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The Business Model of Swedish Municipal Waste Management Companies

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Abstract
This paper describes the business model of two influential Swedish municipal waste management companies. A comparative study of these case companies shows that they combine three types of activities: public service activities that take in waste from households and industry; processing activities that transform this waste; and marketing activities that let processed material re-enter the economy. The historical success of the two companies rests on an ability to combine these three distinct although mutually dependent types of activities. However, an ongoing legal controversy may develop into a threat to this business model and to the organisation of Swedish waste management as a whole.

Keywords
Waste management, Business model, Municipalities, Recycling, Sweden
1. Introduction

Swedish legislation places the responsibility for dealing with solid household waste on municipalities, but leaves it up to the municipalities to decide how to execute this responsibility and organise the management of waste. Three out of four Swedish municipalities contract the collection of household waste to external actors; however, most municipalities process waste internally, either through municipal waste management departments or municipal waste management companies that are fully-owned by a single municipality or a collection of municipalities (Avfall Sverige, 2010).

Municipal waste management companies are therefore cornerstones of the Swedish waste governance system. Little is known, however, about how these companies are organised – in Sweden or elsewhere. Waste management companies have been identified as essential to the sustainable development of cities (Johnson, 2007), but descriptions of waste management systems tend to “black-box” (Latour, 1996, 2005) the workings and rationales of waste management companies. Relatively few studies pay attention to the actual management of these companies. Among the few exceptions, Sekher (2001) describes stakeholder participation in the delivery of solid waste management services, and Thomasson (2009) analyses the relationships between chief executive officers and their board on municipal waste management. Closer to actual management, Young (2010) describes the cash-flow of a waste company involved in energy-production, Guimaraes (2010) illustrates the relevance of a balanced scorecard approach for urban waste services, Dokas and Panagiotakopoulos (2006) provide an example of problem-based learning for waste management facilities, and Wayne Huizenga (Sexton, 2001) unveils that the key to success of Waste Management Inc has been a systematic customer focus and a balanced combination of organic growth and acquisitions. There are also case studies of waste management operations, for example, by Bose (1993) in India, El-Hamouz on the West Bank, (2008) or Fobil (2008) in Ghana. However, these studies provide only a fragmentary understanding of the business logic of waste management companies. There is a need to provide a clear understanding of how they are organised. Addressing this need, this article describes the business model of two influential Swedish waste management companies. The notion of a business model expresses the business logic of an or-
ganisation (Osterwalder & Pigneur, 2005) and describes how a company generates revenues (Plé, Lecocq, & Angot, 2010).

The analysis shows how Swedish municipal waste management companies articulate and organize three activities: public service activities that consist of collecting waste from households and industry; processing activities that consist of disassembling and sorting waste into specific waste flows and handling these flows; and marketing activities that bring as much as possible of the results of the processing activities back into the market economy, for example as energy or recycled material. These activities are distinct although mutually constitutive. The specific organisational competence of waste management companies is to articulate a technical competence and a commercial competence so that waste can flow from households and industries back into the economy as resources in socially, economically and environmentally effective ways, instead of ending up in landfills.

The analysis also shows that an ongoing legal controversy with the European Commission about the compatibility of this model with European legislation on public procurements might develop into a serious threat to the model. The European Commission has criticised the two case companies in this study for making too high a share of income from activities with others than their municipal owners. To meet the European Commission’s critique, these companies have already taken a series of measures to lower this share. However, it is uncertain whether this will be sufficient to meet the Commission’s requirements. It is also uncertain how an arbitrary limit put on the activities of municipal waste management companies with others than their municipal owners will affect the ability to innovate in the Swedish municipal waste management sector.

Section two describes the legal settings within which Swedish municipal waste management companies operate, and section three introduces the two case companies of the study. Section four describes the main activities of these two companies, and section five brings these activities into a business model of Swedish municipal waste management companies. Section six describes how a legal controversy stemming from a reasoned opinion from the European Commission raises serious concerns about the compatibility of the current business model with European legislation on public procurements. The concluding discussion underscores that this legal controversy might

1 To be noted is that the authors had designed their research project around these two companies before the intervention of the European Commission.
develop into a threat for the potential of municipal waste management companies to achieve their social, environmental and economical purposes. Because of this, the controversy represents a critical challenge to the organisation of Swedish waste management.

2. Legal aspects of waste management in Sweden

2.1 Swedish national legislation on waste

The development of the Swedish legislation on waste (Avfall Sverige, 2010; CSI Resource Systems Inc, 1995; European Topic Centre on Sustainable Consumption and Production (EIONET), 2009; Finnvelden, Björklund, Carlsson Reich, Eriksson, & Sörbom, 2007; Hartlen, 1996; Rylander, 1985; SLR Consulting Group, 2005; Swedish EPA, 2010) shows that the current legal framework originates in an early 1970s environmental concern that the sparsely populated but industrially advanced Sweden needed to reduce the volume of waste for landfills. In spite a lasting opposition from environmental voices, the primary Swedish solution to the waste issue came to be incineration.

In 1972, the Swedish Parliament gave municipalities a statutory responsibility for the collection and transport of domestic solid waste. In 1979, this responsibility was extended to the treatment of solid waste. Moreover, the 1973 oil crisis raised a lasting interest in deriving energy from waste strategies, and a State support program to investments was introduced in 1975 to develop the energy recovery potential or other uses of domestic waste. In parallel with this, many municipalities embarked on ambitious district heating development programs for households, administrations and industries to take advantage of the heat that incineration plants produced. An intensive debate about the risk of dioxin emissions forced the Swedish government to pass a moratorium on the development of incineration facilities in 1985, but this moratorium was ended in the early 1990s when incinerating waste companies produced guarantees that this risk was under control.

In parallel with the development of incineration facilities, a series of waste legislations have been passed in the last twenty years to promote and develop recycling practices. The purpose was two-fold: first, to limit the need of landfills, and second, to meet a political demand from a growing environmentalist opinion in favour of increased recycling of waste. In 1990, the Swedish Parliament approved a national waste management strategy with the objectives of restricting the volume and content of hazardous substances in waste, increasing recycling and reuse, and improving
techniques for managing the wastes which cannot be avoided, reduced, recycled, or reused. Since 1991, municipalities are required to have a plan for processing the waste found in the municipal area as a resource, and to do this in a manner that is appropriate for the environment. As owners and operators of most incinerators and landfills, Swedish municipalities have in the 1990s had a decisive influence on the development of waste management infrastructure.

In 1994, the Parliament gave legal ground to the polluter pays principle. Starting with paper and packaging, it introduced a scheme that requires quantified targets of collection and disposal of Swedish producers and importers of consumer goods packages, vehicles, newsprint, rubber tires and electrical and electronic equipment. To fulfil their legal obligations, these producers and importers have created so-called material companies that work under a virtual national monopoly on the collection and recycling of these specific waste categories (Swedish EPA, 2010).

To limit passive landfill methane emissions and their climate change effects, the Swedish Parliament introduced in 2000 a tax on waste taken to a landfill, banned the landfilling of combustible material in 2002 and of organic waste in 2005. Between 2006 and 2010, it has also introduced a tax on incineration of household waste to encourage the recycling of fossil fuel based products.

In recent years, the Swedish Parliament has reversed its original position of relying on the administrative authority of municipalities to manage waste and instead has systematically promoted the development of a waste market (Skottheim & Paz, 2004). A key principle for the organization of this market is that the nature and origin of the waste determines who is responsible for handling it (SFS, 1998:808).²

The municipal monopoly on the treatment of industrial waste was terminated in 2000, and the treatment of dangerous waste was deregulated and opened to private actors in 2007. Today, the municipal responsibility for waste management is limited to the collection and management of

the part of household waste that is not the subject of producer responsibility obligations. A quarter of total household waste is collected by the municipalities themselves and three quarters are collected by contracted private companies (Avfall Sverige, 2010). The further treatment of waste remains largely a public matter though, even if a few waste processing facilities are operated by private sanitation companies. In addition, private energy companies have recently made explicit moves to enter into waste treatment markets (e.g., E.On, 2008).

As an outcome of forty years of legislative efforts, only 3% of municipal solid waste is landfilled today in Sweden. The rest is incinerated (49%), recycled (35%), or composted (13%) (Eurostat, 2010).

2.2 Rights and constraints of Swedish municipal waste management companies
Municipal waste management companies operate in a heavily regulated environment. A direct consequence of the Swedish legislation on waste is that the activities of waste management companies – because of the potential for significant environmental impact – are subjected to environmental permits. Depending upon the size of the waste management facility, these permits are issued by the County Administrative Board (Länsstyrelsen) or the Environmental Court (Miljödomstolen). These permits are precise. For example, they set maxima for how many tonnes of waste that can transit through a given site, be incinerated or brought to landfill. Permits also regulate gas emissions, leachate, or transportation to and from the waste management facilities. However, permits are not only constraining. They are also social licenses to operate (Azapagic, 2004; McCorquodale, 2009; Ruggie, 2009) that certify, among other things, an environmental competence. In this way, environmental permits equal competitive advantages for the receiving company as they allow for activities that not all competitors can do, for example, operate an incineration plant or run a landfill.

Another consequence of the Swedish legislation on waste is that municipal waste management companies enjoy a monopoly on household waste within the jurisdiction of the municipalities that own them. All other activities are to be undertaken in competition. All contracts with external service providers, private or public alike, must be attributed in competition in accordance with the Swedish legislation on public procurements (SFS, 2007:1091). And a municipal waste
management company can process the waste that originates from another municipality, but only if it has won the tendering process that the external municipality must organise.

Being municipally-owned, municipal waste management companies are also subjected to political control. The companies operate under so-called owners’ directives (ägardirektiv) that define company objectives. The board of municipally owned companies is composed of politically appointed members. As Thomasson (2009) shows, a change in the political majority in municipal owners can have profound strategic implications for a municipal waste management company. For example, new board members can challenge the very idea that municipalities should own a waste management company, and impose strategic options that have more to do with political ideology than the operation and rationale of the company. But in a way, municipalities are both owners and customers of their waste management companies.

Finally, municipal waste management companies are subjected to strict pricing practices, even if only a few fully respect the existing legislation that the confederation of Swedish enterprise (Persson, 2007) demands. Municipal companies have to follow the so-called prime cost price and may not levy charges exceeding the cost of the services or utilities that they provide (SFS, 1991:900); neither are the companies allowed to engage in activities in competition with other companies at a loss. Practices of cross subsidising competitive activities with resources from regulated activities are therefore strictly forbidden, and something that is carefully monitored by municipal owners, competitors and competition authorities alike. In practice, municipal waste companies have to design their accounting systems to distinguish between the costs and revenues from the two kinds of activities. Consequently, they may even have to physically separate waste by origin in their waste management processes even though the material composition of the waste streams in question is exactly the same.

Taken together, the operations of municipal waste management companies are embedded in a complex mix of rights and constraints outside of which their operational mode cannot be understood.
3. Two case studies

Two publicly owned waste management companies have been engaged as case studies: NSR (Nordvästra Skånes Renhållnings AB, in translation: Northwest Scania Sanitation Company, Ltd) and SYSAV (Sydskånes avfallsaktiebolag, in translation: South Scania Waste Company, Ltd). The rationale behind this choice is that while NSR and SYSAV have many traits in common and operate within the same legislative framework, they also represent very different approaches to waste management.

Both companies are owned by a consortium of municipalities in Scania, the southernmost and densely populated part of Sweden. Both own their processing facilities and combine various treatment methods to manage a broad range of waste. Both show a positive economic result and a satisfactory environmental record. Both show a strong commitment to minimise landfilling practices: NSR landfills less than 2% and SYSAV landfills 4% of the waste that they process (see Table 1 for key figures). But here the similarities end.

NSR and SYSAV represent two historically opposed recycling and waste management philosophies. In their own words, NSR has been focused on becoming an international leader in biological processing whereas SYSAV has become one of the most effective waste-to-energy companies in the world. The proportion of waste that is incinerated is nearly inverted between the two: 18% at NSR and 69% at SYSAV. This means that NSR is a major biogas producer whereas SYSAV is a large district heating producer. It also means that SYSAV is more capital intensive than NSR, as illustrated by the fact that SYSAV’s total balance sheet is four times larger than NSR’s when turnovers are in a relationship of only two to one.
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<tr>
<td>Established</td>
<td>1982</td>
<td>1974</td>
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<tr>
<td>Ownership*</td>
<td>6 municipalities in Southern Sweden</td>
<td>14 municipalities in Southern Sweden</td>
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<tr>
<td>Activities*</td>
<td>Curbside collection, Waste disposal</td>
<td>Waste disposal</td>
</tr>
<tr>
<td>Population served*</td>
<td>225 000 inhabitants</td>
<td>665 000 inhabitants</td>
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<tr>
<td>Number of business customers (ca)*</td>
<td>300 (under contract)</td>
<td>6 000</td>
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<tr>
<td>Volume of waste received*</td>
<td>477 820 tons</td>
<td>792 500 tons</td>
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<tr>
<td>Processing modes*•</td>
<td>- Landfilling: 2%</td>
<td>- Landfilling: 4%</td>
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<tr>
<td></td>
<td>- Incineration: 18%</td>
<td>- Incineration (waste-to-energy) 69%</td>
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<td></td>
<td>- Material recovery: 59% (Inclusive of construction material)</td>
<td>- Material recovery: 27%</td>
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<td></td>
<td>- Biological treatment: 20%</td>
<td>Out of which:</td>
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<td></td>
<td>- Remitted hazardous waste: 1%</td>
<td>-- Remitted hazardous waste and contaminated soils 10%</td>
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<td></td>
<td></td>
<td>-- Biological treatment 8%</td>
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<tr>
<td>Main outputs*•</td>
<td>- 106 GWh gas from landfill</td>
<td>- 254 GWh electricity</td>
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<td></td>
<td>- 33 GWh biogas (vehicle fuel)</td>
<td>- 1,4 TWh district heating</td>
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<td>- 67000 tons biofertilizers</td>
<td>- 36 GWh from landfill gas</td>
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<tr>
<td></td>
<td>- 2500 tons plastic</td>
<td></td>
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<tr>
<td>Income structure (2010)***•</td>
<td>- Income from monopolistic activities: 75%</td>
<td>- Income from monopolistic activities: 85%</td>
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<td></td>
<td>- Commercial income: 25%</td>
<td>- Commercial income: 15%</td>
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<td></td>
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<td>Out of which:</td>
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<tr>
<td></td>
<td></td>
<td>- Waste handling fees: 52%</td>
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<tr>
<td></td>
<td></td>
<td>- Energy delivery: 39%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Material sales: 3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Other sales: 6 %</td>
</tr>
<tr>
<td>Key economic figures*</td>
<td>- Turnover: 345 Million SEK</td>
<td>- Turnover: 750 Million SEK</td>
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<td>- Before tax result: 1,1 Million SEK</td>
<td>- Before tax result: 26,9 Million SEK</td>
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<td></td>
<td>- Before tax RoE: 2,3%</td>
<td>- Before tax RoE: 6,8%</td>
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<tr>
<td></td>
<td>- Solidity: 10,8%</td>
<td>- Solidity: 23%</td>
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<tr>
<td></td>
<td>- Balance sheet total: 359 Million SEK</td>
<td>- Balance sheet total: 1 678 Million SEK</td>
</tr>
<tr>
<td>Number of employees*</td>
<td>172 persons (on average)</td>
<td>252 full time equivalent</td>
</tr>
<tr>
<td>Mottos***•••</td>
<td>Vision: To be a leader in all areas of recycling</td>
<td>Vision: To be the leading recycling and waste treatment company in Southern Sweden</td>
</tr>
<tr>
<td></td>
<td>Goal: Maximal recycling</td>
<td>Goal: Waste management that is sustainable in the long term, with the most extensive recovery of materials and energy possible and the least possible landfill.</td>
</tr>
<tr>
<td>Other*</td>
<td>- ISO 14001 certified</td>
<td>ISO 9001 certified</td>
</tr>
<tr>
<td></td>
<td>- Region Skåne environmental price (2004)</td>
<td>ISO 14001 certified</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OHSAS 18001 certified</td>
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The fieldwork for these two case studies has followed a classic design of qualitative studies. Data collection has consisted of meetings (ca 10), semi-structured interviews (ca 10), informal discussions, on-site observations, and document analyses. Interviews have been transcribed and processed together with other texts in a conventional manual manner.

4. The activities of Swedish municipal waste management companies

Basically, the operations of NSR and SYSAV combine three distinct although mutually constitutive types of activities: public service activities, processing activities and marketing activities.

4.1. Public service activities

NSR and SYSAV are endowed with a public service mission that follows from the legal responsibilities that municipalities have for waste, and from which they derive the largest part of their income.

Like private counterparts such as Remondis in Germany, Waste Management in the USA, or Sita in France, municipally-owned NSR and SYSAV insist that waste management is a service activity. It is a service activity in the everyday sense of the term service, that is, something done for the benefit or at the command of another, or an effort for human welfare or betterment (Webster & Gove, 1971). By definition, waste is something that people wish to get rid of and waste management companies help them to do so.

Waste management is also a service in the technical sense of the term in contemporary service management literature. How NSR and SYSAV managers view their activities corresponds to the definition of services given by Grönroos (2000, p.48): “processes consisting of a series of activities where a number of different types of resources are used in direct interaction with a customer, so that a solution is found to a customer’s problem”. Like their private counterparts, NSR and SYSAV offer a series of solutions to the problems that are associated with household and industry waste. Likewise, their view is congruent with the suggestion by Vargo and Lush (2004) to un-
nderstand service as the application of competences (knowledge and skills) by one entity for the benefit of another. Our respondents express obvious pride in the various processes that allow their companies to find re-uses for all but 4% of the waste they receive. And they take pride in developing collaborations that aim at creating value for their customers, yet a characteristic of a service according to contemporary service management research (Lusch, Vargo, & Wessels, 2008). For example, NSR has helped vegetable wholesalers to install mills that separate water from biological waste to reduce the volume of collected waste, allow for the on-site re-circulation of the separated water and pre-process this waste for biogas production.

NSR and SYSAV differ from their private counterparts, though, on account of how their mission is one of public service. As stated in their owners’ directives, NSR and SYSAV endorse a two-tier public service mission: first, to make it possible for the municipal owner to fulfil their legal obligations to take care of waste within their jurisdiction in an environmentally responsible way; and second, to offer a competitive waste management alternative to local enterprises. The raison d’être of NSR and SYSAV is not to maximise their own profit. Rather, it is to offer their communities socially, economically, and environmentally sustainable waste management services and even to promote local and regional development. For example, SYSAV’s owners’ directive states that the company shall “maximise material and energy recovery and minimise waste to landfill” (SYSAV Styrelsen, 2010, p.1).

This public service is offered in exchange for waste management fees. NSR and SYSAV derive the single largest share of their revenues from the monopolistic activity of taking care of the household waste produced within the jurisdiction of the municipalities that own them (see Table 1). The levels of these waste management fees are not set on a market but administratively set by municipalities after consultation with the companies. Following the cost price principle, fee levels are determined on the basis of the actual cost of managing household waste in each municipality plus a smaller net margin.

However, NSR and SYSAV also derive revenues from waste management services that they sell to others than their municipal owner. When they have waste treatment capacity available, NSR and SYSAV bid for public tenders made by other municipalities. For example, NSR is processing the biological waste of a neighbouring municipality that does not own processing facilities, and SYSAV has been for years incinerating parts of NSR’s household refuse. Occasionally, these bids
are international, and SYSAV has begun to import waste from Norway to feed their incineration plant. Moreover, NSR and SYSAV derive revenues from providing waste management services to industrial companies. Managing industrial waste is a deregulated activity, and NSR and SYSAV are here competitors with each other and with other private or public waste management companies. In addition, NSR and SYSAV sell waste management services to the material companies that run the producer responsibility system, for example, to ball packaging or pre-treating and disassembling electronic equipment.

Municipal waste management companies often undertake these commercial activities of public service in collaboration with private companies that they contract or co-own. Patterns of collaboration can change, though, and partners can become competitors. NSR has seen a long-time contractor, specialising in the collection of industrial waste, start waste processing facilities of its own in the wake of the 2001 deregulation of industrial waste processing. This new competition resulted in an important diminution of NSR’s access to industrial waste, and entailed a drastic decrease of its waste processing volume and turnover which, ultimately, prompted a downsizing and reorganisation of the company.

Finally, municipal waste management companies have taken on a role of educating people on waste. Outdoor posters campaigns and regular visits from schoolchildren are a form of public service to build awareness for the environmental importance of sorting out waste and recycling.

4.2. Processing activities

One can assert without getting into the technical details of their processing activities that SYSAV and NSR stand for contrasting approaches to waste management. Both companies share the ambition of minimising landfilling, which also is Sweden’s national ambition, as well as the ambition of the European Union’s environmental policy. But this same ambition has been framed within contrasting recycling philosophies. SYSAV has concentrated on energy production through thermal processes, while NSR has prioritized energy generation from biogas fermentation. Each of these energy production philosophies has resulted in narrow path-dependencies (Schreyögg & Sydow, 2010) that find their expressions in dedicated facilities, selective technical skills and fixed commercial channels.

SYSAV operates two older hot water boilers that produce district heating and two recent steam
boilers that generate both district heating and electricity. It also operates units that retrieve metal and glass from bottom ashes and a pre-treatment unit for bio-fuel production. In addition, SYSAV has instalments for biological treatment of contaminated soil, local treatment of leachates, garden-waste composting and wood chip production for selling to external customers. Visually most conspicuous are the four boilers that represent a centralised capacity of incineration and a commitment to an industrial logic of massive investments and regular increases in volume of waste to be processed.

NSR has turned its facilities into logistic platforms where a whole range of waste flows are separated, sometimes in an artisanal way, by NSR itself or by contracted private entrepreneurs. NSR managers underscore that material separation is the key to recycling, and thus to their creation of value from waste. The single most important processing unit of this platform is a biogas production unit, but there are many other processing units for specific material flows. Recently, NSR has constructed one of the biggest facilities in Europe for purifying landfill gas (50 % methane-concentration) to motor fuel quality (about 98 % methane concentration). In another new instalment, biogas is liquefied and compressed to facilitate long-distance transportation. NSR has also created a market for certified wood chips sold as fuel to factories and heating plants, and they have also built their own wood chip burning facility on their premises to cover their own internal energy needs. NSR managers repeatedly point out that they have set up successful collaborations with industries to reduce waste at the source, thereby limiting the quantity of waste that passes the scales at the entrance of the NSR facilities.

NSR and SYSAV both provide waste management services that result in a very low level of landfilling, but the differences are manifest in how they process waste. However, both NSR and SYSAV seem to be willing today to discard their dependency from past waste management paths. A municipal power company is currently building an incineration plant on NSR’s main site, and SYSAV is considering building a biogas production capacity of its own. Both companies aim at developing a full-range waste processing capacity to provide their municipal owners with a total waste management service. The risk of a regional over-capacity for incineration is often evoked by our respondents, though. In association with this it is worth mentioning that an uncoordinated development of incineration capacity in Sweden raises concern about an increasing competition for waste in the future (Sundberg & Sahlin, 2011). A more intense competition for waste as in-
put to incinerators is likely to involve an increased amount of waste import, but might also entail economic difficulties for waste companies that are dependent on high incineration volumes to use their full infrastructural capacity.

4.3. Marketing activities

Effective waste management does not end at the processing of waste. If NSR and SYSAV are to fulfil their public service mission, they need to find ways to let the output of their processing activities re-enter the economy as products. This requires expertise in marketing. Marketing is to be understood in the original and literal sense of the term: the activity of bringing things into markets. This includes market research, product development, service innovation, pricing, market communication, personal selling and distribution, but it is not limited to any of those activities.

SYSAV could not have become a major producer of district heating (1.4 TWh in 2009) heat and NSR a major producer of gas (106 GWh gas from landfill and 33 GWh biogas for vehicle fuel) without a parallel development of processing and marketing activities. Their respective performances result from systematic strategies to find or develop markets for their outputs. Relying on an industrial logic of large investment and growth, SYSAV has passed long term sales agreements with a major private power producer for its production of heat and power, and NSR has passed a similar agreement with a municipal power company for its production of biogas. But NSR and SYSAV have also constructed a fine web of co-owned companies, contractors and customers to sell the materials that they recycle and market on domestic and international markets. NSR markets plastic (2500 tons in 2009) across EU countries and paper to the People’s Republic of China, whereas SYSAV sells electricity (137 GWh in 2009) on the Nordic electricity spot market place and scrap metal to European and Asian ironworks.

If one is to avoid the end-of-pipe alternative of a landfill, waste is to be transformed into something that someone else than landfill owners are ready to accept and, from a corporate point of view, preferably pay for. NSR and SYSAV managers describe how they think of conversion possibilities and marketing opportunities as two that need one another to become meaningful. One of SYSAV’s top managers takes pride in the fact that his company has always thought “economically” rather than “ideologically”. Correspondingly, one of NSR’s top managers points out that there is such income potential in some kinds of waste that it makes obvious good economic sense
for waste management companies to pay for waste if they can find ways to transform this into a product that they can sell at a premium. NSR and SYSAV managers express a undeviating engagement in designing and organising transformative processes that increase the share of waste that re-enters the economic system of exchange as materials for the generation of goods and services, to re-use O’Brien’s (1999) way of putting things. Matching waste management processes and markets so that waste becomes marketable products is one of their core concerns.

Moreover, letting waste re-enter the economy as products serves the social and environmental objectives of NSR and SYSAV. Income derived from the sales of energy or material helps NSR and SYSAV keep waste management fees at a low level. Marketing activities serve to realize the environmental value from processed waste and offer an alternative to the use of virgin material or non-renewable energy sources. SYSAV states on its homepage that its district heating production rests mostly on biofuels and that it represents an equivalent of 170000 cubic meter oil or 250000 ton coal.

Marketing activities are therefore essential in more than one way for NSR and SYSAV to fulfil their public service mission as municipal waste management companies. It is the combination of a technical competence and a commercial competence that enables NSR and SYSAV both to create social, environmental and economic value from waste and to limit landfilling.

5. Modelling the business model of Swedish municipal waste management companies

Based on NSR and SYSAV, the business model of Swedish municipal waste management companies can be described as articulating three core activities (see Figure 1). First, municipal waste management companies are endowed with a public service mission to organize the collection of waste from households for a reasonable fee, and to offer local industry competitive waste management services. Part of their mission is also to minimise landfilling and mitigate negative environmental impacts of waste generation and management.

Second, to fulfil these goals, municipal waste management companies have developed processing activities that transform as much waste as possible into potential products. The modalities of these
transformation processes are specific to each company, but the rationale is the same: to transform as much waste as possible into something marketable. Even landfills participate in the transformation of waste into products through the production of gas that, once upgraded, can be sold as fuel.

Third, waste management companies organize marketing activities to let the outputs of their transformation processes re-enter the economy. As a rule, waste management companies do not initiate recycling processes unless the product of these can get sold on a market. A potential commercial value is a condition for their recycling policies. Waste management companies therefore need to adapt their technical competence for processing waste to generate marketable outputs, or create markets for these outputs when there is no already existing one. Principally, these incomes pertain to energy and material sales. But it can also be specialized services such as waste characterization for industries or other municipalities. However, municipal waste management companies do not see marketing activities as ends in themselves. They consider these activities as the means to achieve the social, environmental and economic dimensions of their public service mission.

Figure 1: The business model of Swedish municipal waste management companies
These three core activities stand for different combinations of inflows and outflows of financial and material items across and within organisational boundaries. Public service activities represent both waste and financial inflows; processing activities keep material circulating within the organisation, but at a cost that corresponds to financial outflows; finally, marketing activities result in material outflows and financial inflows. Balancing and managing the interdependency of these inflows and outflows of money and material is a critical organisational challenge for all actors on the operational level that wish to minimise landfill.

Moreover, municipal waste management companies collaborate with other companies in regard to all of their activities. This is why the rounded rectangles in figure 1 for “public service activities”, “process activities” and “marketing activities” go slightly out of the frame that represents the organisation’s boundaries.

The trade of waste management companies is to take possession of waste and convert it into marketable products. They collect something that has acquired a negative value in the eyes of its beholder who is therefore ready to pay to get rid of it. The waste management companies then transform the material with negative value into something that has a positive value in the eyes of another beholder and is therefore ready to pay to acquire it. Rag, scrap and junk collectors that would return from the past (Strasser, 1999) might be surprised by the volumes processed by today’s waste management companies, but they would immediately recognize the rationale of letting the potential material value in waste re-enter the economic value chain. The only novelty for these visitors from the past would be how the process of transforming and revaluing waste now is framed in terms of environmental value creation.

The business model presented here makes it possible to pinpoint issues of strategic importance for municipal waste management companies. In particular, the model makes it explicit how changes that affect any one of the public service, processing or marketing activities directly affects the others and therefore the organisation as a functioning whole.

6. A legal controversy

A current legal controversy might threaten the business model of waste management companies such as NSR and SYSAV. This controversy sets municipal waste management companies and the
Swedish Government against private waste management companies and the European Commission. At its core is the question of how large a share of income municipal waste management companies can make from commercial activities without losing their monopolistic right to household waste within the geographical jurisdiction of their municipal owners.

Referring to the Teckal case (C-107/98, European Court of Justice, 1998), the Carbotermo case (C-340/04, European Court of Justice, 2006), and the Swedish legislation on public tendering (SFS, 2007:1091), the European Commission (Europeiska kommissionen, 2010) argues in a reasoned opinion that municipalities must put out waste management services on a public tender unless two conditions are met. The first of these is that municipal waste management companies must derive only a marginal share of their income from customers other than their municipal owners (activity criterion), and the second is that these municipal owners must exercise a degree of control over these companies that is equivalent to what it exercises over its own departments (control criterion).

NSR and SYSAV are explicitly referred to by the European Commission in its reasoned opinion (Europeiska kommissionen, 2010). When the controversy started, NSR declared in their annual reports 73% of its income from municipal services and 27% from commercial activities (NSR, 2009), and SYSAV declared 52% of its income as related to household waste operations and 48% to industry-related operations (SYSAV, 2009). For the European Commission, this meant that neither NSR nor SYSAV fulfilled the activity criterion described above as they are very active on the waste market and derive more than a marginal share of their income from customers other than their owners (Europeiska kommissionen, 2010).

To meet the European Commission’s critique, NSR and SYSAV have taken drastic measures to lower their share of commercial activities incomes. Some of these measures are accounting-based. Both companies now consider all sales of energy and material as pertaining to their public service mission of taking care of waste and therefore as income made on behalf of their municipal owners. This redefinition of their accounting model only has a decisive impact on how large a share of income NSR and SYSAV consider making with others than their municipal owners. For SYSAV it reduces this share for the same year of 2009 from 48% (SYSAV, 2009) to 16% (SYSAV, 2010). Other measures involve a redesign of the boundaries of their operations to increase the volume
of their activities with their municipal owners, and therefore decrease their share of commercial activities with non-owners. NSR and SYSAV are taking over the planning and billing of waste services to households from their owning municipalities. SYSAV is even planning to take over the physical collection of waste from its municipal owners that have so far managed this activity themselves and not contracted it out. NSR has contracted out several waste management processes that were previously managed in-house.

As a result, SYSAV plans to decrease its turnover from private customers to 11% by 2011 (SYSAV, 2010) and NSR to 8% by 2012 (Setterlid, 2010). By re-defining their accounting model and re-designing the boundaries of their activities, NSR and SYSAV expect to meet the Commission’s demands while fulfilling their missions and goals. However, it is not certain that the Commission will accept Sweden’s view that NSR and SYSAV are now fulfilling the activity criterion (Regeringskansliet - Utrikesdepartementet, 2010). The controversy remains open.

The business model presented in this article illustrates that this legal controversy affects more than the marketing activities of the companies. It constrains their whole dynamics. Already today, managers at NSR and SYSAV confess that they refrain from expansive commercial strategies to make sure that their company remains eligible to direct attribution of contracts from their municipal owners. A historical strength of Swedish municipal waste management companies has been to be proactive and innovative in developing transformation processes that match markets and markets that match transformation processes. A legislation that would arbitrarily limit at a few percents how much income they can generate from customers other than their municipal owners would compromise the capacity of these companies to maintain their innovation dynamics.

7. Concluding remarks

The trade of waste management companies, public or private, is to take in waste with negative value for its holder and convert it into marketable products. By so doing, waste management companies present the unusual characteristic of generating income from both input and output. Such a characteristic is not necessarily an economic advantage, however, but it is a strength and a characteristic that springs from the nature of waste management activities: taking in something that someone is ready to pay to get rid of, and turning it into something that someone else is ready to pay to acquire. In certain situations, the entity that pays for getting rid of the company’s
input and then pays for the output is one and the same. For example, this would be the case for households that pay waste collection fees and then pay for district heating generated from waste.

As the present business model of municipal waste management companies shows, Swedish municipal waste management companies bundle processing activities back to back with both public service activities and marketing activities. It is because their public service mission to take care of waste does not end with transporting waste to their physical facilities, but also includes processing waste and bringing the products of this process onto markets. NSR and SYSAV turn marketing — in the sense of bringing products to a market — into an alternative to landfilling.

Dismantling this dynamic between public service, processing and marketing would seriously impede the possibilities of Swedish municipal waste management companies to serve their social, environmental and economical purposes. It would therefore be a decisive challenge to the whole organisation of Swedish waste management as we know it today.

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