APRAISE - Stakeholder Consultation Workshop

"Improving Environmental Policy Making in the EU: from Member State Experience to EU Policy Design"

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Background Paper

Recycling of plastic packaging waste

The cases of the Netherlands and Germany

Introduction

This background document presents the assessment of environmental and sustainability-related policies in different policy fields: waste management, water management, resource efficiency and climate protection. These policy fields are reflected in four case studies

- Waste management with focus on plastic packaging waste
- Promotion of energy efficient buildings
- Use of biomass for the production of bio-fuel
- Hydro-power as an example of renewable energy sources

Starting point of each of these case studies is one (or a set of related) directive(s) enacted by the European Commission, which have to be transposed subsequently into national law. In most cases, the directives describe the environmental targets that are to be achieved, but do not prescribe exactly how the targets should be achieved. This leaves the countries plenty of room with regard to the choice of policy instruments and their respective designs. But not only the type and design of policy instruments is decisive for the effectiveness of the transposed policies; also many other factors can influence the policy output in favourable or unfavourable ways. These factors – specifically assessed in the APRAISE project – can result from

- The broader **context** including environmental, economic, social, and technological factors;
- Institutional settings that prevent the transposition and **implementation** of EU directives as well as policy specific context such as policy instrument design, operation and enforcement; and
- **Interactions** between policies and policy instruments, where one policy instrument can possibly reduce the effectiveness of another instrument or joint implementation of policy instruments could result in synergies.

Altogether, the specific policy instruments, their design, their interaction with one another and with other policy instruments, the context in which they work and the way they are implemented give rise to their specific output. For the assessment in APRAISE, this output is measured against the environmental targets stated in the policies – mainly in the directives, but also in the national laws – and the degree, to which the targets are achieved, is called the policy instrument's **effectiveness**. However, actual effectiveness sometimes differs from how a policy instrument could perform in theory. Therefore, not only the actual effectiveness of the assessed policy instruments is measured, but also the (maximum) level of achievement that could potentially be achieved. In many cases, this is also what the policy makers expected, when they planned and implemented the policy. In APRAISE, this potential achievement is called **efficacy**. Eventually, in order to assess the usefulness of policy instruments in achieving a certain target, their effectiveness (and efficacy) has to be related to the cost of implementing and pursuing these targets. This is determined by the **efficiency** of the policy instruments.

Eventually, measuring the effectiveness, efficacy and efficiency of a policy instrument and relating these results to the policy instrument's characteristics, their working context, specific implementation process and interaction with other policy instruments allows drawing conclusions as to why, possibly, a policy instrument does not perform as it was expected to and how the performance could be improved.

Recycling of plastic packaging waste – the cases of the Netherlands and Germany

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To substantially reduce the use of natural resources is a priority of the EU. One of the EU's most important political strategies addressing this issue is the thematic strategy on waste. Due to the environmental challenges associated with the strong growth of plastic waste worldwide, the two case studies focus on the management of plastic packaging waste in the Netherlands and Germany. There are several options available for the management of plastic waste, including recycling, thermal recovery, incineration with or without energy recovery, and disposal. Although the waste hierarchy specified by the EU's waste directive gives a preference to recycling, the interference with other policy instruments (e.g. promotion of secondary plastic material as refuse derived fuel) can impede possible progress with regard to recycling quota.

As a starting point for this assessment, the following table lists the policy instruments used to transpose the EU Directive on Waste (2008/98/EC) in the Netherlands and Germany.

Crucial domestic policy instruments

Crucial domestic policy instruments (Netherlands/Germany)	
The Netherlands	**Germany**
• **Packaging tax:** paid by producers/suppliers of products packed in plastics (levied by weight). The tax revenues were partly earmarked for waste separation and prevention of litter. • **Producer responsibility**: producers/suppliers are responsible for the collection of the plastic material after consumption of the product. • **The responsibility of municipalities to collect household waste and optimise waste prevention and separation processes**: municipalities have a crucial role in the collection and separation of plastics from regular household waste and transfer of the separated plastics to recycling installations. Municipalities were compensated for that from packaging tax revenues.	• **Closed Substance Cycle and Waste Management Act:** stipulates the so-called 5-step 'waste hierarchy': (1) prevention, (2) preparing for reuse, (3) recycling, (4) other recovery (in particular energy recovery), (5) disposal. • **Packaging Ordinance**: formulates recovery and recycling quotas for specific packaging wastes streams. Starting from 1999 at least 60% of plastic packaging materials has to be recovered, thereof 60 % has to be recycled. • **Technical Ordinance on Waste from Human Settlements:** requires thermal treatment of waste and inertisation prior to final disposal in landfills • **German Greenhouse gas Emission Allowance Trading Act**: The overall objective of this act is to reduce greenhouse gas emissions from the energy sector and energy intensive industries.

It is evident from the list that both countries call on the responsibility of the waste producers. Additionally, the Netherlands use tax incentives, whereas specific minimum quota are set in Germany.

In order to find out, why the intended policy targets were reached to a lesser or greater extent, three types of influential factors referring to the context and implementation of the relevant policy instruments and their interaction with other policy instruments were assessed. The results are provided in the following tables

Positive **Negative impact**

Crucial context factors impacting effectiveness/efficiency of policy instruments			
The Netherlands		**Germany**	
• Household incomes and savings • Existing infrastructure of waste management • Availability of techniques for waste separation and skills • Health concerns • Role of government coalition • Existence of markets for recycled goods • Responsibilities of different parties in the producers responsibility		• Technological progress of recycling technologies • Rise of the oil price • Quality standards for recycled plastic • Demand for plastic as an energy source • Use of composite packaging materials • Export of plastic waste	

Crucial policy implementation factors impacting effectiveness/efficiency of policy instruments			
The Netherlands		**Germany**	
• Familiarity with prevention and recycling benefits • Coordination among institutions • Adaptability • Enforceability		• Acceptance of recycling as a policy objective • Flexibility of waste hierarchy • Political support for investments in waste incineration • Political support for thermal recovery of plastic waste	

Crucial interaction factors impacting effectiveness/efficiency of policy instruments			
The Netherlands		**Germany**	
• Negative impacts on recycling because of low costs for incineration as a competing option for waste treatment		• Negative impacts on recycling because of low costs for incineration as a competing option for waste treatment	
• Stakeholder interaction in waste value chain (producers, government and municipalities		• Negative impacts on the objective to reduce plastic packaging	
• Interaction between packaging tax, producer responsibility and municipality role in waste collection and separation		• Negative impacts on recycling because of increasing demand for plastic waste from RDF power plants and economic incentives for thermal recovery	

The different sets of policy instruments used in both countries to transpose the Waste Directive render it little surprising that also the impacting factors are quite different. In general, the positive factors appear to be more abundant in the Netherlands. In the end, however, the effectiveness and the efficiency of the assessed policy instrument turn out to be rather similar in both countries. With respect to the better performance of Germany at the time of policy implementation, more advance targets could have been achieved, which may explain the more pessimistic assessment of the impact factors.

Observed vs. Anticipated and efficiency of domestic policy instruments			
The Netherlands		**Germany**	
• Packaging tax has had limited effect in terms of prevention, due to short time frame (with longer timeframe prevention could be stronger). In terms of recycling, the tax made secondary (recycled) plastics		• Reduction of plastic packaging waste generation	
• Producer responsibility on its own had no effect on prevention and recycling rates as producers were not directly involved in and did not directly pay for waste collection and separation		• Increase of packaging plastic recycling	
• The agreement between producers, municipalities and governments to producer responsibility-packaging tax to combine the packaging tax, producer responsibility and municipalities' role in waste value chain had a positive impact on increasing plastic recycling		• Increase of plastic recovery	
		High **No effectiveness**	

Observed vs. Anticipated and efficiency of domestic policy instruments	
The Netherlands	**Germany**

• Using a tax scheme for implementing the producer responsibility was considered efficient as it would utilize existing (tax) schemes. However, in practice the tax size was considered too small for operationalisation through the taxation office. The packaging tax has therefore been cancelled on 1 January 2013. • Use of existing municipality waste collection and separation schemes has improved efficiency of the policy. • In terms of dynamic efficiency effects, there are indications that the process of collection and separation have become more efficient (e.g. reduction in compensation for municipalities from € 475/ton plastic in 2009 to € 430 in 2013.	• Packaging Ordinance: increasing efficiency of the 'green dot' scheme due to technological progress and increasing competition. The total costs of the 'green dot' scheme have decreased from approximately two billion Euro per year in the period between 1995 to 2000 to approximately one billion Euro per year since 2008.

After assessing the observed and expected effectiveness and efficiency of the investigated policy instruments and relating these findings with with the relevant impact factors, the following conclusions can be drawn for the management of plastic waste in the Netherlands and Germany.

Conclusions and country comparisons	
The Netherlands	**Germany**
• The agreement between producers/suppliers, government and municipalities, which enabled implementation of producer responsibility in collaboration with municipality waste collection and separation infrastructure • Willingness of households to separate plastics from waste at home • Possibility to apply different collection and separation systems depending on the context (larger cities, apartment blocks, etc.) • Economic conditions (recession, etc.) have reduced waste material supply, but plastic waste quantities have remained relatively stable as people changed their consumption patterns in terms of consuming in different price categories but not in terms of type of consumption goods • An increase in plastic separation activities leads to lower supply of waste to incinerators which operate below capacity levels for efficient through-put of waste incineration. The supply deficit is	• Waste avoidance and recycling seem to be influenced negatively by interactions with other policy instruments. Both, the interaction between different waste management policies as well as the external interaction between waste management policy and climate policy have had a slightly negative impact on recycling. • In particular with regard to the recovery of low grade plastic waste, economic incentives for thermal recovery and incineration are much stronger than for recycling. The flexibility of the waste hierarchy has made the recycling objective susceptible to the potentially negative effects of policy interactions. • Due to the lack of dynamic incentives, the Packaging Ordinance by itself was not successful in increasing the recycling performance beyond the 36 % threshold level. Rather it seems to be the case that the observed increase of recycling between 2005 and 2010 was induced by a positive

compensated through waste imports. • The European Emissions Trading Scheme (ETS) could have a positive impact on recycling of plastic waste as a high price on CO2 emission would make primary plastics relatively expensive compared to secondary (recycled) plastics. This effect could, however, not be observed during the 2006-2012 period for this case study as ETS prices were generally too low for that. • from € 475/ton plastic in 2009 to € 430 in 2013.	development of the system context, • However, it must be stated that this development could only take place with the basic recycling infrastructure being in place, which can be clearly ascribed to the provisions of the Packaging Ordinance.

Questions to stakeholders

- The case studies for the Netherlands and Germany show slightly different pictures with respect to the interaction between waste incineration and recycling goals. For example, in the Netherlands, waste supply shortage is mainly compensated through extra waste imports. In Germany, increased demand for plastic waste from RDF power plants and economic incentives for thermal recovery have a negative impact on recycling. ***How could, in your view, the interaction between plastic waste recycling and incineration activities be organised so that the waste hierarchy is observed more strictly?***
- Potentially, carbon pricing, such as the EU Emissions Trading Scheme, makes the use of primary plastics more expensive, which could stimulate use of recycled plastics. In practice, this effect has not been observed as EU ETS prices have been too low. ***Do you think that strengthening carbon pricing instruments (e.g. ETS or carbon taxation) is an effective and efficient way to achieve plastic recycling goals?***
- The introduction of an incineration tax has been proposed in order to make recycling of lower grade plastic waste more competitive compared with incineration. The introduction of more ambitious recycling quotas would be an alternative to that. Against this background, **what type of policy instruments would be most promising in order to make further progress on recycling.**