A close-up photograph of a person with vibrant red hair, wearing a dark jacket, focused on working on a red bicycle frame. The person's hands are visible, adjusting a component of the bike. The background is filled with other bicycles, suggesting a workshop or a bike-sharing station. The lighting is warm and natural, highlighting the textures of the metal and the person's hair.

Waste prevention is about effective production and thoughtful consumption – not about waste

SEVEN LESSONS FROM THE RESEARCH PROJECT
FROM WASTE MANAGEMENT TO WASTE PREVENTION



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More information about the research project can be found at website www.ism.lu.se/mtp,

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Foreword

This report summarises the most important lessons learned from the research project From waste management to waste prevention. In the research project, researchers from Lund University and the University of Gothenburg, but also Umeå University and the Royal Institute of Technology, have studied waste prevention.

The aim of the project has been to identify and clarify the difficulties in realising the goals of waste prevention policy. Researchers have approached the project's purpose through content analysis of waste plans, quantitative and qualitative studies of waste prevention initiatives, criticism of urban planning theory, and the mapping of obstacles to waste prevention.

The project has been conducted in close cooperation with municipalities, municipal waste companies, authorities, social movements and companies. It has been financed by the Research Council Formas (Ref. no. 259-2013-210).

There are sources referenced in the text and presented in the reference list at the end of the report for those would like to know more. It is also possible to contact the respective researcher. Under Internal references you can find the scientific articles, conference contributions, seminars, essays, reports, polemical articles, and new research projects that have resulted from this research project. On the project's website www.ism.lu.se/mtp, the project is described in detail, for example, the workshops that have been organised within the framework of the project.

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Waste prevention – a prioritised goal within waste policy

Today's intensive consumption is creating large volumes of waste. Only a small proportion of all waste produced in Sweden comprises household waste (4.2 million tonnes). The waste from businesses (24 million tonnes) within the construction sector, manufacturing industry, service sector and forestry and agriculture combined is several times more. If waste produced from mining is added (139 million tonnes), more than 160 million tonnes of waste is produced per year in Sweden – that equals 16 tonnes per person and year. Waste and its management accounts for significant resource consumption and environmental impact.

Since the 1990s, politicians have attempted to promote waste prevention, or waste reduction. In the European Waste Framework Directive,

waste prevention is defined as measures taken before a substance, material or product has become waste, that reduce: (a) the quantity of waste; (b) the adverse impacts of the generated waste on the environment and human health; or (c) the content of harmful substances in materials and products. Prevention is seen by the responsible authorities at both the EU and national level as the most effective way to reduce the significant environmental impact entailed by the production and management of waste.

Prevention is therefore the highest step within the waste hierarchy (Figure 1): the model that governs waste management in the European Union's Member States. According to this model, the member countries shall primarily prevent the occurrence of waste. If a product has become waste, it shall, using the most preferred method first: be re-used, possibly after repairs; be recycled through conversion to raw materials; be subjected to energy extraction through incineration; or lastly, be disposed of if no other alternative is possible. Energy extraction is the most common method of treating household waste in Sweden, followed by material recycling. However, if commercial and mining waste are included, disposal is then the most common way to manage waste.

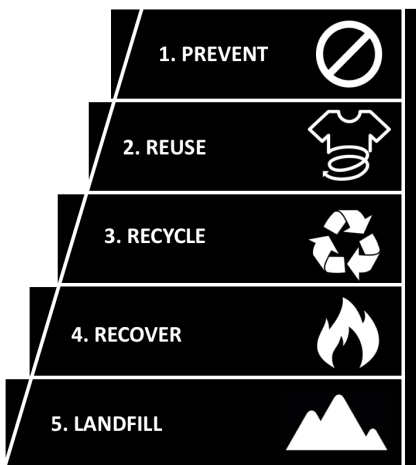


Figure 1: The waste hierarchy, the model that governs Swedish and European waste management. Illustration: Nils Johansson

Further reading: European Parliament and Council of the European Union (2008/98/EC); Swedish Environmental Protection Agency (2015); Hultman and Corvellec (2012); Zapata Campos, Eriksson-Zetterquist and Zapata (2014)

Project results and lessons learned

This report is built around seven lessons learned from the research project and a closing discussion that we hope shall form the foundation for further discussion surrounding waste prevention.

1. Waste prevention happens through interconnected actions
2. Activists lead the way to waste prevention
3. It is difficult to disseminate and scale up waste prevention initiatives
4. Structural rigidity complicates waste prevention
5. Waste prevention policy is unclear
6. Waste prevention takes place through distance work
7. Waste prevention is not about waste

1. Waste prevention happens through interconnected actions

Waste prevention is growing through various actors becoming involved in waste prevention initiatives within the areas of information, production, distribution, consumption and waste management. What these initiatives have in common is that they comprise actions that succeed in interconnecting both new and old actors in innovative forms of cooperation.

Many actors have become engaged in different initiatives with the aim of reducing the volume of waste in society. In 2012, the Swedish Environmental Protection Agency formulated a national plan for waste prevention. Waste companies have attempted to influence households through information campaigns such as SYSAV's *Köp inte skräp!* [Don't buy trash!]. Some municipal pioneers such as Hässleholm, Gävle and Gothenburg began working systematically at an early stage to reduce the volume of waste within their own organisation, for example, in schools or elderly homes. The trade organisation Swedish Waste Management Association coined the term *Miljönär* (Swedish combination of the words for environment and millionaire) in order to disseminate concrete tips via a website on how waste can be prevented. Social movements are arranging bicycle kitchens to extend the life of products, and different kinds of alternative libraries are offering items such as clothes and tools in order to increase sharing. Many consumers have put up "No advertising thanks" signs on their letterbox. Additionally, the business sector is highlighting the fact that they are working with waste prevention. For example, apparel retailer H&M have installed collection boxes for used clothes and textiles in

their stores in order to close the material flow according to the principles of circular economy.

What these initiatives have in common is that they all demand a change in behaviour: that people behave in a new manner, or rather, do what they always have done, but differently. For example, returning clothes to a store or borrowing clothes from a clothing library instead of buying new items, throwing them away and buying new again. This behaviour in turn is based on innovative actions that are interconnected and creates new networks of actors.

One example could be a person that puts up "No advertising thanks" signs on their letterbox, common practice in reducing the volume of direct advertising. The action of putting up such a sign connects the industry organisation for direct advertising to mail and advertising distribution companies and households. "No advertising thanks" signs are based on an agreement in which the distributor abstains from distributing the advertising, which perpetually interconnects the various actions: making an agreement, informing distribution employees, putting up a sign, and not distributing the advertising. None of these actions are by themselves waste prevention, but when connected together, a waste prevention effect occurs; in

other words the volume of waste and/or its environmental impact is reduced.

Waste prevention's potential lies its ability to innovatively interconnect actions and thereby create cooperation.

Further reading: Corvellec (2016a); Corvellec and Stål (2017); Corvellec and Czarniawska (2015); Zapata and Zapata Campos (2015, 2018); Zapata Campos and Zapata (2017)

2. Activists lead the way to waste prevention

Many innovative activities regarding waste prevention take place at a grassroots level, in citizen-driven non-profit projects. Thereafter, they are often picked up by other societal actors such as companies and municipalities.

Many waste prevention initiatives are created from below at a grassroots level, unlike traditional waste management with major technical waste systems that are initiated from the top by authorities or companies. Examples of such initiatives are bicycle kitchens, where residents can receive help with learning how to repair their bicycles; food banks that use leftover food to serve free lunches and snacks for students, swap markets or free shops as places to share used books, toys and furniture.

Many solutions for waste prevention are therefore found in social movements, where perhaps we would not usually search for innovative waste solutions. The reason why so many initiatives are driven by social movements is that established societal actors such as authorities and companies are included in existing waste systems and consumption patterns, whereas the social movements can more easily deviate from the conventional and question the patterns of material wealth and consumption that are taken for granted.

The aim of these citizen-driven initiatives is to create social change, beyond serving free

lunches or fixing bikes, to actually transform social norms and create considerate, sharing, and thoughtful consumption that considers the earth's limited resources. Many of these initiatives have not only converted waste into valuable resources, but have also created what Elinor Ostrom called "commons". Free shops as well as clothing libraries are usually open to all and are not limited by the customer's purchasing power. In these contexts, waste becomes a free resource that admittedly may require some work in the exchange but which is thereby managed jointly. Through reusing and sharing, new purchases can be avoided and resources spared.

These initiatives have grown alongside both the market and the public sector. The initiatives have been made possible through people connecting what is leftover with what somebody else needs and, often through volunteer work, creating acceptance of their activities among authorities and other institutions. In addition, the most successful initiatives have been transparent and appealing to the people who have participated. Sometimes the participation has

been with the explicit aim from the person to prevent waste, however, sometimes they have needed a bicycle, wanted to learn how to repair something, or in order to show their children how to share their toys with others while also saving a bit of money. But regardless of the purpose, all involved have prevented waste.

The ability of the social movements to offer practical and functional solutions has, together with their transparency, enticed companies and public organisations to attempt to scale up the movements' ideas and solutions. For example, free shops and swap markets have been used as a model when housing companies have created recycling rooms, while at the same time dumpster-diving has contributed to large food groups opening their eyes to the huge food waste and therefore creating food banks in order to pass on the surplus to socially vulnerable groups. However, in many

cases the initiatives have been picked up and implemented in the market. It may be noted that this occurs without greater reflection over how such solutions question the relationship between consumers and producers or the "wear, tear and throw away" society.

What this means may be interpreted in many ways, one being that waste prevention is being increasingly normalised and becoming something that is not questioned. In simple terms, companies and municipalities learn from and take after social movements through imitation.

Further reading: (Ek, 2015); (Ostrom, 1990); (Zapata Campos & Zapata, 2016); (Zapata Campos & Zapata, 2017)

3. It is difficult to disseminate and scale up waste prevention initiatives

Waste prevention initiatives are often difficult to make commercially sustainable on a large scale, permanent, and geographically dispersed to other cities, regionally or nationally – even if there are successful examples. Reasons for this could be that they are initiated with the help of external financing, because of various local conditions, or that they are based on the voluntary involvement of committed citizens. In addition, the initiatives focus primarily on the fact that it is the individual who shall change their behaviour – rather than the organisations being the ones to change.

Up-scaling, increased distribution and the awareness of successful waste prevention initiatives are always attractive to political decision-makers as this can be imagined to lead to greater volumes of waste being pre-

vented. Unfortunately, solutions, initiatives and concepts cannot be simply translated from one place to another. An initiative's practices and solutions will be modified and adapted to local conditions and actor interests. Initiatives

such as bicycle kitchens and car pools are, for example, relevant in conurbations where transport routes are short, but they are not an obvious fit for rural conditions.

Another difficulty with spreading waste prevention initiatives is that they are generally run by committed and passionate people. This appears to be chiefly true for citizen-driven alternatives, however, waste prevention initiatives within municipal operations and the business sector are also often run by committed and passionate people. This makes the initiatives vulnerable because if the person quits or if their life situation changes, the entire operation is at risk. Since waste prevention initiatives are often dependent on the individual's commitment, they may therefore be at risk of having a limited lifespan.

Previous attempts also show that it is difficult to scale up small-scale waste prevention initiatives into commercial business operations, thereby reaching other and larger groups within society. Many of the initiatives function thanks to peoples' unpaid labour combined with lower demands for a return, or they are financed by municipalities and the business sector through project support. The transition to a large-scale operation and business-related financial requi-

rements are therefore difficult. A complicating circumstance is that a new bicycle or fresh food is inexpensive compared with the costs of repairing, handling and processing items intended to be discarded.

Waste prevention initiatives generally target individuals. It is you as a consumer who is to alter the way you act by borrowing clothes, car-sharing, increasing the reuse of second-hand goods, and putting up "No advertising thanks" signs. Despite many of the initiatives indirectly influencing the industry and the state with requirements for new business models and infrastructure, significant responsibility is placed on the individual. This in turn leads to the initiatives being driven in respect of the latter part of a product's life cycle in the form of changes in consumption and waste management, rather than company design and production processes, where much of the potential for waste prevention resides. A product that is designed and produced with a waste minimisation perspective simply involves less waste than others.

Further reading: Corvellec (2016b); Corvellec (2016c); Zapata Campos and Zapata (2017); Zapata Campos and Zapata (online first)

4. Structural rigidity complicates waste prevention

There are several lock-in factors, here referred to as obstacles, in the prevailing waste system for commercial waste. These include a conventional business logic, habits, mindsets, laws, regulations and elements in the infrastructure that can complicate the work with preventing commercial waste.

The difficulties in preventing waste from occurring within industry are due to a great extent to the fact that today's waste market and waste system have been built up according to business logic based on the idea that waste is a resource with economic value, for example, as an energy source or saleable recycled material. In the conventional business logic that prevails within the waste industry, there is a lack of clear financial incentives for waste organisations – both municipal and private actors – to work towards reducing the volume of waste. Today's business models, agreements, and market for waste favour the management of existing waste rather than preventing its production. Of course, this means that the more waste that is handled, the greater the turnover for those who are paid for handling it, which runs contrary to waste prevention's basic concept.

In the prevailing system for commercial waste, the habits and mindset of employees within waste organisations also constitute an obstacle to increased waste prevention. This obstacle is related to how people within these organisations view their competence, their working methods and the waste market in general. Those who work with waste issues are knowledgeable and well-experienced within the waste industry. However, they often lack the confidence that their own competence could be used in helping waste producers to reduce their waste.

There are also a few obstacles that lie outside of the individual waste organisations. One of these is laws and regulations which are not clearly oriented towards increased waste prevention. Waste organisations and their waste-producing customers demand legal and economic driving

forces that create space to achieve profitability in innovative waste prevention measures.

Another obstacle is the infrastructure that has been built up around the prevailing waste systems in the form of collection, incineration plants, recycling plants and landfill sites. To take waste incineration as an example, there is an overcapacity which does not provide incentives for managing less waste; on the contrary, waste companies import waste to maintain the infrastructure of waste incineration for the production of district heating and electricity for households and businesses.

An important lesson learned from our research regarding commercial waste is that the waste industry has built up its business based on the idea that waste shall not constitute a problem, but rather waste is a resource to be managed, preferably in a profitable manner. On the other hand, efforts to prevent the production of waste are based on the idea that there shall be no waste produced at all. If waste is produced, this is a problematic defeat for the prevention work, which is a thought pattern that a large proportion of those in the waste industry are not accustomed to.

Further reading: Corvellec and Svinstedt (2015); Svinstedt and Corvellec (2015); Svinstedt and Corvellec (2018)

5. The waste prevention policy is far too unclear

Waste prevention is a prioritised goal. The Swedish Waste Prevention Policy is modest in its demands for social change. In practice the responsibility of waste prevention is left to the consumers, municipalities, and companies. The effects of the measures and how they influence the volume of waste, hazardous waste and environmental impact, is often unclear.

The European Waste Framework Directive requires the member states to make waste prevention a high priority in their waste policies. In Sweden, the Riksdag has commissioned the Swedish Environmental Protection Agency to establish a national plan for waste prevention, and an increasing number of municipalities are bringing up prevention in their waste plans.

The waste prevention policy is characterised by soft rather than hard proposals and actions. Information campaigns, pilot projects, or encouragement for collaboration and evaluations are common features within this policy area. Only in exceptional cases are suggestions made concerning amendments to laws, ordinances, or taxes. Furthermore, there are no concrete incentives and penalties so far for the fulfilment of the policy.

A characteristic of the waste prevention policy is for the responsibility of waste prevention to be laid on the waste producers. The policy indicates a desire to reduce waste volumes and proposes a number of measures, but in general it is down to the waste producers to design solutions, in order to prevent the occurrence of the waste. The consumers are thereby encouraged to consume sustainably, municipalities to reduce the waste from their activities,

and companies to present innovative ways to approach waste – on their own responsibility. Without downplaying the importance of consumer power or individual responsibility, there are plenty of examples that a combination of instruments lead to results. For example fees, taxes and information directed at companies, as well as consumers. In addition, companies and organisations are strong forces for change, and having them help to effect change provides good conditions for success.

The waste prevention policy's explicit aim is to break the connection between increased economic growth and waste creation, without attacking the fundamental driving forces behind the increase of waste volumes in the form of a constant increase in population and consumption. The fact that the social ideal of constantly increasing consumption falls outside of the waste policy is remarkable, even if it is more understandable that the increase in population does so.

Instead of preventing the occurrence of waste, many of the proposed goals and actions regarding waste prevention are directed towards the management of existing waste; for example reducing the occurrence of hazardous waste in households, or increasing reuse. To a large

extent, the waste prevention policy is therefore about ensuring that existing waste is sorted better and ends up in the right place.

For example clothing chains' "garment collecting initiatives" for used clothes and textiles have gained a great deal of attention, although the impact on waste volumes is highly unclear as long as the principal business idea is a quick throughput of new fashion products. Also a transition from products to services is often referred to as waste prevention, but often there is a lack of reflection on the fact that services can also consume larger quantities of materials and energy and consequently become waste-intensive. Over and over again, the waste prevention policy shows great confidence in the current economic system's ability to make itself more waste-economic and sustainable – but why should it?

There is also reason to wonder why the smallest waste flows receive the greatest attention. Household waste is given disproportionately large attention within the waste prevention plans, especially electricity, textiles and food waste. With the exception of construction and

demolition waste, business waste receives little attention whatsoever. Mining waste, which represents more than 80 per cent of all the waste in Sweden by weight, is hardly addressed at all.

By and large, there is a great gap between the high-set ambitions in the waste prevention policy to separate the production of waste and economic growth, on the one hand, and the absence of proposals and measures that aim or are able to structurally reduce waste production on the other. Whereas the waste prevention policy is rendered as central for a transition to a circular economy, this policy provides little more than encouragement to the players who are actually attempting to circulate material flows in our society.

The forthcoming waste prevention policy needs to be clearly separated from the waste management policy, if it is to succeed in breaking the connections between waste production and the financial system.

Further reading: Corvellec (2017); Corvellec and Stål (2017); Johansson and Corvellec (2018); Stål and Corvellec (2018)

6. Waste prevention takes place through distance work

Spatial and mental distances from waste must be shorter if waste levels are to be reduced. Waste must be more visible to households and businesses, while social planning should create space for waste prevention initiatives close to people.

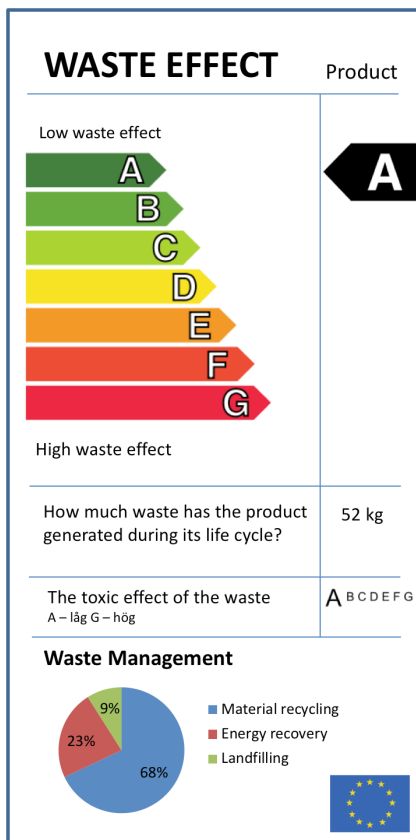
Waste prevention requires space, a physical place, precisely as consumption does. To be able to, for example, increase the reuse or sharing of a fewer number of goods, space is needed

for storage, repairs, handling and advertising. The businesses that are allowed room in today's society, not least in the city centre, increase the volume of waste, rather than reducing it

or preventing its creation. At the same time, competition for space is increasing, especially in the city. Therefore, we must ask ourselves how the allocation of different types of social activities influence the possibilities to reduce waste and encourage waste prevention initiatives.

A tool that could potentially be utilised in order to prevent waste is social planning. Planning can be a blunt tool, but it may simultaneously be utilised, for example, to decide that a location or an area shall be devoted to waste prevention activities, rather than the reverse: waste generation businesses such as shopping centres. The planning tools are there, so what is needed is political will and courage to offer physical space to waste prevention businesses also in central parts of the city, not only in its outskirts. An example is the reuse shopping centre ReTuna in Eskilstuna, which is run by the municipality on the basis of clear directives. ReTuna holds a number of different private, non-profit and municipal players, who prevent waste by processing and advertising second-hand goods.

Waste prevention does not only need space in a physical location nearer to people. An equally great challenge is to decrease people's mental distance from waste. People have long been masters of ignoring, hiding and forgetting about waste. Now is the time to make the waste visible! Only when people understand the wastes' downside will they be poised to prevent it. Waste prevention is ultimately a question of ethics, and the responsibility for the waste's impact on various environmental issues, such as climate change, toxic emissions, and reduced biodiversity. Producing waste needs to become an unethical and unacceptable deed, just like littering.



Figur 2: Exempel på hur avfallsmärkning i handeln skulle kunna se ut. Siffrorna är uppdiiktade. Illustration: Nils Johansson

Waste can be visible in a number of different ways. Connections between waste and production needs to be clearer, for example through waste labelling, such as clearly displaying a product's waste footprint (Figure 2), for example, how much waste a product has generated during its life cycle, but also in its afterlife as waste. The connection between waste and consumption also needs

to be clearer. Primarily, this means that both households and businesses must clarify this relationship. For example again, the volume of waste that every household and business creates every year could be reported when the local waste company invoices for waste tax. Tests in Gothenburg Municipality have shown that the mere visibility of how much waste a business creates, may lead to reduced waste volumes. Secondly on a societal level, it must be clarified how the city is built around consumption and that this is unsustainable.

The waste prevention activities that have been discussed in this section, must be placed in

the immediate vicinity of shopping streets and other physical centrally-located places that have consumption and waste production as their primary functions, in order for the mental distance between waste and consumption to be reduced in the citizens' minds. This is not to say that it is solely their responsibility to reduce the waste. What is required is a re-prioritisation of the city's space, which needs to be initiated and enforced on a political level, with planning as one of the central instruments.

Further reading: Corvellec, Ek, Zapata and Zapata Campos (2018); Ek (2015); Zapata Campos and Zapata (2013)

7. Waste prevention is not about waste

Waste occurs in every step of a product or a service's life cycle: from design, to resource extraction, production, consumption, and finally waste management. It means that waste prevention also needs to take place in each of these steps. Waste prevention should not be classified as a waste issue, because waste prevention concerns the building of value chains, which consist of material, energy and waste – waste prevention is not about waste. Working with waste prevention begins with illuminating all the waste that a product or a service gives rise to.

Waste management has traditionally been performed by highly specialised players, chiefly waste companies. Waste prevention on the other hand, involves more, and, perhaps more importantly, different players than those traditionally dealing with waste, not least producers, distributors, consumers, authorities, and social movements, usually in co-operation. New action nets: to recover what was used for the producers for restoration and verification; to use online platforms to connect those who wish to share items and/or services, or those who need or can provide repairs; and to make agreements that phase out ineffective or hazar-

dous products, and more. The many faces of waste prevention are often based on innovative forms of collaboration streamlining the use of things, so that materials and energy are spared, whilst waste volumes and hazards are reduced. Economic players must be connected in new ways so that value chains are formed, which are consistently material, energy and waste efficient.

However, not all initiatives which aim to increase the purchase of second-hand gadgets, repairing or sharing need to be preventive. For example, a car-pool could create accessibility

for people who previously could not, or did not want to own a car, or replace travelling with public transport. It is therefore important to be aware that initiatives for waste prevention could ultimately have a negative effect on the environment, rather than a positive one.

A central aim of waste prevention is to promote social change, so that it becomes illegitimate to be wasteful with materials. From this point of view, waste prevention is reminiscent of the circular economy, which also aims to reduce the waste of materials, especially expensive or strategically important ones. However, an important difference is that, while the circular economy is an industrial model for economic growth, waste prevention focuses on preventing the occurrence of waste and thereby reduce negative environmental consequences. Both models indicate the need to build closed material circuits, although they should not be mixed up, because they have different aims, goals, and focus points.

The fact that a waste prevention policy is more material than a waste policy, indicates that waste prevention should not necessarily be viewed as a part of the waste hierarchy, which is a model for waste management, not waste prevention. Seeing waste prevention as a part of the waste hierarchy cements the fact that it forms a part of waste management, despite its aim is only to implement measures before the occurrence of waste and thus prevent waste being created.

The organisation of today's waste policy is divided into two parts, surrounding (1) collection and (2) management of waste. The consequences of waste prevention not being a matter of waste, leads to the conclusion that

a combined waste and waste prevention policy should instead be divided into three parts: (1) prevention (2) collection, and (3) management of waste.

Even more important is the question regarding the legitimacy of the virtually unlimited entitlement that producers and consumers have to produce waste today. Today's waste volumes make it necessary to raise the issue of the effects of waste from production and consumption and ask the questions: how much waste, (including carbon dioxide) do the products and services being produced and consumed actually generate? Additionally: how should this waste be handled by current and future generations?

If waste prevention is to become a real policy priority, the waste effect needs to become a central motive in the determination of whether a product or service may be allowed on the market or not. A waste-efficient society cannot afford waste-intensive businesses. The right to be waste-intensive shall therefore be something that cannot be taken for granted, but must also be motivated. In return, waste-efficient businesses shall be rewarded.

Waste prevention is about approaching production and consumption in a more thoughtful, effective, and responsible manner. Ever since the post-war period, it has become an acceptable social norm to produce a lot of waste. Waste prevention aims to make it the new social norm to prevent waste. A break in the trend is clear, and of importance. With its far-reaching consequences for production and consumption, waste prevention represents a serious challenge to the consumption-intensive way of life that characterises Sweden today. This challenge relates, not least, to the ethical

question of whether it is responsible to consume so much waste. Basically, we suggest that everyone should ask themselves the question, prior to every opportunity for production and consumption: is it worth the waste?

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Waste prevention is about effective production and thoughtful consumption – not about waste

SEVEN LESSONS FROM THE RESEARCH PROJECT FROM WASTE MANAGEMENT TO WASTE PREVENTION

Today's intensive consumption is creating large volumes of waste, which accounts for significant resource consumption and environmental impact. Since the 1990s, politicians have therefore attempted to promote waste prevention, or waste reduction. Prevention is seen by responsible authorities on both the EU and the national level, as the most effective way to reduce the significant environmental impact that the production and handling of waste entails.

This report summarises the most important lessons from the research project *From waste management to waste prevention*. The aim of the project has been to identify and clarify the difficulties in realising the goal of waste prevention policies.

In the research project, researchers from Lund University and the University of Gothenburg, but also Umeå University and the Royal Institute of Technology, have studied waste prevention. The project has been conducted in close co-operation with municipalities, municipal waste companies, government agencies, social movements and businesses.



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