density increased from 157 inhabitants/km² in 1900 to 466 by the end of 2000. The most urbanized area, Randstad conurbation (name given to area consisting of a ring of five big cities; Amsterdam, Hague, Rotterdam, Utrecht, Almere with an open space, called as Green Heart, in the middle of the ring) has the population density of 2000 inhabitants/km². The population has grown by 1.72 whereas the residential area enlarged by 2.42 between 1950-1996 along with urban sprawl and decline.

The land is a scarce commodity, of which 60 % of the total area is used by agriculture, and 15% as open space and only 12 % is designated as build up area. Besides, %40 of the total country is under sea level and water with its long standing problems is everywhere, necessitating specific areas and measures for water management. Such a scarcity of

area was the main reason why they specialized in spatial planning to manage the land.

2.1 Structure of spatial planning

The history of modern spatial planning in the Netherlands goes back to beginning of the nineteenth century when first spatial planning at local level was made obligatory to the municipals with the enforcement of "Housing Act" in 1901. However just after this; discussions, of the lack of necessary integration between the municipals, started. Following this, in 1931 the housing act was revised and the regional level spatial planning was introduced. This was before the introduction of the national level planning which was issued with the first "National Spatial Planning Act". Thus, the general framework of spatial planning so called three-tier system at tree levels was established in 60s, in the country. Since then the Dutch government has developed a more comprehensive multidisciplinary planning scheme operating mostly under the umbrella of "spatial planning" and authority of ministry of housing spatial planning and environment.

Figure 1 is the simple illustration of structure and functioning of spatial planning, as they call "Polder Model". Polder model has three dimensions; first is within the government as interrelations between different ministries at the national level and with regional and local authorities. Second is between government, non governmental organizations, citizens and private sector. Finally third dimension is international base especially within the European Union.

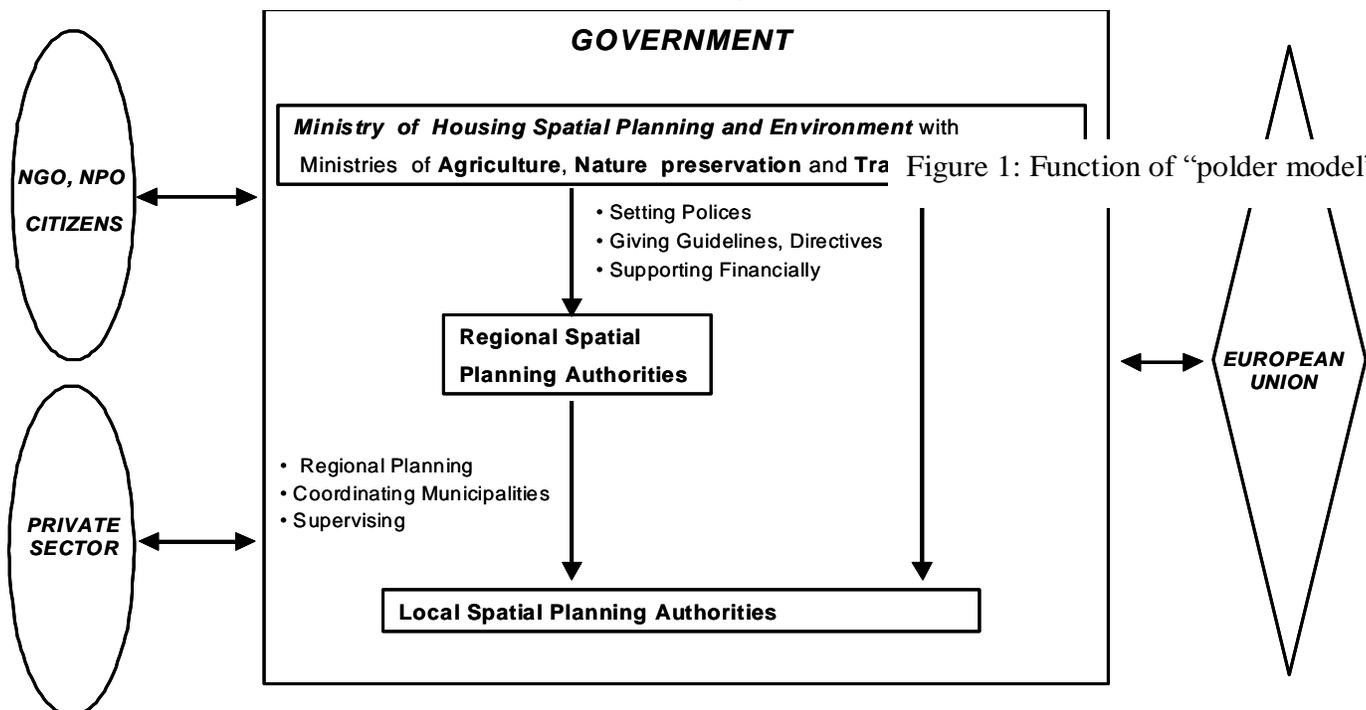


Figure 1: Function of "polder model" as spatia

Ministry of housing spatial planning and environment, with its higher role for spatial planning, collaborates with the ministries in charge of agriculture, nature preservation, environment, water management and transportation to set policies, to determine guidelines and budgets for regional and local authorities. Also central government takes responsible for deciding and planning large and

medium scale infrastructures including transport projects. Regional authorities have the major role for coordinating and supervising the local municipalities and preparing regional zoning plans for future development decisions. Local municipalities are to prepare and implement all the detailed land use and all construction plans within their territories.

Table 1: Outlines of the last two spatial plans

4th National Spatial Planning (end of 1980's -1990's)	5th National Spatial Planning (2000's)
<ul style="list-style-type: none"> ▪ Strengthening the collaboration of municipalities to eliminate competition ▪ Concepts of “compact city” ,“contrast of areas” ▪ Area Specific Approach (ROM) to solve specific environmental problems ▪ ABC Policy for business locations 	<ul style="list-style-type: none"> ▪ More authority towards regional and local authorities for decentralization and collaboration ▪ Concepts of “urban renewal” ,” vital cities”, “urban networks” with “compact city” and “contrast of areas” ▪ More practices of (ROM) and “polluter pays approach” ▪ New Location Policy for new business developments ▪ Drawing countrywide red and green zoning maps

2.2 Introduction of the last two national spatial plans

After the war, the country has observed a dispersed, to some extent uncontrolled urban development to meet the growing demand. Along with the “general extension plan” for the time, rather concentric and radial growth was observed. However, low density new suburban developments were resulting in urban sprawl more than anticipated. In order to restrain such spillover, the idea of “concentrated deconcentration” was born for the time being. It was simply described as developing densely adjoining areas nearby the developed areas. Following this, in the middle of eighties with the fourth plan, the primary policy turned out to be the “compact city” supported with the idea of “contrast of areas”. Table 1 very briefly summarizes the some of the outlines of the previous fourth and current fifth national spatial plans. The term “compact city” expresses new developments within the existing urban areas without allowing growth in rural areas where possible, otherwise a growth in outward direction along with the radial transport routes. “Contrast of areas” is for different use of areas like buffer green and recreational zones within the urban developments with high accessibility.

The fifth policy document added new concepts of “urban renewal” ,” vital cities”, “urban networks” .

Urban renewal is combined with the policy of vital cities for increasing the attractiveness of city centers. Vitality has three dimensions: individual life aspiration satisfaction like better working and living environments; overall social satisfaction like more green areas, high level of service for public transport; economic satisfaction like higher income. The Dutch government has chosen 30 cities for urban renewal to ensure vitality. The city of Amsterdam has been facing an urban decline, such that the density decline in the urbanized area between 1960 and 1990 was 44%. This is similar and even worse when compared to London with 35% and Tokyo with 17%. Therefore, the city was the core of the urban renewal program.

Since the Dutch society is developing to be a network society, “urban networks” is gaining high importance to meet the changing life styles of the citizens. The idea of urban network has two parts. First is the development of the city centers and second is connecting the city centers through efficient transport network aiming to use the facilities of cities more efficiently. Randstad conurbation has the highest priority for network program since the region is the core of the economic activities in the country.

Contour policy in the fifth plan covers two different contours of which first is red contours to define the concentrated urban development like centers to be

intensified for housing and employment. Second is the green contours which is a term given to areas that should be kept as green areas and restrict any urban development. The fifth policy draws a countrywide map of contours on the large scale. Accordingly, the regional and local authorities exactly determine the areas of green and red contours with further details.

The ROM approach, mostly initiated in the fourth term, was also envisaged in the fifth term. ROM (Area Specific Approach) focuses on the environmental problems of special areas where the problems occur. It is a kind of temporary organization established by relevant bodies and citizens to reach consensus and solve the specified problem. Without any legal power as a whole, any interest groups, non governmental or governmental agencies also private sector may come together and reach a solution.

ABC location policy of the fourth term has limited success. Only 25% of the expected results with this policy were realized. The main idea of ABC policy was designation of space to business and industrial developments in the right place by means of accessibility. It was aimed to restrain private car work trips to business centers and promote public transport where public transport is available. Simply it divides the locations in to three main groups: A as areas where accessible by public transport; C areas that are accessible only by private transport; and B as the mixture of A and C. Necessary policy instruments like parking, land permission are assigned accordingly. Rather restrictive, inflexible approaches and focusing only on mobility or accessibility were the reasons, why results of ABC policy fell behind the expectations. Therefore the fifth policy improved the ABC policy and developed a policy, called "new location policy". It is described as "offering an appropriate place for every business". Although there is no specific description for appropriate which may cause problematic, but it is less restrictive and more flexible than ABC policy. New location policy mainly covers how to provide suitable locations for businesses, all services and activities. For new housing spaces, it is left to be decided along with the contour maps. The new policy is wider compared to ABC, as it is not only limited with mobility but taking into consideration two more parameters; the spatial quality (efficient use of space high quality of working and living environment); economic development. By the new location policy, more authority is assigned to

provinces and municipalities for taking decisions of space making and also some transport facilities. The government declares that the success of the new policy depends on the collaboration of local authorities on land use and transport issues and also availability of financial resources.

3 TRANSPORT PLANNING IN THE NETHERLANDS

The share of public transport, 14%, in the Netherlands is rather low compared to many developed European cities. The private car share, 74%, is undesirably high; however the level of cycling and walking is satisfactory with the percent of 8%. The annual distance traveled by car increased from 7990 to 9077 billion passenger-km by 14% between the years 1986-1998. For the public transport, the increase is 36% from 1287 to 1756 billion passenger-km for the same period. It was also presumed by the Dutch government that with the increasing mobility of 30 %, the car use will increase by 70 % unless preventive measures are taken by the end of 2010. Yet, this does not match with their sustainable transport understanding; the government is working to improve the efficiency of public transport network to increase its share.

3.1 Structure of transport planning

The ministry of transport, public works and water management develops national transport plans through a five step successive process. In the first step, the minister sets its general policy framework for every 10 years in coordination with water management, economy, environment and spatial planning departments. Second step is for listing the options of major transport infrastructures which are revised every year along with the budget prepared by the minister. Next step is for assessment. A multi disciplinary traffic, economic, financial and environmental assessment is carried out to give the final decision for accept or reject. The Dutch planners are arguing on the third step as more comprehensive framework, including more parameters like safety, should be improved for better evaluation of large infrastructures. Fourth is for the final decision which is given through the collaboration of relevant ministries but with the higher role of ministry of transport. Final step is the

inclusion of the given decisions in the provincial and local programs.

3.2 Introduction of the last two national transport plans

Table 2: Outlines of the last two transport plans

Second Transport Structure Plan (1990 - 2000)	National Traffic and Transport Policy (2000 - 2010)
<ul style="list-style-type: none"> • Focus on environment • Modal shift to public transport • Decreasing vehicle distance traveled 	<ul style="list-style-type: none"> • Focus on environment & economy • Modal shift to public transport and slow modes • Decreasing vehicle distance traveled and its bad impacts • Stronger role of local governments • Higher share of public private partnership • Establishment of network between cities

concepts of transport planning, since then. In fourth national spatial planning report, an important section was separated to emphasize the relation between urban development and transport. Table 2 briefly summarizes how the framework for transport planning has changed with the last “second transport structure plan (STSP)” and current, “national traffic and transport policy (NTTP)” national plans. This is in fact an illustration of how new concepts were included in transport planning for sustainable development in the Netherlands. In the before, the government was aiming a model shift from car to public transport and was taking some measures to reduce the vehicle distance traveled (VDT). Today two important policies were added with the NTTP. One is to shift from car to slow modes, which are non motorized transport, for short distances. And second is to reduce the bad impacts of VDT, not only the VDT itself. When comparing the two planning period, STTP valued environment as the main criteria but NTTP considers both economic growth and environment while providing mobility. The latest transport plan included more infrastructures, especially public transport investments, connecting city centers, such as LRT project for Randstad conurbation, in accordance with the urban network policy of the fifth spatial plan as mentioned before. This shows how the Dutch government challenges to manage and combine land use and transport policies for future developments. The NTTP also draws attention to financial role of government in huge infrastructures and emphasizes the necessity to increase the public private partnership for transport investments.

Traditionally, the transport minister had been in the business of providing infrastructure. But with the second transport structure plan in 1990, this shifted to manage mobility for the sake of environment. Improving public transport and increasing integration of transport modes was the main

4 ENVIRONMENTAL PLANNING IN THE NETHERLANDS

Nature has been a traditional concept within the history of urban planning in the country. The Netherlands is a wealthy country with its growing economy of 20,905\$ GDP per capita, similar to that of Germany and France. Additionally, government has been quite successful in spending its budget on necessary environmental issues. It is no wrong to say that the Netherlands has been successful for saving open spaces and preserving nature when considered many other countries. The total environmental expenditures cover 1.9 % of the total GDP, which is a higher when compared with similar expenditures in the UK and Germany, 1.4% and 1.0% respectively.

Since 80s, there have been some changes within the makeup of spatial development investments of the Dutch government. In the middle of 80s, 70% of such investments were on transport infrastructures and the remaining 30% was for other investments, gathered under the caption of quality of life like urban renewal, reconstruction, improvement of environment, preservation and development of nature. Today the figure shifted such that, the share of QOL increased to 40% and as absolute value, it increased from 0.9 billion Euro to 2.0 billion Euro. The government still aims to increase the QOL and reach 50% or 60% by the end of 2020.

4.1 Greening the taxation system

The Netherlands has placed a great effort for greening the tax system since 1985 and has

increased the share of green taxes from 8.7% in 1985 to 14.1% in 2001 as of total. NO_x, CO, VOC decreased by 30% since 1990 due to the catalytic converters, use of less polluting diesel engines. However since 2001, CO₂ from road transport has increased by 35% with the increasing VDT and it was calculated as, 1 ton of extra CO₂ costs 22 Euro to the government. The current challenges are to reflect this and similar costs to the taxation.

Existing green taxes in Netherlands are given below as:

1) Taxes on passenger cars and motorcycles: Any individual or company registering the first time for owning a passenger car or motorcycle pays. For, used cars and motorcycles tax is reduced in accordance with the drop in the value of the vehicle. New passenger cars and vans with specific emission standards are given an incentive premium.

2) Motor vehicle tax: People owning motorcycle, car or lorry are not liable to pay the tax because of having used the roads. Only the buses are required to pay motor vehicle tax when they make use of the road.

3) Tax on heavy good vehicles: Heavy good vehicles making use of the motorways are liable and the amount is paid in advance.

4) Environmental taxes: There are different environmental taxes like ground water tax, tap water tax, fuel tax, waste tax, regulatory energy tax.

The Netherlands is one of the few countries that

initiated carbon taxes. Its total revenue from fuel taxes is the highest in the Europe with the amount of $1,655 \times 10^6$ \$ for the year 1998. The central government spends all of it on environment and nature preservation projects. Recently in 1998, it was decided that environmental expenditures require more financial source and the fuel excise levels were raised. This was a well known exercise as financial disincentives to reduce both car use and its bad impacts. However, the Dutch government also practices financial incentives as well, for sustainable transport. Increasing the difference of commuting tax deduction by favoring the public transport use can be given as example of rewarding in the Dutch taxation system.

The latest tax commission “Second Green Taxation Commission” was held in 2001 for revision of the taxation system. One of the reasons for renewing taxation, as set by the second commission, was “encouraging environmentally sustainable economic development or shortly green practices”. The overall aim is to achieve economic and environmentally development simultaneously. The government believes in the power of balanced financial incentives and disincentives; therefore the report covers both introducing new levies and also welcoming more financial incentives and rewards when tackling with environmental problems.

The commission introduced an assessment system for evaluating the proposed levies and measures for

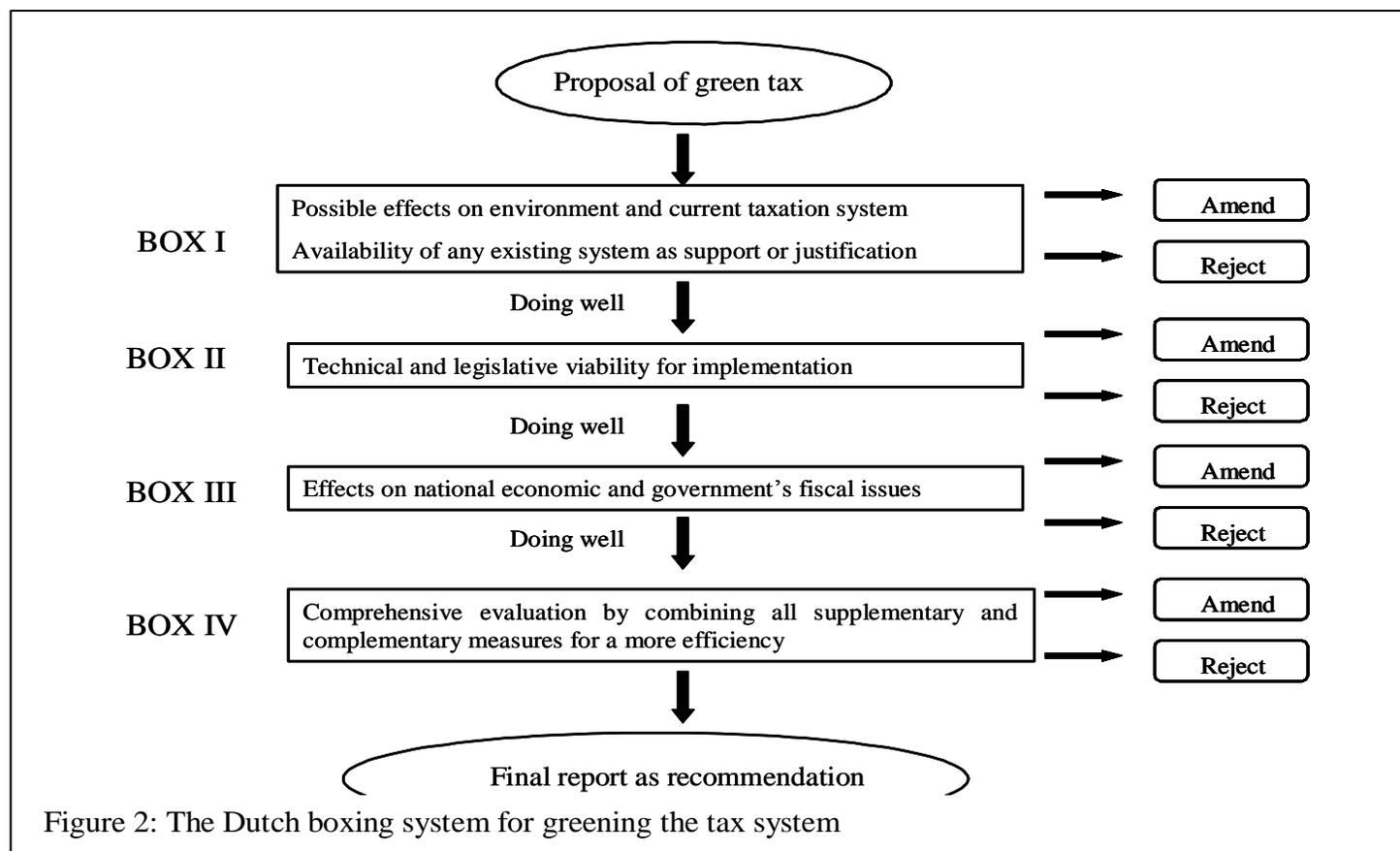


Figure 2: The Dutch boxing system for greening the tax system

greening the tax system. It is a system of simple boxes, for this reason, here it will be called “ the Dutch boxing system” as shown in figure 2. It consists of four boxes, each forming a subcategory of evaluation in which it is decided that proposal is capable of passing to the next step. If any rejection comes out at any step than it is subject to amendment or complete rejection. The first box asks the reason of proposing, such as what are the possible short and long term expectations on environment and tax system. Also the availability of any existing system to support the proposal is questioned in this step. Second box deals with legal and technical aspects in order to find out how to implement it. Third box is to analyze the effects in some dept, especially to the national economy and government’s fiscal issues like the changes in income distribution, competition or changes in the relevant subsidies. The last step is a large scale evaluation by combining or grouping all possible measures for a better efficiency. It is obvious that one measure by itself may not be viable whereas; it may be fruitful, when working with some others. Finally, a comprehensive report of recommendation is produced to be submitted to the central government. Using the box system, the commission evaluated many proposed green taxes. The most important two, currently under discussion, are; kilometer levy and taxation on the use of space and residential function.

5 CONCLUDING REMARKS

This paper briefly examined the Dutch example to provide benchmarks to other countries, by sharing experiences and knowledge of urban planning in the Netherlands. The authors strongly believe in the necessity of distributing the know-how and practices especially from developed to developing countries. Of course it should be mentioned here that because of the discrepancies between the countries, same policies may have different consequences in different countries. The Dutch model of land use, transport and environmental planning was concluded throughout its weak and strong points and the following remarks were drawn.

5.1 Polder Model

Polder Model, today’s general policy framework of urban planning is based on transparency, integrity of all necessary disciplines, and coordination of stakeholders with the idea of “centralized where necessary and rather decentralized where possible”. The core of planning relies on reaching consensus through formal and informal personal networks, negotiations and exchange of knowledge within relevant governmental institutions. On the other hand it also covers integration of all non governmental bodies, private sector and public intervention. When the three-tier system was first shaped in 1960, for the time being, the spatial planning was only a comprehensive land use plan where the ministries in charge of environment and especially transport were mostly on their own. This is the case for many developing countries today. However within the last 40 years the country developed its planning framework owing to its small amount of population and also cultural heritage of transparency and cooperation. Though the example of the Netherlands as polder model is difficult to adapt in highly populated countries, it can still be taken as a model to apply to small or medium size regions in particular cases as a start.

5.2 Integration between ministries

From the perspective of Dutch planning doctrine, sustainable development policy is to combine the urban polices that are land use, transport and environmental policies. The difficulty arises at this point in determining the weight and role of each authority within the whole framework. Although currently the core of the planning is spatial planning, there is still going on debate on institutional arrangement to balance the authorities with rising importance such as transport, environment, agriculture, nature preservation. Despite a well combined national land use and transport plans, the Netherlands is also still facing some problems of collaboration between the ministry of transport and public works who claims its authority for infrastructures.

5.3 Balancing economic development and environment

The fact of ensuring economic development is quite significant to all developing and developed world. The Netherlands has also added the fact of economic progress in its current spatial and transport plans.

Here the general point is the difficulty of combining environmentally friendly transport policies and economic growth especially in developing countries. (Hayashi, et al. 1994) has proved how the sensibility of environment and awareness of sustainable development arise with the income level. Therefore, the Netherlands planning framework constitutes a good example of combining economic and environmental development policies. As mentioned, the country has passed through a high speed economic development, but environment has always taken its important place among the government's missions.

5.4 Decentralization of government

The three level planning is a good example for collaboration of different layer of authorities, yet it still has some problems. For example three-tier system is functioning well from top to down; however, in the reverse direction, that is to carry the claims and experiences of municipalities to central government is rather slow with many weak points. Today's challenge in the Netherlands is to assign power and responsibility of taking decisions and implementing programs to the corresponding authorities with the aim of decentralization. But it should be noted that the central government still acts as the guarantee of its society taking necessary actions, in case if the results were unrecoverable by the relevant authority, damaging the citizen's rights. There were some arguments to initiate new authorities combining, all different central authorities and giving complete power for a special region like Randstad conurbation of high importance. Nevertheless, government decided to put it aside since the Netherlands was a small country for a four level authority. However the authors believe that the three-tier even the four tier system approach should be concluded in some depth for the case of highly populated developing countries for integration of policies for crucial regions.

5.5 Collaboration between municipalities

One of the points under debate is the inadequacy of the power of provincial authorities to treat the municipalities, especially not willing to cooperate with the other municipals and causing lack of municipal interrelation in some regions. This may sometimes produce problematic especially for transport, owing to the increasing importance of

network society and economy with high mobility far beyond the city boundaries. The Netherlands has well experienced that the success of national policies depend on the collaboration of local authorities for implementation. This is also the case for many other countries that are lacking collaboration of local municipalities with the neighborhood, therefore should be paid attention when determining land use and transport policies.

5.6 Centralized nature of taxation system

Despite the decentralized nature of spatial system, the taxation is quite centralized. 93% of the total taxes are collected by the central government, whereas only 7% is the source to regional and local authorities, mainly being used for the spatial development. This, to some extent restrains the desired level of decentralization as lower authorities financially depend on the central government for receiving financial incentives by means of transfers, subsidizes. Today not only the Dutch government itself but also the experts interested in the Netherlands assert the necessity of decentralized taxation system for the country. The poor financial status of the regional authorities also weakens their position within regional implementations, as most of the regional public transport projects are especially under the responsibility of the local authorities. Therefore the country is trying to strengthen financial freedom of small and medium size authorities as it is in France and Germany. However, by contrast the idea that the municipals are encouraged to develop projects in order to claim financial support from the central government is a fact. Highly decentralized taxing may have adverse effects on local municipalities to some extent especially for the case of developing countries.

5.7 Investment plan and expenditures

Although efforts are still going on, the Dutch government disclosed its investment plan for the period by the end of 2010 as follows: new roads: 2.0 billion Euro (0.7 for road pricing); public transport: 2.0 billion Euro; vital cities: 2.0 billion euro; nature conservation: 1.3 billion Euros. All kinds of spatial development investments constitute 11 % of total GDP in which the national government has the share of 5.3 billion Euro and the provincial and local authorities spend 2.7 Billion Euro. Private sector has the highest part with the amount of 30 Billion Euro.

This is a picture showing, how big budget was allocated for the major policies of the latest national spatial and transport plans: vital cities, urban renewal and network of cities. The country well knows about the importance of assigning required resources for the implementation of policies. Because third planning term for 70's fell behind the expectations due to the lack of financial resources.

5.8 Plan do check act (PDCA) system

Until the fourth planning period in 90's, the Netherlands has passed through a learning process to establish its planning framework and develop land use, transport and environmental policy instruments. The authors call it learning period since it was a time of successive 3 planning terms such that what was not achieved or realized as lacking in the previous one was the concern of the following. The first three reports are now described as the efforts for preparing the fourth report by learning from their mistakes. Therefore the authors believe that it may also be used to the benefit of countries developing their urban planning. The first period was mainly for developing urban problems of transport, land use and environment; however it was inadequate to bring solutions to problems. The following term emphasized policy objectives and measures but was lacking to bring necessary programs for implementation. The third national plan developed programs for policy implementations; but it was lacking to cover provision of necessary financial sources. And also it was inadequate and rather inflexible to meet the social needs with the increasing QOL claims of the society.

5.9 Instruments to increase the share of public transport

The Netherlands has managed to achieve high urban densities and save open spaces with their long term urban policies. By contrast, the country was not that much successful with its modal split. Public transport share of motorized passenger kilometers in the Amsterdam, 14%, is very low when compared to that of London with 50% and Tokyo with 80% approximately. This disadvantage was because of being late to improve the public transport network. It is one of the most important dilute parts of their urban planning framework. Therefore the Dutch government is now standing at the point of improving accessibility by public transport. They

have a pocket, consisting of many projects in order to increase the efficiency of the public transport network. This does not only cover the new infrastructures but also renewal of existing systems for increasing the level of service. Also complementary policies like park and ride, road pricing and tax deduction as given above are the future concern for increasing the share. Especially the inter city large rail infrastructures are at the beginning of their investment list. Until now the Dutch government has a large share of financing transport infrastructures. But with the new planning term they are aiming to increase the public private partnership in construction and operation as it was well done in Japan. Lessening the financial burden on the government is also the key issue in developing economies, too.

5.10 Instruments to reduce the need to travel

Some other complementary instruments to reduce the need to travel are also currently under scope. The most promising concepts is "multiple and intensified land use". Multiple and intensified land use is to manage and concentrate the use of both urban and rural areas in order to efficiently use the land and to decrease the demand for traveling. Multiple and intensified land use has four dimensions: first is to make use of even very small piece of land; second refers to the mixture of function in the same place; third is to make more use of one parcel of land quantitatively like high rise or underground construction. Fourth concept is the time management of multiple functioning of one space. Along with the idea of the multiple and intensified land use, the government endeavors to initiate a program called as "Stimulation of Intensified Use of Space Program" (StiR). Twenty two projects have been selected to act as key projects which will be supported by expertise and some amount of funds to examine how and to what extent such implementations can produce favorable outcomes. For example analyzing the availability of more effective use of space along the motorways or around the sea and air ports by taking necessary preventive measures is among the StiR projects.

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