

# **A Bird in the Hand: Solid Waste Modernisation, Recycling and the Informal Sector**

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## **1 Introduction and Orientation**

Romania, Bulgaria, and other EU countries face strong pressure to modernise public infrastructure. Solid waste management is an area of infrastructure which is visible, has strong symbolic and affective impacts, and is often a necessary but not a sufficient condition for attracting investments in commercial, industrial, and housing sectors. It is also a kind of report card on the competence of local, regional and national authorities. To paraphrase David Wilson (undated), no-one takes the local government seriously if there is garbage all over the place.

But what does “modernisation” actually mean for a country in the Balkans in 2008? Does it mean following the steps in the process in the 1970s, 80s, and 90s in Western Europe or North America? Does it mean seeking to copy the technologies and standards (theoretically) in operation in those much higher GDP countries? Does it mean ignoring the local circumstances and stakeholders and assuming that real differences of geography, culture, demographics, industrial experience, and material welfare are unimportant in the outcomes? Can such an approach be effective, let alone sustainable? To address the dilemmas facing Romanian and Bulgarian authorities and local experts, this paper seeks to answer the following research questions:

- ◆ What happens in the solid waste modernisation process, and what drives it? In what ways does a post-modern landscape differ from a pre-modern one?
- ◆ What choices have countries like the US and the Netherlands made in the modernisation process, and how has this affected key stakeholders in the public sector and the recycling supply chain?
- ◆ What are the key elements of a modernised solid waste system in practice? How does social science theory help to understand the differences between modernised and non-modernised social provisioning systems?
- ◆ How does the informal sector fit into the modernisation process, and how does this relate to the specific characteristics of recycling in Romania and its Balkan neighbours?
- ◆ What is necessary for Balkan countries to find their own way to modernised waste management, integrating solid waste and recycling on the one hand, and in designing flexible, affordable, and sustainable provisioning systems for solid waste on the other?

The paper and presentation are organised as follows. Section 1 introduces the paper and presents a generalised picture of the modernisation process, and what changes come with it. One aspect of modernisation receives particular attention is the changing relationship between the largely public solid waste system and the largely private recycling supply chain, which are separate prior to modernisation and closely interrelated after it.

Section 2 looks at the process of ecological modernisation in more detail for the US and the Netherlands. In each case the process is divided into baseline, that is, the situation operational prior to the onset of modernisation, the pre-modern period, the period of intensive modernisation, and the period of operation of an essentially mature, modernised system. Also in this section special attention is paid to the solid waste-recycling relationship. Section 3 brings this ecological modernisation process into the framework of broader processes of ecological modernisation as defined and elaborated by a number of environmentally focused social theorists in Northern Europe (Mol and Sonnenfeld 2000a). In broad outline, ecological modernisation refers to a series of institutional, operational, economic, governance, social, and political shifts that are set in motion by environmental drivers (Wilson 2007, Mol 2000). These drivers push new social arrangements, a new discourse, new scientific and technical developments, and a shift in responsibilities and interests between public and private sectors, between governments and their citizens, between civil society and other economic actors, and between the formal and informal sectors and arrangements within a wide range of disciplines. In this section, the modernised solid waste landscape is explored in greater detail.

Section 4 looks more closely at the solid waste informal sector in the context of specific modernisation processes in the Balkans. It concludes with recommendations for what to do, and what not to do, to facilitate improved outcomes.

## **1.1 Overview of Solid Waste Modernisation**

The modernisation of the waste management sector has specific features in specific locations, but wherever it occurs, there are similarities that make it possible to characterise it as a globalised process. This paper focuses on OECD and transitional countries, but it occurs on all continents, and in poor and rich cities alike (Scheinberg and Anschutz 2004, Scheinberg and IJgosse 2004, Scheinberg 2003a). Data, experience, and anecdotes from a wide number of cities and countries make it possible to formulate a general description of features of the modernisation of solid waste management (GTZ//CWG 2007; Scheinberg 2003; Scheinberg and Anschutz 2004a; Scheinberg, Post and Mitrovic 2007). Modernisation generally implies:

1. Closing of local landfills and regionalisation of the disposal function
2. A shift in institutional responsibility so that for the first time, supra-municipal entities have a role in solid waste and are required to develop and manage regionalised disposal
3. A rapid upward spiral in solid waste costs, due to (a) large and sudden increase in costs of collection and the introduction of tipping fees, and (b) increased transfer and transport costs related to the regionalisation of disposal
4. A new or greatly expanded interest in recycling, composting, and recovery approaches by municipal service providers, both for symbolic-environmental goals and as a cost-saving measure, which causes new or intensified claims for rights to materials or services
5. Prohibition and/or criminalisation of traditional solid waste practices, especially those relating to informal recovery at landfills

In some sense all of these aspects are related to changing environmental and solid waste economics, and came about either through a desire to internalise negative externalities, through a need to compensate for this internalisation, or through a response of the market to the changing dynamics caused by the internalisation.

To understand the contours of the modernisation process, it is first necessary to discuss two important activities within the broad field of modernised waste management, solid waste services, and the commodities sector.

## **1.2 Services and Commodities**

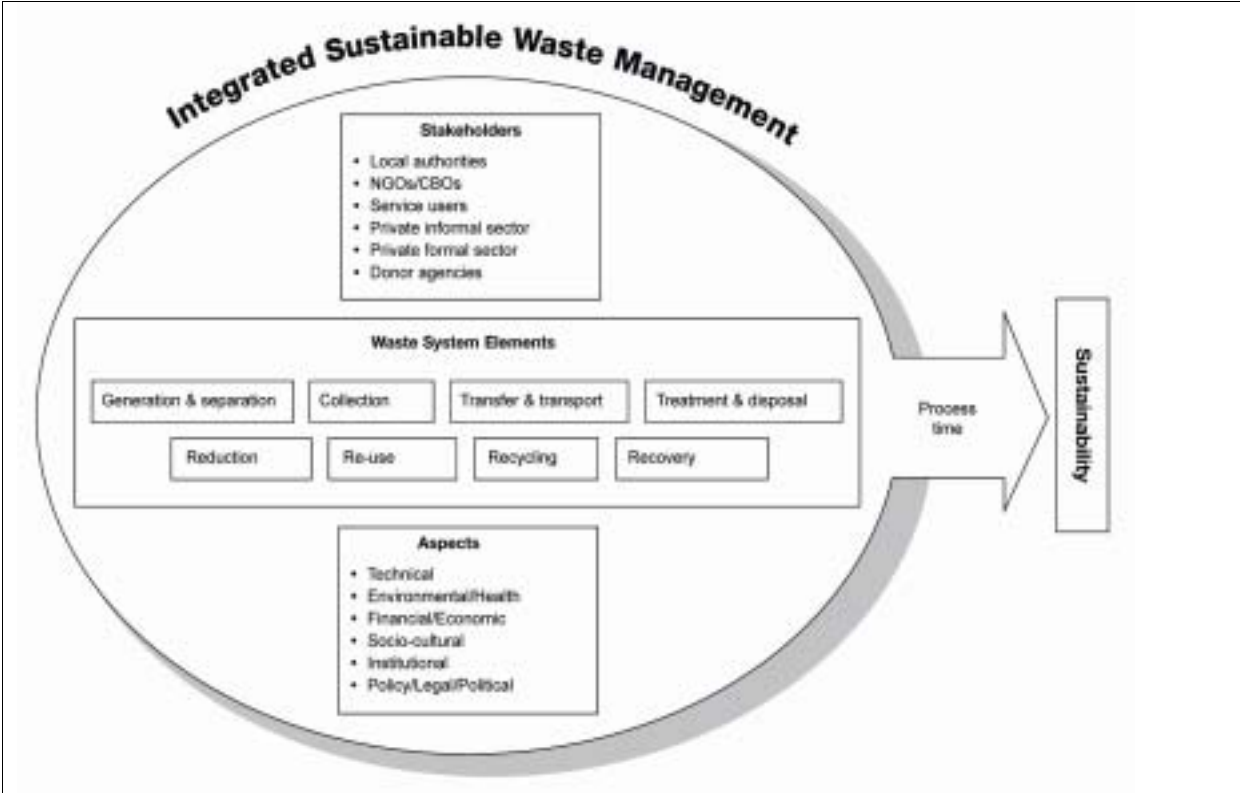
Solid waste **services** consist primarily of removal of waste or other undesired materials from their point of generation to a site where they are burned, buried, or otherwise managed out of site. Services are traditionally a public sector activity and removal and disposal have been, since about the 1960s, consistently a public responsibility (Wilson 2007 p. 199). An exception is Latin America, where the private sector was active, especially in waste collection, at a much earlier date, because the involvement of the public sector did not satisfy public demand (Price, Rivas and Lardinois 1998, Scheinberg 2001a and 2001 b). Even where disposal is a public responsibility, this responsibility is often contracted to private sector operators (Cointreau 1994).

Solid waste services, represented as the middle box in Figure 1, begin with the activities of users or generators and continue through steps of collection, transport, and disposal. One can argue that the essential nature of solid waste service is removal, and solid waste service providers mostly are involved with different forms of removal, street sweeping removes litter from streets, waste collection removes household or industrial waste, even sewerage is a form of waste removal to remove human excreta from households. For removal to be effective, it requires that there is a place to remove the waste to, means of transport, institutions for organising the removal, and systems for covering costs and distributing benefits.

Most solid waste crises (including the one in Naples, Italy, in February 2008 at the time of writing of this article) are failures of removal. Either the waste is not removed well or on time; or it is not transported efficiently or effectively; or the place it is removed to is not accessible, safe, or sufficiently removed from dwellings and businesses; or there is contact between the waste and soil, air (through burning) or water which releases the “removed” materials to the natural environment. The crisis narrative that sets the modernisation process in motion is then also usually a crisis narrative of contaminated groundwater, as it was in the US, or of contaminated soil, as it was in the Netherlands. (Scheinberg 2003, 2004a). In new EU countries, the crisis narrative may be constructed in relation to availability or possible loss of EU funds, status, and the like.

The few solid waste crises that are not direct removal crises are usually health or environmental damage crises, or symbolic crisis narratives about pollution and contamination, environmental health, or the like. An essential feature of solid waste crises is that they both challenge and reinforce the essentially unseen, slightly shameful social characterisation of waste as belonging to a “back” or private region of social space (Giddens 1984, pp 119-132), the social analogy to the private regions of the human body. The “back” nature of all things relating to solid waste is one of the reasons that it is so difficult to have rational, open decisionmaking in this area. It also means that those working with waste have low social status and little influence.

**Figure 1. The Integrated Sustainable Waste Management (ISWM) Framework**

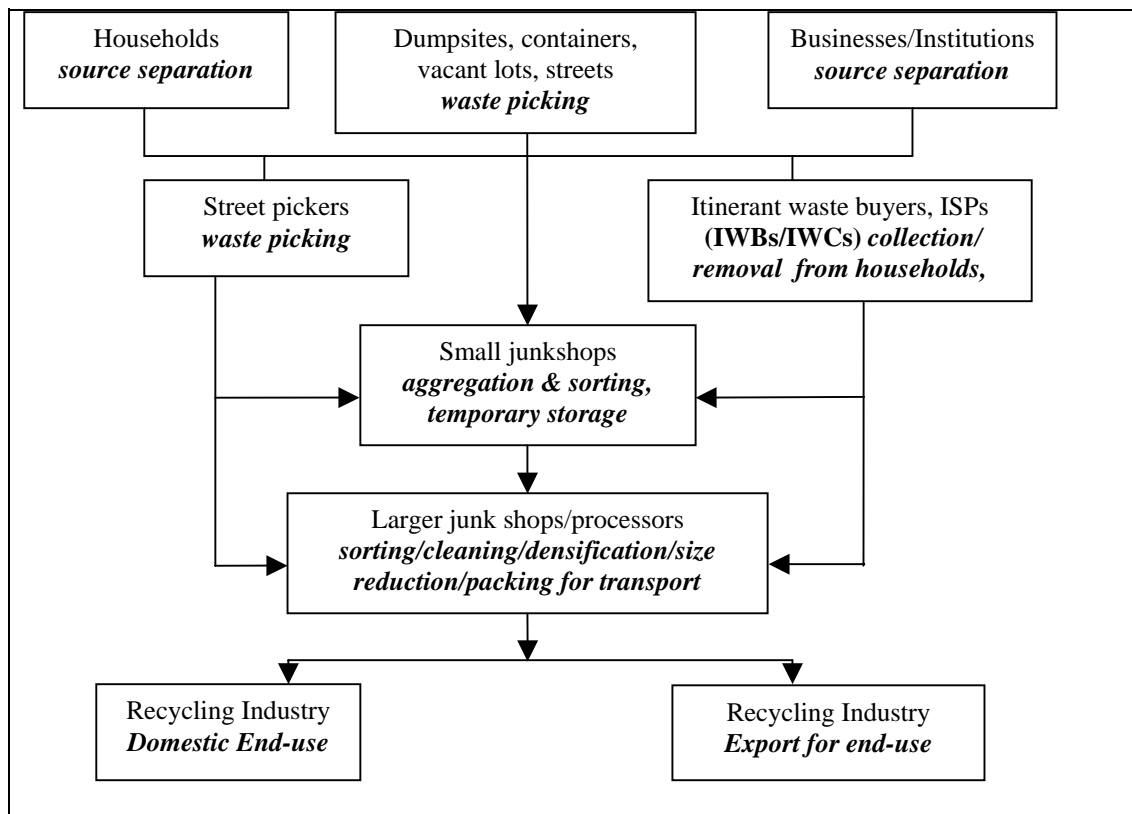


Source: IJgosse, Anschütz and Scheinberg, 2004

If the essential activity of solid waste services is removal, the corresponding core of valorisation is conservation of value-added. Effective recycling or organics recovery activity is based on capturing intrinsic value of component materials at the highest available level, translating that value added into an industrial or agricultural input, and re-depositing that value in new products. For example, used paper has about six levels of intrinsic value.

**Commodities** activity involves valorisation, or commercialisation, of materials which are placed in the waste stream by one set of economic actors – households, businesses, and institutions – but which are economically interesting to other economic actors because of their residual value added. The commodities sector had common origins with the waste management service sector, as products of urbanisation in Europe and North America (Melosi 1981, Wilson 2007).

**Figure 2. The Recycling Supply Chain**



Source: Adapted from Marchand, 1998

In most countries, including Southeastern European countries, commodities activity is done in the intensely private recycling supply chain<sup>1</sup>. Depending on regional industrial structure, markets, and transportation networks, most recycling activity focuses on ferrous and non-ferrous metals and the more valuable grades of paper because their intrinsic value justifies collection and processing. Other materials, such as glass, plastic, textiles, and organic materials, are valorised based on geographic and economic characteristics, or, during and after the modernisation process, for their negative value in disposal chains. In Romania and other Balkan countries prior to 1989, recycling was a considered a strategic state industry (Gille 2007) and part of the state-owned industrial sector. Since the 1970s, on modernised legal frameworks for solid waste management. In contrast to the solid waste service sector, commodities valorisation has always been, and remains, primarily a private sector activity.

Much of this paper is devoted to a discussion of the nature and implications of the coming together of these two completely separate systems, as a defining feature of the modernisation process, and as one of the critical elements which is left out of the EU policy discussions in the Balkans.

<sup>1</sup> In a site visit of the author to several family-owned scrap metal mills in North Carolina, USA in 1983, the patriarch of the family explained that with recycling, there is no way to count inventory, all inventory is undefined. In this circumstance it is impossible to prevent employees stealing materials. But by keeping the employment in the (extended) family, it is at least possible to make sure that the benefits of stealing also remain in the family.

### **Box 1. Six Levels of Value-added in Recycling Paper**

Paper is a manufactured surface for writing, and the highest conserved value added uses it (again) for this purpose. When a sheet of paper is used on one side, the other side can still be reclaimed and reused for writing something else. This is the first level, the second level is as a packing material. When there is no empty or unused writing surface left, the physical nature of paper still allows its use as a surface protector for other items, or as a filler of volume. When paper is wet or dirty, it is not usable as paper any more, but then, via an industrial recycling process, the wood fibres that hold it together can be recovered and used as inputs for new paper. Long fibres are thus a third level of value added, when fibres are broken or short, they can be used as a fourth level material in certain low-grade forms of cardboard which do not require tensile strength, called “boxboard” or “corrugating medium”. The fifth level is use as a carbon source in composting, and the sixth level is that the carbon can be burned for heat, energy, or resulting charcoal, ash, and the like.

Source: practical experience of the author

## **2 Modernisation of Solid Waste: Changing Relationships between Public Cleansing and Private Recycling Sectors and Institutions**

By the end of the 20<sup>th</sup> century, in spite of their common roots in ash and rag collections in the 19<sup>th</sup> century (Melosi 1981), the private recycling sector had already achieved an industrial identity as completely separate from public sector urban cleansing activities (Scheinberg 2003). According to Gille (2007), in Hungary and other State Socialist countries in Europe, this industrial identity was so strong that recycling became a kind of cult within the state socialist production sector (Gille 2007) and the separation from urban cleansing was so absolute that ‘waste’ in Hungary during socialism was defined as consisting only of metal (Ibid.)

The drivers that set the solid waste modernisation process in motion create a strong public sector need to find alternatives to “pure” removal, especially when geography, demography and level of urbanisation create scarcity of physical spaces for removal. In many cases, the private recycling supply chain, presented in a scaled-down version in Figure 2, appears to be interesting as an alternative to disposal, an institutional space where materials can be removed to. This process has continually sought to re-define the recycling sector as an adjunct to the solid waste system, a re-definition which was, at least in the 1980s in North America, vigorously resisted<sup>2</sup>. And once recycling enters the solid waste discussion, a process begins that ultimately forces a conversion of service and commodities activities. In North America, the municipal solid waste departments and private waste collection firms spent several years learning how to collect recyclable materials from households separately. This created a large supply of materials, and for them to be recycled, the service sector either had to make new relationships with the recycling supply chain, or had to learn about the industrial aspects of processing and the commercial aspects of marketing the materials. The major new area that emerges is generally called, in North American terminology, “municipal recycling” and it is closely associated with “integrated solid waste management.”

In Europe these new service and commodities relationships, new models of public-private economic relations, and new forms of infrastructure which have both a service and a

<sup>2</sup> The author, in her capacity as a policy consultant, was present at a number of meetings in Massachusetts in the period 1984-88, where the state recycling director, John Schall, actively lobbied the scrap metal and scrap paper businesses in the state to accept this new function and definition, and re-invent themselves as service businesses. Their resistance in that and other states in the US also created resistance in the national trade associations in Washington DC. But the pressure remained so strong that at a certain point the national lobbyist for the American Paper Institute, the paper manufacturers’ trade association, called up and said, literally, ‘we give up. We see that this relationship cannot be avoided. We don’t want to be left behind, tell us what we need to do.’ (personal notes of the author)

commodities component are grouped under the term “valorisation” of waste, or, literally, extracting the value-added. In the Netherlands, the material-based policies led to a material-based integration of public and private responsibility through the covenant process. The Dutch Ministry held the producers and importers responsible for the environmental footprint of their products, and required that they take action to meet policy demands for increased levels of valorisation. Producer responsibility systems represent a particularly Dutch approach to the new scientific and political relationships that characterise ecological modernisation. Similarly, European-style recovery of kitchen and garden organic wastes and North-American approaches to curbside collection of recycling both represent new categories of modernised solid waste service (Ibid., Scheinberg 1999).

Both large-scale composting and incineration for energy recovery – directly or via production of bio-fuels – are representative of a special category of modernised valorisation which has characteristics of both the public sector services model and the private valorisation model. The developing country experiments with micro-privatisation, separation at source, and informal sector integration also belong to the class of modernised hybrid arrangements (Lardinois and Furedy 1999, Price Rivas and Lardinois 1998) combining commodities and service aspects. These features, taken together, strongly suggest that the modernisation of waste management is a process of ecological modernisation (Mol and Sonnenfeld, 2000, Scheinberg 2003, Wilson 2007), which is the subject of the following section.

## **2.1 Ecological Modernisation Theory**

Modernisation of the solid waste sector re-shuffles virtually all aspects of solid waste management, from the institutional to the technical, and is well-described by the literature of Ecological Modernisation Theory (EMT). (Mol 2000, Mol and Spaargaren 2000, Mol and Sonnenfeld 2000). The main driver is environmental protection, supported by some combination of policy and fiscal reform and decentralisation. Like other forms of ecological modernisation, one of the drivers of this process is a perceived need to internalise environmental externalities, but the impacts go much further (Wilson 2007, Gille 2007, Scheinberg and IJgosse 2004, Scheinberg 2003).

The modernisation of waste management indeed represents a passage from a system with a single technical idea – remove waste from populated areas and dump it on or bury it in some unused or far-away ground – to a system which deconstructs the waste stream and looks for appropriate intermediate or final destinations for all the different components, according to their sources, value, and physical nature. It is then generally correct to say that modernised waste management systems represent a modernised mixture (Spaargaren *et al* 2005), as the field of activity of solid waste expands to include prevention of waste and recovery of secondary materials, specifically, recycling, composting, reuse, and, in some places, remanufacturing and repair. There is also a net increase in the number of actors and activities which fall generally under the solid waste management sector, so that instead of a single system it becomes a mixed system, also referred to as a “modernised mixture” (Spaargaren *et al* 2005).

Social scientists looking more broadly at the Western European utilities sector notice that the hybrid arrangements characteristic of modernised solid waste systems are not unique to the solid waste sector. In energy, sanitation, food systems, housing, and other socio-technical systems, monopolistic large technical approaches are increasingly being replaced by pluralistic “smart” systems, referred to as “modernised mixtures” (van Vliet 2002, Spaargaren

and van Vliet 2002), Hegger 2007, van Vliet, Chappels and Shove 2006, Spaargaren *et al* 2005).

On one dimension, the ‘mixture’ relates to the technical waste elements in the waste management chain, as shown in the central block in the Integrated Sustainable Waste Management (ISWM) in Figure 1, below. The modernised landscape includes more elements in more complex and consuming relationship to each other.

On a second dimension, the ‘mixture’ relates to the structural integration of commodities and service activities. This necessarily widens the stakeholders in the upper block of the ISWM figure to include, in addition to local and national authorities, a range of private-sector stakeholders who see recycling and valorisation of materials in the waste stream as a private commercial activity. The private sector stakeholders are characterised as a whole as belonging to the *recycling supply chain*, and are shown in Figure 2. A larger number of stakeholders operating at many scales and in many small areas and micro-regimes contribute to the pluriformity of the system.

The third dimension, consistent with other ecological modernisation processes, of “mixing” is the one specifically identified by Spaargaren *et al*: the mixing of types of relationships between providers and users of the solid waste system (Spaargaren *et al* 2005; van Vliet, Chappels and Shove 2005). These relationships are radically different than those in the pre-modern landscape, where one provider, usually the municipality (but in the US also the private waste collector), has an identical service relationship with all users, who in turn all have the same service, usually for the same price, and without possibility for variations according to choice (van Vliet 2002).

In summarising the nature of the ecological modernisation process, Mol and Sonnenfeld (2000a, pp 6-7) identify five key features of ecological modernisation:

1. the changes are motivated for purely or largely environmental reasons, independent of their economic impacts
2. science and technology get a new impetus and a new role
3. the changes are institutionalised in new arrangements between social actors, between users and providers, between governments and citizens
4. these new arrangements stimulate a shift in responsibility and activities between government, civil society, and the private sector
5. there is a new vocabulary and a new discourse about the system, accompanied by new benchmarks for success (summarised and paraphrased from Mol and Sonnenfeld 2000a)

Box 2 summarises the features of a modernised system discussed further in section 4.

### **Box 2. 15 features of a modernised landscape in solid waste management**

1. Local landfills are closed, disposal is regionalised
2. Landfill standards require fencing, weighbridges, entry controls, cover, leachate collection, closure
3. Supra-municipal institutions are required to manage regionalised disposal and recover costs
4. Bureaucratic claims and responsibilities for solid waste are vested in new institutions and the (new) environmental ministry
5. Solid waste costs are above €30 per ton, built up out of: containers, collection, processing, transport to regional disposal, final management
6. Siting, financing, operating new landfills / other disposal facilities is difficult and expensive
7. Households and businesses have a new status as users and clients
8. Public and private providers care about what the public thinks
9. Quality, reliability, cost effectiveness, and performance of recycling, composting and removal replace technical performance as values
10. “Integrated solid waste management” includes prevention, public education, recycling, composting, and sometimes reuse
11. New institutional arrangements and benefits-sharing manage and adjudicate claims to materials, services, equipment, spaces
12. Traditional solid waste practices and informal recovery have either been integrated, marginalised, or replaced by parallel alternative systems, with winners and losers according to choices made
13. The modernised system has a variety or mix of operations, technologies, and economic actors
14. Financing for modernised system comes from a variety of sources, actors, and revenue streams
15. The policy, legal, regulatory, and financial landscape for solid waste is pluriform and flexible

*Source: elaborated by the author.*

### **3 Case Studies in the Ecological Modernisation of the Solid Waste Sector**

In OECD countries the modernisation process has generally been driven by a crisis narrative around pollution of water or ground – that is, generally crises which are external to the boundaries of the system, but internal to the geographic boundaries; the crisis narrative also has local accents (Wilson 2007). In Europe, the Netherlands, Denmark, and Germany were the earliest to modernise, and the sector had matured by the end of the 1990s (UN Solid Waste SourceBook 1997, Scheinberg and IJgosse 2004). Finland, Belgium, Austria and France were in the middle, and the UK, Spain, and the new EU countries are still in this process at the time of writing (Scheinberg 1996).

In Hungary, representative of the EU-25 accession countries, some activities were occurring already in 1996-8 (Scheinberg 1999, Gille 2007), but the rapid modernisation period began later. In Bulgaria, one of the EU 25+10, the momentum of modernisation began about 2004, although preparatory initiatives funded by external donors began as early as 1997 ([http://www.iscvt.org/where\\_we\\_work/bulgaria/](http://www.iscvt.org/where_we_work/bulgaria/) (on 2 February 2008)). In North America this process began on the East and West coasts in the early 1980s and was already maturing by 1996 or so.

The drivers of the modernisation process in South or transitional countries may be similar, but a crisis narrative in solid waste in many South countries will be subsidiary to a large range of competing crises, and the process may also be driven by donor ideas, symbolic considerations, public pressure, treaty compliance, or EU accession.

No matter what the driver is, one of the most critical is that modernisation drives the public solid waste sector and the private recycling sector to integrate, due primarily to pressures on disposal and a need to diversify options in terms of destination, concentration, and cost. Other impacts include changing economies of scale in disposal, which forces regionalisation, and a high awareness and level of discussion among all stakeholders.

This high “discursive awareness” makes every political step hazardous and risky and likely to attract unpredictable reactions and results, but it also makes it easy to introduce and embed changes in services, client/user practices, and professional standards. The normal forms of resistance or institutional rigidity fall away, and quite deep and fundamental change occurs in a short time, that is, in 12-20 years. The process occurs in social, financial, institutional, governance, environmental, and technical dimensions, and the modernised landscape is pluriform, technically institutionally and economically mixed, multi-actor, and flexible.

The rest of this section is devoted to two case studies of modernisation of the solid waste sector, the process in the US (and Canada), and the parallel process in the Netherlands. The section concludes with a more detailed discussion of the 15 features of a modernised landscape in Box 2, with examples from other countries as well.

### **3.1 Modernisation in the United States (and Canada), 1986-92<sup>3</sup>**

Modernisation in the US began in 1984, although the preceding 12 years of the pre-modern period were important for setting the stage. In Europe it began somewhat earlier, and lasted somewhat longer. In both North America and Western Europe perhaps the strongest driver for modernisation has been a growing understanding of the relation of non-point-source pollution on water supplies, and introduction of measures for protection of groundwater (Wilson 2007).

The key driver in the US, in contrast to the claim of Wilson (2007), was the Clean Water Act of 1972 (Scheinberg 2003), and the resulting changes in landfill standards. A secondary but still critical driver was the so-called “tax revolt” in the 1970s, which resulted in an imperative to reduce local government expenditures and decentralise and reorganise the responsibilities of local authorities (Scheinberg 2003a, Scheinberg and IJgosse 2004). This accelerated the closure of town dumps and stimulated the regionalisation of landfills. The mechanism was primarily the State laws made to comply with the Clean Water Act, and, in the second half of the 1980s, the passage of percentage recycling goals.

Some degree of interaction with growing environmental awareness played itself out in municipal experiments with recycling and the first producer responsibility initiatives, primarily in Canada and the Netherlands. The New Jersey Recycling Act, the first state-level recycling strategy, is credited with beginning the era of modern recycling in the US. “Bottle Bills” in New York and Massachusetts and recycling laws in California and Oregon were passed at around the same time. Modernisation in the US can be divided into four periods:

1. the baseline period, in the era before earth-day in 1970;
2. the pre-modern period, 1970 to 1980, a period in which the conditions for modernisation were put into place;
3. the transition period, 1980 to 1984-5-6, a period of simple modernisation; and
4. the modernisation period, 1984 to 1996, a period of reflexive modernisation and rapid social and technical change.

Quite early on, it became clear that integrating recycling into solid waste management was and would remain a key dimension of modernisation. The By 1984, Massachusetts had the first State Recycling Director and regional recycling strategy; by 1986, Rhode Island had

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<sup>3</sup> Some of the material in this section is drawn, without citation, from Scheinberg 2003.

passed the nation's first "state-wide mandatory recycling law;" the West-Coast states of Washington, California and Oregon also began to be active in the policy and legislative area in the period 1982-85. In the middle of the US, the Great Lake states of Minnesota and Wisconsin were among the early adopters.

The modernisation period was characterised by rapid technological innovation; by development of the institutions of recycling; and by the transformation and professionalisation of the existing recycling actors their increasing convergence with the solid waste sector, and their integration – often under protest – with the shifting landscape of solid waste institutions. Before modernisation these consisted of the metal and paper scrap industrial sector, environmental and community activists; and civic organisations. During the modernisation period the recycling sector in North America, under a range of pressures to serve as the 'alternative to removal' for increasing volumes and types of materials, matured into a professionalised, integrated urban recycling management sector. Curb-side recycling initiatives – a modernised approach to capture of materials – elevated participation rates from 15% to 80%, and achieved diversion rates (the percent of wastes diverted from disposal and directed to recycling) of 35% and above.

Ecological modernisation changed the relationship of local government to waste management and the private sector. Towns, cities, and counties seeking to lower their reliance on landfilling adopted recycling ordinances, passed local laws, bought recycling vehicles, and instituted collection programmes. As soon as it was clear that the landscape was going to place strong pressure on municipalities to recycle and recover yard wastes, the solid waste providers and their suppliers began to innovate and educate themselves. Some early adopters – both private and municipal – were able to show that high-participation recycling collection was affordable, feasible, and reliable, but that it relied on different technology and different communication strategies than solid waste.

The public sector in Canada actually made the most important breakthrough for high-capture source separation, the "blue box." The innovation consisted of providing households with a convenient, attractive, durable, and uniform storage and set-out container, which also raised collection efficiency at the curb. In some places there was a problem with the informal recycling sector stealing materials, and some municipalities responded with so-called "anti-scavenging ordinances." In the states with container deposit legislation, this was to some extent solved by shifting of informal sector activity to collection of used deposit bottles and cans, and also by stimulating and encouraging existing buy-back centres to become more active in areas where source separation at curb was difficult or under-performing.

The private sector innovated the development of divided collection vehicles, represented by the Eager Beaver trailer, LoDal recyclers, and LaBrie trucks, which were designed both for separate collection of recyclables, or in some cases for integrated collection of recyclables and mixed waste. Municipalities with better collection systems had an over-supply problem, as it was not always possible to sell materials into the recycling supply chain. This triggered another round of technical innovation, the Materials Recovery Facility, or MRF.

A MRF is a small industrial facility which takes in mixed (sometimes called commingled) whole recyclables -- glass containers, steel and aluminium cans ("tins"), newspaper, other kinds of paper, and, more recently, a wide variety of rigid and flexible plastics. On the US East Coast, two competing models for MRFs were developed and tested in the mid-1980s, one, in Groton, Connecticut (Resource Recycling Systems, RRS), working from the civic

organisation side, and the other in Oxford, Massachusetts (Recycling Enterprises Inc.), working from the scrap industry side. Together, these technical approaches made the bridge between the needs of the municipalities to divert high volumes of materials from landfill, and the standards in the recycling supply chain for reliable quality of industrial inputs.

New communication approaches – in combination with the set-out containers, were increasingly understood to be essential to achieving high rates of participation, that is, reliably increasing the numbers of households who follow the rules for recycling. Monitoring to meet legislative goals required refined measurement instruments to characterise the waste stream and predict the amounts of recyclables that could be captured and recovered. A key public management innovation, consistent with EMT theory, was the municipal recycling co-ordinator, which brought young professionals into public works and public cleansing departments, where they could facilitate information exchange and act as insider change agents.

This period was one of unprecedented consultations, a rapidly changing discourse on recycling and municipal waste management, and the formation of remarkable alliances between activists, Government, and industry. Under the leadership of Garden State Paper's CEO Fred Schmidt, the New Jersey Recycling Forum represented one of the earliest attempts to create a stakeholders' forum, bringing together recycling activists, civic recyclers, leaders from the paper, glass, and metal industry, waste collection companies, municipalities, and state regulators. The National Recycling Coalition held its first National congress in 1982. These platforms provided a forum for the new discourse about recycling as a discipline, as a form of public-private co-operation, and as an activity of government. In these meetings, a whole new terminology of recycling emerged, was discussed, and finally became institutionalised in publications, reports, and articles in *Resource Recycling and Biocycle*. Integrated solid waste management, a new discipline with a new name, a new jargon, and an almost unrecognisably changed discourse, replaced urban cleansing as the umbrella for solid waste activities. This "modernised" integrated solid waste management (ISWM) paradigm had by 1996 largely stabilised in North America, (Brewer 2002, personal communication).

### ***3.1.1 Modernisation and the Informal Sector***

At the beginning of this process, most cities and some rural dumpsites had informal recyclers but there weren't so many as in the Balkans and South countries. What happened to informal sector waste pickers and junk shops in North America? In general, the integration of recycling into integrated waste management has resulted in the following forms, although a considerable difference exists in different sized cities and different regions.

1. The community recycling centre model. Community recycling centres like Urban Ore in Berkeley (California), the Resource Centre in Chicago, and R2B2 in the Bronx in New York City adapted to the new situation by offering curbside and business collection services to cities, but also to commercial generators. Former suppliers from the informal collection sector sometimes move into jobs as collectors or processors (Maurice Sampson, personal communication 2007).
2. The MRF model. MRFs are recycling centres that combine service and commodities functions. MRFs were invented in the 1980s and incorporated into state policy on the East coast in the period following 1986. A defining feature of a MRF is that it takes mixed recyclables, not mixed waste. Some MRFs either employ or contract with individuals who were previously picking waste.
3. The second-hand shop, attic clean-out, flea market or repair model. In some cases

4. informal entrepreneurs focusing on reusable goods have evolved into semi-formal or formal businesses. They pick re-usables from waste collection set-outs or offer a free removal service. In their own households they repair household and garden appliances, bicycles, or the like.
5. The “take it or leave it.” Many rural communities in the US have a depot-type solid waste facility that combines recycling, waste disposal, and drop-off of organic waste, re-usables, white, brown and grey goods, and the like. In certain parts of the US there are parts of the depot which are designed to facilitate free exchange of reusable items. Households can bring furniture, appliances, books, clothing, auto parts, but they are also free to take those things. Take-it or leave-its also serve informal centres for recycling.

### 3.1.2 *The Modernised Landscape in the US*

In the US at the end of the modernisation period, there were a number of models for a solid waste system, shown in Table 1.

**Table 1. Solid waste operations in the US after modernisation**

Setting	Source separation	Collection	Processing	Transfer	Disposal
Small city with curbside	Blue box paper + mixed containers + 2-3 season yard waste	1x week rest-waste, 1x wk recycling, fall leaves, spring yard waste. combined with depots in some cases	of recyclables, combined with transfer of waste	in combination with recycling	at a county, regional, or long-haul landfill
Small city with depot	by material incl paper/cardboard/cans /glass/reusables/ plastic/ beverage containers	1x week rest for centre, rest is self-haul to depot	some hand processing, reusables area, rest to private MRF	depot is also a transfer station/not applicable	regional landfill
Large city “dirty MRF”	clear or blue bags co-collected with mixed waste	2 x week rest, fall leaves in single-family home areas	bags opened, sorting line, (high levels of contamination)		regional landfill – incinerators in a few cities
Large city “curbside recycling”	separate paper, beverage containers semi-automated	blue box / 120 L rolling cart recyclables; fall leaves; 3-season yard waste	MRF / con-tract with private processor + municipal composting	by residential zones, depending on distance to disposal	regional landfill – incinerators in a few cities
Very small city / town with depot	by material based on what depot accepts; hhs bring everything to depot or take it to work in the city	none except when privately contracted	hand or materials sold mixed to priave sector	depot is also a transfer station	regional landfill

The modernised landscape in the US is based on the following institutional and technical choices.

**Table 2. Overview of the modernised solid waste landscape in the US**

1. Policy and laws	Solid waste policy is made at National level, but solid waste and recycling laws are made at the level of states, not at the level of the national government. The laws are directed at municipalities, not at households. Some types of laws are directed at particular business sectors. The main goal of policy is decoupling waste generation from GDP.
2. Primary responsibility	The primary role for solid waste management, recycling, composting, and urban cleansing in the US is assigned to municipalities. In spite of having no disposal facilities, local municipal authorities in the US have primary responsibility for the solid waste management activity that takes place within their boundaries.
3. Disposal responsibility	Regional authorities are more likely to have responsibility for disposal.
4. Private sector and arrangements	There is strong participation of the private sector, and many private-to-private arrangements. In spite of this, the involvement of the private sector in virtually all urban areas is mediated by local and regional authorities via permits, concessions, franchises, or contracts for services.
5. "Integrated waste and modernised mixtures	Adequate solid waste management is conceived as being an integration of several different operations at different scales, managed by different types and sizes of actors offering a range of services.
6. Payment arrangements	Both households and businesses expect to pay directly for waste removal, collection and disposal of waste directly, and no longer through real estate taxes or other indirect measures. Households pay as much as US \$2000 per year, but less is more common.
7. Integrated waste management for households	The residential "package" includes separate house to house collection of mixed wastes, some recyclables and yard wastes, return of beverage containers to shops in 16 out of 52 states (30% of states, but probably more like 60% of the households), and availability of a depot or community recycling centre for people to bring household hazardous wastes and materials not collected at the curb.
8. Decreasing collection frequency	In most cities, collection frequency for household collection has dropped in the modernisation process to a maximum of three times a week for residences, and sometimes as little as once per week.
9. Integrated waste management for commercial generators	The commercial "package" is a private-to-private arrangement based on the type and volume of the waste, the frequency of the collection service, the rental of the container(s), and the distance to and cost of disposal. Commercial waste services are likely to include office paper recycling.
10. General urban practices	Urban households in standalone houses or small multi-family houses with 2-12 apartments put their own waste, recyclables, and yard wastes on the street.
11. Practices in high-rise apartment houses	In high-rise apartment houses there is usually disposal in bags and recycling in special containers. The building management takes the waste to the street, or it goes down a chute to a container.
12. Rural practices	In small towns or rural areas most households bring their own waste to a depot that combines disposal, recycling, organic waste management and reuse.
13. Shift to payment by volume	There is a strong trend to have households and commercial generators pay based on the volume of waste that they dispose.
14. Private collection	There is a strong tradition of private collection which still continues in many smaller cities and towns. In this arrangement the households pay the collection company directly and the municipality is only involved in terms of (a) licensing the collection companies and (b) organising their access to disposal.

15. Solid waste collection subsidises recycling	In much of the US the recycling collection and processing – through the level or MRFs – is paid for out of solid waste fees, and recycling and composting are “free”.
16. Role of the informal sector	The informal, micro, and small private sector has not disappeared in the US, but they have tended to diversify to related activities in reuse, especially, the second-hand shop and repair sectors. There are still street collectors and very occasionally there are dump pickers in rural areas. In many small towns waste picking is facilitated by having depots with a “take it or leave it” area.

**Table 3. Costs for Solid Waste in the US 2008**

Solid waste operation	\$/short ton	€/tonne
Landfills	\$66	€52.00
Incinerators for domestic waste	\$90	€71.00
Incinerators hazardous waste	\$2,200	€1,729.00
Composting of yard waste	\$55	€43.00
Composting of bio-solids	\$100	€79.00
Composting of mixed municipal waste/GFT	\$75	€59.00
Solid waste collection	\$85	€67.00

Source: Michael Simpson, Personal Communication, February 2008

### 3.2 Modernisation in the Netherlands, 1984-2005<sup>4</sup>

Modernisation in the Netherlands has both overlaps and differences with modernisation in the US, and can be divided into five main periods, with some overlapping between them:

1. The baseline period, prior to 1996
2. The pre-modern period, 1976-85
3. The period of intensive modernisation: 1985-2002
4. The simple modernisation period of the 10-year waste management plans: de-coupling GDP and waste generation per capita, 1992-2005
5. The reflexive modernisation period of the National Waste Management Plans, 2002-2012

#### 3.2.1 Baseline and pre-modern period

Prior to modernisation in the Netherlands, solid waste management had a hygiene focus which was institutionalised in the 19<sup>th</sup> century (Zon 1986). The modernisation period was initiated by the crisis narrative of contaminated soil in the 1970s, as a result of which waste management became a “hot political issue”, but within a more general process and policy of environmental planning and protection. The discussions of the 1970s led to the formal adoption to the so-called “Ladder of Lansink” as the main policy guideline for waste management. This is a “hierarchy” or pyramid approach, which says that waste must first be prevented, then reused, then recycled, organic waste composted, then energy recovered, and only then disposed of in safe landfills. What makes the Dutch version of the hierarchy different is that there is an absolute commitment to the total elimination of landfilling for recyclable and burnable materials, something that is other national policy in the world, although EU directives include a somewhat weakened version of this.

<sup>4</sup> Some of the material in this section is drawn, without citation, from Scheinberg and IJgosse 2004

The pre-modernisation period in the Netherlands was characterised by a very active political discourse, in which not only politicians but civil society and the business sector participated. In this period the government financed a great deal of research, modelling, and pilot projects, many with a focus on recycling or composting.

In this period, waste management was considered a part of the national environmental planning process, and there were chapters on waste management in each National Environmental Policy Plan (NEPP). The two goals for waste management in the NEPP were S35 and S36 (Evaluation, NEPP, 1990, VROM directorate general Environment):

- ◆ technical and organisational improvement of the disposal infrastructure such that in 2000, with only a few exceptions, all of the waste streams generated in the Netherlands could be processed or disposed safely, with minimum environmental risks.
- ◆ preparation and stimulation of structural measures for recycling and waste prevention.

### ***3.2.2 The period of intensive modernisation: 1985-2002***

In this period, waste management became a discipline on its own; specialists emerged in the industry, government, and NGO sector, and the field of waste management achieved some recognition as a separate area of urban governance. The discussions and activities intensified in this period, beginning with the identification of the 29 priority waste streams, and culminating in the formulation and publication of the (first) 10-year waste management plan for the period 1992-2002, and the second 10-year waste management plan for the period 1995-2005, which had the main goal of planning for adequate and environmentally safe (“leak-proof”) incineration and landfill capacity. The focus on 29 priority waste streams was mainly useful in the research on the development of recycling capacity and lines of producer responsibility.

The focus on 29 priority waste streams made this process in the Netherlands definitively different from other countries and resulted in a fundamental characteristic of the Dutch waste system, a materials-based strategy to prevention, recovery, and disposal. This in turn made it possible to forge agreements with the trade associations to take responsibility for dismantling, recycling, and/or safe disposal of their own specific products and materials. As a result, in contrast to the US, in the Netherlands recycling system the primary responsible parties are producers and importers. Responsibilities of municipalities and private waste companies generally focus only on collection, making municipal innovation unnecessary, other than in participation and public education campaigns.

### ***3.2.3 1992-2002 and 1995-2005: the 10-year waste management plans: de-coupling GDP and waste generation per capita***

The 10-year waste management plan was based on a set of policy interventions developed in relation to the process of national environmental planning (NMP) in the fifth and sixth national environmental plans. These interventions included:

1. development and application of a set of instruments to promote prevention and reuse, that made it feasible for municipalities to require separation at source;
2. establishment of environmental and policy parameters for disposal, including the landfill ban which limits landfilling to non-recyclable, non-burnable materials;
3. planning for disposal capacity at National level;
4. allocation of responsibility and liability for the waste stage of materials and waste streams to their producers and importers;

5. restriction of imports and exports of waste (late subsumed under EU directives and the Basel Convention); and
6. de-coupling waste generation (actually measured as disposal) from economic growth.

Some results in this period included:

- ◆ 1985 - 2000, total waste supply increased from 46 megaton (Mton) to 57 Mton, (24%).
- ◆ GDP increased by 54%. If total waste supply had also increased by 54%, 71 Mton of waste would have been generated (disposed) in 2000. This means that a reduction of 19% was achieved between 1985 and 2000.
- ◆ The period 1995-2005 was followed by the National Waste Management Plan (LAP)

The instruments which were used included:

1. stimulation of waste prevention in companies;
2. developing the recycling systems for households;
3. providing households and businesses with educational and instructional materials;
4. establishing parameters for each of the priority waste streams in waste decrees, or decisions, based on the concept of a percentage of that waste stream which was required to be recycled by 2000 (or 2002);
5. establishing rules for the operation and permitted environmental impact of waste disposal facilities, especially incinerators and landfills, based on the idea of restricting their input waste streams and progressively banning more materials;
6. establishment of the AOO (Waste Management Co-ordinating Council) to allow for the co-ordination of large-scale or national-level activities, such as national disposal, recycling and composting capacity planning, and the negotiations for extended producer responsibility (EPR).

In this period, there are three especially important “milestones” in policy, which are:

1. initiation of a tipping fee for the landfilling of certain waste streams, initially at the rate of 29 Euro per ton, in the mid nineties. Progressive increases resulted in the tipping fee reaching 81 Euro per ton in 2001, equivalent to the average tipping fee for incineration. As a result, the financial incentive to choose landfilling over incineration was eliminated.
2. introduction, in 1995, of the ban on landfilling for about 30 waste streams, and the gradual application of this ban to progressively more material streams, as sufficient alternatives for processing of the specific stream became available;
3. establishment of Extended Producer Responsibility (EPR) as the primary framework for organising, stimulating, and implementing recovery, recycling, or safe disposal of specific materials and waste streams, as requirements in law, but with a large space for voluntary agreements by industry for specific targets, privatisation of the responsibility and the financing of recycling; and a combination of industry monitoring and reporting to VROM and VROM inspections of the results.

#### **3.2.4 2002-2012: the national waste management plan- Landelijk Afvalbeheer Plan (LAP)**

The National Waste Management Plan (LAP) represents the shift from the period of rapid modernisation to post- or reflexive modernisation. This document was set up to cover a 10-year period, with updates every four years (later changed to every six years). It has a policy focus on:

- ◆ institutionalising the developments from the rapid modernisation period that preceded it;
- ◆ shifting the emphasis to even more de-coupling and a focus on decreasing the environmental footprint of materials management;

- ◆ adjusting the policy and implementation focus to the reality that landfilling of non-recyclable waste has in fact been eliminated;
- ◆ re-centralising waste disposal capacity planning and control to the National level under the responsibility of the Ministry of Environment; and
- ◆ accounting for the influence of European rulemaking.

The LAP has the following formal policy and practical objectives:

1. Encourage household and service waste prevention by strengthening the experiences of de-coupling in the years 1985-2000;
2. Encouragement and optimisation of materials recovery (both for recycling and as fuel) through source separation, supplemented by post-collection mechanical separation of mixed rest-waste. The level of recovery should reach 83% by 2012.
3. Increasing the use of non-recyclable waste as fuel for generating energy, at the same time decreasing contributing to climate policy;
4. A limitation of waste for landfilling and incineration to 9.5 Million tons in 2012.
5. Encouragement of market forces and innovation in waste prevention and waste management;
6. Working towards a “level playing field” (the same rules, prices, restrictions) for all of the European Union, and ultimately, for all of Europe.

### **3.2.5 Modernisation and the Informal Sector in the Netherlands**

According to interviews with solid waste professionals in the Netherlands in 2007<sup>5</sup>, the informal sector in the Netherlands has “just disappeared.” A closer investigation suggests that this is not strictly true. Ferrous metal and paper recycling firms report that as much as 30% of their materials are brought by informal recyclers who collect from the street, but also from commercial generators.

In addition, the Netherlands waste landscape is characterised by a number of institutions that are neither strictly public nor strictly private. The *kringloops* are second-hand shops which are integrated with and co-financed by the municipal cleansing companies. They have three functions: collection of reusables and bulky waste (and in some cities waste paper); repair or dismantling for recycling; and retail and wholesale marketing for reuse in second-hand shops. For this the *kringloops* receive a *diversion credit*, that is, they can claim a part of the avoided cost of disposal from their host municipality.

Most *kringloops* also have a strong social profile, and serve as sheltered workshops for “socially weak” individuals who are physically, psychologically, or socially unable to participate as regular workers in the labour market. These work places have also served as absorption for the informal waste sector, but also have been willing to work with informals who do collection and other small jobs.

There are also some informal recovery activities related to the collection and recovery of construction and demolition waste. But in general the informal sector in the Netherlands has, indeed, largely disappeared over the years.

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<sup>5</sup> The conversation occurred during a series of trainings for Dutch solid waste staff involved in “twinning” exchanges with cities in South countries financed by the Logo South programme of the Association of Netherlands Municipalities (VNG).

### **3.2.6     *The Modernised Landscape in the Netherlands***

In the Netherlands at the end of the modernisation period, there were a number of models for a solid waste system, shown below:

**Table 4. Solid waste operations in the Netherlands**

Setting	Source separation	Collection	Processing	Transfer	Disposal
Small –medium-large city <i>recycling fees paid at POP: tires, electronics, batteries; auto/motor; white/brown goods, HHW beverage containers, packaging,</i>	paper, glass, GFT, rest, household hazardous waste, reusables	1x 2 weeks rest-waste in grey 120 or 240 l rolling cart, 1x 2 wks GFT in green 35-120L container, 1x month curbside paper / 4 x yyear chemocar for HHW, reusables by appointment or drop-off; glas-bak + paper-bak (or depot) w/ batteries /clothing; batteries at POP	post-collection sorting in combination with centralised composting or incineration	in connection with some post-collection separation	centralised composting, incineration, in combination with residues only to landfill
Rotterdam	same as above but GFT only in concrete bunkers in areas with high-rise houses	2x week rest centre, GFT 1x 2 wks low-rise hhs 1 x month paper, HHW, reusables bring to depot	some at depot	depot is also a transfer station/not applicable	regional landfill
Very small city / town with depot	Same as above but may not have paper collection	1 x week GFT, rest, paper, glass, HHW at depot or paper-glasbak	hand or materials sold mixed to priave sector	depot is also a transfer station	regional landfill
Belgium	Generally same but GFT in combination with intensively supported home composting	none except when privately contracted	hand or materials sold mixed to priave sector	depot is also a transfer station	regional landfill
GFT: vegetable, fruit and garden waste Glasbak and Paperbak: “Igloo”-style drop-off containers in neighbourhood shopping areas or near bus- and tram-stops POP: point of purchase					

**Table 5. Overview of the modernised solid waste landscape in the Netherlands**

1. Policy and laws	Solid waste policy and laws are made at National level, to comply with EU directives. The laws are directed at municipalities, not at households. Some types of laws are directed at particular business sectors. The covenants are national-level contracts between the Ministry and particular business sectors
2. Primary responsibility	Municipalities have primary responsibility for urban cleansing, operation of collection and depots, and extensive public education. Even when municipalities operate collections for GFT or recyclables (and they don't always operate them, sometimes other parties do), the municipalities deliver the materials into a producer responsibility system and do not have to know anything about marketing materials. Municipalities are also not generally responsible for final disposal or processing. Recycling is largely the responsibility of the private producers' organisations, but is controlled and inspected by VROM. It is VROM as a public agency that sets recycling targets and reports to the
3. Disposal and processing responsibility	Composting and disposal is the responsibility of regional authorities or semi-private companies. Virtually all composting in the Netherlands is done in regional, centralised service-based composting installations and is <i>financed by avoided costs of more expensive landfilling or incineration</i> and does not depend on making a profit on selling compost. The primary mode of marketing is to give compost to residents, sell it for a very low cost, or use it in parks and boulevards (For example, in the author's community garden, all the garden plots have a layer of GFT compost spread on them at the beginning of the gardening season
4. Private sector and arrangements	Most of the large "private" solid waste service companies in the Netherlands are not really private. The largest collection and processing "companies" are either owned by electric utilities, one or more cities, or a combination of private, public, and utility sectors. (The recycling chain businesses are private).
5. "Integrated waste and modernised mixtures	The key concept in solid waste management is materials-based strategies. This necessarily means that there are parallel systems at different sizes and scales, managed by different types and sizes of actors offering a range of services. However, for each kind of material or product, the system is usually uniform throughout the whole country.
6. Payment arrangements	Households pay an annual solid waste fee to their municipality along with water and sewer taxes. Fewer than 15% of Dutch municipalities charge for domestic waste service based on volumes. Businesses expect to pay directly for waste removal, collection and disposal of waste directly, and no longer through water-sewer bills. Households pay around €300 (US \$450) per year in one fee for all services relating to waste, recycling, GFT collection, and the like.
7. Integrated waste management for households	The residential "package" includes separate house to house collection of rest wastes and GFT, monthly collection of paper, conveniently located recycling bins for paper and glass, chemocar service outside of the largest cities, free collection of bulky waste, point of purchase return of batteries and fluorescent lights, return of refillable glass beverage containers to shops and availability of a depot to bring household hazardous wastes and materials not collected at the curb.
8. Decreasing collection frequency	In most cities, collection frequency for household collection has dropped in the modernisation process once per a week for residences, and in some places once every two weeks for dry rest-wastes, with GFT collected every week.
9. Integrated waste management for commercial generators	The municipal waste service usually includes small and medium-sized businesses in residential or commercial areas. The larger commercial "package" is a private-to-private arrangement based on the type and volume of the waste, the frequency of the collection service, the rental of the container(s), cost of disposal. Commercial waste services are likely to include weekly collection of paper and cardboard.
10. General urban practices	Urban households in standalone houses or small multi-family houses with 2-12 apartments put their own waste, recyclables, and yard wastes on the street.
11. Practices in high-rise apartment houses	In high-rise apartment houses there is usually disposal in 2-m <sup>3</sup> containers with separate ones for paper.
12. Rural practices	Even the countryside in the Netherlands is quite urbanised and most houses have door-to-door collection at least once per two weeks for mixed waste and GFT.

13. Shift to payment by volume	Only very few municipalities require households to pay based on the volume of waste that they dispose. Businesses and industries outside the city centre or residential areas usually do pay based on volume
14. Private collection	Outside of the “randstad” (the western coastal megalopolis) there are some private to private arrangements, but only the smaller ones are “real” private companies.
15. Solid waste collection subsidises recycling	Collection of yard waste and recyclables is financed by direct municipal budgets or via a diversion credit to kringloops. Processing of recyclables is paid for by the producer responsibility covenants. Composting is financed by municipal tipping fees which are less than would be paid for landfilling or incineration.
16. Role of the informal sector	The informal, micro, and small private sector has not disappeared in the Netherlands, but they are small in numbers and rather old in age. Some have tended to diversify to related activities in reuse, especially, the second-hand shop and repair sectors. There are still street metal and paper collectors who supply paper stock dealers and metals recyclers.

A key feature of the Dutch waste management landscape in 2008 is that the official stakeholders consider it to be fully mature, finished, and not likely to undergo any new major changes. The indicator for this is the fact that the Ministry of Housing, Environment and Land-use Planning (VROM) no longer has either policy or research staff; entire divisions have been eliminated or transferred to the para-statal management organisation SENTER-NOVEM. Some other important features of the institutional landscape:

### Box 3. Producer responsibility and recycling in the Netherlands

There are strong producer responsibility “covenants” dating from the 1990s for many materials and products: white and brown goods, batteries, fluorescent lights, packaging, paper, metals, electronica, construction and demolition waste, automobiles, and several others. Mol, Lauber and Liefferink (2000) refer to these as instances of voluntary environmental policymaking. The basic structure of these is a private-to-private arrangement.

- ◆ the members of the trade association form a recycling daughter organisation (and when a certain percent have signed on, the Ministry makes it binding on all sector members). These recycling daughter organisations take collective responsibility for recycling and/or safe disposal of all of the specific material or item disposed in the Netherlands, irrespective of where it is produced or bought.
- ◆ a point of purchase fee is charged to consumers and put into a recycling fund
- ◆ the fund pays for an administrative and monitoring office, and for the processing of the materials on a per-unit or per-ton basis
- ◆ in most cases the processing is contracted to existing medium- and large-sized private recycling chain businesses

Most of these covenants work well, have collected vast sums of money to protect themselves against risks, and have met or exceeded their goals. The packaging covenant has two sub-arrangements, the one for paper and paper packaging works extremely well, but the one for plastic and multi-material packaging has never worked, and has just been reorganised by a new and assertive environmental minister.

Source: Scheinberg and IJgosse 2004, WASTE training powerpoints

**Table 6. Costs in the Netherlands 2004 and 2008**

Solid waste operation	Cost in €/metric tonne 2004
Landfills	€1
Incinerators for domestic waste	€80-200
Incinerators hazardous waste	€1.800
Composting of yard waste	€25-40
Composting of bio-solids	not applicable
Composting of mixed municipal waste/GFT	€15-65
Solid waste collection	€0

Source: Scheinberg and IJgosse 2004. \* 2008 prices about 20% higher.

The cases of the US and the Netherlands are interesting because they represent quite different political and institutional choices, but nevertheless show that the process has similar drivers. The first part of this section focuses on presenting, from these two examples and other sources, some generic features of the modernised waste landscape. The second part shows how this specifically affects the recycling supply chain and the informal sector.

### **3.3 Summary features of a modernised landscape**

Looking at other countries as well, it is possible to identify 15 key features of a modernised solid waste landscape. Depending on national policies and local conditions, most of these occur in most modernised landscapes, but not all of them are present in each case.

1. Local landfills have been closed, disposal is regionalised, and the role of municipalities has shifted from mixed waste collection and management of a local disposal site, in combination with street sweeping, and the like, to a focus on collection, recycling, composting and service to users.
2. Landfill standards require fencing, weighbridges, and entry controls, which in effect means the end of uncontrolled dumping. Technical standards include daily and final cover, cell- or other organised filling patterns, collection and treatment of leachate, capping at closure, methane venting or methane recovery, and post-closure after-care. This brings the cost of landfilling to at least €30 per ton in most countries after the modernisation process.
3. Supra-municipal institutions are required to manage regionalised disposal and recover costs. There is a high range of variation in these institutions: in some countries the private sector has largely taken over this role; in others municipalities band together to create public companies (called “companies” in the Netherlands and “authorities” in the US); in some circumstances (as is happening in Bulgaria and Romania now) the process of regionalisation causes the rebirth or re-energising of a small regional level of government (“counties”) or, in small countries like the Netherlands, of provinces. This trend goes against the tendency to devolve power downwards, and results in a significant centralisation at an intermediate level.
4. Bureaucratic claims and responsibilities for solid waste are vested in new institutions and the (new) environmental ministry. During the process of modernisation, it is almost always the case that the governance emphasis in solid waste management shifts from hygiene to environmental protection. During modernisation, this usually means an institutional displacement of solid waste from the health ministry, where it is a neglected, sleepy, and has very low priority for financing and action, to a young ministry of environment, or in some countries to a ministry of local government, where, in contrast (and depending on the urgency of the crisis narrative) it is a flagship or bellwether issue (Mol, Lauber and Liefferink 2000). This is a process which is not always smooth, and may involve bitter power struggles, especially in transitional and South countries where environmental ministries attract significant donor funding.
5. Solid waste collection plus processing costs stabilise above €50 per ton. These costs are built up out of capital costs for household containers for separate and mixed collection, collection equipment, processing facilities for organic waste and recycling, transport infrastructure, regional disposal facilities, costs of closure and post-closure management of disposal, and a range of related items such as ICT systems for weigh-bridge payment systems, environmental monitoring infrastructure, laboratory tests, and the like. There are also new levels of organisation and management, and specialist staff or service providers for composting and recycling. This restructuring of costs usually also requires a

- restructuring of the fees and a new relationship with users, because the existing taxation structure cannot manage the income necessary in a modernised system.
6. Siting, financing, operating new landfills / other disposal facilities is difficult and expensive, complicated by high sensitivity from potential “neighbours”. Many articles have been written about “NIMBY”, but few associate this with a general increase in awareness about solid waste. One way of interpreting NIMBY is that it is part of a general demand from citizens that solid waste decisions be made transparently and in multi-stakeholder processes (Davoudi 2006, Saarikoski 2006).
  7. Households and businesses have gained new status and new power as users and clients. This is part of the political and economic modernisation of solid waste management: the system becomes more dependent on the choices, activities, and behaviour of the users. This means, among other things, that assuring adequate performance of recycling and composting initiatives and systems becomes a social project, rather than a technical one. Unless users are willing to change their behaviour and separate in their homes and businesses, there are no materials flowing through the recycling system and the infrastructure – even if moderately priced – is too expensive for the volume of materials it captures. This is probably the most common failure of modernisation, a failure to engage users and design the system around their preferences for comfort, cleanliness, and convenience (van Vliet 2002, Hegger 2007).
  8. Public and private providers care about what the public thinks and does. This comes about in part because modernised systems almost always involve users to pay for services and infrastructure directly via fees and tariffs, and not indirectly via a tax. But it also has to do with the relationship in a modernised system between user satisfaction and trust and the willingness of users to co-operate in changing behaviour and practices.
  9. Quality, reliability, cost effectiveness, and performance of recycling, composting and valorisation largely replace technical performance of removal as system values and evaluation criteria. This may seem obvious but there are some unexpected consequences. For example, in most cities, the frequency of household mixed waste collection goes down after modernisation, from daily to three or sometimes two days per week (commercial collection is often an exception). This can partly be explained by the fact that with recycling and organics management, some materials no longer go through the mixed waste system. But it also has to do with the expanded role of information in modernised systems, which are more “information-intensive” than pre-modernised ones. Planners and managers simply know more about the waste after modernisation, and this facilitates their making different technical choices about frequency of collection.
  10. “Integrated solid waste management” includes prevention, public education, recycling, composting, and sometimes reuse. This is sometimes theorised as a solid waste parallel to energy or water de-regulation, which give an expanded range of user choice in providers and services (van Vliet, Chappells and Shove 2005). In fact this theorisation of solid waste as a utility presents some problems, since it is not the fact that users choose between services, but that they internalise a choice model for management of specific streams and materials within one pluriform service. This has been parodied as an impossible burden for households and lampooned as meaning 15 different waste bins per household, but the practice is more nuanced. Most modernised systems (a) prioritise a few waste streams as being “worth” separate collection because of their volume or impact or potential value in recovery, and (b) depend on commingling of certain compatible materials that are later separated. Users have a role during planning in co-determining the contours of the system. But in contrast to trends in “real” utilities like water and energy, solid waste users do not, outside of North America, have (much of) an active choice between competing systems or providers.

11. New institutional arrangements and benefits-sharing manage and adjudicate claims to materials, services, equipment, spaces. The most significant changes in this area have to do with competing claims to valuable materials streams that arise during modernisation, or to avoiding liability for dangerous materials. Prior to modernisation, waste materials are generally unclaimed and revert to common property status. That is why poor people are able to access them and earn a livelihood through recycling them. In many cities the modernisation process changes this. Ownership of material becomes the subject of a truly confusing set of conflicts and legal actions. Public authorities tend to seek an official monopoly on ownership of these materials when they are investing in disposal or treatment or collection infrastructure, so that they can earn or allocate the revenues from valorisation. This is the case in many cities in the US, where cities often pass anti-scavenging ordinances to protect set-outs for separate collection. But also hazardous waste laws seek to force generators or authorities to accept liability for dangerous materials even when they have passed them on to a different stakeholder. Private service providers may claim materials as their “right,” a development occurring in modernisation in Delhi, India and Bangkok, Thailand as a result of privatisation (Chaturvedi 2007, Scheinberg and Anschutz 2004). In some places privatisation contracts include benefits and revenue-sharing (Massachusetts Regional Recycling Plan, 1988).
12. Traditional solid waste practices and informal recovery have either been integrated, marginalised, or replaced by parallel alternative systems, with winners and losers according to choices made by the local authority, private operators, and other key stakeholders. The best integration examples are from partially modernised systems in South America and Asia (GTZ/CWG 2007, Scheinberg and Anschutz 2004); the situation with modernisation and privatisation in Cairo is a classic example of missed opportunities (GTZ/CWG 2007). In general what has succeeded is supporting the informal sector to combine new services with rights to commodities, which reduce the costs for the public sector and keep the materials in the hands of those who know how to manage and market them. The neighbourhood separate collection in Lima and the Brazilian waste picker-managed public collection points are examples of this strategy, and are potentially good examples for the Balkans as well. The Philippines strategy of certifying junk shops to function as MRFs has some of the same benefits but does not address the level of collectors directly; rather, it preserves a kind of market access for them (Ibid). Situations where the informal sector is “forced” to accept waged positions as collectors or recyclers are anecdotally reported to be less sustainable, which is worrying for Delhi, India, which uses this strategy for community collection containers (Chaturvedi 2007).
13. The modernised system has a variety or mix of operations, technologies, and economic actors. A pre-modern system consists of one (or in North America several) service providers who collect mixed waste from households and deliver it to a dumpsite or landfill); a modernised system may have different actors involved in different operations, such as separate collection of recyclables, management of organic waste and/or re-usables, and special systems for special streams like E-Waste. Unlike the situation in electric utilities, these operations are generally complementary, rather than competing, although the allocation of materials to each is a result of individual practices and choices. In the US in the 1980s there arose a complex vocabulary to reflect this variation: *participation* refers to the habits of households and the percent of all households that participate in specific source separation practices; *capture* refers to the *effectiveness* of that participation, in terms of the actual materials that are affected by the practices, and *recovery* is a material-based measure of system-level performance which combines the impacts of users and providers in directing materials away from disposal and to industrial utilisation (Tompkins County Waste Management Plan, 1988).

14. Financing for modernised system comes from a variety of sources, actors, and revenue streams. The mixture here is on all levels and dimensions. First, after modernisation there are different types of financial inputs to the system. *Capital investment* comes from public and private capital, debt and equity instruments such as bonds, loan guarantees, and in recycling, also from pre-financing of material purchase from actors higher in the recycling supply chain to support smaller suppliers to upgrade materials before sale. *Revenues* come from service fees or commodity sales. A special form of *transfer payment* called a *diversion credit* is used explicitly in the Netherlands and implicitly in other OECD countries to finance recovery and avoid the higher cost of disposal. Intermediate financial instruments include floor and ceiling prices for materials, landfill bans and fines for violating them, and transport subsidies on the provider side, and both fines and non-monetary payments on the user side. In some countries, such as the US and Denmark, financial instruments “spill over” to the introduction or modernisation of systems for beverage container deposits or packaging taxes. An increasing trend in Asia is legislation that restricts or prohibits throwaway LDPE shopping bags by forcing them to be thick enough to require that the user buys them. Finally, the whole area of extended producer responsibility (EPR) dominates financing for recovery in the Netherlands, and increasingly in the EU, but has much less importance in the Americas.
15. The policy, legal, regulatory, and financial landscape for solid waste is pluriform and flexible. This goes beyond financial mixtures to other areas of institutional development, management, and governance, mixtures of public and private participation and responsibility, and new roles for civil society. Diversification and fragmentation of the landscape of solid waste in modernisation opens new economic niches for a range of community based services and activities. Two common forms are micro community based organisations (CBOs) and micro private enterprises (MSE), which typically focus on micro service or commodities niches such as servicing hard-to-reach areas or combining services like street sweeping or commercial cleaning with recovery of special streams. In North America and Europe there is also a blending of social protection with the recycling sector, and the Helsinki Recycling Centre, the US “sheltered workshops” and the Dutch “kringloops” offer subsidised livelihoods to mentally, physically, and socially handicapped individuals; in Africa and Latin America this combination is more typically focused on work for unemployed women or on activities related to (drug and crime) rehabilitation of young men (UNIDO 2004).

## **4 The Informal Sector and Modernisation in the Balkans**

The foregoing two examples and the summary return repeatedly to the expansion of the public solid waste service sector to include recycling activities, either to reduce disposal or to earn income. In the process a new set of interactions – some co-operative and some actively hostile – occur between these sectors. The approach of the public sector to the informal recycling sector – the lowest rung on the recycling supply chain ladder – is of particular interest because it has the potential for either enhanced sustainability or substantial risk of failure. For this reason it is useful to look more closely at the private informal sector, and to see how the sector functions, and what the impact of modernisation on this sector can be.

### **4.1 Informal Sector: A Key Stakeholder in Recycling and Solid Waste**

Anecdotal and historical evidence suggests that informal recovery has been a feature of modern life for centuries, in rural areas as gleaning, and in urban areas in the form of informal recycling, referred to as rag picking or waste picking or scavenging (Melosi 1981). Waste

pickers play an important, often unrecognized, role in solid waste management systems,<sup>6</sup> where they represent – prior to modernisation – the foundation of most recycling activity in the recycling supply chain (Lardinois and Furedy 1999, GTZ/CWG 2007, Scheinberg, Mitrovic and Post 2007).

For purposes of this paper, there are three key relevant characteristics of the informal sector in waste:

1. Members of the informal sector in solid waste and recycling are private sector entrepreneurs. Both service and commodities activities of the informal waste sector are technically and practically activities of the private sector. Specifically, before modernisation, private activities in the recycling supply chain have almost no institutional connection to solid waste management. This separation from solid waste finances and institutions is also a characteristic of the formal and large-scale recycling industry (Scheinberg 2003, Scheinberg and IJgosse 2004).
2. The informal sector works in solid waste and recycling because it offers a livelihood and income which they could not otherwise manage to achieve. Therefore this sector – in contrast with municipal cleansing companies or recycling programmes – only engages in activities which they perceive to have a net economic gain. Also the sector achieves a high rate of efficiency, but this efficiency has a cost. The informal sector over-mobilises resources to do its work, and incurs hidden social and economic costs in terms of health, education of children, safety, and the like. Typical examples are: lifting and carrying too much weight; using a household for sorting and storing (hazardous) materials; burning off plastic because it is faster than physical dismantling, even though the smoke is hazardous; eating from the dumpsite or containers even though the food may be spoiled or contaminated; living on or near the dumpsite even though this may have negative health impacts; and allowing children to work along with their parents instead of going to school (Scheinberg and Anschutz 2004, GTZ/CWG 2007).
3. All informal sector activities in solid waste and recycling can be classified either as commodities-based activities or service-based activities. The commodities-based activities focus on finding, possessing, upgrading, and trading (or in some cases using) materials and items, and compensation is per unit or per weight. Service activities in solid waste focus on some kind of removal – dirt, contaminants, excreta, waste, water, etc. Service-based activities are paid for based on a time measure of labour, in the informal sector often but not always days. (Scheinberg 2001b).

The primary activity of the informal recycling sector is to recover secondary resources directly from disposal – that is, from the first point at which they become common property resources – and to commercialise them based on their residual value added. Informal recyclers thus redirect or divert waste materials found in the commons to the private sector recycling supply chain, where they end up as industrial inputs to local and global industries. Pickers extract recoverable materials from mixed waste in street bins, containers, communal collection sites, vacant lots, and final (or closed) disposal sites. Informal *recyclers* earn by trading commodities and are paid by the kilo. In the Balkans, as well as globally, they generally fall into a number of specialised sub-occupational categories (GTZ/CWG 2007, Scheinberg, Post and Mitrovic 2007).

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<sup>6</sup> Solid waste modernisation is an indicator of general level of development (David Wilson, undated). Most urban solid waste systems in North-western Europe, North America and Japan have been modernized; those in Australia, CEE, the ‘Asian tigers’, Costa Rica and India appear to be modernizing rapidly, and this is also occurring in many ‘developing and transitional countries’.

1. Itinerant waste buyers (IWBs, or, in the Balkans where there is usually no payment for materials, IWCs. itinerant waste collectors), go door to door to collect and pay or barter for the value of recyclable materials from households and servants of the households, and have some kind of vehicle (or carry materials on back or head).
2. Street and container pickers (“dumpster-divers”) get recyclables from waste set-outs and private and community containers
3. Truck pickers, that is, regular employees of the waste collection unit and/or informal workers go with the truck and “cream off” the recyclables during the collection route
4. Dump pickers, working and often living on or near the dumpsite, stand behind and around discharging vehicles, and wade through the waste to select specific materials.

Waste pickers sell to specialized small-scale materials dealers (‘junk shops’) in the city or at or near the landfill. Junk shops are the first point at which one can speak of a transfer of materials from the informal to the formal sector. The junk shops aggregate and sell materials to dealers, processors, or other intermediaries who process and pack them in industrial quantities for export or domestic manufacturing uses. Dealers may employ waste pickers, or may support them with loans, baling or transport equipment or shelter (Furedy 1997, Scheinberg, Mitrovic and Post 2007). Prices paid are low, partly as a result of the low bargaining power of dump pickers and partly due to pickers’ limited ability to aggregate materials and transport them to industrial users who would pay higher prices.

The businesses in the recycling supply chain who depend on pickers also fall into several categories, with quite specific characteristics (GTZ/CWG 2007, Scheinberg, Mitrovic and Post 2007):

1. Small traders, without a place of business, but with a truck or other motorised vehicle. They buy paper, plastic or metals from pickers, loose or in bags or boxes. They earn money by knowing which materials are more valuable, removing non-recyclable parts, and selling them to a “junk shop” that is one step higher in the chain, They add value by cleaning and separating materials, which they do at the entrance to the dump or landfill, in unused land, or elsewhere. Their vehicle is used to pick up materials from generators, and to transport materials in quantity to a junk shop for sale.
2. Small junk shops. These are micro-enterprises, often run by families. Usually junk shops have a fixed place of business but often no business licence. They usually specialise in one type of materials, which they buy from pickers and sell up the recycling chain, that is, into the formal commodities marketplace. Small junk shops are often located at or on the road to the landfill, or in residential neighbourhoods. The most interesting thing about small junk shops is their extremely high needs for working capital. This is because they have to pay cash to the pickers, who otherwise will not sell to them. But they are selling materials to larger industries who only pay net 30, 60, or in some cases net 90 days.
3. Medium and large junk shops. These are larger, usually registered businesses that would be classified as belonging to the formal commercial sector. They have some equipment, which is at least a platform scale and one piece of processing equipment: for paper a low-cost baling machine, for plastic a chipping or flaking mill, for glass a small crusher. The smaller ones have one owner-operator and the larger ones are industrial operations processing tens and in some cases hundreds of tons per month.
4. Processors, Intermediate processors, and packers. These commercial-industrial enterprises process hundreds of tons in registered, fixed industrial facilities. They usually have several machines for processing, and often their own fleet of trucks for collecting or transporting materials, often for export. Mostly they focus on one type of material, sometimes with a minor specialisation in a second. Most of their income is from adding

value to the materials through crushing, pressing, baling, or flaking to achieve volume reduction and densification, in combination with sorting to remove contaminants, cleaning through washing or screening, and market-driven sorting (“high-grading”), packing, and shipping. At this level the market is usually end-use industries making a new product or material.

5. Materials Recovery Facilities (MRFs), also called Intermediate Processing Centres (IPCs) or sorting facilities. MRFs came into being in the 1980s in North America as part of the public sector push to integrate recycling into modernised “integrated” waste management. They differ from processing facilities by focusing on mixed materials streams from municipally financed separate collection. They take these “commingled” mixes of different kinds of recyclables and sort them, process them, and then sell them. MRFs generally have more sorting equipment than processors and packers, but otherwise are of a similar size and scale, and sell to the same kinds of markets. The main difference is that their inputs come from the service function of removal, and therefore mostly MRFs charge a tipping fee. However, their outputs are sold to the commodities industry.
6. Brokers. Like a real estate broker, a materials broker is an intermediary who does not ever own the materials her- or himself. Brokers identify demand at reasonable prices and then go looking for a supply, or work for suppliers looking for purchasing opportunities at high prices.

While the hyper-private recycling supply chain operates without any significant relationship to the public-sector waste management system or to provision of waste and urban cleansing services (Scheinberg 2004), there are also informal *service* providers (ISPs) to be found within – and sometimes in competition with – the formal waste management system, particularly in Latin America and Africa. Micro-enterprises consisting of ‘a guy with a truck’ offer waste collection or other services directly to households or communities in Latin America and Africa (Lifuka, 2007, Keita 2003, Price, Rivas and Lardinois 1999).

One of the oldest examples of this kind of initiative is usually identified as the “yellow trucks” in Guatemala City which began offering a paid service to households to collect waste in 1955 (Price, Rivas and Lardinois 1999). The Zabbaleen in Egypt are in fact both recyclers and informal service providers (Iskandar, Shaker *et al* 2007). Informal service providers provide services in waste collection, street sweeping, gutter, sewer and drain cleaning (Mali), snow removal (the Balkans), latrine-emptying (Africa), beach and green space maintenance (Central America), and a range of other services relating to urban cleansing. Unlike informal sector recyclers, ISPs work for an hourly, daily, or weekly payment based on their time and/or the unit serviced.

The ILO has had a special role in securing the livelihood of micro and small enterprises (MSEs) and community-based organisations (CBOs) in their model project in Dar es Salaam, and UNDP in their programme PPPSD (Public-Private Partnerships for Service Delivery, formerly PPPUE (Public-Private Partnerships for The Urban Environment) has done some similar work in Mauritania (PPPUE website). The focus of this work has been to gain municipal recognition for informal service relationships by converting them to micro-franchises with standard fee structures paid directly by the clients.

Informal service providers also face risks in the modernisation process, but they appear to be less critical than the risks facing the informal recyclers. Where informal recyclers risk the loss of access to materials and the physical dangers associated with criminalisation and police harassment, informal service providers are more likely to lose their permission to dump at a

recently privatised disposal facility or to find their routes poached by the landfill operators or their daughter companies or re-assigned to powerful politicians (UWEP La Ceiba Report 2003, Ishengoma 2003, Scheinberg 2003b). In some cases the risk is converted to substantial financial gain when a larger company buys out the ISP and turns the owner into an employee (Tompkins County Solid Waste 1988).

#### **4.2 Modernisation Pressures in the Balkans**

At the time of writing, solid waste managers and the responsible deputy mayors and city councillors above them face relentless pressure to modernise solid waste systems and to bring them into conformity – and compliance – with EU and global environmental and fiscal norms. This pressure is more from above than below, unlike the development of standards in older EU member states, and the nature and direction of the pressure limits local spaces for innovation and context-sensitive planning.

In spite of – or maybe because of – this pressure, the spaces for socio-technical experimentation and sources of modest financing for small-scale project experiments have been replaced by an EU-dominated discourse about regionalisation, investment, and infrastructure on the model of Dutch, Danish, German and Northern European systems, backed up by large-scale EU, UN, and World Bank group investment (Andy Whiteman, 2008, personal communication). Project-based international subsidies for modernising Bulgarian and Romanian solid waste infrastructure have decided what the correct models are, and they require of consultants and municipalities that they follow the blueprint (Ibid.). Municipalities, regions, and central governments receive EU funds only when they have accepted the models and agreed – implicitly or explicitly – to implement them. In EU pre-accession and accession programmes for support for solid waste, such as ISPA or SAPARD, ‘one size,’ as the English proverb says, ‘fits all.’

Currently, the emphasis is on financing feasibility studies for large integrated waste management projects, focusing on establishment of the network of regional waste facilities required by the Waste Framework Directive, and designing the infrastructure and utilisation programmes in a way which is considered compliant with the requirements of the Landfill Directive (Ibid.). Financing has also been put in place for closure of local dump sites, and processing, regional composting, MBT and waste to energy are part of the discourse in the larger cities.

In parallel the licensed National Producer Responsibility organisations are busy creating new Northern-European style igloo-type containers for recyclables, without, in general, doing the analysis as to where the containers should be placed, how they should be publicised, and even, what materials in the local waste stream are appropriate for container-based collection systems. They by-pass the junk shops and existing (post-socialist privatised) recycling sector, and thus deprive these systems of important local marketing knowledge (Doychenov 2008, personal communication). The result is predictable but sad: recycling capture rates are very small, making per-ton prices ridiculously high (Scheinberg 1999).

Moreover, although these programmes provide investment and ensure that physical infrastructure is in place, they do not pay enough attention to the political and institutional infrastructure and financial and cost recovery mechanisms needed to manage and operate them. Without this “software,” the systems do not function, and will not until the enabling

environment has time to catch up with construction. Only then will, these investments and the hardware they pay for come to be used in the way they are designed and planned.

In a number of cases, municipalities have signed a Financing Memorandum for a landfill construction project, have reneged on their commitment to send their waste to the facility, because 'it is too expensive', 'its too far way', 'we don't believe the tariffs' and 'the document was signed by the previous Mayor' (Andy Whiteman, 2008, personal communication.). In Bulgaria and Romania, political transition to new practices is perhaps as slow, or as fast, as it was across Northern Europe over the last 30 years. The focus of activity is to create infrastructure that the EU can audit and the European Commission accept as 'compliance' even if the practice does not change, and the results fail to solve the inherent problems at the local level (Andy Whiteman, personal communication 2008).

The geo-political and symbolic pressure for modernisation forms the context for the primarily negative attention that is being increasingly directed at the informal solid waste and recycling sector. Changing solid waste conditions and access to materials that accompany modernisation increase the vulnerability of the overwhelmingly Roma informal sector to harassment, competition, and "eradication" campaigns. While this is a global phenomenon (Scheinberg and Anschutz, 2004, Wilson, Velis and Cheesman 2007), there are some specifically Balkan accents: the use of EU funds to create parallel recycling systems for plastic which bypass the Roma informal sector is one of the most prevalent (Scheinberg, Post and Mitrovic 2007).

The situation is not completely dark, however. The experiences with modernisation in North America and North-western Europe suggest that the process is not unending: it has a predictable trajectory and will at a certain point be complete, with functioning solid waste systems. Moreover, modernisation has some good news, and offers expanded potential for capturing materials in the waste stream, improving environmental performance, supporting livelihoods and jobs, cleaning up cities and the countryside, and returning resources to the economy. In the Balkans modernisation is in some sense "back to the future," in that it returns waste materials to a position of value that they had in State Socialist times.

### **4.3 Recommendations and Conclusions**

The dynamics of solid waste modernisation elevates the importance of knowledge about recyclable materials and markets for them; without this knowledge, many investments are made in vain and separate collection and recycling of organic waste and recyclable materials is likely to be expensive and ineffective.

The strongest argument for including the informal sector in the process of modernisation is that they have this knowledge and experience: they have been trading materials for a long time and are good at it. In the is brought together with the economic, social, and environmental information from studies of the informal sector, the result is to suggest that it is better to work with this sector than to ignore them.

But working with the informal sector may be politically or institutionally difficult, or violate symbolic ideas of modernisation and correct behaviour. It is also not simple, and, like other projects that involve working with poor or socially disadvantaged groups, it takes a long time. The final section of this paper takes up the question of **how** to think about putting the lessons into practice, drawing once again on the three main sources for this paper, the ILO thematic

evaluation in 2004, the GTZ/CWG study in 2006-2007, and the IFC Recycling Linkages assessment report in 2007.

The first set of insights arises from noticing that interventions – however well-intentioned – that focus on the social identity and poverty status of waste pickers and other informal sector actors miss the point. Although poor and having low social status, the informal sector in solid waste are solid waste system stakeholders, with significant skills in relation to extracting materials from the waste stream and marketing them to the larger businesses in the supply chain. As such, a narrowly focused “social trajectory” to improve the welfare, rights, or living conditions of the informal sector offers little perspective either for poverty alleviation or for improved solid waste management (ILO 2004). Such initiatives may deepen poverty by their (frequent) focus on facilitating or forcing an exit from picking, without understanding that most other livelihood options will involve significant lost income, as well as lost autonomy (Ibid.). There are few possibilities for pickers, with their low levels of education and social capital, to replace the incomes from informal recycling. Even some integration experiments like those in Delhi, because they are poorly conceived, create a high risk of income loss (Chaturvedi 2006).

Secondly, ignoring the performance and the operational and environmental benefits created by the activities of the informal recycling sector is a lose-lose proposition. The “new” recycling infrastructure being grafted onto modernising solid waste systems in the Balkans and elsewhere is overcapitalised, and often in the hands of municipalities or other social actors who are completely incapable of using it to good effect (PPPUE 2006, Soos 2007, Scheinberg, Mitrovic and Post 2007). The result is that both public and private formal sector stakeholders give up on investing in high-performance recycling or organics recovery as a high-minded but impractical proposition, and they do not take its potential for operational benefits at all seriously.

When there is a strong interest in working with the informal sector, formal actors like municipalities, national ministries, private companies and financial institutions like the World Bank, in spite of their deep knowledge of technical and economic features of solid waste systems, may lack the experience and network to facilitate contacts with the informal sector. There also may be political, cultural, or bureaucratic resistance to engaging with such ‘dirty’ and ‘low-status’ people. Instead of opening an institutional space for change, such initiatives often confirm prejudices and create well-intentioned failures.

Some practical suggestions for private sector, public sector, solid waste planners, and/ or development organisations on how to work with the informal, and facilitate their integrate into the solid waste management modernisation process are listed below.

1. Identify, consult with, and co-operate with **intermediary organisations and institutions** which work with or are composed of leaders in the informal sector. These could be NGOs like Chintan-Environmental in India, labour unions like KKPKP in Pune. the Waste and Citizenship Movement in Brazil, or the Nis Syndicate in Serbia, waste picker associations, or in some cases programmes like ILO/SEED that work closely with the informal sector. In some countries there are recycling or solid waste associations or who do this. Lacking knowledge of such organisations, ask the pickers who represents them, or go through international networks to find someone. Similar organisations were not difficult to find and tendered for participation in the GTZ study.

2. Work with these intermediary organisations to **engage the informal sector in a consultative, participatory process** as part of a **baseline assessment** or **situation analysis**. Once informal recyclers understand that they have status as stakeholders in the waste system, they will be more able to actively work on identifying their needs and strategic openings in the process of modernisation. In this process for the IFC in Serbia, some quite surprising ideas about problem-solving came out of a rapid consultation in only nine cities in South Serbia.
3. Focus on the **professional identity** of the informal sector, rather than on their social problems. This may take both consultation and analysis. The use of process flow and materials balance analyses (GTZ/CWG 2007) proved to be a different way “in” to understanding the informal sector in terms of its solid waste system impacts. Of course the professional and the social are related, but the professional identity may be a source of solutions, rather than problems.
4. Focus poverty alleviation interventions at least in part on **strengthening the capacities of the informal solid waste stakeholders** and their representatives **to understand and analyse their own operations**, and support them in legitimising and valuating their activities in relation to the formal solid waste and political authorities.
5. Make the contextualisation of pickers as solid waste system stakeholders a standard feature of all **terms of reference** and **consulting agreements** directly or indirectly connected with solid waste projects financed by the Bank. This may mean actually designating the place of the situation analysis of the informal sector in the table of contents of feasibility or planning documents. If consulting proposers are not qualified to do this themselves, require that they have a subcontractor that can, as is frequently done with gender or social impacts analysis.
6. **Evaluate the approach to recycling in consulting documents, investment plans, and/or municipal solid waste plans** with an especially critical eye, to see whether they are basing them on integrating or ignoring or even eliminating the informal recycling sector.
7. Encourage the **development and testing of specific and practical strategies** for supporting and encouraging the informal sector to identify and enter new economic niches, as well as for supporting and encouraging local authorities to protect materials access and create new service opportunities. This may require that the local intermediaries facilitate “matchmaking” between the formal and informal sectors to understand where they can make “win-win” partnerships.
8. Document these earliest “experiments” and **evaluate their reasonableness, credibility, feasibility and sustainability** over a longer period. **Support a gradual extension of the approach** to other cities and countries in your dossier, first through an abbreviated assessment process, which tests and confirms or adapts the insights of the pilot work in Serbia, and then through replicating, on a larger scale, the strategies tested in Serbia.

#### 4.4 A bird in the hand

Those of you who are not native speakers of English may wonder where the title from this paper comes from. The full proverb goes: “A bird in the hand is worth two in the bush.” The meaning of this proverb or saying – also in other European languages – is in fact pretty simple: it is better to build on what you have than to throw it away and go “into the bush” hunting something unknown. The proverb has a second more subtle meaning, similar to another English proverb that reads: “the grass is always greener on the other side of the fence.” This suggests that the unreachable has irresistible allure, that tempts the hunter to

abandon what he has in his hand and go into the wild, or over the fence, for the romantic and attractive (and unknown) alternative.

This is used as the title of this paper to point to the fact that in Balkan countries, there is already a great deal of recycling going on. Once the modernisation process starts, solid waste authorities may mistakenly believe that they have a problem because there is no “municipal recycling.” They don’t see the informal recycling activities as being what they are missing; the bird they are looking for is already “in the hand.”

The EU-driven modernisation process, like the glamour of the hunt or the grass on the other side of the fence, has a high symbolic component. The politicians and solid waste managers want that greener grass, those two elusive birds in the bush. And so there is a strong tendency, which is clear from much of the experience in recycling in the Balkans, to chase recycling by creating and investing in parallel recovery systems which actively deny – and seek to undermine – the role and rights of waste pickers and collectors in well-functioning recycling supply chains in Southeastern Europe and in developing countries.

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