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INTRA-ORGANISATIONAL RELATIONS AND SUSTAINABLE TRANSPORT POLICY FORMULATION IN FINLAND

1 INTRODUCTION

Finland among other countries of The European Union has repeatedly expressed its commitment to the principles of sustainable mobility. Member States and the European Commission are working together to develop a transport system that provides access to people, places, goods and services in an environmentally responsible, socially acceptable, and economically viable manner. Although there is no universally accepted definition of sustainable transport, all the different definitions given consider same kind of objectives relevant for sustainability. Generally, sustainable transport implies finding a proper balance between (current and future) environmental, social and economic qualities (e.g. Black et al, 2002, Haynes et al. 2004, JEGTE 2003, Litman 2003, OECD 1998, Richardson 2004, Ruckelhaus 1989, and UNWCED 1987). It is less clear which environmental, social and economic qualities should be guaranteed and balanced (Steg et al. 2004).

The principles of sustainable transport relate to the latest revolution of transport policy formulation in Europe, also called the post-modern transport problem. According to Dugonjic, et al. (1993) transport issues and related problems can be divided into three categories: traditional, modern, and post-modern. *Traditional transport problem* refers to the everyday question for individuals/firms: how to get (or how to move goods) from one place to another? Traditional transport problem can be seen as a consequence of the rapid growth in demand for mobility, which accompanied the industrial revolution (Stough et al. 1997). The unforeseen increase in traffic has resulted in environmental problems and accidents, which form a key issue in *modern transport problem*, evolved in the mid-20th Century. *The post-modern transport problem* is typical of densely populated societies with congested networks and without much room for further expansion. This makes earlier solutions – increase of transport capacity – difficult to execute and in addition to that also former local environmental problems have been expanded into global sustainability issues relating to overall themes of economic efficiency and equity.

Countries of the European Union are currently living, more or less, the age of "the post-modern transport problem". Stough et al. (1997) note that recently national competitiveness, economic development, technological leadership as well as sustainability issues have been added to the national transportation policy agendas. This broadening of objectives has brought some kind of vagueness into policy formulation and also expanded the range of relevant actors in policy formulation and operations. As a consequence, the traditional transportation institutional framework has forced to accommodate a wider than traditional range of objectives and interests at the same time, that there is a rapid change in transport technology. This again, has resulted new courses regarding e.g. production processes, governance and regulatory environment, managing transportation systems, territorial issues, new actors and stakeholders (Rietveld et al. 2003), which all contribute to involvement of new institutions of transport.

2 THE THEME AND OBJECTIVE OF RESEARCH

In recent years extensive research has been conducted in the European Union to develop appropriate tools for practitioners and policy-makers to develop the concept of sustainable mobility and make it operational. However, most of the research has been mainly technical and focused on policy options, instruments, or assessment methods, rather than on decision making processes. Organisational or institutional aspects of sustainable policy formulation and integration and also how these relate to theories from organisational, policy or political sciences have not been in the focus of transport policy research (e.g. Geerlings et al. 2003, Stough et al. 1997, Rietveld et al. 2002 and 2003). I.e. little attention has been given to whether sustainability principles have led to any institutionalisation in national transport policy formulation or not. Institutionalisation is considered here as emergence of shared knowledge among transport system producers/ providers (and users) about the sustainable development and use of transport system.

Organisational aspects can, however, have significant effects on policy formulation. Even classical organisation theorists (e.g. Scott 1997 and Hatch 1997) have indicated, that organisational structures, processes and outcomes can be explained by their reliance on the environment. In other words, organisations strive to be rational although they are natural and open systems because of their interrelationships with the intra- and inter organisational network and organisational environment. This holds true also in the case of current transport policy organisations with the wide range of relevant stakeholders. E.g. Geerlings et al. (2003) have listed the following categories for barriers to transport policy integration in practice between professions and/or departments: (i) Narrow perspectives, (ii) weak or perverse incentives, (iii) lack of management mechanisms, (iv) professional and departmental culture.

It should be emphasised here, that organisations are not identical to institutions. Organisations are groups of actors with some kind of common interest or goal; institutions structure the relationships between actors and organisations. Institutions can be defined as humanly devised constraints that shape human interaction (North 1990). A related definition is to describe institutions as social rule structures. These rule structures can be both formal and informal. The new institutionalists understand society as a game and institutions as the rules that guide the game (North 1990, Ostrom 1994).

The few existing studies on transport policy formulation and organisational aspects (e.g. Tapio et al. 2002, Bickerstaff et al. 2002) have focused on narrower fields of the transport policy, namely in some parts of formulating policy for road transport. Quite surprisingly, they have found global sustainability objectives and their supporting instruments (i.e. tools to find solutions for post-modern transport problem) rather easy to take up in policy formulation process. Responding to the opportunities and challenges created by the shift in government thinking, from modern to post-modern problem solving (see also Ch. 1) was found easy as well. Tapio et al. (2002) examined procedural development of the future studies in Finnish transport administration in the 1990s. The emphasis was on the different roles of actors in a long-term planning and decision making process. Their interest lied in three groups: the professionals, the decision-makers and the public. They discovered the following impressive paradigm shift: In the beginning of the 1990's future studies presented Comtean positivism, where the whole decision making process is carried out by professionals. At the end of the decade a mixture of Polling democracy and Critical pragmatism, was experimented with. In the former, professionals form the alternatives, but the evaluation is based on weighting criteria by decision makers and surveying public opinion. In the latter, professionals are only helping decision-makers and the public to form alternatives.

Rietveld et al. (2003) have listed the following fundamental organisational and institutional transport issues and questions from a sustainability perspective: (i) Institutions and technological change, (ii) Freight transport: production and logistical processes and institutions, (iii) Territories, institutions, regulatory regimes and transport, (iv) Barriers to implementation in political decision making and (v) Private versus public roles in transport systems.

This paper focuses on points (iii) and (iv) and applies theories of organisation-environment relations (e.g. Hatch 1997, Scott 1997) in analysing how forces in the general organisational environment, relating to the post-modern transport problem (sustainability issues), influence the work and also intra-organizational relations of the public sector organisations (officials) in Europe. Furthermore, how those relations contribute to the formulation of sustainable national transport policy in general is examined. Finland (mainly the Ministry of Transport and Communications Finland) is used as a case reflecting implications of EU Policies at national level.

3 THE RESEARCH CONTEXT

3.1 The Setting

The role of Ministry of Transport and Communications in Finland is to formulate and implement transport and communications policy (MinTC 2004). Ministry prepares policy documents, acts, regulations and decisions which are dealt with and finally decreed in the Parliament, at Presidential sessions of the Council of State (Government) and in the Council of State itself. The Ministry also issues ministerial decrees and renders its own decisions. In policy preparation, Ministry co-operates with other ministries (e.g. Ministries of Finance, Environment, Labour and Interior), modal transport Administrations and other stakeholders in transport sector. The Ministry of Transport and Communications aims to actively disseminate information on decisions and matters that are pending and also to foster lively social discussion as well as co-operation with the transport and communications sector. Forms for stakeholder participation are e.g. Consultative Committees, workshops and common projects.

There are seven Government departments and agencies (three modal administrations (Road, Rail and Maritime), The Finnish Meteorological Institute, Finnish Communications Regulations Agency, The Finnish Vehicle Administration and The Finnish Institute for Marine Research), four unincorporated state enterprises (one of which is Finnish Civil Aviation Administration) and seven state-owned companies, operating within the purview of the Ministry of Transport and Communications. The Government departments and budget-bound agencies are independent organisations. The task of the Ministry is to monitor and supervise their work. The means of monitoring include annual performance targets and follow-up of their implementation and of the use of funds. Liikenneturva, a public traffic safety organisation, is also supervised by the Ministry of Transport and Communications.

Within its purview, the Ministry of Transport and Communications deals with budget economy. The Ministry prepares a budget framework as well as an annual budget proposal, operating strategy and financial plan. The Ministry also monitors the use of funds allocated in the state budget to the Ministry of Transport and Communications and describes their use in its annual report. The work also includes matters related to licences and state subsidies. The Ministry also takes initiatives and makes proposals concerning the taxation of transport and communications, where the responsibility for drafting lies with the Ministry of Finance. The Ministry of Transport and Communications monitors the functionality of the transport and communications system and promotes balanced development of the transport and communications sector. This work is supported by research and development. The power of ministry in regional and communal transport policy making is quite limited.

Within the Ministry, the policy preparation and implementation is dispersed between the Minister, the Permanent Secretary and the three departments (Department of General Affairs, Transport Policy Department and Communications Department). In final decisions, the opinion of the Minister is always decisive. Permanent Secretary leads the policy preparation and the departments. The departments are managed by Director-Generals and divided into thematic units.

The role of Transport Policy Department is essential in transport policy formulation. Consequently, this paper examines the organisational aspects of policy formulation within the department, which is divided into eight director-lead units, each responsible for policy formulation of its own theme. Units and their responsibilities are presented in Table 1.

Table 1. Units of Transport Policy Department in the Ministry of Transport and Communications Finland.

Units of Transport Policy Department	Acronym	
Infrastructure unit	IU	(i) infrastructure maintenance and development of transport networks, (ii) monitoring of infrastructure planning, (iii) land use for transport, regional planning and policy
Passenger transport unit	PTU	(i) development, design and economy of passenger transport, (ii) public transport issues, (iii) promotion of non-motorised transport
Unit for transport and logistic services	TLU	(i) transportation markets, (ii) logistics (iii) development of goods transport, (iv) international road transport agreements
Unit for railways and aviation	RAU	(i) legislation on railways and aviation, (ii) industrial and licence policies, (iii) aviation and railway safety

Shipping unit	SU	(i) industrial and shipping policy (ii) maritime safety and safety of other waterborne transport, (iii) protection of marine environment
Traffic safety unit	TSU	(i) road traffic rules and traffic safety, (ii) design and monitoring of traffic safety work, (ii) driving licences, driving tuition and examinations, (iv) environmental issues in transport
Vehicle unit	VU	(i) construction, equipment and use of vehicles, (ii) roadworthiness and registration
Unit for transport of dangerous goods	DGU	(i) road, rail, waterborne and air transport of dangerous goods

3.2 Empirical data

The empirical data used in this paper stems from two on-going national research projects, financed by the Ministry of Transport and Communications Finland and Technical Research Centre of Finland. Projects aim to develop transport policy appraisal process within the Ministry of Transport and Communications Finland. The data consists of: 1) Finnish transport policy documents, 2) interviews and 3) material from a project workshop.

For the purpose of the studies, together 11 thematic interviews including directors of the Units of Transport Policy Department, Director of Finance as well as the Permanent Secretary within the Ministry of Transport and Communications Finland, were carried out during spring and summer of 2004. The motivation behind the interviews was to have a broader view of the process and problems behind the policy formulation, both from thematic and organisational perspectives.

The interviews covered three areas. The first one focused on units' organisational role in policy formulation. The interviewees were asked question about the progress, participants, co-operation and possible problems within the current policy process. The second area focused more on the substance of transport policy formulation. The interviewees were asked about the status and importance of national transport policy objectives, monitoring of the state of the transport system, transport system impact assessment methods as well as their knowledge and utilisation of user needs in their policy formulation work. The third area, which is less important in this context, concerned the evolving societal need to determine a basic level of service for the whole transport system. Also the possible elements of basic level of service were discussed.

In addition to the interviews, Finnish transport policy documents from the late 1990's to 2004 were reviewed and examined. Papers consisted of the following documents: A long-term policy paper: Towards intelligent and sustainable transport 2025, Annual budget proposals and operating strategies of the Ministry, Strategic performance measurement documents (Balanced Scorecard 2004) for Units of Transport Policy Department, Strategic performance targets 2004 for modal transport Administrations (Road, Rail and Maritime) and an Evaluation report of the performance of Finnish National Road and Railway Administrations 2004.

Furthermore, to have a broader view of the policy formulation process, also from the perspective of modal transport Administrations, a Workshop for officials from the Ministry as well as from the modal Administrations, was arranged in autumn 2004. Workshop focused on interaction between Transport policy Department and national transport Administrations in policy formulation process. The questions discussed concerned transport policy monitoring and forecasting and also the importance of mapping user needs in the policy formulation. The roles of each of the partaking organisations in the policy process were reviewed and analysed.

3.3 The Framework

In modernist organisation theories (see e.g. Hatch 1997), the organisational environment is conceptualised as an entity that lies outside the boundaries of the organisation. Organisational environments are typically defined by their elements. The most common way of sorting out of these elements is to divide them into the organisational network, the general environment and the international environment. Figure 1 presents more detailed description of organisational elements according to Hatch (1997): Every organisation interacts with other members of its environment. These interacting elements form the organisational network, which consists of suppliers, customers, competitors, unions, regulatory agencies and special interest groups in relation to the organisation. In addition to significant actors in the organisation's network, there are a host of more general forces at work in an environment. These forces will have an effect throughout the network, yet, analysis of the network alone is unlikely to pick them up. For this reason an analysis of general environmental conditions is used in appreciating the links between an organisation and its environment. To conduct such an analysis general environment is divided into different sectors including: legal, physical, economic, technological, social, political and cultural. The international environment includes aspects of the environment that cross national boundaries or that are organised on a global scale. Because of the partly global nature of the post modern transport problem (sustainability issues) general and international environments are considered here as one and named simply, general environment.

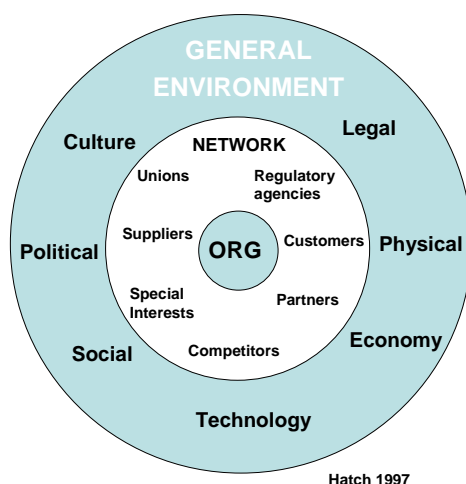


Figure 1. Organisational environment.

The theories of organisation-environment relations (e.g. Hatch 1997, Scott 1997) derive from differing levels of analysis and different assumptions about whether the organisation influences or is simply at the mercy of its environment. They rely commonly on the

environment to explain organisational structures, processes and outcomes. Organisational environments aren't, however, stable. Environmental uncertainty has been defined as an interaction between varying amounts of complexity and change in the environment (e.g. Duncan 1972). The problem with the environmental uncertainty perspective is that it assumes that conditions in the environment are experienced in the same way by everyone. Today organisational theorists recognise that uncertainty lies not in the environment, but in the individuals who consider the environment when they make the decisions. The information perspective (Hatch 1997) argues that decision-makers feel uncertain when they perceive the environment to be unpredictable, and this occurs when they lack the information that they feel they need to make sound decisions.

This paper focuses on analysing how current trends in general environment, relating to the post-modern transport problem (sustainability issues), influence the fields and relations of various Units of Transport Policy Department (TPD) of Ministry of Transport and Communications Finland. These influences can be traced moving through the network and into the organisation (Unit) itself. Here even deeper, into the eight departmental units. Thus, the units are not simply contributing members of the environment they are embedded in their environment. The eight units form together TPD, the (main) organisation, responsible for the co-ordination of policy formulation. The analysis is thus extended into the intra-organisational level.

The following chapters analyse above influences, defined by interviews, policy documents and a workshop (see also chapter 3.2), to find out what really matters in organisational relations within the Transport Policy Department. I.e. how Units really operate as individuals within the organisational configuration (Department) and what those operations tell about the significance of organisational relations. Ultimately, how those relations contribute to the formulation and institutionalisation of sustainable national transport policy in general, is examined.

First, trends in the general environment of the Ministry of Transport and Communications Finland, is defined. Second, relationships between general environment and each of the units are specified. Third, similarities and differences between units are examined. An analysis of a complicated network of interacting and competing organisations (stakeholders) and also their implications to the formulation as well as institutionalisation of sustainable transport policy is not considered here, but left for the agenda of forthcoming research.

4 DEFINITION OF RELATIONSHIPS

On the basis of empirical data (interviews and policy documents), evolving trends, drivers and pressures within the sectors of general environment of the Units of Transport Policy Department in the Ministry of Transport and Communications Finland were defined (see Figure 2). Trends within sectors might be overlapping. E.g. trends in the legal sector are often difficult to separate from trends in political and economic sectors. The general environment was presumed to be the same for all of the Units and to reflect general aspects consequential especially for Finland.

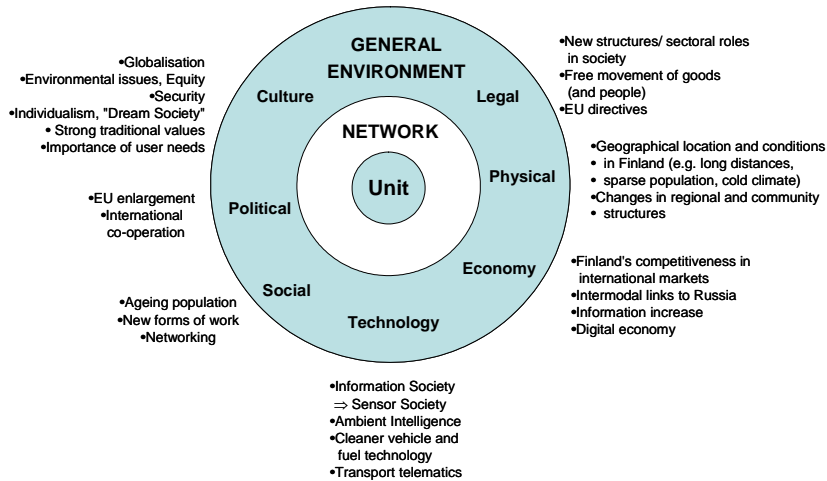


Figure 2. General organisational environment of Units of Transport Policy Department.

Illustrations presenting relationships (influences) between the sectors of general environment and the Units of Transport Policy Department in policy formulation process were then defined based on empirical data. Figure 3 presents maps of influences between sectors of the general environment and individual units. The arrows describe the strength of the relationship. The stronger the relationship, the more field of the unit relates to the basic contexts of the sectors. I.e. close and regular co-operation with network actors as well as interest in issues related to sectoral trends in everyday work, constitute a strong relationship, a minor and occasional co-operation and interest a weak relationship. Moderate relationship lies in between those two.

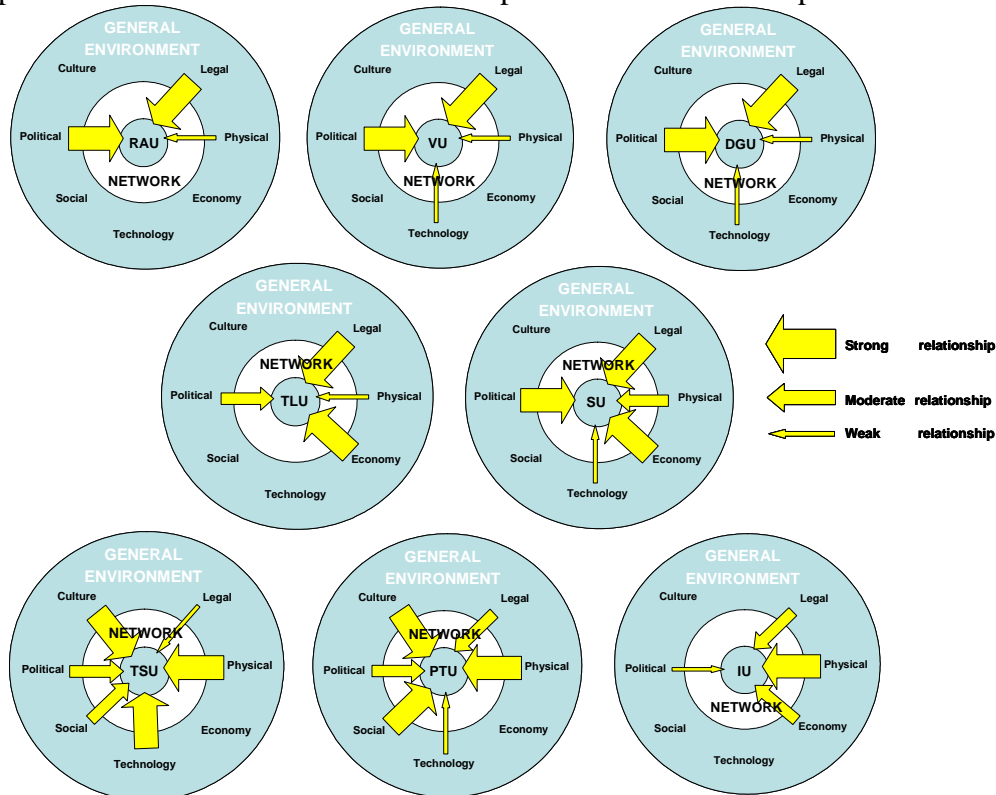


Figure 3. Relationships between the general environment and the Units of Transport Policy Department.

Three different types of relationships were found. The first type (first row in Figure 3), indicated strong relationship between legal and political sectors of general environment and the Units. Legislation and international relations seemed to form the main duties of the Unit for Railways and Aviation (RAU), Vehicle unit (VU) and Unit for transport of dangerous goods (DGU).

In the second type (second row in Figure 3), in addition to legal and political sectors, also economic influence was strong. Finland's competitiveness in international markets, industrial policy and their implications to transportation of goods were issues of great importance, for the Unit for transport and logistic services (TLU) and Shipping unit (SU).

In the third type (third row in Figure 3), the number of relationships was generally greater than in the previous ones. Relationships, from strong to weak, could be detected between nearly all sectors of the general environment and units. Cultural, social and physical dimensions of the environment played the most important role here. Transport safety (TSU) and Passenger transport (PTU) units belonged to this category. Environmental and safety issues of transport, promotion of public transport, walking and cycling were themes highlighted in the work of these two units.

Infrastructure unit (IU), however, seemed to operate differently and have strong relationship only with physical sector. Development of transport networks and their relations to regional planning and land use formed the core of the work of this unit. Due to the monetary value of transport networks under infrastructure unit's supervision, it has a certain financial supremacy over other units. Surprisingly, also development of passenger car transport issues belonged under the tasks of this unit and not for Passenger transport unit. IU's relationships with general environment, and also its role within the Department were found very fascinating. By being responsible for the infrastructure development, unit has a crucial role in directing Finnish transport system into a more sustainable direction, both nationally, locally and EU wide. For this demanding task, influences from the various sectors of organisational environment (representing the post-modern transport problem) were seen to be quite remote.

It should be emphasised here, that that nearly every sector of the general environment was noticed to influence nearly every unit, but only the strongest or the most evident ones have been analysed here.

5 DISCUSSION

This study was designed to review the significance of intra-organisational relations in policy formulation of the Ministry of Transport and Communications Finland. The main results (relationships in Figure 3) showed, that only three units out of eight have focused on strategic issues relevant for long term transport policy formulation and global sustainability perspective, also called the post-modern transport problem (see Chapter 1). Strategic transport issues or themes can be characterised by attributes like long term, structural change, multimodality and spatial dimensions like national or European level. Legislation and international relations has been the focus of the work for other units. Consequently, results indicated that relationships, between units and the general environment occurred at least in two different levels: On a strategic level, but surprisingly much also on another level, specified here as legislative level. In other words, influence from the same general environment was perceived differently depending on the level, on which the unit belonged to.

Three units (TSU, PTU and IU) were seen to operate on the strategic level and all five others (RAU, VU, DGU, TLU, SU) on the legislative level. This polarisation in addition with natural differences between various units, has resulted a lack of understanding as well as information between the units of the Transport policy department. These circumstances have stayed the same for years now.

According to interviews legal and institutional obligations from the European Union (and also from other international organisations) can be seen as a one major prime mover behind the polarisation development. Another one is likely to be the Department's current incentive structure, which encourages more interest in what an individual unit contributes to a department goal, rather than what the whole department contributes to the goal. In addition, aspects related to narrowness of perspectives (e.g. overall goals vs. unit goals) and also professional and management culture were identified (cf. Geerlings et al. 2003). These constraints have increased the emphasis of the enforcement level in Finnish policy formulation at the expense of the strategic level. This progress has resulted serious shortcoming in the nature of social resources (stemming from prioritisation and allocation of work, age structure and its implications, ageing knowledge, etc.) within these legislative level units, as well as promoted the differentiation of tasks of the units. As a consequence, both time and desire of the units, for common visioning and policy formulation, have diminished. Shortcoming in interaction has increased individuality in social structures and at the same time strengthened the desire of various units to respond the trends and pressures from the general environment individually, without a common strategy. It seems that above elements have raised strong organisational barriers between the units of Transport policy department. Barriers have prevented a successful development of a departmental process, on how to work together in answering to the post-modern transport problem (sustainability issues) as a one organisation. The following quotations describe the beliefs of five different Heads of Units:

"Too many of the other Units believe that it is enough to take care of one's own field in transport policy formulation, and that co-operation between units is not necessary or even possible."

"Other units can't see the importance of the long-term work, done by our Unit."

"The Department doesn't have a process how to work together. On the other hand, no-one is willing to make the first move."

"Fields of the Units are so different, that is difficult to work together."

"The contents of the fields of various Units aren't assigned the best possible way. Roots for the assignment are, however, deep in the organisational tradition and difficult to change."

The current situation, which has been going on for years within the department, is named here as a circle of organisational disorder and presented in figure 4. The findings suggest that the more time department continues to act under the circle the greater the departmental entropy (organisational disorder) is expected to grow. The results indicate that a common commitment within the Department to enhance the sustainability of Finnish transport system by rising to the challenges of post modern transport problem as a one organisation, has not been strong enough. The interviews revealed that attempts to build shared knowledge for the Department, by trying to bring units into close co-operation, has not been very successful for the past years, more or less the time sustainability issues have been on the agendas of European transport formulation.

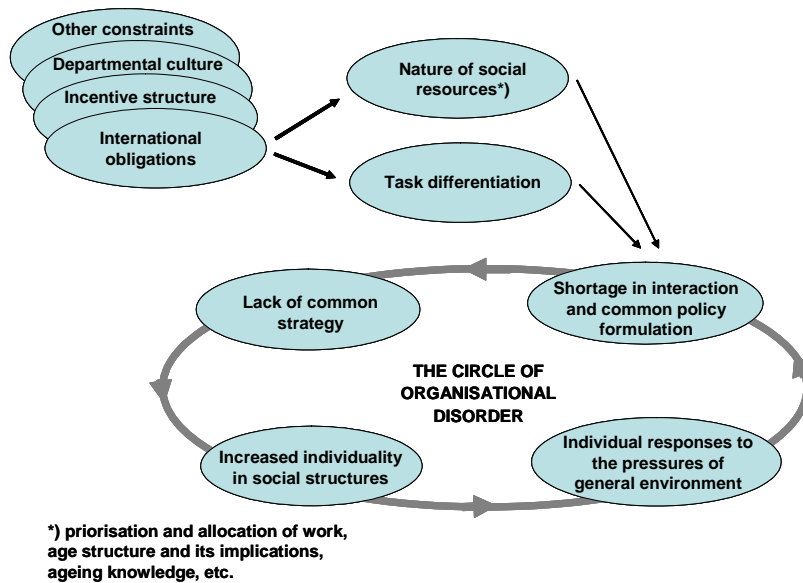


Figure 4. The circle of organisational disorder and its causes within the Transport policy department.

The main interest of this paper was to examine sustainable transport policy formulation from the organisational perspective. The findings were quite opposite to some earlier studies (e.g. Tapio et al. 2002, Bickerstaff et al. 2002), which had found global sustainability objectives and their supporting instruments quite easy to take up in the transport policy formulation process. The focus of these studies hasn't, however, been exactly the same (roles of ministerial units vs. roles of network actors), which can be seen as an explanation to different results. Also, when examining deeper the citizen participation and stakeholder interaction, as e.g. Rask (2003) in Finnish biotechnology policy, and Geerligts et al. (2003) in European land use, transport and environmental policies, problems related to organisational interrelationships, in line with the ones discovered here, have been identified.

6 CONCLUSIONS

The latest revolution in transport policy formulation in Europe, represented by the principles of sustainable transport, has changed the thematic agenda of the transport policy formulation also in Finland. The findings suggest that to get sustainability issues institutionalised into the policy formulation process, the outdated organisational social structures and processes have to be opened for change within the Transport Policy Department and its several units. Organisational social structure is considered here to be comprised of hierarchy of authority, a division of labour and formal rules and procedures (Weber 1947). According to a dynamic model of social structure (structuration theory, Hatch 1997), the success of change (reorganising) will ultimately depend upon individuals changing their daily patterns of interaction. Without this change, old patterns of relationships will be maintained and the intended reorganisation will not be achieved.

It is still less clear, how the relationships between Units of TPD could be balanced the best possible way, but in any case, it means reorganising the current two level approach (strategic and legislative) of policy formulation into a more open and flexible one. In other words, the circle of organisational disorder has to be broken down. Consequently, this means shift to a completely different ways of making strategic choices or formulating policies. I.e. a shift from the rational systems approach, where formal organisational structures are celebrated to the

open systems approach (see also chapter 2). The open system view (Scott 1998) of organisational structure stresses the complexity and variability of the individual parts, both individual participants and subgroups, as well as the looseness of connections among them. Attention is shifted from structure to processes. The environment is seen to be the ultimate source of all that is vital to the continuation of the system (organisation). Indeed, the environment is seen to be the source of order itself.

In the case of Transport Policy Department, general forces (trends), relating to the sustainability issues (see also Figure 2), influence the fields of various units of the department. According to open system view, the intra-organisational structures (current unit structure) should consequently adapt to or follow those main influences. Different parts of the system (units?) should be loosely coupled with other parts and thus flexible to meet the changing influences, coming from the organisational environment and to incorporate them into the transport policy formulation process. Shifting into the open system view in national transport policy formulation, might actually offer a possibility to finally get the sustainability perspective institutionalised into the national transport policy processes in Europe.

Research done about organisational learning might provide some help in this shift (see e.g. Alava, 1999, van der Heijden 2004). Alava (1999), who has conducted an extensive research on organisational learning, has defined that as a shift from strategic planning to strategic thinking. He notes that central to this thinking is dynamic perspective of the change in the organization, changes in its environment, and also changes in strategic work. Information and ideas flow both vertically (top down- and bottom up) and horizontally crossing the old boundaries of departments and units. Alava (1999) notes, that in order to make sure that real change happens, organisation has to move all the way round the four dimensions of Strategic Learning Cycle, which are: analysis, visioning, commitment and actions. Fortunately, in the case of Ministry of Transport and Communications Finland, organisational pressures, partly arising from Ministry's former role as a licensing organisation, have finally been recognised also by the Ministry itself. Lots of work is still, however, needed to find the exact processes which actually fit for purpose within the shift from rational to open system approach in formulation of sustainable transport policies.

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