**Energy**
National Research Programmes 70 and 71

# Project

## Modernising waste management

How can environmentally friendly waste management be implemented?

# How can environmentally friendly waste management be implemented?

Environmentally friendly waste management is part of the sustainable handling of resources and energy. To achieve this, it is not only knowledge with respect to technical implementation that is required, but also know-how with respect to how the change can actually be realised. It is for this reason that researchers investigated the network of players in the area of waste management.

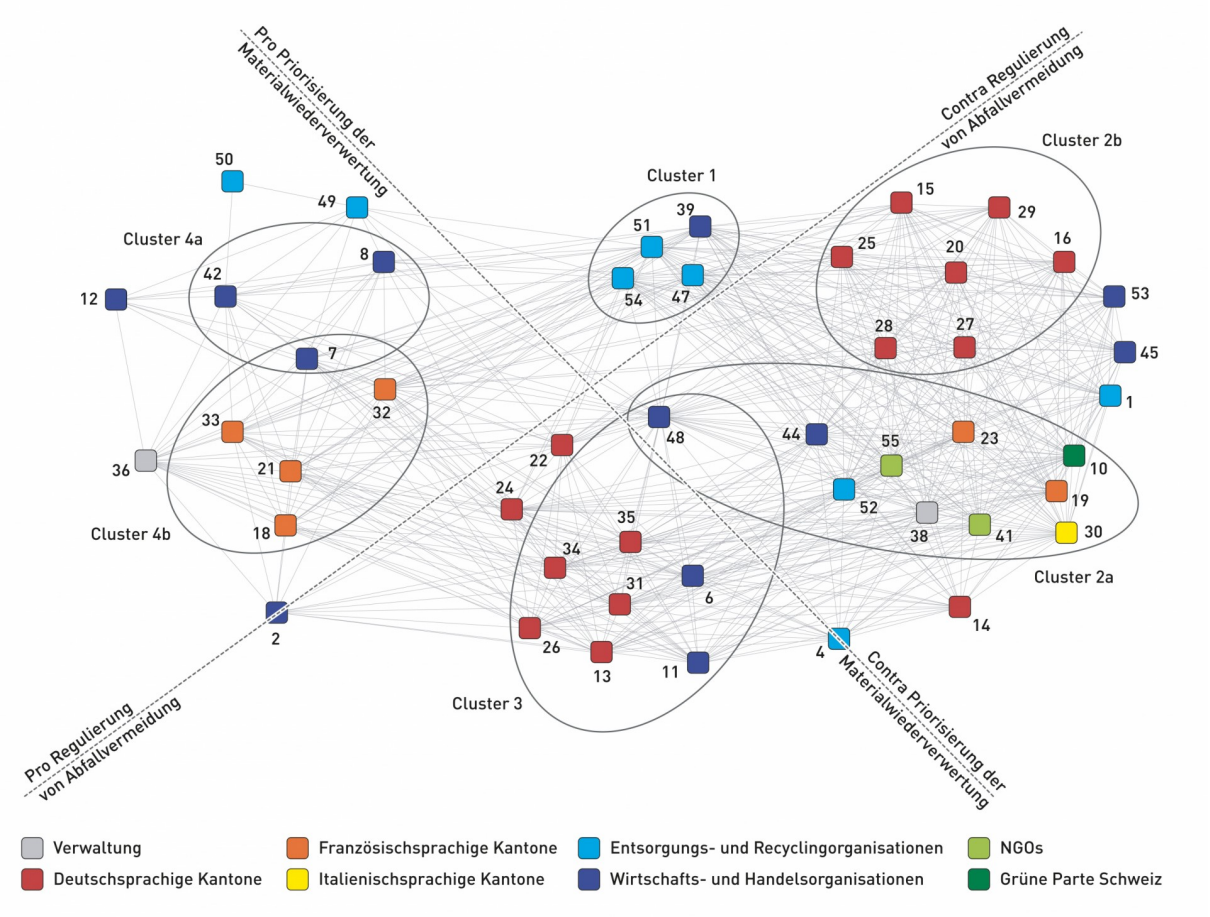
Lorries for the removal of waste stand ready at a car park. *Source:* Shutterstock

## At a glance

- Researchers used the consultation procedure being conducted in connection with a Federal Council ordinance as an opportunity to investigate the attitudes of various players in the area of waste management.
- A transparent process is very important for the planning of new measures and regulations. This increases the acceptance of new solutions.
- The federal structure of Switzerland allows individual municipalities and cantons to perform experiments with innovative concepts.

The Swiss population has one of the highest rates of waste production in Europe. As the disposal and recycling of waste are energy-intensive processes, increased efficiency in these areas can help to ensure that less energy is consumed. However, much greater savings would be possible if the waste were not generated in the first place. Researchers from the ETH Zurich state that this goal receives too little attention in Switzerland. They investigated the attitudes of various players in the Swiss waste management sector in order to find out what impact they have and to identify different groups with similar opinions.

To this end, the researchers made use of the total revision of the Technical Ordinance on Waste (TOW) conducted by the Federal Council in 2014. As is customary in such political processes, interested groups had the opportunity to put forward their opinions as part of the consultation procedure. These interested parties include the cantons, waste and recycling management associations, parties, environmental associations and other bodies. The researchers investigated the views of these players using a new method: so-called discourse network analysis. This enabled them to group the players according to the similarity of their views and to visualise the network between them.




The result of the discourse network analysis on the waste management hierarchy. Duygan et al., 2018

Specifically, the researchers studied the constellation in two areas: firstly the waste management hierarchy and secondly the handling of plastic and organic waste. With respect to the waste management hierarchy, the study looked at the importance and promotion of various levels of waste disposal: avoidance, recycling, combustion with energy recovery and depositing of incombustible residual materials.

In total, the researchers identified six clusters. These can be divided into four different beliefs: for and against the regulation of waste avoidance as well as for and against the prioritisation of material recycling.

**Cluster 1** primarily includes recycling companies which are – not so surprisingly – in favour of recycling and opposed to any regulations with respect to waste avoidance. The organisations in **clusters 2a and 2b**, in contrast, support regulations with respect to waste avoidance and at the same time want to promote recycling. These players are therefore the biggest supporters of a systematic waste management hierarchy.

**Cluster 3** primarily comprises German-speaking cantons as well as several trade and business associations. They all welcome regulations with respect to waste avoidance. Here, the recovery of energy is just as important for them as the recycling of materials.

Finally, the organisations in **cluster 4** are against both measures aimed at avoiding waste as well as the promotion of recycling. This cluster contains the French-speaking cantons as well as business associations. The former emphasise that the promotion of recycling could be too restrictive as other forms of waste processing are, in their view, in some cases better for the environment. The business associations have a different line of argument: the feasibility of recycling is important for them and they argue that the sales markets should be in place before measures are decided upon. They also opine that regulation is unnecessary as the minimisation of waste is taking place in any case for reasons of efficiency.

## Organic waste

In addition to issues relating to recycling and waste avoidance, the TOW also governs compostable waste – an important topic in the area of Swiss waste management. The researchers also analysed opinions on this issue in the same way and in doing so established four clusters of like-minded organisations.

The players in **cluster 1** give preference to composting over fermenting with which energy can be recovered. While this cluster primarily includes cantons that are of this view, it also comprises waste and business associations.

The organisations in **cluster 2** – chiefly non-government organisations and the Green Party – have a diametrically opposing view: they want to recover energy from organic waste through fermentation and are against composting. They justify this view with the argument that the production of biogas is of greater benefit to the environment – in addition to the generated gas, the fermented material can also be used further.

**Cluster 3** primarily includes business and trade associations. They insist on the technical feasibility of demanded measures, which must also be economical before they are adopted. The few organisations that find themselves in **cluster 4** have no preference with respect to fermentation or composting. The only thing that is important to them is that the material is not burnt.

## Plastic waste

Finally, the researchers have dedicated themselves to plastic waste, for which they have also established a discourse network. Four clusters were once again identified here.

**Cluster 1** comprises organisations from all stakeholder groups. They are in favour of the collection and recycling of plastic. The same applies to the organisations – non-government organisations and the Green Party – in **cluster 2**. These, however, would also like the adoption of a more holistic perspective. The case is different for the players in **cluster 3**, for instance trade organisations: they believe in voluntary action as this generates a higher level of quality and therefore consider state regulation to be unnecessary. Finally, the organisations in **cluster 4** – primarily cantons and business associations – believe that recycling is only appropriate if the resulting products are of a high quality and there is a market for them. On the basis of the network analyses, the researchers conclude that there are no insurmountable divides between the various players – there are, however, significant differences that can be reduced to three factors. The first divide is observed between private and state players. The former are against regulatory measures aimed at avoiding waste, while the latter would welcome such interventions. The other divides are seen within stakeholder groups. On the one hand, in the area of waste management: recycling companies are naturally in favour of more recycling, while incineration plants and the cement industry are against this. And on the other, within the German-speaking cantons: half support recycling, while for the other half energy recovery and recycling are of equal importance.

## Who can take action?

In order to allow changes to take place, the most important decision-makers need to be identified. This was also an objective of the researchers. Their results show that one thing is especially important when it comes to having significant capacity to act: resources. These include both material – chiefly financial resources – and immaterial resources, i.e. political power or authority. Furthermore, networks to the various players and the exchanging of information and ideas are important, although their impact is less great than that of resources.

The study's authors write that a greater level of transparency than we currently observe is required for the acceptance of new solutions. After all, the current political processes are prone to lobbying and this may possibly undermine the trust of the population in politicians. With transparent and analytical processes, the importance of financial means and power can be reduced. Nevertheless, the researchers expect that radical changes are unlikely. This is because the majority of players prefer the status quo or minor changes at the most, meaning that amendments will tend to impact details of the overall system. However, the researchers absolutely see an opportunity for major innovations: thanks to Switzerland's federal structure, the individual municipalities and cantons have the chance to risk experimenting and trying new things within the framework of the federal legislation on waste management. This means that – if the innovations work – everyone will ultimately be able to benefit, helping Switzerland to become home to a more environmentally friendly waste system.

## Produkte aus diesem Projekt

- Analysing the discourse in policy change: implications for the governance of transitions in Swiss Municipal Solid Waste Management
  Date of publication: 01.01.18
- Tracing the origins and articulation of power in the ongoing transition of Swiss Waste Management
  Date of publication: 01.01.18
- Exploring the interrelations between actors and structural elements: combining cross-impact balance analysis with actor analysis
  Date of publication: 01.01.18
- Towards an effective governance of socio-technical transitions: A heuristic for the analysis of agency
  Date of publication: 01.01.18

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