

**The impact of EU integration
on Hungarian environmental policies:
Social Network Analysis
of waste management
in the Region Central Hungary**

By

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1 Introduction

Aims of the study. This report describes the main patterns of institutional arrangement, policy learning and Europeanization of Hungarian environmental protection policy, with special focus on waste management policies in the Region Central Hungary. The report aims to present the main characteristics of this region, with special respect to the domestic institutional structures of environmental policy and their process of Europeanization, in particular the co-operation among regional and local actors. Attention is paid to the interaction patterns and networks between domestic public institutional structures, the private sector and the civil organisations within the European context, especially within the framework of legal harmonisation and the ISPA Programme. The study presents the significant failure and success patterns of institutional development and policy learning in the process of Europeanization as appearing in waste management activity in the selected case study region.

Information sources and methods. The report relies on a previous National Study¹, and a workshop paper². The main empirical basis of the report is a series of structured interviews made with various stakeholders of waste management of the Region Central Hungary. The interaction patterns of interviewed stakeholder institutions is modelled (a) in a qualitative way and (b) quantitatively, by using standard computerised algorithms of Social Network Analysis (SNA).

In the following table the interviewed organisations are grouped according to the level of governance and organisational-legal form. The interviewed stakeholders have been classified according to

- Tier or geographical range of activity (National / regional / subregional / municipal / local);
- Sector or ownership (Public / private / mixed public-private / civil);
- Legal form of stakeholder.

¹ G. Horváth, I. P. Kovács, T. Fleischer and P. Futó: Multi-level Governance and the Impact of EU Integration in Hungarian Regional and Environmental Policies. Pécs -Budapest, July 2002. Paper prepared as Hungarian National Report within the ADAPT project.

² The adaptation of Hungarian waste management policies to legal, institutional and financial arrangements of the EU. Paper presented to the Workshop of the ADAPT Project, Brussels, 4. November.

In the last column of the table an abbreviated name of the stakeholders is presented, to be used in the subsequent numerical analysis.

Table 1.

List of interviewed stakeholders of Waste Management in the Region Central Hungary

Serial No of Stakeholder	Tier or geographical range of activity	Sector or ownership	Legal form of Stakeholder	Name and location of Stakeholder	Prefix_ and Label
1	National	Public	Central Government Institution	Ministry for Environment Protection and Water Management (Budapest)	GN_MinEn
2	Regional	Public	Decentralised Government Agency	Environmental Protection Chief Directorate of the Middle Danube Valley Region (Budapest)	GR_EPAge
3	Regional	Public	County Government	Office of County Pest (Budapest)	GR_PestC
4	Regional	Public	Regional Development Institution	"Pro Regio" Regional Development Agency of the Region Central Hungary (Budapest)	GR_ProRe
5	Municipal	Public	Local Government	Budapest	GM_Budap
6	Subregional	Public	Sub-regional Association of Local Governments	South Buda Vicinity Regional Development Association (Budakeszi)	GS_SBuda
7	Subregional	Public	Sub-regional Association of Local Governments	Zsambek Basin Regional Development Association of Local Governments (Biatorbagy)	GS_Zsamb
8	Local	Public	Local Government	Aszod	GL_Aszod
9	Local	Public	Local Government	Budakeszi	GL_Budak
10	Local	Public	Local Government	Csomor	GL_Csomo
11	Local	Public	Local Government	Godollo,	GL_Godol
12	Local	Public	Local Government	Pusztazamor	GL_Puszt
13	Local	Public	Local Government	Solymar	GL_Solym
14	Local	Public	Local Government	Zsambek	GL_Zsamb
15	Local	Public	Utility Firm	Municipal Public Space Management Shareholder Company (Budapest)	FRPu_FKF
16	Local	Public	Utility Firm	Okoviz Ltd. (Cegled)	FRPu_Oko
17	Local	Public	Utility Firm	VUSZI Ltd. (Godollo)	FLPu_VUS
18	Local	Public	Utility Firm	Ceszolg Ltd. (Cegled)	FLPu_Ces
19	Regional	Private	Utility Firm	ASA Hungary Ltd. (Gyal)	FRPr_ASA
20	Regional	Private	Utility Firm	Biofilter Ltd. (Budaors)	FRPr_Bio
21	Regional	Private	Utility Firm	Doppstadt Ltd. (Zsambek)	FRPr_Dop
22	Regional	Private	Utility Firm	Ereco Co. (Budapest)	FRPr_Ere
23	Regional	Private	Utility Firm	Pyrus-Rumpold Ltd. (Budapest-Aszod)	FRPr_PyR
24	Regional	Mixed Public - Private	Utility Firm	Becker Ltd. (Erd)	FRM_Beck
25	Local	Private	Utility Firm	Mozes Ltd. (Cegled)	FLPr_Moz
26	Local	Private	Utility Firm	Selective Waste Recycling Ltd. (Tura)	FLM_SHTu
27	Regional	Mixed Public - Private	Utility Firm	Rumpold Bicske Ltd. (Bicske)	FRM_RuBi
28	National	Civil	Trade Association	Association of Privately Owned Waste Management Service Providers (Budapest)	TA_PrWMF
29	National	Civil	Trade Association	Association of Publicly Owned Waste Management Service Providers (Gardony)	TA_PuWMF
30	National	Civil	Trade Association	Association of Recyclers	TA_Recyc
31	National	Civil	Environment Protection Pressure Group	Humusz Environment Protection Association of Waste Management Issues (Budapest)	CN_Humusz
32	Regional	Civil	Environment Protection Pressure Group	Zsambek Basin Environment Protection Association (Perbal)	CR_Zsamb

2 Profile of the selected region

2.1 Reasons for selection of the region as a case study

The Hungarian Parliament established seven regions in Hungary by the acceptance of National Regional Development Concept on the 10th of March, 1998. We decided to choose the Region Central Hungary, that is the region that includes the capital and the surrounding Pest County for the following reasons.

The Budapest – countryside division is a clear case of centre-periphery relation, and represents a major, ever-recurring issue of territorial distinction accompanying Hungarian regional development. The region is composed of a highly urbanised centre, its urban agglomeration and the surrounding countryside. Thus territorial imbalances within one region can be properly illustrated by this choice.

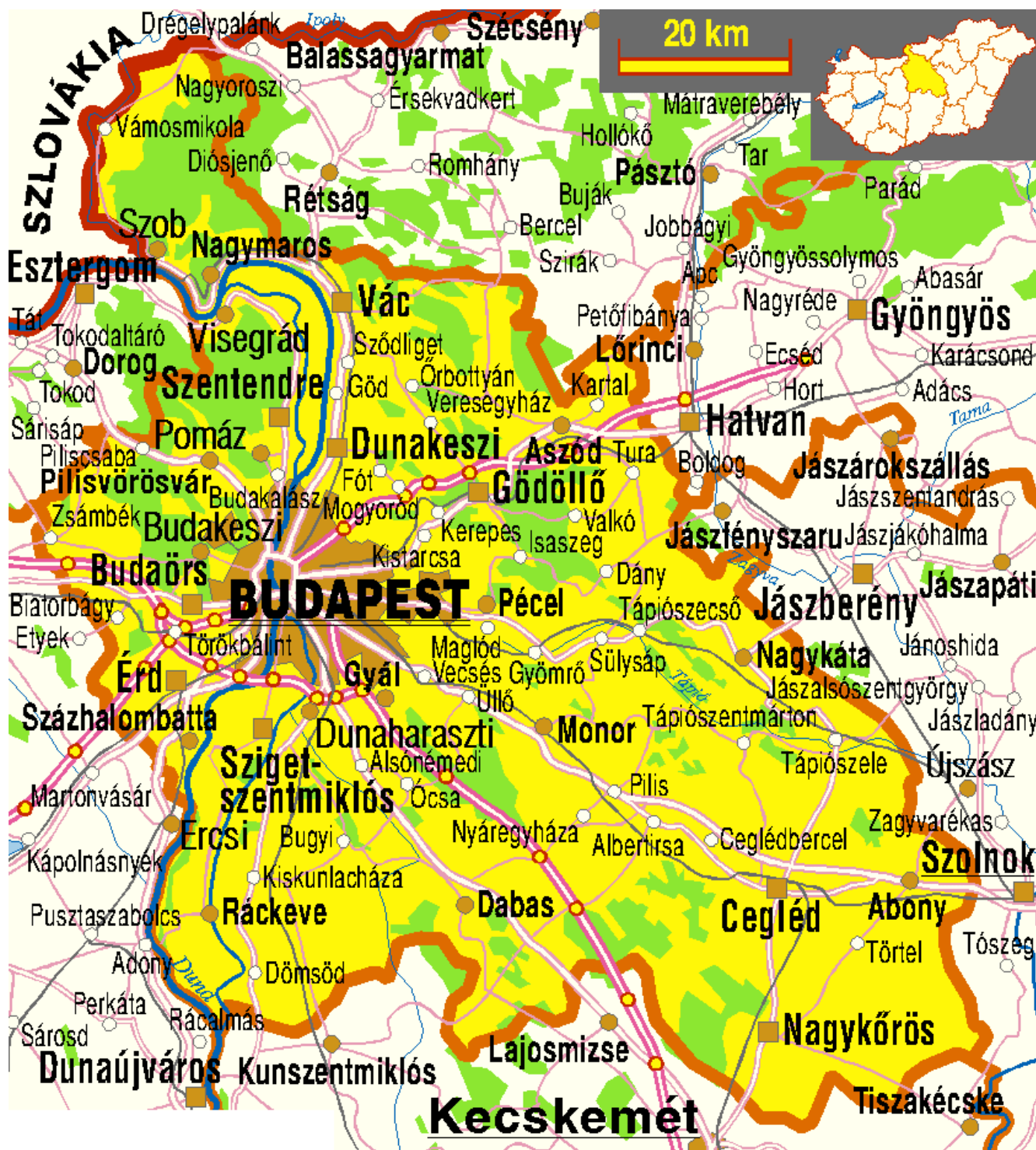
The region seems to be an interesting area for research in centre-periphery relations in environmental issues as well. It has been selected as a representative case of the way solid waste management policy is implemented, waste management is organised. The Region Central Hungary is a densely populated area, where the centre (the capital Budapest) produces large quantities of waste but lacks available space due to highly competitive uses of land. Therefore the capital co-operates with settlements in its agglomeration in using land for waste disposal purposes. The region exemplifies in a clear manner the mutual interdependence of a large city and the nearby countryside.

The case study aims to highlight the necessity of co-operation and of multi-level governance within one region.

2.2 Local characteristics of the region

Hungary is divided into 19 counties and the capital city of Budapest. The Region Central Hungary is the smallest among the 7 Hungarian regions, but it has the biggest population: 28% of Hungary's population lives here - approximately 2,8 million people, of which 1,84 million live in the capital Budapest. The Region has four neighbouring regions and borders with Slovakia to the North.

Figure 1.
The Region Central Hungary ³



³ Downloaded from the website <http://lazarus.elte.hu/hun/hunkarta/varme/pes/pest.gif>

Economic situation. The relatively favourable situation of the region as a whole is determined by its central position, the relatively highly developed infrastructure, and by the dominance of the capital and its agglomeration. The region contributes two-fifth to the Hungarian GDP, concentrating 40% of all active economic organisations in the country. The importance of financial services and real estate development are constantly growing, enhancing the dominance of service sector within the economic structure of the region. The region is one of Central Europe's focal points in terms of attraction of foreign direct investment (FDI).

However, there are considerable territorial differences inside the region. While in Budapest the per capita GDP produced is double of the national average, and 89% of EU GDP, in the surrounding Pest County the per capita GDP is only 78% of the national average. As of the industry, the capital city of Budapest concentrates branches of production with high added value, like electronics, pharmaceuticals, chemicals, confection, food, and printing industry. Pest County is the site of traditional industries such as oil refinement, production of electronic machines and tools, alimentary and textile industry.

Migration and employment. Since the 1960s Budapest as the economic and administrative center of the country has deeply influenced the migration flows of Hungary. The working places created in the capital have attracted many people formerly working in the agrarian sectors of the countryside. The agglomeration of the capital is characterised by the spontaneous creation of several "sleeping settlements", whose population commutes daily into the working places of the capital. In the region the number of the unemployed has been decreasing for years, and unemployment rate in 2000 is 5.3%, less than the country's average. There has been a shift in employment in the last decade from the production sector to service sector.

Education and research. The Region Central Hungary - especially the capital - plays significant role in education: More than one fourth of all students of the country attending secondary schools learn in institutions of the Region Central Hungary, while 44% of high level education students pursue their studies here. The region has the largest capacity in Hungary in the education of economists, doctors, technical experts and artists . Two-third of scientific researchers and developers works here. Two third of budget devoted to R&D has been invested in the Region.

Transport. Due to the centralised radial structure of the Hungarian transport network the Region has a unique position in public road and railway systems. All motorways and main rail lines of European importance cross the region. Ferihegy, Hungary's only international airport is also located here. The river Danube crosses the region.

Tourism. One sixth of commercial places in public accommodation is to be found here, mostly in Budapest, which receives 2 million visitors yearly. The capacity of tourism in the region has been increased in the last few years.

Environment. In the capital city Budapest the general state of environment has become a veritable bottleneck of urban development. Air pollution, sewage problems and lack of green surfaces in the crowded inner city districts are on the top of the list of urban problems. In the immediately surrounding, still highly industrialised but densely populated agglomeration and further out in the predominantly rural countryside the state of the environment depends on the fact, whether the impacts of heavy industry, dense transport network, agriculture or the vast nature reserves are predominant.

Municipal solid waste production and collection. In Hungary local governments that are obliged to assume the major responsibility for solid waste management, but well-defined, less significant responsibilities exist at the county and region level as well. Local governments provide waste management services either through their fully owned local utility companies, and/or through private utility firms. In some cases, local actors have entered into inter-municipal co-operation schemes to organise the collection, processing and disposal of wastes in order to benefit from economies of scale.

- In the capital Budapest the quantity of the municipal solid waste collected in the framework of public service is approximately 4 million cubic metres. During the 90's the population of the capital has decreased by ten percent and this has diminished the quantity of municipal waste. Organised waste collection covers almost hundred percent of the capital. The single waste incineration work of Hungary operates here, and processes 60% of all collected municipal solid waste of the city. At the beginning at the 90s there were still 4 landfills on the territory of the capital, all of which have been filled up and closed. For the disposal of the rest of the municipal waste of Budapest the landfills of the surrounding Pest County are used.

- On the other hand, the surrounding Pest County produces yearly 1.7 million cubic metres of municipal solid waste, which has increased during the 90s. Organised waste collection has been dynamically developing in the County.

Industrial waste production.

- *Hazardous waste.* As companies are obliged to report hazardous waste production, data are available on hazardous waste production. Between 1993 and 1997 the production of hazardous wastes has significantly decreased both in Budapest (from 600.000 tons/year to 200.000 tons/year) and Pest County (from 400.000 tons/year to 75.000 tons/year).⁴
- *Non-hazardous industrial waste.* This category of industrial waste can be estimated to amount to 1 660 000 t/y in Budapest and to 780 000 t/y in Pest county.

The region is characterised by a continuous practice of uncontrolled dumping of wastes into illegal landfills.

2.3 Political climate and regional identity

The regionalization of the country is still the subject of heated debates, a process of which the official creation of the Hungarian regions in 1998 was only a significant milestone. While the "19 counties plus Budapest" pattern has an unquestioned legitimacy based on a thousand year tradition of county structure, counties are too small territorial entities to correspond to the principles of the Regional Policy and of the Structural Funds of the EU. However, the official seven regions created in the 1998 Law of Regional Development does not exactly correspond to characteristic regional identities.

Regional identity is further weakened by the fact that the decision-making bodies of the regions - the Regional Development Councils - are not directly elected. Their members are delegated partly by local level and county level governments, partly by interest groups, and partly by sectoral ministries. The exact functions of the regions within the Hungarian public administration and in regional

⁴ However, the heavy decrease is partly due to a new classification of the hazardous waste categories.

development have remained rather vague and have frequently been changed by the consecutive Governments. As recently as in January 2003 the Ministry for the Interior has publicised a concept whereby settlements and subregions on the border of the existing 7 regions should be entitled to choose the region they belong to.

Among the dozen policy areas of Hungarian governance it is only the traditionally weak regional policy of which the official regions are implementing institutions. Subsequent governments have made decade-long efforts in order to institutionalise the co-ordination of the impacts of government decisions on the territorial level, to harmonise regulations and special fund utilisation of the sectoral ministries. Regional equalisation has gained in importance because since in the 1990s market forces have reinforced traditional territorial and social inequalities. The 7 official regions and the 150 official subregions can be regarded as implementing agencies of these policies. Although regional identities are reinforced step-by-step as gradually more and more resources are being attached to the decision-making bodies of the regions – the results of these efforts are still weak. In this process the impact of EU rules and funds cannot be under-estimated.

Regional borders are artificial to such an extent, that a substantial number of well informed citizens do not know, what is the name of the region they live in. On the other hand, an important minority, such as the public administration community, and in particular officials and beneficiaries of the Hungarian regional development policy are well aware of the significance of the regions.

Among such circumstances the political weight of the regions is rather weak. The most important resources such as administrative jurisdiction, budget redistribution power, and basic institutions are still concentrated at the central, local and county level. On the other hand, settlements and counties are reinforced by a territorially defined century long sense of collectively belonging together.

For the above reasons the political climate of the Region Central Hungary does not differ significantly from that of other regions of the country. What follows below, is a summary of what is specific for the political climate of the Region Central Hungary.

Budapest as the centre makes the Region a special case in comparison to the other 6 regions. In the last 130 years Budapest has become the location of the headquarters of Hungarian public services. The city monopolised a wide range of decision-making in the private sector, and developed to be a key location for all kind of products and services by becoming a busy transit hub and a large internal market. The Budapest centralisation has been particularly strengthened in the rural exodus of the 50s and 60s, when the capital was the most important pole where new jobs were created. Therefore it is not surprising that the unity of the capital and of the surrounding countryside is questioned from time to time.

The identity of the Region Central Hungary was seriously questioned when in 2002 a group of delegates of the General Assembly of County Pest proposed the splitting of the Region. The declared aim of the move was the maximisation of the expected future flow of income originating from the Structural Funds. The centre of the region, the well-developed Budapest has a per capita GDP 89% of the average of the EU, which might diminish the support received by the Region under the regional policy of the EU. On the other hand in the surrounding region - i.e. in the County Pest - the respective indicator is approximately 40%.

Thus - according to preliminary calculations - if Hungary enters the EU with a united Region Central Hungary, this leads to an expected loss of 200 Million Euro per year for the region. The calculation was based on yet non-existing, still to be defined redistribution rules of the Structural Funds. The municipal authorities of the capital opposed the splitting of the region and the referendum move. The group of Pest County delegates favouring the institutional divorce has initiated a referendum among the 810 thousand inhabitants eligible for voting in the County Pest. However, in September 2002 the Supreme Court has annulled the move for the referendum as unconstitutional.

The above debate was heavily influenced by party politics. The Region Central Hungary is characterised by a decade long success of the Liberal and to a certain extent of the Socialist party in Budapest, whereas in the agglomeration and in rural areas of the Region an equilibrium between liberal, socialist and middle right forces can be observed.

2.4 Patterns of interest intermediation and representation

Since the political changes of 1989 the patterns of interest intermediation have profoundly changed in Hungary. Interest groups such as employers, employees, professions, moreover issue-oriented organisations in the environmental, social, urban and other policy areas have freely established their representing organisations in form of associations, foundations and chambers. A law for NGOs ensures their participation in the rule-making process by declaring their right to be consulted by the Parliament.

Various tri-partite and bi-partite organisations have been set up on the national, regional and county level, where central and local Government organisations on the one side and representatives of interest groups on the other side participate in the bargaining process over regulations and their implementation and over funds utilisation. Some of these interest-mediating organisations are influencing the work - and sometimes implementing the policies - of the central tier of government, others work at regional or county level.

In the environmental policy field a wide ranges of NGOs and lobby groups work on influencing the decisions of the main stakeholders. Chambers of commerce work on representing the interests of their members in the regulation of waste management. Experts of environmental pressure groups are often involved in ministerial committees working on specific issues of waste management. While their participation in the debates is granted, their impact is relatively weak.

Waste policy involves the continuous intermediation and representation of interests of the relevant stakeholders. Typical patterns of this interest intermediating and representing activity that have evolved during the last decade are presented in a bottom-up scheme:

Manufacturers of products that eventually become waste, moreover producers or holders of waste must pay the waste treatment costs or dispose of the waste according to the polluter pays principle, according to the Waste Law of 2000. This has led to the establishment of specific waste management companies, co-owned a run by big manufacturer and trade companies producing a substantial amount of waste. Entrepreneurial awareness regarding waste management is at lower level among smaller and medium sized companies, and their trade associations often represent a negative attitude towards strict

regulation. Economic interest groups intensively participate in the rule making process and EU integration is often taken as a pretext to enforce their vested interests and to deviate investments from their optimal schedule and efficient allocation.

Waste management utility firms, operators of waste treatment facilities. According to the Waste Law of 2000, these actors must draw up a schedule to implement the requirements provided in the waste act and must verify the environmental and technical conformity of landfills by environmental audits. Most of these companies are privately owned, the bigger ones regularly by foreign investors. However, there is a wide range of publicly owned utility companies, whereby some of them - and typically the landfill operating companies - have private co-owners as well. Both types of firms and the recycling companies as well have organised their trade associations which work actively on the representation of the interest of their members, successfully influencing the rule making process, the formulation of waste management strategy and the administrative structures of waste infrastructure development.

Local governments. In accordance with Article 21 of the Law on Waste Management (2000) obliges the local governments to organise and maintain a waste treatment public service to manage the waste generated by the real estate owners. They are expected to ensure the disposal of abandoned waste, maintain public areas through regular services and manage municipal waste.

Since the 1990 Law on Local Governments, the nature of the waste management task of the municipalities have changed from rather facultative to rather obligatory. Moreover, the Law on Waste Management (2000) enables local governments to co-operate with each other in order to perform their public service duties in the form of formulating co-operation contracts with each other, or, in accordance with the Association Act, association contracts.

Local Governments use the existing institutional framework to fulfil the following aims:

- To create price and quality competition among privately and publicly owned waste utility firms through co-operation with other local governments.
- To establish or to maintain their own utility firms or to create the financial and organisational conditions of co-owning such companies by entering into public - private partnerships with privately owned waste utility firms

- To enter into subregional associations with other local governments - regardless on county or region borders - in order to participate in subregional waste management investment projects. These projects are regularly co-financed by the EU, the Hungarian Government, the beneficiary local governments themselves, and occasionally by private stakeholders.

Pest County. According to waste legislation in force, all county governments are responsible for promoting environmentally sound waste treatment within the territory of the county. In particular, they must draw up a county waste treatment plan, select - in co-operation with municipal local governments - areas within the territory of the county that are suitable for waste treatment and disposal, collect local waste management plans from municipal governments and harmonise them, co-operate with other county governments in accomplishing waste management tasks, and finally, promote and support the establishment of joint waste treatment sites of local governments. In the investigated region, on county level the main stakeholder of waste policy is the Assembly and Administration of Pest County. The county has a Strategic Program and a separate Waste Management Plan, the two documents are harmonised.

The capital city Budapest. The Mayor's Office of Budapest is the most powerful actor of the regional waste management market, since the capital city is a big consumer of waste management services, and in the same time the owner of the biggest waste management utility company: FKF Inc.. The aims of the municipal solid waste management in Budapest are defined in the Municipal Waste Management Concept, elaborated by the Environment Management Institute, in 2000. The concept has set the ambitious aim of diminishing of the organic part of landfill waste by 20 % during period 2000-2005. Proportion of reused waste should be increased up to 25-30 % of total waste. The concept has taken into consideration not only the Hungarian legislative framework of waste management and local governments, but also the relevant directives of the European Union and recommendations of the OECD.

On the regional level. Hungarian regions as official bodies belong to the least significant actors of the waste management market, but they can have a strong influence on waste infrastructure investment decisions by effectively controlling certain aspects of the re-distribution mechanism of EU and Hungarian budget resources.

On the level of the investigated region the main stakeholder of waste policy is the Regional Development Council. In the document "Strategic Plan of the Region Central Hungary 2001-2006", it is stated that that waste management is counted as a weakness characteristic to the whole Region. The document highlights that landfills not satisfying hygienic requirements are among the most hazardous polluters in the region. Accordingly a high priority is attached to the improvement of the state of the environment, and the development of the environment protection infrastructure is a required action. Activities that can be supported in this respect are the following:

- Complex waste management programs (regional landfill, waste recycling programs)
- Recultivation of filled-up uncontrolled landfills
- Assessment and liquidation of illegal landfills.

Administrative issues of environment protection are organised in a network of decentralised specialised Government agencies. It is at regional level where major administrative decisions are taken. However, the territorial pattern of environment protection agency jurisdiction relies on water basins, thus it does not exactly correspond to the territorial pattern of regional development. Environment protection agency activities involve, among the others, granting waste generation permits, approval of hazardous waste management programmes, approval of instruction of use of landfills, granting permits to close a landfill or its part, permit to conduct business dealing with collection, transport, recovery or disposal of wastes.

The National Council for Environment Protection is a forum, where local, county and regional communities, central agencies, moreover representatives of economic agents and NGOs are able to participate in the interest reconciliation process. This is an advisory body to the Government, bringing together several authorities on environment, to promote and enhance environmental policy and trying to achieve integration of environment in other policies. Lobbying is often aimed at influencing the utilisation of environmental funds set up by the Government; the most substantial of them is managed by the Ministry of Environment Protection and Water Management.

Civil organisations also have an important role in influencing legislation, and in raising awareness. The limited participation of citizens in the NGO sector is worth stressing. There are just a few NGOs

representing nation-wide valid issues of waste management. On the other hand, many local environment protection groups are active but within a limited geographical range. In many local NGOs environmental issues are typically closely intertwined with other issues regarding local infrastructure development and the impact of private investments. Leading personalities of NGOs with environmentally oriented programs often appear in the media and on local elections in co-operation with political parties or as independent candidates.

2.5 Major development problems

Major development issues of the region have been assessed in the SWOT framework. The following system of tables is partly based on various strategic documents produced by the Regional Development Council of the Central Hungarian Region⁵ and of Pest County⁶, while partly complemented with the findings of the ADAPT research. The analysis begins with general economic, human and infrastructure issues and focuses later on environment and waste management issues.

Table 2.
Economy
Region Central Hungary

Strengths	Weaknesses
<ul style="list-style-type: none"> • Permanent and great internal market – (Region) • Turntable role in transport– (Region) • Transfer role between Western and South-Eastern-Europe – (Budapest) • Attractive natural and territorial conditions – (Region) • Low level of unemployment – (Budapest and its Agglomeration) • High economic activity – (Budapest and its Agglomeration) • Qualified, skilled labour force – (Budapest) • High concentration of FDI – (Budapest and its Agglomeration) • Concentration of headquarters of multinational companies – (Budapest) • Extended business service activities – (Budapest) • Continuous outmigration of industrial sector – (Pest County) 	<ul style="list-style-type: none"> • Spatial system of the country and that of the region is centralised, transversal connections of sub-centres are weak – (Region) • Territorially uneven economic development – (Region) • Dual economy – (Region) • Lack of connections between companies both in productive and service sector – (Region) • Low income generating capacity of SMEs – (Region) • Lack of vertical and horizontal integration in agriculture – (Pest County) • Out-of-date production factors in agriculture – (Pest County) • Lack of EU-knowledge (Region) • Weak regional marketing and regional identity – (Region) • Lack of major cultural events – (Pest County) • Unclearified distribution of competencies between the capital, its districts and the settlements of the Agglomeration (Budapest and its Agglomeration) • Uneven level of infrastructure provisions and services – (Region)

⁵ Strategic Plan of the Central Hungarian Region. 2001 – 2006. April 2001

⁶ Waste Management Plan of Pest County, 2001

Strengths	Weaknesses
<ul style="list-style-type: none"> • Ample supply of industrial parks and real estates – (Pest County) • Infrastructure of quality tourism – (Budapest) • Presence of cultural economy (Budapest and its Agglomeration) 	<ul style="list-style-type: none"> • New Economy is not sufficiently prioritised by national policies – (Region) • Low sensitivity toward global and EU tendencies – (Region)

Table 3.

Human resources, social issues and institutional arrangement

Region Central Hungary

Strengths	Weaknesses
<ul style="list-style-type: none"> • Existing infrastructure of education and training- (Budapest) • High number of research institutions and universities – (Budapest) • Scientific park - (Budapest) • Presence of healthcare institutions – (Budapest) • Presence of cultural institutions – (Budapest) 	<ul style="list-style-type: none"> • Weak co-operation skills, lack of partnerships– (Region) • Weak connections between the universities and industrial R&D, as well as between education and the business sector – (Region) • Relatively low level of language skills – (Region) • Increasing social and income difference (dual society) – (Region) • Growing territorial differences in human resources, a potential to lead to regional segregation – (Region) • Preparedness for information society is weak – (Region) • Territorially concentrated social problems – (Region) • Missing programs for the enhancement of living conditions of the Gypsy minority – (Region) • Employment problems in peripheral areas - (Pest County) • Unsatisfactory level of social and healthcare infrastructure - (Region) • Homelessness unsolved – (Budapest) • High crime rate - (Budapest) • High ratio of aged population – (Region)

Table 4.

Infrastructure

Region Central Hungary

Strengths	Weaknesses
<ul style="list-style-type: none"> • Developed communication and transport infrastructure – (Budapest and its Agglomeration). 	<ul style="list-style-type: none"> • Permanent lack of capacity in the primary road system – (Agglomeration). • Lack of transversal and tangential transport connections – (Region). • High ratio of unpaved roads in settlements – (Region). • Lack of tariff-integration in public transport– (Agglomeration). • Shortage of parking – (Budapest). • Low level of sewage and wastewater treatment – (Region).

Regarding the individual policy areas of environment protection, the gap between Western Europe and Hungary is the widest in the following three areas:

- sewage and purification of urban wastewater,
- waste disposal and management
- level of air pollution.

This is especially true for the Region Central Hungary, where severe urbanisation problems aggravate the situation.

Table 5.
Environment, with special respect to waste management
Region Central Hungary

Strengths	Weaknesses
<ul style="list-style-type: none"> • Attractive built environment – (Budapest). • Well-organised municipal solid waste collection in Budapest. • Improving solid waste collection in Pest County • Recently established regional landfills. 	<ul style="list-style-type: none"> • Complex and severe pollution, due the metropolitan position, central position in all kinds of transport infrastructures – (Budapest and its Agglomeration). • Decreasing green areas – (Region). • Building stock is in bad conditions– (Budapest). • Unfavourable overall image of many settlements – (Region). • Unregulated and wasteful land-use – (Agglomeration). • Lack of selective waste collection (Region). • Many illegal landfills. (Pest County). • Many landfills not satisfying essential hygienic requirements. (Region). • Communal wastewater treatment unsolved. Three-quarter of the wastewater of Budapest flows without sewage into the Danube. – (Region). • The partly unsolved problem of specific waste streams such as medical waste from hospitals • Economic needs of municipalities are stronger than environmental considerations – (Region). • Environmental awareness lagging behind– (Region). • Unused alternative energy resources – (Pest County).
Opportunities	Threats
<ul style="list-style-type: none"> • Widening the range of selective waste collection. • Integrated waste management developed with national and ISPA funds. • Development of recycling industry. • Organisation of household hazardous waste collection. • Spread of household composting. 	<ul style="list-style-type: none"> • Illegal landfills pose hygienic threats. • Illegal practice of depositing sludge in landfills devoted to solid waste. • Improper use of liquid fertilisers. • Air pollution impacts of waste incineration in Budapest may cause conflicts between local governments. (Agglomeration vs. Budapest). • Conflicts between local governments over locally owned under-utilised landfills, made obsolete by recent competitive investments in nearby settlements. (Various subregions of the region). • Conflicts over inter-regional, inter-county, inter-settlement disproportion in environmental situation and -protection. • Conflicts over influx of waste to Pest County landfills originated from outside the county.

2.6 Major institutions and their role

Hungarian environment protection institutions are organised

- vertically within the hierarchy of the Ministry for Environment Protection and Water Management
- and horizontally, based on the co-operation of other relevant ministries, administrative units of territorial tiers (local, sub-regional, county, and regional level).

The list cannot be complete without the regulated companies, institutions and households. The implementation of environment protection policy is attentively followed by a set of local and central civil organizations.

Table 6.

Main actors in policy making and implementation of waste management

Region Central Hungary, 2002

	Public Sector	Private Sector	Civil Society / NGOs
National Level	<ul style="list-style-type: none"> Ministry of Environment and the decentralised system of Environment Protection Agencies Ministry of Health and the decentralised system of Public Health Offices Ministry of Interior, with special respect to its jurisdiction over local governments The Prime Minister's office with special respect to its jurisdiction over Regional Policy and over the National Development Plan Other sectoral ministries National research and education institutions 	<ul style="list-style-type: none"> Alliance of Manufacturers (GYOSZ) Individual large companies interested in the rule-making process Alliance of Waste Utilisation Companies Nation-wide there are more than 1400 firms that are active in the field of waste collection, waste disposal, waste utilisation, waste transportation, waste processing or handling of hazardous waste. Trade associations of various professions 	<ul style="list-style-type: none"> Various environment protection groups, such as the Hungarian Waste Alliance "Humusz", the "Levegő" Alliance and the "Reflex" Alliance Alliances of Local Communities
Regional Level	<ul style="list-style-type: none"> Regional Development Council County Assembly and Administration The Mayor's Office in Budapest Subregional alliances of local governments Environmental Inspectorates Local offices of the following national public agencies: National Public Health and Medical Officers Service, Water Management Directorates, Plant Health and Soil Protection Stations, National Park Directorates, Transport Inspectorates, Customs Bodies, Consumer Protection Inspectorates Regional research and education institutions 	<ul style="list-style-type: none"> Individual companies in the region Municipal and county- level Chambers of Commerce and Industry Environment protection companies, consultancies and their alliances. There are 396 firms in the Region Central Hungary, (301 of which registered in Budapest) that are active in the field of waste collection, waste disposal, waste utilisation, waste transportation, waste processing or handling of hazardous waste 	<ul style="list-style-type: none"> Regional nature protection and environment protection alliances, such as 'Göncöl'.
Local Level	<ul style="list-style-type: none"> Local municipalities 	<ul style="list-style-type: none"> Individual companies in the settlement 	<ul style="list-style-type: none"> Local NGOs, single issue movements

3 The European context

3.1 Political process of EU accession in the field of environment protection

Already in the early 90s, by virtue of the *Europe Agreement*, Hungary took the obligation to adjust the law and the ecological policy to the EU standards. During the last decade the co-operation between Hungarian authorities and EU officials in the field of environment protection was continuous, and Hungary's varying results in this field was monitored in all yearly progress reports issued by the EU. The basic environmental needs of the regions - among them of the Region Central Hungary - are formulated in the Development Plan of the respective region. Main features of these documents have been introduced into the National Development Plan of 2002. These documents play a crucial role in how EU structural funds will be used after accession.

An important milestone, the environmental chapter of the accession negotiations between the EU and Hungary has been closed in June 2001.⁷ It is estimated that the harmonisation costs of only this chapter amount to 2500 billion HUF (cca. 10 billion Euro). Hungary has got derogations in case of only four EU regulations. According to the agreement reached the EU monitors the amount, content and implementation quality of the harmonised environmental regulations and in case of non-compliance the European Supreme Court is entitled to levy a fine on the Hungarian Government. Two of the environmental regulations of which the harmonisation will suffer a delay regards waste management: the EU requirements of directives regarding the incineration of wastes and that on recycling of packaging materials do not have to be fulfilled completely by the time of the integration.

The formulation, acceptance and implementation of a National Waste Management Plan have been among the obligations of the Hungarian Government agreed on the accession negotiations⁸. Due to its large impact in terms of finances and activities this Plan has been the subject of extensive bargaining and has been submitted (the second time) to the Parliament in October 2002. The Plan foresees that after 2005 half of the packaging materials will be recycled and that after 2008 landfills can accept but wastes that can be neither recycled, neither incinerated. The implementation of the Plan between 2002

⁷ Contribution in the economic weekly HVG 09.June 2001

⁸ Contribution in the economic weekly HVG 05. October 2002.

and 2008 involves costs in the amount of 360 billion HUF (1.4 billion Euro). The Government intends to finance one-third of this amount by ISPA funds of the EU.

The obligations agreed during the negotiations have a far-reaching impact down to local governments and households. In Hungary waste management is only one of the many issues where obligations and resources of local governments do not match. The Act on Waste Management (2000) and the National Waste Management Plan (2002) has made this fact even more transparent by demanding that landfills without modern isolation be closed down and obliging local governments among others to deal separately with organic solid wastes. Associations of local governments have frequently criticised that the Government does not attach the necessary finances to the solution of these tasks⁹. According to the present regulations, these investments cannot be financed by normatively defined budgetary appropriations, and local governments are either compelled to participate on tenders to receive finances from the Government funds attached to regional policy, or to enter into public-private partnerships with private firms. As an end-effect - partly due to the scarcity of central funds attached to local waste management - communal waste collection tariffs levied on households will at least double in the coming years.

Hungary's European integration process has profoundly changed the incentive mechanisms of all types of stakeholders of waste management. The main impacts of the EU on the behaviour of organisations can be attributed

- to harmonised rule-making
- to its implementation and the compliance by the resulting regulations, to the EU-compatible development of the institutional arrangement
- and to the emergence and co-operation consequences of new types of resources such as EU co-financed waste management projects.

3.2 Legislation

⁹ Contribution in the economic weekly HVG 1. December 2002.

During the last decade Hungarian regulations for environment protection were continuously and in detail harmonised with EU legislation. The major regulations conformant with EU standards are already in place. The corner-stones of this development were as follows.

- The introduction of Environmental Impact Assessment for investment projects in 1993.
- The Act on the General Rules of Environment Protection in 1995 (Act 53. of 1995). It contains a comprehensive set of enforcement requirements and economic instruments for environmental protection. It includes new or increased fees on products that constitute environmental risks. These product fees are expected to reduce consumption and encourage recycling. The funds generated go to a central fund (later also called Government Appropriation) devoted to finance environmentally important tenders.
- The elaboration of the National Environmental Protection Program 1997-2002 (NEPP) by the 83/1997 (Sept. 26) Parliament decision in 1997. The NEPP takes into account the Environmental Action Programme for Central and Eastern Europe, the Fifth EU Action Programme and Agenda 21.
- The Government Programme for 1998 to 2002 has introduced a legal harmonisation programme with the aim of achieving, by 2002, complete approximation of Hungarian environmental laws with EU legislation.
- The National Programme for the Adoption of the Acquis Communautaire (NPAA) determined targets, deadlines concerning legal harmonisation, institution building and implementation needs, addresses costing, with reference to the financial resources to be ensured by the central budget, the private sector and the municipalities. Also reference has been made in this Programme to the expected use of Community financial resources, such as PHARE and ISPA.
- The completion of waste *management plans* is a key element of EU environmental legislation, which has been adopted into Hungarian environmental policy making. The National Waste Management Plan is a bill under preparation for the Parliament, which relies on a hierarchically organised set of regional- county- and local waste management plans. Waste management plans influence decisions issued by administrative bodies, they form the foundations for the implementation of projects, which may have impact on all waste producers. Non-compliance with the plan excludes the possibility of financing a project in the field of waste management from environmental protection funds.

By 2002 the country has adopted most of the EU's environmental regulations and norms. Environmental policies are largely based on the use of regulatory and economic instruments, and have been accompanied by sizeable environmental investments. The process of assuming the obligations resulting from EU membership is supported financially by the Community.

3.3 EU programmes

The most important projects of waste management are co-financed by the EU, the Hungarian Government and by the local communities. During the 90s the conditions for the effective and transparent utilisation of Community funding for environmental investments were created. In the first years after the systemic change the EU support has taken the administrative form of the PHARE Programme which has supported many environmental projects. This programme is currently being phased out and replaced by the pre-accession instruments ISPA and SAPARD programmes. Approximately half of the resources of the ISPA Programme are devoted to environment protection.

While PHARE and ISPA support programs help to finance new investments, the yearly operational costs of the resulting infrastructure are regularly covered either by local governments or private enterprises. Such projects typically

- generate contract-based ownership co-operation among beneficiary local governments,
- generate public-private partnership among infrastructure-owning local governments and infrastructure-operating private firms.
- and create hierarchically organised administrative co-operation with the existing organisational structure of ISPA support management.

Under the ISPA program in the years 2000-2003 the EU has made decisions on supporting the development of 12 integrated waste management systems throughout Hungary¹⁰. In particular, in 2002 six integrated waste management projects were in course of being effectively managed in the country. Two from these subregional investments fall into the territory of the investigated Region Central

¹⁰ Contribution in the economic weekly HVG 25. Jan 2003

Hungary. Both programmes involve the building of a series of territorially dispersed waste management infrastructure (such as collecting, composting, selecting, forwarding facilities), with a central waste landfill of 1.5 million cubic metres for each of the two projects.

The Cegled project. According to the plans the subregional waste management system "Duna-Tisza Köze" (Mid-Danube-Tisza Plain) with the centre Cegled will manage the waste of altogether 354 thousand inhabitants living in 48 settlements. The majority (but not all) of these settlements are in the investigated Region Central Hungary. The total costs of the investment runs up to 6 billion HUF (some 24 million Euro), half of which will be covered by the ISPA program. The project will result in the closure of 37 old landfills. In November 2002 the project has reached the stage where tender documents have been issued.

The Galgamacsza failure. According to the plans accepted by the ISPA administration in 2002 the subregional waste management system North-East Pest County with the administrative centre Galgamacsza will manage the waste of 306 thousand inhabitants living in 99 settlements. The total costs of the investment runs up to 6,6 billion HUF (some 27 million Euro) , 45% of which is covered by the ISPA program. The project was expected to result in the closure of 2 old landfills.

However, this project has run into difficulties for the following reasons.

- The central landfill was planned to be built in the settlement Puspokszilagy, but a local referendum held in late 2002 has ruled out this option and there is no agreement on the site (NIMBY syndrome).
- It is not only the location of the central landfill which makes the partnering local governments to disagree. There is also a debate on whether the conditions of the public private partnership (PPP) between the beneficiary local governments and the private utility firm ASA Hungary, the future professional operator of the publicly owned landfill is fair.

In the ensuing debate 80 out of the planned 99 settlements have left the consortium of beneficiary local governments, among them the original administrative centre of the project, Galgamacsza. This is a clear case where co-operation problems among stakeholders of waste management result in a probable loss of ISPA money and in seriously delayed development.

PHARE contributions. While the ISPA projects mobilise the largest financial investments into environment protection, PHARE is also important in facilitating institution building of the Hungarian environment protection structures. In particular, a program has been initiated under Phare 2000 for the establishment of a standardised waste management information and statistics system. This is indispensable for building the waste management planning system. For this purpose also a twinning co-operation agreement has been prepared.

4 Domestic context

4.1 Social Network Analysis

4.1.1 Empirical background

This chapter is a synthesis of a series of the semi-structured interviews. In the Region Central Hungary 32 actors have been interviewed.

Sample considerations. The choice of interviewed institutions has been determined by the following sampling method. The sample of interviewed stakeholders (institutions, companies, organisations) includes all important, big, influential public, private and civil stakeholders of the Region Central Hungary in the field of waste management. Moreover, it contains

- a territorially representative sample of smaller local governments of the Region,
- an activity-wise representative sample of waste management firms and their trade associations

The distribution of the sample according to sectors is as follows:

- Approximately half of the interviewed institutions are representatives of the central, regional, sub-regional, municipal and local administration. Their main responsibilities focus on the formulation, co-ordination and implementation of government policy. Of this group, local governments are the most important clients of the relevant utility services.
- Less than half of the interviewed institutions are actors of the private sector, which is represented mostly at local level, mostly by institutions directly involved in waste treatment as the result of communal services being outsourced to privately owned companies. Large utility companies tend to be owned by bigger settlements or by foreign owners, most of the latter types being the subsidiary of a company with a centre in an EU member state.
- Some of the interviewed utility firms, among them the biggest ones are publicly owned or co-owned by public and private partners.
- A few interviewed organisations belong to the civil sector as waste issue oriented environment protection groups.

An abbreviation system has been developed for the interviewed stakeholders, according to the classification system used. The prefixes of abbreviated stakeholder names are based on the following logic.

Table 7.

**Abbreviation system of stakeholder name beginnings (prefixes)
according to geographical range and sector of stakeholder**

GN	Government Body of National Importance.
GR	Government Body of Regional Importance.
GM	Municipal Government of Budapest
GS	Subregional Association of Local Governments.
GL	Local Government
FRPu	Waste Management Firm of Regional Importance, Publicly Owned.
FRPr	Waste Management Firm of Regional Importance, Privately Owned.
FRM	Waste Management Firm of Regional Importance, Mixed (Public-Private) Owned
FLPu	Waste Management Firm of Local Importance, Publicly Owned.
FLPr	Waste Management Firm of Local Importance, Privately Owned.
TA	Trade Association of Waste Management Firms
CN	Civil Environment Protection Organisation of National Importance.
CR	Civil Environment Protection Organisation of Regional Importance

4.1.2 *Types of institutional networks*

Theoretically a possible typology of relationships among various stakeholders can be based on the following co-ordination types:

- market based co-ordination (e.g. contractual relationships between service providers and local governments)
- bureaucratic co-ordination (e.g. relationship between environment protection authorities and service providers as expressed by permits and obligatory reports)
- ethical co-ordination (e.g. relationships between environment protection pressure groups and authorities).

The institutional arrangement of waste management has developed the following types of networks.

Ownership based networks of companies. Waste management utility companies often build up their activity in various locations of the country, whereby in each of these locations an independent

subsidiary fulfils the necessary service functions. Most of these subsidiaries are fully owned by a holding company (which in most of the cases has its centre in one of the present member states of the EU). An example for this type of network building is ASA Hungary Ltd. (FRPr_ASA), this is a French owned utility company with Austrian headquarters, which has built up four subsidiary companies in Hungary, one of them is in the investigated region. Other utility companies, owned by a foreign investor enter into joint ventures with a local community, as a rule in order to maintain the local landfill, or to operate local waste collection services. The sample of interviewed stakeholders offers several examples of this type of ownership strategy: Becker Ltd. (FRM_Beck), co-owned by a big German utility holding and the settlement Érd, and Rumpold Bicske Ltd. (FRM_RuBi) co-owned by a Austrian utility holding and the settlement of Bicske.

Subcontracting networks made up by companies. Most of the waste management utility companies are specialised on a limited range of services, and need the help of others, because they either lack the skills for specific wastes, or lack the equipment for collection and storage of waste, or do not own a landfill themselves. Waste management companies have formed a complex network of subcontracting among themselves, according to their specialities (landfill operation, collection of special wastes, recycling, etc.). A typical example of such a network is the consortium led by the biggest Hungarian waste management firm FKF Municipal Public Space Management Shareholder Company (FRPu_FKF). This publicly owned company has teamed up with nine other privately owned waste management companies and together they won the tender issued by the Municipality of Budapest for operating integrated waste management services on behalf of the capital. FKF Inc. is owned by the Budapest local government and has an effective monopoly on household solid waste collection, incineration and landfill. Although this company is the leader of a consortium of 10 companies (FKF included), a consortium created to solve the full spectrum of waste related problems of the capital, the relationship among participants of this consortium is unequal. In particular, all members of the consortium are compelled to use the landfills owned by of FKF.

Besides regular co-operation, there is an inherent business conflict among privately and publicly owned waste management companies. The former regularly complain about biased competition framework, due to the fact that the latter are substantially closer to management and investment decisions of local governments, which form the main demand on this market.

Networks made up of local governments. There are different types of networks made up of local governments. The Hungarian institutional system offers various frameworks for these co-operations:

- *Vertical.* The most important example for vertical relationship is the obligatory co-operation between local governments (of which there is 3100), the so-called statistical subregions (In Hungarian: "kisterseg", of which there are 150 - NUTS IV level), the counties (of which there are 19 plus the capital - NUTS III level) and the regions (of which there are 7 - NUTS II level).
- *Horizontal.* All local governments have horizontal connections with nearby other local governments. These relationships are in many cases institutionalised in form of voluntary subregional co-operation associations. While one local government can be the member of only one county, it can associate itself to many different voluntary associations in order to team up with its neighbouring local governments. These associations are typically oriented to solve a certain well-defined problem, such as waste management, sewage or to respond to some other utility or infrastructure challenge. Subregional co-operation networks are created by the necessity to use economies of scale: the high standards of waste management as expressed in the Environmental Acquis Communautaire can be met only if many local governments team up and build integrated waste management systems, organising higher level of co-ordination. These subregional networks are created in order to participate in ISPA or other EU financed projects, to win EU funds.

Networks of authorities. The Government authority in charge of waste management is the hierarchically constructed organisation of Environment Protection Agencies, which have a territorially decentralised system. The territorial borders of the 12 regional Environment Protection Agencies do not overlap with the borders of the regions (NUTS II level). These Agencies have a frequent co-operation with local governments, with locally based companies and with waste management utility firms by issuing or denying permits, by controlling all public and private activities from the point of view of the environment.

Civil organisations are also co-operating with each other, albeit typically on an occasional basis.

Inter-sectoral networks. Specific waste management projects often generate public-private partnership networks. The typical PPP is based on a contract whereby a private enterprise operates a publicly owned landfills.

The interviewed organisations developed a multi-faceted network, covering all sectors and ownership forms. Since waste management is an integral part of the totality of material flow generated by the whole society, it is deeply embedded into the field of all kinds of economic and social activities. It is therefore that the size of the investigated network reaches far beyond the sample (N=32). In fact, no reasonable sample size could have possibly covered the total of the revealed inter-organisational network.

Public. During the field research each new interview has revealed a substantially new set of related firms. On the other hand, the set of waste-issue-related related authorities has remained essentially the same throughout the region. There is a wide network of public organisations dealing with waste-related issues, such as Environment Protection Agencies, Public Health Institutes, Fire Brigades, Customs Offices, etc. These organisations have developed their respective countrywide networks, with regional and sometimes with local institutions as well. The relationship network of these institutions is very dense, since each local government, each utility firm and each waste producing company needs permits and has to file occasional reports related to waste management. While the number of these links is high, the content of these relationships is often formal and impersonal.

Private. While the relationship network of private waste management companies reaches well beyond the borders of the region and often beyond the borders of the country, locally owned waste management companies tend to have predominantly local relationships. Some of the interviewed utility companies - which have specialised on specific waste streams - have several thousands of business partners. Other utility companies, - specialising on the collection of the solid waste of a few settlements - have only a dozen (or two) clients.

Civil. There are much more locally based civil organisations dealing with local issues than environmentally interested NGOs with a countrywide reach.

Table 8

Overview of the activity of the interviewed organisations and of their relationship networks

Serial No of Stakeholder	Prefix_ and Label	Name and location of Stakeholder	Estimated number of regular ties generated by waste management. Including ties inside and outside of the sample	Identification of stakeholder	Characterisation of ties related to waste management
1	GN_MinEn	Ministry for Environment Protection and Water Management (Budapest)	80	The Waste Management Department is responsible for co-ordinating waste management related planning regulation. The Department for Foreign Support Funds is the central project management organisation of the environmental part ISPA Program in Hungary.	Ties with implementing environment protection authorities. Ties with regional, county level and municipal actors of waste management planning. Ties with beneficiary local governments under the ISPA program.
2	GR_EPAge	Environmental Protection Chief Directorate of the Middle Danube Valley Region (Budapest)	60	The jurisdiction area of this agency covers most of the territory of the region. Most important instance of issuing environmental permits and monitoring environmental impacts of investments and activities.	Formal administrative ties with all settlements and companies of the region. Strong ties with 15 waste management companies and their trade associations. Ties with civil organisations.
3	GR_PestC	Office of County Pest (Budapest)	50	Environmental Management Department of the county authority. Takes actively part in county-level waste management planning.	Ties with all local governments of the county, authorities, professional organisations and interest groups
4	GR_ProRe	"Pro Regio" Regional Development Agency of the Region Central Hungary (Budapest)	25	Implementing agency of the Regional Development Council. Project planning and managing activity in all policy fields covered by EU funds.	Ties with subregional organisations, subregional managers. Further ties with the complete institutional network of Regional Development.
5	GM_Budap	Budapest Municipal Government, its Department of Urban Utilities	40	Implementing authority of the capital regarding urban policies on waste management and other utilities	Ties with all the 23 districts of the capital. Ties with local governments in the Agglomeration of Budapest, where subregional landfills receive the waste of Budapest (Pusztazamor, Dunakeszi, Fot). Ties with all relevant authorities.
6	GS_SBuda	South Buda Vicinity Regional Development Association (Budakeszi)	20	A subregional voluntary association of 12 neighbouring local governments of settlements and districts of Budapest.	Ties with each other, other subregional associations, tender issuing organisations within the institutional framework of Regional Policy.
7	GS_Zsamb	Zsambek Basin Regional Development Association of Local Governments (Biatorbagy)	25	A subregional voluntary association of 14 neighbouring local governments of settlements.	Ties with member local governments. Further ties with other associations of local governments, regional development bodies and waste-related trade associations.
8	GL_Aszod	Aszod	15	A medium sized settlement East of Budapest with a much-debated landfill of wastes of subregional significance.	Ties with 4 utility companies, 2 subregional associations of local governments, authorities.
9	GL_Budak	Budakeszi	15	A medium sized settlement in the vicinity of a national park, immediately bordering Budapest.	Ties with other 11 settlements and districts of Budapest which are also members of the South Buda Vicinity Local Government Association. Further ties with a private and with a locally owned utility firm.
10	GL_Csomo	Csomor	10	A medium sized settlement immediately bordering Budapest on the NE side, site of a new landfill operated by a private utility firm.	Ties with neighbouring local governments, the utility firm and authorities.

Serial No of Stakeholder	Prefix_ and Label	Name and location of Stakeholder	Estimated number of regular ties generated by waste management. Including ties inside and outside of the sample	Identification of stakeholder	Characterisation of ties related to waste management
11	GL_Godol	Godollo,	15	Local government and its Department for Urban Utilities. Owner of subregional landfill.	Ties generated by waste management issues with 5 neighbouring settlements and some authorities.
12	GL_Puszt	Pusztazamor	10	Local government of a small settlement W of Budapest, site of biggest well-equipped landfill of the country, owned by Budapest Municipal Government, operated by FKF Inc.	Ties with Budapest municipal government, nearby local governments, associations of local governments etc.
13	GL_Solym	Solymar	20	A settlement immediately bordering the West of Budapest.	Ties with other settlements of the association of local governments in the subregion Pilis. Further ties with regional authorities and two utility companies.
14	GL_Zsamb	Zsambek	20	Local government of a small settlement W of Budapest.	Ties with the member settlements of the Zsambek Basin Regional Development Association of Local Governments. Further ties with the utility company managing the waste of the settlement (Doppstadt.) and with authorities.
15	FRPu_FKF	Municipal Public Space Management Shareholder Company (Budapest)	30	The biggest waste management company of the country, owned by the capital Budapest, leader of the consortium of 10 companies performing all waste management tasks for the capital, owner of the biggest landfills of the country.	Ties with members of the Budapest Waste Management Consortium. Joint projects with further 7 utility firms. Ties with full range of national and regional authorities. Member of international and national professional bodies.
16	FRPu_Oko	Okoviz Ltd. (Cegled)	60	Urban utility firm majority owned by the local government of Godollo. Professional local manager of ISPA co-financed subregional integrated waste management system with the centre Cegled.	Ties with the local government, the other utility firm (Ceszolg), and the authorities. Ties with 48 beneficiary local governments of the subregional ISPA project. Ties with private utility companies operating the infrastructures to be built.
17	FLPu_VUS	VUSZI Ltd. (Godollo)	10	Urban utility firm owned by the local government of Godollo.	Ties with the owner local government. Further ties with neighbouring local governments using the landfill operated by VUSZI Ltd. and with authorities.
18	FLPu_Ces	Ceszolg Ltd. (Cegled)	5	One of the 2 locally owned utility firms in Cegled, a town SE of Budapest.	Ties with the local government, the other utility firm (Okoviz) and the authorities.
19	FRPr_ASA	ASA Hungary Ltd. (Gyal)	25	An Austria-based multinational utility company.	Ties with 8 client settlements, 3 subsidiaries, authorities and trade associations.
20	FRPr_Bio	Biofilter Ltd. (Budaors)	70	A private firm specialised on the recycling of used alimentary oil. 20 ties with clients who buy recycled oil.	The firm is a member of the 10 member Budapest Waste Collecting Consortium. Contacts with all regional Environment protection Agencies and with all County Public Health Authorities. Further several thousands of contracts with restaurants and other catering organisations, offering used alimentary oil to Biofilter.
21	FRPr_Dop	Doppstadt Ltd. (Zsambek)	50	A subsidiary of a Germany based machine producer company, selling waste management equipment countrywide and operating a landfill in Zsambek (a medium sized settlement West of Budapest).	Ties with the client settlement, the trade association and other service providers of waste management.
22	FRPr_Ere	Ereco Co. (Budapest)	60	A France-based multinational waste	Ties with waste producing industrial

Serial No of Stakeholder	Prefix_ and Label	Name and location of Stakeholder	Estimated number of regular ties generated by waste management. Including ties inside and outside of the sample	Identification of stakeholder	Characterisation of ties related to waste management
				management utility company with 11 sites in Hungary.	firms, recycling firms, industrial firms using used metal and paper. Further ties with the authorities.
23	FRPr_PyR	Pyrus-Rumpold Ltd. (Budapest-Aszod)	50	Subsidiary of an Austria based multinational utility company, operating the hazardous waste landfill in Aszod, a settlement East of Budapest.	Business relations with local governments and bigger utility firms. Government relations with various levels of the public administration. Ties with three other subsidiaries of the same holding.
24	FRM_Beck	Becker Ltd. (Erd)	15	A utility company co-owned by a German firm and the local government.	Ties with 6 co-operating utility companies (clients and subcontractors), local governments, other member of the same holding.
25	FLPr_Moz	Mozes Ltd. (Cegled)	20	A small enterprise in Cegled developing a paper recycling business line.	Contractual ties with used cardboard producing retailing and service companies in the vicinity. Tie with a recycling company, the buyer of collected paper.
26	FLM_SHTu	Selective Waste Recycling Ltd. (Tura)	25	Company jointly owned by 4 neighbouring settlements East of Budapest.	Ties with the owner local governments. Further ties with recycling companies, who are the buyers of selectively managed waste. Ties with regional development organisations and authorities.
27	FRM_RuBi	Rumpold Bicske Ltd. (Bicske)	70	Utility company jointly owned by Pyrus-Rumpold Ltd. and by the local government of Bicske, a town W of Budapest. Operates the subregional landfill serving 50 nearby settlements.	Ties with all settlements served by the landfill operated by the Ltd. Sometimes informal-competitive, sometimes contractual relations with other utility firms. Administrative ties with authorities.
28	TA_PrWMF	Association of Privately Owned Waste Management Service Providers (Budapest)	10	A project based interest group of private waste management companies with lobbying as the main activity.	Ties with the most active members (ASA Ltd. and Doppstadt Ltd.). Further occasional ties with Government bodies are generated by participation in the rule-making process.
29	TA_PuWMF	Association of Publicly Owned Waste Management Service Providers (Gardony)	60	An active interest group organising regular events on waste management.	Ties with member organisations, local governments, subregional associations of local governments, ministries and others.
30	TA_Recyc	Association of Recyclers	80	An influential professional interest group of recycling companies, mainly in the metal and paper sectors.	Ties with 67 member companies. Frequent co-operation with relevant ministries on regulations, plans and programs.
31	CN_Humus	Humusz Environment Protection Association of Waste Management Issues (Budapest)	40	A nation wide civil organisation with special interest on waste.	Ties with locally based civil organisations, schools, higher education institutes. Further ties with national and regional authorities.
32	CR_Zsamb	Zsambek Basin Environment Protection Association (Perbal)	10	Local civil organisation West of Budapest.	Ties with local governments, schools and utility firms.

Inter-organisational conflicts. Networks are created because the participants want to institutionalise their common interests. But - besides co-operation - waste policies are also characterised by many structural conflicts and competitive situations among various stakeholders. The investigation has

shown that in the field of waste management Hungary's EU integration has a clear influence on the development of conflict resolution mechanisms. This chapter attempts to give an overview on interest differences generated by waste management with special attention to the impact of European integration on this policy field and service sector.

Competition in the provision of utility services exists both between the firms of the private sector and private companies and firms of public ownership. These conflicts can sometimes stop co-operation efforts. Conflicts between the actors can even end up in building parallel waste management capacities in areas. Among landfill operators and their owners (which can be local governments as well) there is a wide spread competition to acquire the waste of a certain area in order to become cost efficient. The local interest of maintaining and utilising existing landfill capacities often deviates local governments from joining otherwise efficient, cheap and environment friendly integrated subregional waste management systems. Such decisions are made possible by permissive regulation, since old waste management methods used by the local governments can be continued up to 2009 (according to regulation KÖM 2001/22).

Conflicts generated by the location choice of waste disposal. There is lack of consensus on the necessary number and capacity of landfills. Companies and local governments widely disagree on the optimal size and geographical pattern of waste management infrastructure to be developed by using joint private and public, Hungarian and EU sources. The opinions are heavily influenced by the past investments made by the respective stakeholders. Private and public owners of existing landfills alike embrace opinions that allow them to operate their existing landfills in a profitable way, and if ISPA financed developments attract the waste from their landfills, they often initiate debates in order to question the rationality of these developments.

Due to specialities of the Hungarian regulation and of the waste management market, besides the NIMBY (Not In My Back Yard) syndrome a complementary syndrome can also be observed, which can be called PIMBY (Put In My Back Yard). The acronym PIMBY in the Hungarian context means, that owners of landfills - private and public alike - are competing for waste to be put in their landfills. In their competition tools such as influencing regulation, investment and sales decisions of companies and political decisions of local governments are used as well.

The causes of conflicts, mechanisms of competition and interfaces of co-operation between various stakeholders of waste management in Hungary are grouped in categories in the following table.

Table 9.

Causes of conflict, mechanisms of competition and interfaces of co-operation between various stakeholders of waste management in Hungary

Cause	Ensuing conflict or co-operation
Legal harmonisation of the environmental Acquis	Resource conflict on the macro level: the implementation of all EU environmental directives costs more than 10% of the GDP of Hungary.
Increasing complexity of environment protection tasks	Resource conflict on the micro level: environment protection agencies unable to cope with increasing tasks due to lack of manpower and expertise.
ISPA waste management projects	Local governments deeply embedded into administrative hierarchies and in the same time fiercely autonomous, must co-operate over creation of regional waste management infrastructures and systems with each other and with private firms
The EU supports only regional waste management systems. The ensuing centralisation tendency of ever-larger landfills spreads the pattern of inter-communal transport of waste.	This tendency re-organises the spatial structure of waste streams and creates new inter-dependencies between localities.
Continuing debate over optimal solution of waste handling (incineration, landfills, recycling, etc.)	Creates professional and local groups of conflicting interests.
Waste incineration pollution	Creates inter-communal conflicts depending on wind directions.
Illegal landfills	Create conflicts between environment protection authorities and local governments on the one side, households and companies on the other side
Badly equipped legal landfills not conforming to EU requirements	Create conflicts between landfill owners and operators on the one side and authorities on the other side.
Local governments delegate responsibilities regarding communal waste management to private and semi-private (local government owned) companies.	Conflicts over waste collection fees and modalities
Landfills and other waste management infrastructure created for public bodies co-financed by the ISPA	Publicly financed infrastructure launches competition to landfills created by purely private investment. Competition conflicts between privately owned service provider firms and publicly owned service providers over markets and investment resources.
Landfills are owned predominantly by public bodies, but managed mostly by private firms.	Creates the need for public-private partnerships.
Time schedule of solution of various tasks of environmental protection (e.g. sewage vs. waste management) depends on local conditions.	Conflicts among various business pressure groups influencing public decision making.
Selective waste collection profitable only in case of individual waste types (metals, paper)	Conflicts between local governments, profit-oriented service providers and environmental pressure groups over financing schemes of selective collection of waste.
Environmental conflict resolution mechanisms have weak influence, are not sufficiently professionally based, are not deeply rooted in civil society	Environment issues become issues of rivalries of political parties locally and nationally.

4.1.3 Density – cohesion

This chapter concentrates on the relations between the members of the sample. While the former analysis has revealed a wide, open network of several thousands of stakeholders, this analysis concentrates on the interaction patterns of the 32 interviewed organisations.

Social Network Analysis concentrates on the embeddedness of the actors into the web of relationships. Therefore the size of the institutions and of the companies does not appear in the input matrices, and consequently it remains irrelevant for the whole computation, whether the investigated actor is a small, a medium sized or a big organisation.

In order to describe the inter-relationship of the interviewed actors, two matrices have been developed.

- First a dichotomised (binary) adjacency matrix A has been used. Entries have the following meaning: connections between stakeholder I (row) and stakeholder J (column) are assessed as existent (1) if at least one of the stakeholders I or J has stated a functioning relationship. If none of the stakeholders I and J has mentioned any relationship, than the value is (0).
- Second, a valued adjacency matrix B has been created, where the values are rounded up averages of the following evaluations made by I and J.
 - (0) means no relations between stakeholder I (row) and stakeholder J (column),
 - (1) means weak, informal relations with occasional interactions,
 - (2) means medium sized strength relations, i.e. formalised ties but no joint projects
 - and (3) means strong relations between the two stakeholders: i.e. formalised ties with joint projects and frequent interactions.

For example if J has stated that the relationship has a strength of 1 and I has reported a strength of 2, then both of the values I,J and J,I in Matrix B equal 2, i.e. the rounded up value of 1,5. It must be borne in mind that both matrices are symmetrical: although the ties between the two actors are usually assessed differently by each of them.

Using the abbreviations as introduced earlier, the matrices A and B are as follows.

Table 10

Existence of relationship between interviewed stakeholders of waste management of the Region

Central Hungary

Binary adjacency matrix for Social Network Analysis

Serial Number of Stakeholder	Serial No. of Stakeholder	Prefix_ and Abbreviation of Stakeholder's Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Total			
			GN_MinEn	GR_EPAGE	GR_Pestic	GR_ProRe	GM_Budap	GS_SBuda	GS_Zsamb	GL_Aszod	GL_Budak	GL_Csomo	GL_Godol	GL_Puszt	GL_Solym	GL_Zsamb	FRPu_FKF	FRPu_Oko	FLPu_VUS	FLPu_Ces	FRPr_ASA	FRPr_Bio	FRPr_Dop	FRPr_Ere	FRPr_PyR	FRM_Beck	FLPr_Moz	FLM_SHTu	FRM_RuBi	TA_PrWMF	TA_PuWMF	TA_Recyc	CN_Humus	CR_Zsamb	Total			
1	GN_MinEn	0	1	1	1	1	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	20	
2	GR_EPAGE	1	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	27	
3	GR_Pestic	1	1	0	1	1	1	1	1	1	0	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17	
4	GR_ProRe	1	0	1	0	1	1	1	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	
5	GM_Budap	1	1	1	1	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	1	11	
6	GS_SBuda	0	0	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	6	
7	GS_Zsamb	0	1	1	1	0	1	0	0	0	0	1	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	1	1	1	1	1	1	0	11	
8	GL_Aszod	1	1	1	1	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	10	
9	GL_Budak	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
10	GL_Csomo	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
11	GL_Godol	1	1	1	1	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	
12	GL_Puszt	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	
13	GL_Solym	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	4	
14	GL_Zsamb	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	
15	FRPu_FKF	1	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1	1	0	0	1	0	1	1	1	1	1	1	0	13	
16	FRPu_Oko	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	5	
17	FLPu_VUS	1	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	7	
18	FLPu_Ces	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
19	FRPr_ASA	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	8	
20	FRPr_Bio	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
21	FRPr_Dop	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	1	1	0	0	0	9	
22	FRPr_Ere	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	6	
23	FRPr_PyR	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	1	0	1	1	1	1	1	1	1	1	0	13	
24	FRM_Beck	1	1	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	1	1	1	1	0	0	0	9	
25	FLPr_Moz	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
26	FLM_SHTu	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	1	1	1	0	0	1	0	1	1	1	1	1	1	1	0	13	
27	FRM_RuBi	1	1	1	0	1	0	1	0	0	0	0	1	0	1	0	0	0	1	0	1	1	1	0	0	1	0	0	1	0	0	0	0	0	0	0	14	
28	TA_PrWMF	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	9	
29	TA_PuWMF	1	1	1	0	1	0	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	1	1	0	1	1	0	0	0	0	0	0	1	17	
30	TA_Recyc	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	10	
31	CN_Humus	1	1	1	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	10	
32	CR_Zsamb	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4
	Total	20	27	17	9	11	6	11	10	3	4	7	5	4	5	13	5	7	2	8	4	9	6	13	9	4	13	14	9	17	10	10	10	10	4	296		

Table 11

**Strength of relationship between interviewed stakeholders of waste management of the Region
Central Hungary**

Valued adjacency matrix for Social Network Analysis

Serial Number of Stakeholder	Serial No. of Stakeholder	Prefix_ and Abbreviation of Stakeholder's Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Total	
			GN_MinEn	GR_EPAge	GR_PestC	GR_ProRe	GM_Budap	GS_SBuda	GS_Zsamb	GL_Aszod	GL_Budak	GL_Csomo	GL_Godol	GL_Puszt	GL_Solyim	GL_Zsamb	FRPu_FKF	FRPu_Oko	FRPu_VUS	FLPu_VUS	FLPu_Ces	FRPr_ASA	FRPr_Bio	FRPr_Dop	FRPr_Ere	FRPr_PyR	FRM_Beck	FLPr_Moz	FLM_SHTu	FRM_RuBi	TA_PrWMF	TA_PuWMF	TA_Recyc	CN_Humus	CR_Zsamb	Total
1	GN_MinEn	0	3	2	1	3	0	0	2	2	1	1	0	1	0	2	2	2	2	0	1	2	3	0	1	1	1	1	1	1	2	2	2	1	0	31
2	GR_EPAge	3	0	1	0	1	0	2	2	2	1	1	1	1	1	3	0	1	0	2	3	2	2	2	3	1	0	1	1	1	3	2	2	2	1	46
3	GR_PestC	2	1	0	1	2	2	2	1	0	0	1	1	0	0	1	0	1	0	0	0	0	0	0	1	0	1	1	0	2	2	2	1	0	24	
4	GR_ProRe	1	0	1	0	1	2	2	1	0	1	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
5	GM_Budap	3	1	2	1	0	0	0	1	0	0	0	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	17	
6	GS_SBuda	0	0	2	2	0	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	13	
7	GS_Zsamb	0	2	2	2	0	1	0	0	0	0	0	1	0	2	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	1	1	1	0	15	
8	GL_Aszod	2	2	1	1	1	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0	2	0	0	1	0	0	0	0	0	0	0	13	
9	GL_Budak	1	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	
10	GL_Csomo	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	6	
11	GL_Godol	1	1	1	2	0	0	0	1	0	1	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	
12	GL_Puszt	0	2	0	0	2	3	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	
13	GL_Solyim	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	7	
14	GL_Zsamb	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	8
15	FRPu_FKF	2	3	0	0	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3	1	1	3	1	0	1	0	3	3	1	0	0	28	
16	FRPu_Oko	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	8	
17	FLPu_VUS	2	1	0	0	0	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	1	0	0	10	
18	FLPu_Ces	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	
19	FRPr_ASA	1	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	1	0	0	0	11		
20	FRPr_Bio	1	3	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	8	
21	FRPr_Dop	0	2	0	0	0	0	1	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	1	0	0	1	1	2	1	0	0	0	0	13	
22	FRPr_Ere	0	2	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	1	1	0	0	0	0	0	10	
23	FRPr_PyR	1	2	0	0	0	0	0	2	0	0	0	0	0	0	3	0	0	0	0	0	0	1	2	0	1	0	1	2	1	2	1	1	1	0	20
24	FRM_Beck	1	3	1	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	1	1	0	0	0	0	12	
25	FLPr_Moz	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	4	
26	FLM_SHTu	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	1	1	0	0	1	0	1	1	1	1	0	13	
27	FRM_RuBi	1	1	1	0	1	0	1	0	0	0	0	3	0	1	0	0	0	1	0	1	1	1	2	0	0	1	0	0	2	1	0	0	0	18	
28	TA_PrWMF	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	2	1	1	1	1	1	0	0	0	0	0	0	0	0	11	
29	TA_PuWMF	2	3	2	0	1	0	1	0	0	0	0	0	0	3	1	1	1	1	2	0	1	0	2	1	0	1	2	0	0	1	1	0	0	26	
30	TA_Recyc	2	2	2	0	0	0	1	0	0	0	0	0	0	3	0	0	0	0	1	0	0	1	0	0	1	1	0	1	0	1	0	0	0	15	
31	CN_Humus	1	2	1	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	1	0	1	11	
32	CR_Zsamb	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	
	Total	31	46	24	12	17	13	15	13	5	6	10	11	7	8	28	8	10	4	11	8	13	10	20	12	4	13	18	11	26	15	11	11	44	44	

Density is a crucial characteristic of the policy network. A low density of the network indicates that links are typically weak between the actors.

- *Method.* The density of a *binary network* is the total number of ties divided by the total number of possible ties.
- *Results.* In case of the investigated *binary network* it has a value of 0,298. This value can be interpreted in the following way: in the investigated network almost one third of the potential relationships does exist, at least in one direction.
- *Method.* For a *valued network* the density is the total of all values divided by the number of possible ties. In this case the density gives the average value.
- *Results.* The density of the investigated *valued network* is 0,447. This value can be interpreted in the following way: the average strength of the existing relationships is 1,5, which indicates that most of the existing relationships operate at a weaker than medium level.

4.1.4 Centralization

The task of centrality indicators is to reveal the embeddedness of each stakeholder into the web of relationships.

Method. To measure the degree of centrality, Freeman's method was applied for the case of a symmetrical network. Diagonal connections (connections of a given institution with itself) are not valid.

Results. As expected, centralization is not distributed evenly among the clusters of actors. The stakeholders with the highest indices of centrality are to be found in the sub-network comprising

- public sector institutions, publicly and joint public-privately owned utility firms and their trade association at national and regional level
- and the group of the biggest private utility firms with many subsidiaries and co-operation ties.

On the other hand, the smallest indices of centrality are to be found in the subnetworks consisting of the groupings of local actors of the public, private and public-private sector.

The above findings are stable in the following sense: they are valid irrespective of whether we investigate the binary or the valued matrix. In fact, the set of the most central stakeholders is almost identical by using any of the two methods. Respectively, the same applies for the set of the most peripheral stakeholders as well.

For example, the regional Environment Protection Agency (GR_EPAge) is the most central in case of both the binary and the valued approach. This Agency has mentioned 21 ties within the sample and the agency has been mentioned by 23 stakeholders of the sample. However, the two sets do not overlap, therefore the number of relationships mentioned by either by this Agency or any of its partners, equals 27. This illustrates the fact in case of a binary symmetrical adjacency matrix, for each actor Freeman's degree equals the row (or column) total of the respective row (or column) of the adjacency matrix.

Table 12

Centrality measures in case of the binary adjacency matrix

FREEMAN'S DEGREE CENTRALITY MEASURES:

```
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Diagonal valid?          NO
Model:                  SYMMETRIC
Input dataset:          C:\Mixproj\MTA\SNA\Binary_symm
```

	Degree

2 GR_EPAge	27.000
1 GN_MinEn	20.000
3 GR_PestC	17.000
29 TA_PuWMF	17.000
27 FRM_RuBi	14.000
26 FLM_SHTu	13.000
23 FRPr_PyR	13.000
15 FRPu_FKF	13.000
5 GM_Budap	11.000
7 GS_Zsamb	11.000
8 GL_Aszod	10.000
30 TA_Recyc	10.000
31 CN_Humus	10.000
4 GR_ProRe	9.000
28 TA_PrWMF	9.000
24 FRM_Beck	9.000
21 FRPr_Dop	9.000
19 FRPr_ASA	8.000
17 FLPu_VUS	7.000
11 GL_Godol	7.000
6 GS_SBuda	6.000
22 FRPr_Ere	6.000
12 GL_Puszt	5.000
14 GL_Zsamb	5.000
16 FRPu_Oko	5.000
10 GL_Csomo	4.000
25 FLPr_Moz	4.000
20 FRPr_Bio	4.000
13 GL_Solym	4.000
32 CR_Zsamb	4.000
9 GL_Budak	3.000
18 FLPu_Ces	2.000

DESCRIPTIVE STATISTICS

	Degree
1 Mean	9.250
2 Std Dev	5.420
3 Sum	296.000
4 Variance	29.375
5 SSQ	3678.000
6 MCSSQ	940.000
7 Euc Norm	60.647
8 Minimum	2.000
9 Maximum	27.000

Table 13

Centrality measures in case of the valued adjacency matrix

FREEMAN'S DEGREE CENTRALITY MEASURES:

 Diagonal valid? NO
 Model: SYMMETRIC
 Input dataset: C:\Mixproj\MTA\SNA\Valued_symm

	Degree
2 GR_EPage	46.000
1 GN_MinEn	31.000
15 FRPu_FKF	28.000
29 TA_PuWMF	26.000
3 GR_PestC	24.000
23 FRPr_PyR	20.000
27 FRM_RuBi	18.000
5 GM_Budap	17.000
30 TA_Recyc	15.000
7 GS_Zsamb	15.000
8 GL_Aszod	13.000
26 FLM_SHTu	13.000
6 GS_SBuda	13.000
21 FRPr_Dop	13.000
4 GR_ProRe	12.000
24 FRM_Beck	12.000
12 GL_Puszt	11.000
28 TA_PrWMF	11.000
19 FRPr_ASA	11.000
31 CN_Humus	11.000
22 FRPr_Ere	10.000
17 FLPu_VUS	10.000
11 GL_Godol	10.000
14 GL_Zsamb	8.000
16 FRPu_Oko	8.000
20 FRPr_Bio	8.000
13 GL_Solym	7.000
10 GL-Csomo	6.000
9 GL_Budak	5.000
18 FLPu_Ces	4.000
25 FLPr_Moz	4.000
32 CR_Zsamb	4.000

DESCRIPTIVE STATISTICS

		Degree
1	Mean	13.875
2	Std Dev	8.863
3	Sum	444.000
4	Variance	78.547
5	SSQ	8674.000
6	MCSSQ	2513.500
7	Euc Norm	93.134
8	Minimum	4.000
9	Maximum	46.000

4.1.5 Structural equivalence

Method. The purpose of this computation is to reveal common structural positions among actors with regard to their linkages. For this purpose the network is split (partitioned) into blocks of structural equivalence, using the CONCOR (CONvergence of iterated CORrelations) algorithm. The result of the partition is a system of blocks, whereby members of the same block are positively correlated, members of different blocks are negatively correlated. The computation of correlations are based on the (valued or binary) adjacency matrix, where a pair of stakeholders with the same set of relationships have a correlation coefficient equal to 1, and are positively correlated if the set of their relationships differs only slightly. The CONCOR algorithm splits the initial data first into two blocks. Successive splits are then applied to the separate blocks. At each iteration all blocks are submitted for analysis. Consequently n-partitions of the binary tree can produce up to 2n blocks.

Results based on the binary adjacency matrix. Here the algorithm searching for structural equivalence has revealed four groups. The interpretation of this blocked matrix goes as follows.

- The first group of stakeholders contains eight members. This group is dominated by various small or medium sized waste management companies, some of them owned by a local government, others privately owned. The common feature of the relationships developed by these companies is that they are not connected with each other. The reason of this absence of ties is threefold: (a) either they are competitors, or (b) some of them are strongly locally based (e.g. FLPr_Moz) and do not develop strong ties with stakeholders outside their immediate reach.
- The second group consists of the most interconnected 11 actors of the sample. This group is dominated by the biggest private and public waste management companies, and their trade associations. These stakeholders are deeply embedded into the relationship network of waste

management: their connections are dense not only within the group, but with the members of the first group as well.

- The third and the fourth group are very homogenous in that sense that all of the stakeholders belonging into this group are either local governments, or subregional associations of local governments or regional development agency.

Table 14

Partition of the binary adjacency matrix into blocks with the CONCOR algorithm

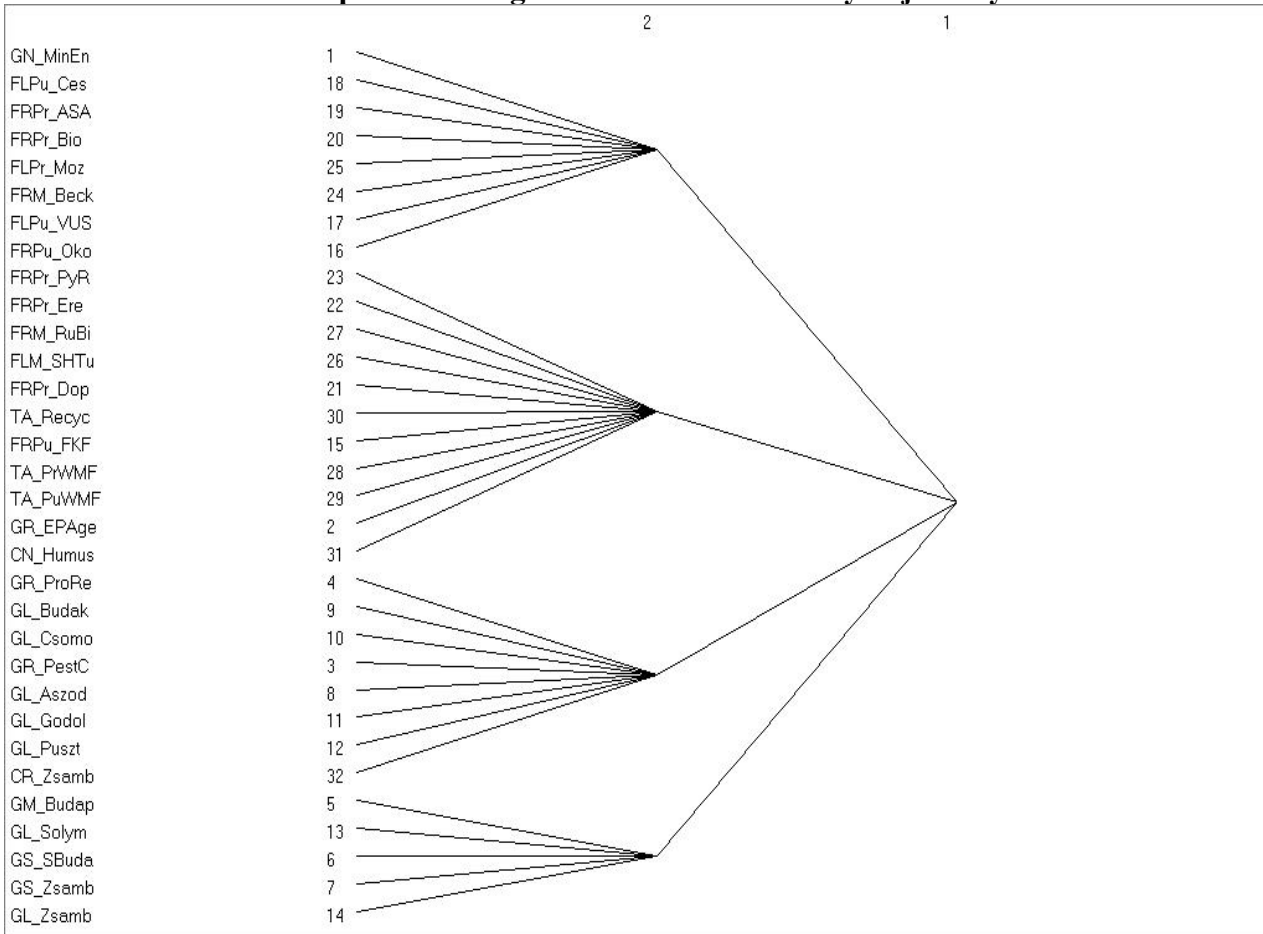
CONCOR

Diagonal: Treat as Missing Values
 Max partitions: 2
 Input dataset: C:\Mixproj\MTA\SNA\Binary_symm
 Blocked Matrix

	1 GN_MinEn	18 FLPU_Ces	19 FRPr_ASA	20 FRPr_Bio	25 FLPr_Moz	24 FRM_Beck	17 FLPU_VUS	16 FRPU_Oko	23 FRPr_PyR	22 FRPr_Ere	27 FRM_RuBi	26 FLM_SHTu	21 FRPr_Dop	30 TA_Recyc	15 FRPU_FKF	28 TA_PrWmf	29 TA_PuWmf	2 GR_EPAge	31 CN_Humus	4 GR_ProRe	9 GL_Budak	10 GL_Csomo	3 GR_PestC	8 GL_Aszod	11 GL_Godol	12 GL_Puszt	32 CR_Zsamb	5 GM_Budap	13 GL_Solym	6 GS_SBuda	7 GS_Zsamb	14 GL_Zsamb					
1 GN_MinEn	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
18 FLPU_Ces		1					1																														
19 FRPr_ASA	1		1							1	1		1	1	1	1	1						1														
20 FRPr_Bio	1			1																																	
25 FLPr_Moz					1	1																															
24 FRM_Beck	1					1			1			1	1	1	1	1	1						1														
17 FLPU_VUS	1						1					1	1	1	1	1	1						1														
16 FRPU_Oko	1	1				1																															
23 FRPr_PyR	1							1		1	1	1	1	1	1	1	1					1															
22 FRPr_Ere								1	1						1	1	1																				
27 FRM_RuBi	1	1						1	1	1	1	1	1	1	1	1	1					1						1	1	1	1						
26 FLM_SHTu	1	1			1	1		1	1	1	1	1	1	1	1	1	1						1														
21 FRPr_Dop	1	1						1	1	1	1	1	1	1	1	1	1						1														
30 TA_Recyc	1	1						1	1	1	1	1	1	1	1	1	1					1															
15 FRPU_FKF	1	1	1		1			1	1	1	1	1	1	1	1	1	1						1					1									
28 TA_PrWmf	1	1	1	1	1			1	1	1	1	1	1	1	1	1	1																				
29 TA_PuWmf	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1						1					1	1	1	1	1					
2 GR_EPAge	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
31 CN_Humus	1							1																													
4 GR_ProRe	1																					1	1	1	1												
9 GL_Budak	1																																				
10 GL_Csomo									1													1															
3 GR_PestC	1				1	1					1	1	1	1	1	1	1					1						1	1	1	1	1					
8 GL_Aszod	1	1			1	1			1	1	1	1	1	1	1	1	1					1						1									
11 GL_Godol	1					1																	1	1	1												
12 GL_Puszt														1																							
32 CR_Zsamb																																					
5 GM_Budap	1																																				
13 GL_Solym										1												1															
6 GS_SBuda						1																1															
7 GS_Zsamb										1	1	1	1	1	1	1	1					1															
14 GL_Zsamb														1																							

This system of blocks is portrayed in the cluster partition diagram as well.

Figure 2.
Cluster partition diagram based on the binary adjacency matrix



Results based on the valued adjacency matrix. Here the algorithm searching for structural equivalence has revealed the following four groups.

- The first group of scarcely interconnected actors consists of 11 stakeholders. This group is dominated by small and medium sized waste management companies, with an additional mix of a few government agencies and civil organisations. The density of ties within this group is the smallest within the whole sample.
- The second group consists of the stakeholders with the densest network of ties. This group is dominated by the biggest private and public waste management companies, and their trade associations. The ties between waste management companies on the one hand and local governments on the other hand can be characterised either by client-service provider relationship, or by joint ownership of waste depositories. In this group additionally the most

influential regional public stakeholders are represented, such as the Budapest Municipality and the Regional Environment Protection Agency. These stakeholders are deeply embedded into the relationship network of waste management: their connections are dense not only within the group, but with the members of the first group as well.

- The third and fourth group of stakeholders consists mainly of local governments and their associations, moreover of important public regional actors such as the implementing agency of the Regional Development Council (GR_ProRe) and the County Pest (GR_PestC). The local governments are interconnected horizontally with each other only if they are neighbours, or if using the waste landfill owned by the other one, or if members of the same subregional association. On the other hand, their vertical relationships maintained with the members of the third group are strong.

Table 15

Partition of the valued adjacency matrix into blocks with the CONCOR algorithm

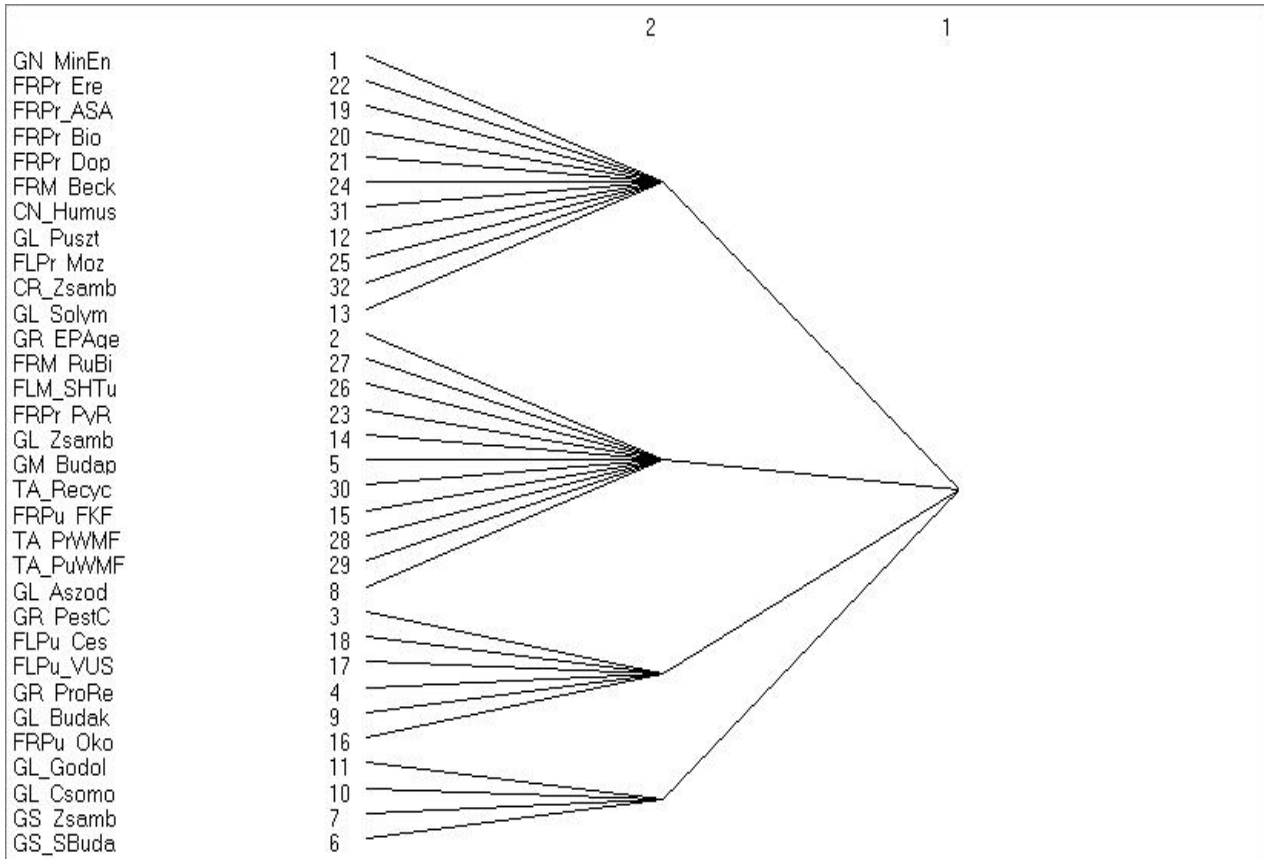
CONCOR

Diagonal: Treat as Missing Values
 Max partitions: 2
 Input dataset: C:\Mixproj\MTA\SNA\Valued_symm
 Blocked Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33						
1 GN_MinEn	1																																						
22 FRPr_Ere		1																																					
19 FRPr_ASA			1																																				
20 FRPr_Bio				1																																			
21 FRPr_Dop					1																																		
24 FRM_Beck						1																																	
31 CN_Humus							1																																
12 GL_Puszt								1																															
25 FLPr_Moz									1																														
32 CR_Zsamb										1																													
13 GL_Solyrn											1																												
2 GR_EPAge		3																																					
27 FRM_RuBi			3																																				
26 FLM_SHTu				3																																			
23 FRPr_PyR					3																																		
14 GL_Zsamb						3																																	
5 GM_Budap							3																																
30 TA_Recyc								3																															
15 FRPu_FKF									3																														
28 TA_PrWMF										3																													
29 TA_PuWMF											3																												
8 GL_Aszod												3																											
3 GR_PestC														2																									
18 FLPu_Ces																																							
17 FLPu_VUS																																							
4 GR_ProRe																																							
9 GL_Budak																																							
16 FRPu_Oko																																							
11 GL_Godol																																							
10 GL_Csomo																																							
7 GS_Zsamb																																							
6 GS_SBuda																																							

Figure 3.

Cluster partition diagram based on the valued adjacency matrix



4.1.6 The multi-dimensional scaling graph of the network

Method. The aim of this computation (multi-dimensional scaling, MDS) is to create a portrayal of the investigated network in two dimensions. The algorithm is developed for finding a location for each actors of the sample so that for each pair of actorsthe following statement should hold: the stronger they are interconnected, the closer they should be located to each other on the plane. This algorithm is well suited for revealing central and peripheral situation of the stakeholders in the space of relationships.

Results based on the binary adjacency and on the valued matrix. Both diagrams offer a clear distinction between the group of centrally placed actors and the group of peripheral actors.

Centrally placed actors. As expected, in both cases - whether we use the binary or the valued adjacency matrix approach - the following stakeholders have taken the central positions of the MDS graphs:

- national and regional level players of environment protection, such as the Ministry for Environment Protection and Water Management (GN_MinEn), moreover the Regional Environment Protection Agency (GR_EPAGE);
- the city of Budapest (GM_Budap) and the utility firm of the capital (FRPu_FKF);
- a few internationally connected companies (e.g. FRM_RuBi, FRM_Beck, FRPr_PyR);
- moreover the trade associations of public utility firms (e.g. TA_PuWMF) and the association of recycler companies (e.g. TA_Recyc).

Peripherally placed actors. On the other hand, on the periphery we can find

- the smaller utility firms of predominantly local interest rather on the right side and on the top of both MDS diagrams (e.g. FLPu_Ces, FLPu_VUS);
while the local governments and their associations rather on the left side and on the bottom of the diagram (e.g. GL_Csomo, GS_SBuda)

Undoubtedly, a strong disequilibrium exists between core and periphery actors of the network. The validity of the MDS graphs presented here is reinforced by various other observations as well. Using the supply-demand paradigm, the findings portrayed by the MDS graphs can be summarised the following way:

- *Centrum: supply side actors and demand side actors closely intertwined.* Centrally placed public and private stakeholders of waste management are closely connected with each other by a multitude of various types of ties. In the central group (a) supply side actors of the market of waste management (b) demand side actors of the market of waste management services and (c) regulators of this market are deeply embedded into relationships of (1) ownership, (2) client-service provision and (3) bureaucratic interdependence. (An example from the central group: the utility company of the capital is owned and regulated by its biggest client: the capital itself.)

- *Periphery: supply side actors and demand side actors sparsely related with each other.* Most local governments are placed in both diagrams in the Southern and Western periphery of the MDS graph. Most of the small and medium sized utility firms are placed in the Northern and Eastern periphery of the diagrams. Thus peripherally placed public stakeholders of waste management are rather separated from peripherally placed utility firms in the space of relationships. This means that local governments on the one hand and small and medium sized utility firms on the other hand possess a distinctive pattern of embeddedness into the web of relationships.
- *Supply - demand axis.* Since local governments represent the demand side of waste management services, and utility firms represent the offer side of the same services, the SW-NE axis of the MDS diagrams can be interpreted as the axis connecting supply side actors and demand side actors.

Figure 4.
Multidimensional scaling diagram based on the binary adjacency matrix

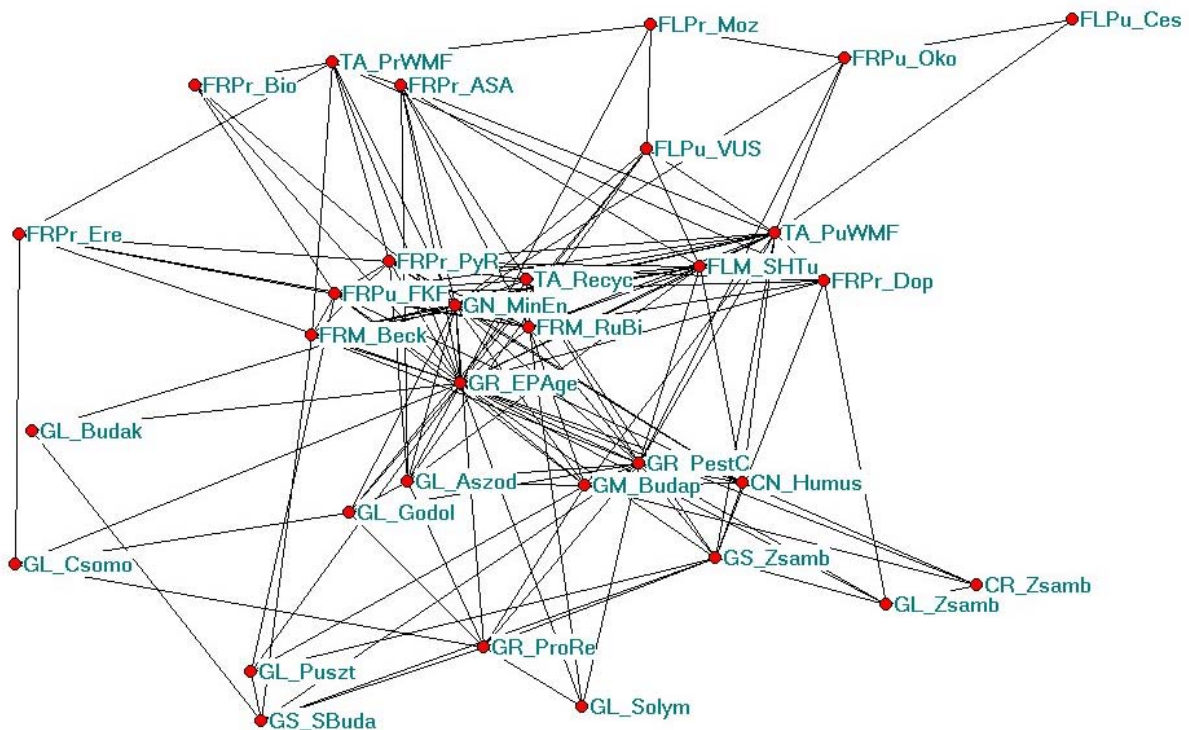
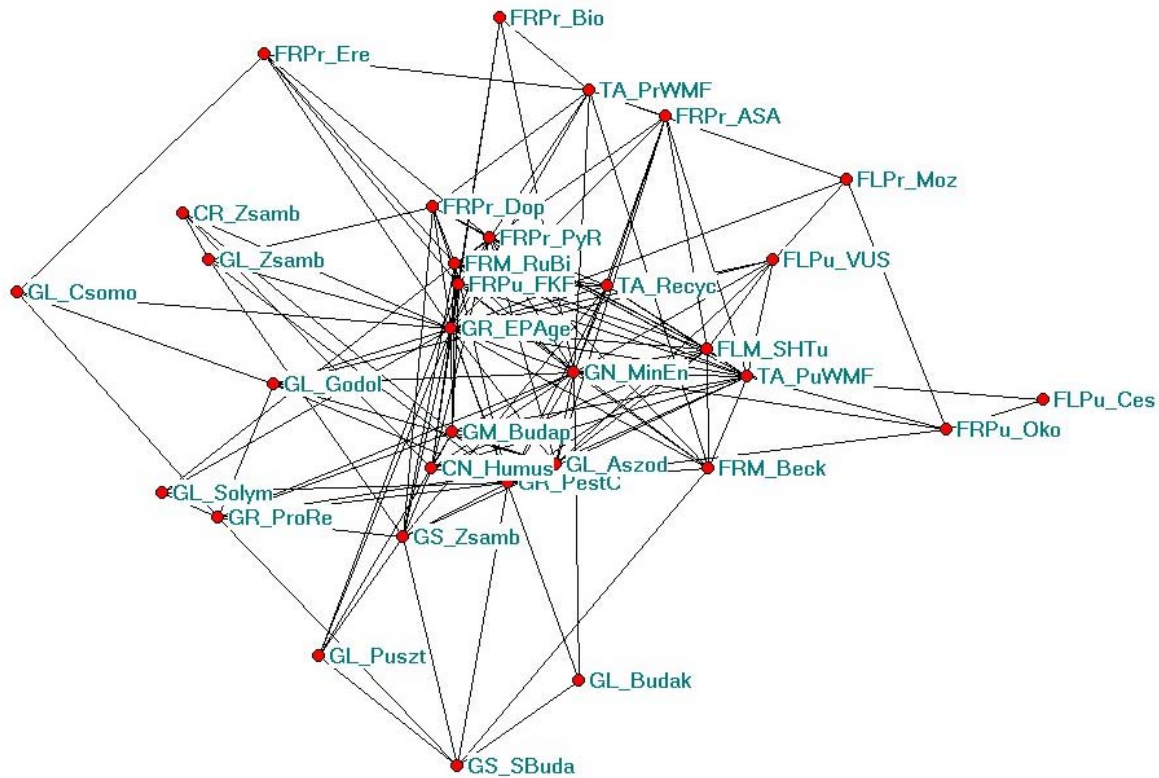


Figure 5.
Multidimensional scaling diagram based on the valued adjacency matrix



4.2 Existence of fora for dialogue, negotiations and conflict resolution

Since the adaptation process generates conflicts, there is an enhanced need for interest reconciliation. The interviewed actors mention an extensive catalogue of conflict types and cases in the region. The most often voiced are:

- Competition conflicts between various groups of enterprises (private vs. public, small local vs. large multinational, etc.)
- Conflicts generated by deepening social and territorial differences
- Competence conflicts between different levels of public authorities
- Conflicts over special purpose funds, the influence of party conflicts on fund appropriations, or the appearance of centre-periphery relations in budgetary redistribution

At the regional, county and local level the Regional Development Council and the County and municipal self-governments are the formal fora for dialogue and negotiation. However, the role of Government agencies such as the regional Environment Protection Agency is the most important in the process of planning and approving the regional waste management plan. Negotiations between officials and local communities are often based on bargaining and the outcomes are often influenced by a network of personal relations. The involvement of the citizens in the decision-making process is often just a formality to be satisfied.

It is not only the process of waste management planning that serves as platform for bargaining and reconciliation between conflicting local interests. Regional and subregional committees with the purpose of distributing regional development funds also function as fora for dialogue and negotiation. Integrated waste management projects are co-financed by the EU, the Hungarian government and the local authorities. This arrangement also creates dialogue and negotiation among all involved partners. However, a wide range of the conflicts resulting from waste management issues are resolved by standard market mechanisms such as price and quality competition in the provision of the respective services.

4.3 Public-private partnerships and the role of the private sector

Public private partnership is widely practised in waste management, but its legal framework is not sufficiently regulated in Hungary. For each case of PPP a specific contractual framework has to be devised, which takes into consideration the special legal circumstances of the deal. Interfaces and co-operation modalities between private and public actors must be exactly and transparently regulated. Due to previous problematic record of legal institutions such as public procurement and concession tenders in the country there is a widespread suspicion of corruption. In the support programs of the EU - including the ISPA program - only public institutions are entitled to receive funds for infrastructural investments. Therefore the practice has evolved whereby the supported infrastructure is owned publicly - typically by the beneficiary local governments - whereas the costly operation is being done by private firms.

In the beginning of the 90s private waste management firms have entered into this sector in a time when practically there was no competition between service providers. The overwhelming majority of the market was covered by medium and large sized utility companies owned by the local governments, and the rest was served by privately owned micro-enterprises. Foreign investment in this area followed the patterns of investment in other sectors of the economy.

Foreign private investors introduced in Hungary up-to-date information and technology, organisational know-how and development. Most of these companies had background in the EU and were familiar with European environment protection and safety standards. They represented a well-developed institutional culture and offered solutions to the authorities in introducing environment friendly solutions in public utility operations, such as selective waste collection. Foreign owned private companies exercised pressure on local incumbent waste management service providers - most of them local government owned - of becoming more cost-efficient and productive.

Foreign investors were motivated by the pressure of Hungary's environmental legislation being adapted to the EU standards, combined with the weaknesses of local competition that they can be successful even if the current solvent demand on good quality waste management services lagged behind. Foreign investors have the interest of adapting the Hungarian regulations to a similar structure that they were used to in their countries of origin. Some of these investments could seem to be exaggerated at the first sight compared to the existing waste management infrastructure, but an adaptation process of Hungarian regulations to those of the EU rendered their investments in this country to become profitable at least on the long run.

Private companies have formed various lobby groups such as Association of Privately Owned Waste Management Service Providers. The association represents the interest of these companies on various government levels. Their interest lies in further liberalising the provision of waste management services. In particular, their aim is to introduce free competition on those markets where local government owned companies still act in effective monopoly. Waste producing companies can freely choose their service providers, but waste management companies operating in Budapest do not have free choice of landfill since they have to use the landfill owned by the market leader FKF Inc.

4.4 Common understanding of development problems

All interviewed actors seem to have a more or less common understanding of the development problems of the Region. These are mainly

- environmental problems (e.g. large amount of wastes and uncontrolled waste flows and air pollution resulting from waste incineration),
- problems related to spatial and urban planning (e.g. uncontrolled land development)
- and transport infrastructure problems (e.g. shortage of motorways, and traffic congestion).

During the 90s the policy on foreign direct investment was predominantly an issue which was the responsibility of the central government. Only a handful of cities have launched pro-active programs to attract investors and to improve the local image. By now, as a completion of a top-down process, local governments are increasingly faced with the challenge of attracting foreign - or, in fact, any type of - investors. This activity usually begins with a development of the existing infrastructure, by improving the accessibility of the settlement and by developing local utility services. Many locals attach a great importance to the regular clean-up of “wild” landfills.

4.5 Evidence of policy adaptation and institution building

Regarding the tasks implementing the Environmental Acquis in the field of waste management, the National Programme for the Adoption of the Acquis has defined the tasks of public agencies. This document has defined a structure of activity fields, and has assigned special tasks to the relevant professional branches and territorial levels of public administration.

Inadequate enforcement of environmental regulations is a major concern in Hungary. The upgrading of the institutional system of environment protection is a difficult task, which will take more time than the modernisation of the tools and the physical infrastructure of environmental protection. Implementation problems arise due to lack of resources, lack of information, problematic political decisions and problems in political culture and environmental awareness. Due to substantial lobbying force of local and sectoral interest groups environmental investments are often targeted to areas with lower priority or lower efficiency.

Most of the standards that regulate governmental environment protection activities originate from the general approach of those in the EU. In particular,

- the intensity of monitoring and control functions regarding development projects
- the scope and results of educational and information activities
- the increase in social participation in environmental decision-making

are systemic features, which are attributable to European integration to a large extent.

Policy-making, monitoring and implementation of tasks have been heavily influenced by Hungary's EU integration process. The Environmental Acquis and the experiences of EU member states have provided a blueprint in many institution development projects.

The Hungarian environment- and nature protection policy direction has been elevated to a ministerial level since April, 1988. Since the 2002 parliamentary elections environmental issues are again coupled with water management issues in the same ministry. Demands on sub-national structures intensify with the EU integration process, in particular with the implementation of the Environmental Acquis. Various tasks and responsibilities, which were previously carried out by the national government, have been shifted to sub-national level, to local governments, moreover to regional and local state administrations. The capacity of these administrations is limited, both in terms of their resources and expertise.

4.6 Centre-periphery relations and distribution of resources

The central status of the capital Budapest is a century old fact from administrative, economic, infrastructural and cultural aspects as well. However, regional policy of all consecutive governments has introduced measures a long time in order to loosen the centralised space structure of the country. The aims and the complex set of tools of this policy is well documented in various laws accepted by the Parliament and by the National Development Plan (2002) as well, a document which is responsible for giving an outline to the utilisation of the Structural Funds in Hungary after the country's accession to the EU.

Since Budapest has such a prevalent role, many issues related to the development of the Region are settled through the central offices of the ministries, which are located in Budapest, rather than through the offices of the Region. The centralisation of responsibilities deprives regional governance of the opportunity to play a more decisive role. Those members of the Regional Council that were delegated by the various line ministries profoundly influence the Regional Council of the Region Central Hungary.

Typical public, private and civil stakeholders alike regard the centralised feature of the country as an inevitable fact, which has to be respected if their institutional aims are to be met. Quite a few regional and rural interest groups, including some political parties use ideological arguments in the redistribution bargaining between the capital and the countryside. However - on the level of the interviewed organisations - the decentralisation of networks, reaching the remote or the less developed regions is a matter of effectiveness.

As in practically all aspects of life, the centrality of the space structure can be easily documented in material flows as well, in particular in waste management. Budapest is a separate entity in resolving its waste issues. The city produces the highest amount of waste per capita. The landfills of Budapest are located in the urban agglomeration of the capital, which means a significant waste flow from the centre to the periphery. Due to high value of land, existing waste landfills in the capital have been filled up and closed.

Incineration of solid waste also creates conflicts between the capital and its agglomeration. The biggest waste incinerator of the country owned by the municipality of Budapest, located in the capital causes air pollution in the neighbouring settlements which lie in the direction of the ruling winds. The legal pressure exercised by these settlements has contributed to the installation of environment friendly investments (better filters) in the incinerator.

4.7 Social capital endowments

Theory. Social and institutional networks made up by collective actors are important ingredients of social capital. Rich network structures enable the circulation of information and trust, thus lower the

costs of transaction in the use of the market and foster exchanges, enhance the possibility of collaborating in the risky processes of innovation and finally lead to positive economic consequences and facilitate local and regional development. In particular, policies for local development are more effective when they are formulated and implemented through a close co-operation between public and private actors.

On the other hand network can also be an instrument to avoid competition or exercising strong control over individual behaviour and discourage innovation thus reducing efficiency. In extreme cases too strong networks can lead to patronage, political dependence or even corruption and criminal economies. In any case, there is a growing need for measures that support, through both financial and organisational aids, integrated projects based on the formation of co-operative networks between collective actors¹¹. Social capital endowment as a collective good is strongly interconnected with the adaptiveness and learning capability of the institutional system.

Previous research. During the last decade the pressures of Europeanization have seriously challenged the trust, civic participation and co-operative decision-making capability of the Hungarian society. Empirical research¹² on indicators of social capital in the transition countries of Central and Eastern Europe and of the former Soviet Union has shown that in these countries the degree of trust and of civic participation is significantly lower than in OECD countries. The study benefited from the availability of data from the 1990 and 1995 World Values Survey (WVS), which included 12 and 21 transition economies respectively. This enabled the researchers to construct measures of moral attitudes, trust and civic participation.

In the years 1988 and 1995 comparative surveys¹³ among Hungarian counties have been made on social capital. It has been found that counties with higher social capital tend to have higher economic growth and healthier population. More recently the importance of electronic networks has been

¹¹ Carlo Trigilia: Social Capital and Local Development. European Journal of Social Theory 2001. No. 4.

¹² Social capital in transition: a first look at the evidence. Martin Raiser, Christian Haerpfer, Thomas Nowotny and Claire Wallace. EBRD Working Paper No. 61. London, February 2000.

¹³ Á. Skrabski. Results presented in the daily newspaper Magyar Nemzet 1999. Febr. 25

pointed out in enhancing social capital¹⁴. Impact mechanisms of social capital deficiencies have been introduced into medical university curricula for understanding the statistically measurable health problems of Hungarian population¹⁵.

Waste management and social capital. Waste management behaviour of all stakeholders, waste policies are apparently influenced by such "soft" factors as environmental awareness and political culture and civic participation. Waste management behaviour is to a large extent a matter of collective consciousness. The amount of illegally dumped waste is a reliable indicator of social capital in a region. Waste policies must build on the co-ordination ability of a wide range of actors. The co-operation of many autonomous stakeholders such as local governments is the only option if the communities want to use the economies of scale in waste related investments.

The resulting institutional networks are too complex to be governed with a combination of administrative bottom-up approach and regulated market forces. These tools must be complemented by the ability to maintain horizontal relations, a capability, which is needed throughout the institutional system and the partnering private sector as well. Infrastructural projects planned and implemented in the investigated region have produced success stories and failures of attempted network building efforts alike. While success has been widely attributed to an abundance of trust, to capabilities of communication, failures were caused by the lack of social capital.

Results of the interviews. The structured interviews made with decision-makers of stakeholder organisations in waste management have revealed certain political attitudes of the respondents. The analysis of their answers does not give comparable results with standard, survey based indicators of social capital, but nevertheless it gives a certain insight into the general mindset regarding trust, civic participation and network-building capabilities.

On the challenges. The majority of respondents share the opinion that the social composition of the region has profoundly changed during the last decade. This change is mainly attributable to the

¹⁴ See the contributions of Szilard Molnár at the website of the Information Society Research Centre, www.ittk.hu

¹⁵ See the website of the Semmelweis Medical University of Budapest, <http://www.sote.hu/magtud/paradox3.htm>

adaptation of the institutional sector to democratic principles and the transition of the economic sectors to market economy. These structural changes have exercised great pressure on all strata of the society to adapt themselves to the new requirements of the job market. Due to inadequate adaptation of a wide stratum social and territorial inequalities have measurably and visibly risen. All this has posed serious challenges to local and county governments.

On political institutions. Local and regional authorities enjoy a substantial amount of social trust. Malfunctions of these institutions are generally attributed

- to shortcomings of the institutional system and
- to their scarce resources.

The distribution pattern of power between

- national and local party leaders,
- government ministers and local officials,
- national and local elected bodies

is generally not questioned. For most of the respondents the power differences between these bodies in their capability of influencing local processes is taken as granted. Media and NGO are considered to influence outcomes only in exceptional cases.

Existing distrust against elected politicians seems to be stronger in the private sector than in the public sector. Private sector actors frequently point out that the decision-making processes of public bodies often lack transparency and impartiality. In particular, the fairness of

- public procurement
- and public investment

procedures are regularly questioned.

The general level of political culture in the region is not very high, according to the opinion of the respondents. This is visible from the fact that most of them share the opinion that political debates seldom end with a compromise. On the other hand, consensus is a highly valued concept, a compromise between opponents is generally seen as a virtue. Private actors attach greater importance to

selfish motivations than to moral motivations - an opinion not very often shared by public and civil actors. It is a generally accepted view that technical considerations have - or at least should have - greater weight than political ones. Professional approach should take precedence over politics in solving socio-economic problems. Except in passionate election times, actions and decisions are generally not judged on the basis of political criteria. Extreme views and personalities are not welcome in the political debates.

On civil society. The majority of the actors has the opinion that the strength of the state and that of the civil society are not contradictory with each other and attach great importance to both at the regional level. Although most of the interviewed actors agree on the importance of the existence of a strong civil society, this seems to be rather weak. Public participation either in the planning and implementation processes of environmental programmes or in voluntary associations and organisations is very limited, although several NGOs are actively providing information and motivation to the citizens. However, NGOs count as weak actors on the regional political scene.

On environmental policies. Features characterising the presence of democratic values in ecological policy are seen differently by representatives of public and private stakeholders of the region. Whereas interviewed public actors tend to characterise these policies as democratic, bottom-up, and point out that they reinforce social dialogue, private actors are more sceptical and stress the hierarchical features of the system.

5 Conclusions – Europeanization and domestic structures

5.1 Learning, adaptation and Europeanization of the domestic institutional infrastructure

Waste disposal and management is one of the areas of environment protection, where the gap between Western Europe and Hungary is the widest. It is generally accepted that EU environmental policy is one of the main forces behind recent development of environmental policy in Hungary. Hungarian environmental policy derives its guidelines and legal framework from EU legislation.

Legal harmonisation has gone a long way. The acceptance of EU induced waste management regulations is the common basis for all the institutions and firms involved in waste management. This is expected to have a significant influence on future developments also by adopting management schemes such as waste management planning. Legal harmonisation and its enforcement has generated a substantial amount of adaptation work for the central and decentralised government agencies of environment protection, albeit without a sufficient degree of institutional development.

Public institutions of environmental protection and their networks play an important part in the implementation of the above regulations and policies, leading to conditions whereby markets of waste management services and wastes function smoothly as well. However, the learning capacity of these institutions is seriously limited by resource problems. In particular, Environmental Protection Agencies have not enough capacities to fully exercise control activities. There would be a need to have enough properly educated staff to do all the controls to clarify EU compatibility in all waste management areas.

EU funds have co-financed many waste management projects. Resource shortages of institutional development and of infrastructure investment are alleviated by EU funds to a considerable extent. Moreover, various ISPA co-financed waste management projects of regional scope have been launched. Most of the waste management infrastructure established by these projects are (or will) be operated in the framework of public-private partnerships. PPP is a way of co-operation that is still underdeveloped, but the spreading of such partnerships is inevitable.

The private sector has been profoundly influenced by the European integration of Hungary. A growing number of foreign firms have invested into the environmental service provision sector, most of them originating from EU countries. Foreign owned private firms have invested in waste management infrastructure, contributed to increasing competition in the field of waste management services, comply easier by EU regulations than local firms and constitute an important channel for the diffusion of contemporary environmental information and innovation both in the field of technical development and institutional development. However, beyond law-abiding transactions, uncontrolled avenues of waste import and export are also opened.

In the Region Central Hungary policy-making structures and policy implementing institutional structures at all levels have been heavily influenced by the Europeanization process. At the regional level the political bodies would not exist at all without the need to absorb EU pre-accession and structural funds. At the county level waste management planning activity takes a form which corresponds exactly to EU practices. And at the local level the changes have been motivated by the integration process as well. Recent waste legislation obliges local governments to satisfy requirements of EU environmental legislation. Since local governments usually lack the sufficient means to make the necessary investments many of them enters into subregional waste management associations in order to obtain ISPA funds.

Network building is an adaptation strategy for most of the interviewed stakeholders. Not only local governments team up in order to utilise economies of scale in integrated waste projects. Waste management utility companies co-operate with each other in ownership based networks (holdings) and subcontracting / consortium alliances. These companies also form various lobby groups and enter interest reconciliation bodies in order to participate in the rule making process. Civil organisations regularly co-operate with educational institutions in order to spread environmental awareness but also to participate in joint fact-finding projects of environmental significance. The level of social capital in the region is sufficient to sustain the above co-operative efforts.

Social capital, on the other hand, is not sufficient to prevent the spreading of illegal landfills. Shortcomings in the domains of civic participation are indicated by the low participation rate in civil

organisations. Shortcomings in the domain of trust are duly indicated by the widespread opinion that public-private interactions are neither sufficiently fair, nor transparent enough.

5.2 Trends of the current period

Hungarian environmental policies and the environmental practice of economic actors has been characterised during the last decade by an increasing awareness of environmental issues. As a consequence of this, public and private policies have been adapted to satisfy certain European environmental norms. Environmental behaviour of stakeholders is increasingly influenced by the process of deep restructuring

- of the institutional arrangement of environment protection
- and of the environment protection infrastructure.

In particular, this applies for the waste management policies of the Region Central Hungary.

Comments of the interviewed organisations on policy adaptation tend to be positive. Many stakeholders - and certainly the public ones, among them the regional actors - point out that EU integration contributes to an improvement in the functioning of their institutions. Most of the interviewed actors in a central position are able to exploit the opportunities that EU programs provide. Peripheral actors are at best in the position to use these possibilities indirectly.

- Typical interviewed public actors react to the investigated changes by some form of policy adaptation, institution building, partnership formation/networking, implementation of the legal adaptation process, or by gaining access to financial resources.
- On the other hand, private actors adapt to the investigated changes by trying to comply by harmonised regulations and by entering into public-private partnerships with beneficiary public actors of EU projects.

Among positive aspects of adaptation the following aspects are mentioned (in decreasing sequence of importance)

- better access to funding,
- legal adjustments,
- better use of resources in undertaking development initiatives,

- improved evaluation of own activity and the learning by doing process,
- establishment of co-operation and partnership networks, increase in social participation.

Adaptational pressures differ by sector and owner:

- Local government owned utility firms are slower in changing their practices unless it is unavoidable.
- Most of privately owned waste management firms have already completed the adaptation process as their mother companies are typically embedded into the legal and regulative environment of one of the EU countries.
- Local governments are pushed toward regional co-operation as the EU supports only regional waste management systems. Subregional co-operation between local governments creates some conflicts, whereas the methods and fora of conflict resolution are still underdeveloped.

Table 16.

Impacts of EU integration by stakeholders in the field of waste management

Type of Stakeholder	Incremental activities attributable to EU integration
Central Government Institutions	Organising implementation and enforcement of EU legal harmonisation in the field of waste management, co-ordinating waste planning activities of various tiers of public administration, ensuring development of institutions, co-ordinating the administration of EU aid with various Hungarian regulations and sources.
Decentralised Agencies of the Central Government	Enforcing EU-induced regulation, waste planning, organising institutional development related to these tasks.
Regional Development Institutions	Fulfilling legal duties in the field of waste management, in particular duties arising from EU integration-induced legal harmonisation. Co-operating with other tiers of public administration in the development of regional waste management systems and in the implementation of waste management planning
County authorities	
Subregions (Associations of Local Governments)	
Local Governments	
Local Government Owned Waste Management Service Provider Firms	Complying by EU-compatible waste regulation, adapting to EU compatible waste management planning and to public institutions co-financed by EU aid. Providing technical and managerial help to the owner local governments in EU co-financed projects and tenders.
Privately Owned Waste Management Service Provider Firms Operating in Central Hungary	Complying by EU-compatible waste regulation, adapting to EU compatible waste management planning and to public institutions co-financed by EU aid. Diffusion of technical and organisational know-how originating from European mother-companies.
Trade Associations, Lobby Groups of Waste Management Service Provider Firms	Conveying European regulatory and market information to member companies, interest representation argumentation using European examples.
Local and National Environment Protection Pressure Groups	Conveying European regulatory and environmental information to the public, doing environment protection argumentation by using European examples.

Still there are many local governments to whom these positive impacts have not yet arrived and for them "Brussels is very far away". Some of the private waste management companies find themselves on the loser side due to EU financed waste management programmes, because these programmes tend to favour their publicly owned competitors. Links to all kind of stakeholders of EU member states are considered to be of great importance. It is a widespread opinion that such links offer experience, information and / or profitable business contacts.

5.3 Patterns of failure or success

Patterns of failure or success are easily demonstrated in the field of PHARE and ISPA financed projects. The success of these projects depends largely on the co-operation ability and willingness of the many stakeholders involved.

In the field of waste management adaptation to EU integration has evolved through various impact mechanisms. Each of these mechanisms has shown its strengths and weaknesses.

Table 17.
SWOT analysis of mechanisms of EU adaptation of waste management in Hungary

Mechanism of adaptation	Results and strengths	Problems and weaknesses
Legal harmonisation	By 2002 the country has adopted most of the EU's environmental regulations and norms. Environmental policies are largely based on the use of regulatory and economic instruments, and have been accompanied by sizeable environmental investments. The basic legal document of waste management in Hungary is the Act XLIII of 2000 on waste management, a law harmonising with the Waste Framework Directive 75/442 of the EU.	Most of the problems of legal harmonisation arise from lack of co-ordination between the relevant policy fields, from the uneven pace of adaptation across government agencies. The transposition of EU environmental legislation is dynamic, but the system of lower level implementation regulations is dispersed among responsible ministries.
Institutional development, in particular waste management planning	Due to adaptation to EU institutional procedures local, county and regional authorities are obliged to develop a geographically co-ordinated approach to waste management planning. Recently created associations of local governments (small regions) are successfully negotiating with waste disposal service providers and reach better conditions of service than isolated local governments. Organisational development of various central and local institutions enhanced through EU co-financed twinning projects.	The development of enforcing institutions is resource-intensive and time consuming. The hierarchical system of waste management plans (national-regional-county-local plans) creates co-ordination and timing problems. Harmonic development of public-public partnerships constitutes more serious problems than the creation of public-private partnerships.
EU aid	The use of EU support funds has contributed to the regional and institutional decentralisation of decision making in the field of environment protection. The National Development Plan attaches a great importance to environment protection. The institutional conditions of EU aid promoting the building of waste management infrastructure have contributed to the creation of single-issue associations of local governments to a hitherto unprecedented extent.	The central and local institutional framework of EU financial support management in the field of environment protection develops at a rather slow pace. Project management of EU supported projects is slowed down by lack of co-ordination between of various stakeholders. In particular, <i>public-public partnership</i> and <i>public-private partnership</i> develops slowly,
Developing the involvement of the civil society	The implementation of democratic principles in the field of waste management is a pre-condition of EU integration and of the launching of EU co-financed projects. EU co-financed environmental projects create ongoing dialogue between public bodies and civil organisations. Environment protection associations participate in the rule-making process and represent public interest in the debates accompanying the negotiations of the Government with the EU.	The general level of environmental culture among households and businesses develops very slowly. Engagement of civil society in waste management issues varies between specific issues and localities. Consultation between public and civil stakeholders is often lacunary and is only enforced by pressures of party policy.

Short-lived campaigns are indicating a shallow and temporary adaptation to some EU requirements. One widely attempted specific domain of adaptation is selective waste collection. Many local governments in the region have "experimented" with such projects. However, in many areas selective collection was regarded only as a matter of 'educational' activity, to get the population used to selective waste collection, and in many such cases selectively collected waste material ended up being transported together with other waste types to the same landfill. The need of EU support would be extremely important in the area of utilisation and sales of the selectively collected waste materials.