From waste to materials management

John Wante

OVAM, Mechelen, Flemish Region, Belgium

Abstract

The transposition of the Waste Framework Directive offers the opportunity to thoroughly rethink the Flemish waste legislation and transform it into a legal framework that willl accommodate recent and future foreseeable evolutions in waste management. Waste management practices are no longer solely focused on reducing the environmental impact of waste generation and treatment. Waste management is more and more placed in a broader perspective where the focus is widened to lowering the environmental impact over the whole life cycle of products. The central policy question has become how to use raw materials and products derived from them as efficiently as possible. This article describes how Flemish waste legislation will be reframed to address this more complex issue.

Keywords

Waste, materials, sustainable materials management, waste framework directive, waste legislation, materials legislation, lifecycle thinking, resource efficiency, recycling

1 The need for redrafting existing waste legislation

1.1 The new waste framework directive

The waste framework directive forms the legal basis of European waste legislation. The original directive dates from 1975 and was thoroughly revised in 2008. This revision served several purposes. First of all, the revision was part of the process of “better regulation” in which existing environmental legislation is screened on potential simplification without lowering the level of environmental protection. The new waste framework directive integrates three old directives, namely the old waste framework directive, the directive on hazardous waste and the waste oil directive, three pieces of legislation that showed considerable overlaps. The new directive clarifies frequently used concepts in waste policy, such as recovery and disposal and, importantly, the distinction between a waste and a non waste. It also tries to define what needs to be treated under waste legislation and what not.

Secondly, the waste framework directive translates the objectives of the thematic strategy on waste prevention and recycling into legal terms. We need to evolve towards a “recycling society”. Hence, the directive contains more provisions to stimulate the separate collection of waste and its recycling. The waste hierarchy consisting of five steps

(prevention, preparation for reuse, recycling, other recovery and finally disposal) has been turned into a legal requirement for all Member States. The concept of “life cycle thinking” is introduced: Member States need to set up their policies in such a way that the best environmental outcome is obtained taken from a life cycle perspective. This may require a deviation from the waste hierarchy, where underpinned with environmental, economic and social considerations. The focus is clearly on reducing the environmental impact of waste generation and treatment and not solely on quantities of waste. In line with the waste strategy, the directive pays more attention to prevention measures so as to contribute to more resource efficiency and decouple environmental impact from economic growth.

Thirdly, the new waste framework directive tries to contribute to leveling the playing field. For instance, the directive contains a provision that enables the European Union to lay down harmonised standards for marking the “end of waste” for specific waste streams, as a response to a wide range of different requirements and criteria that have been laid down by different competent authorities throughout the EU for several waste streams since the past twenty years. The directive also clarifies under what conditions a municipal waste incinerator is to be classified as “recovery” in an attempt to avoid a wide range of different interpretations in the EU. There is also an article on harmonised standards for waste treatment installations that need to be fulfilled as a minimum so as to allow a free movement of waste in the EU between those installations that fulfil the minimum standards.

These are all elements that have urged the Flemish legislator to thoroughly revise existing waste legislation.

1.2 The shift from waste to materials management

In the eighties a lot of attention was given to cleaning up numerous illegal landfills in Flanders. The generation of waste and its treatment was primarily seen as a source of potential damage to air, ground water and soil in the immediate vicinity of treatment facilities. The incineration of waste was hardly seen as a solution because it was perceived as shifting environmental problems from one compartment (water, soil and use of scarce open space) to another compartment (air). Limiting the need for landfills and incinerators was the main driver of Flemish waste policy.

In the nineties all attention went to setting up separate collection schemes so as to step up recycling. Almost all municipalities introduced household waste charging. An extensive network of civic amenity sites and reuse centres was set up. This policy proved very successful. In five years time the amount of household waste that was separately collected for recycling rose from less than 20 % to around 50 % and some years later to

even more than 70 %. The Flemish became champions in separating their waste and recycling it. However, during the same time the amount of waste generated rose from 400 kg per person to more than 550 kg. A new issue needed attention: how to prevent the generation of waste and its associated environmental impact? Waste prevention measures were implemented, mainly based on communication and subsidies for waste prevention initiatives. During the nineties we also noticed a shift in responsibilities. Extended producer responsibility schemes came to existence in which the producer or distributor of the product that becomes a waste is held (partly) responsible for its collection and recycling.

Thanks to high standards for landfilling, incineration and recycling, the direct threat of waste generation and treatment to local environmental quality has seriously decreased. Since 2000, the environmental impact of waste management is more and more linked with other, more global environmental problems: climate change, loss of biodiversity and growing scarcity of resources. Waste is seen as a symptom of unsustainable production and consumption patterns. We have started to realize that materials in general (be it raw materials or products derived thereof or waste) need to be managed more efficiently if we want to avoid irreversibly depleting the earth's natural capital. It is this broader policy, managing materials over their complete life cycle that is named "materials management". This more holistic approach tries to overcome the disadvantages of scattered environmental policies that focus on isolated aspects such as clean air, water, soil, less greenhouse gases or less waste. A materials management approach that is overseeing the whole life cycle is less likely to shift impacts from one environmental compartment to the other and more likely to set the right priorities.

Flemish waste legislation was focused on the environmentally sound management of waste. The new waste legislation (the Decree on sustainable management of material cycles and waste, shortly called materials decree) will have a broader scope so as to accommodate a "sustainable materials management" approach.

2 Content of the new materials decree

2.1 A new set of definitions

The materials decree contains some new definitions that are essential for a good understanding of a materials policy. The first definition is that for "material". A "material" is defined as any substance that is mined, recovered, harvested, produced, distributed, used or discarded or any object that is derived thereof. This definition is very broad and covers actually any tangible physical substance or object that is used in our economy. It does not cover unexploited resources (such as fish in the ocean), but it does cover any-

thing that is taken from resources until it is returned to nature in some form or another. There is also a definition for a “material cycle”. This is the whole of consecutive actions between the moment a material is taken from nature and the moment it is returned to nature. In other words it relates to the complete life cycle of a material. “Life cycle thinking” has been defined as an approach that takes - in some way or another – economic, social and environmental impacts as they occur throughout the life cycle into account. It is not to be confused with the more specific term “life cycle analysis” which relates to a specific scientific tool that can be used – among others – to implement life cycle thinking. The waste definition remains unchanged as any substance or object that the holder discards, intends to discard or is obliged to discard. This definition is open to various interpretations. Therefore, the new decree contains a chapter solely devoted to the difference between waste and non waste.

The waste framework directive has the waste hierarchy as one of its basic principles. The terminology used in this hierarchy has been clearly defined. The definition for recovery no longer uses the annex with R codes as the main reference. There is now a stand alone definition that takes the replacement of primary materials by waste as the main criterion to judge whether a waste treatment is to be considered as recovery. This was taken from former jurisprudence of the European Court of Justice. Remarkably, reference is made to the primary result and not to the primary objective of the treatment, in contrast to former court cases. This will make it more objective to judge whether a treatment is to be regarded as recovery, as the intention no longer counts. However, there is still some room for interpretation as disposal has been defined as any waste treatment that is not recovery, even if there is a replacement of primary materials, be it as a secondary consequence. Clearly, the efficiency by which the replacement is taking place will determine the difference between recovery and disposal. Recycling has also been clearly defined. Remarkably, recycling has been defined as any waste treatment that keeps waste (or materials in general) in a closed cycle. Energy recovery or even the transformation of waste into fuels is not considered as recycling. The same applies to waste treatments that are similar to landfilling, such as backfill operations in old mines. In this way, recycling is clearly distinguished form the two lower steps of the hierarchy.

2.2 General objectives of the Flemish materials decree

The material decree serves a double purpose. First of all the decree needs to contribute to creating sustainable material cycles in which human health and the environment are protected from the negative impacts of waste generation and treatment. Secondly, the decree needs to contribute to the preservation of natural resources (defined in its

broadest sense as natural capital in the form of raw materials, clean air, water, soil, renewable and non renewable energy, biodiversity, climate).

This overarching objective is further detailed by making reference to the waste hierarchy laid down in the waste framework directive. However, this hierarchy has been transformed into a material hierarchy so as to be in line with a material management approach. The first step of the hierarchy is not only referring to the prevention of waste but to the establishment of sustainable production and consumption patterns in general. This means that we want to lower the environmental impact of production and consumption in general and not only the generation of waste. In practice, when laying down measures, they will be aimed at lowering several impacts at the same time, and not only at lowering the generation of waste. The third step is the recycling of waste, together with the use of materials in general in closed material cycles. This means that even if a material is not a waste from a legal point of view, policy measures should be in place that diverts these materials away from energy applications. From a materials management approach what really matters is the nature of the material and not its legal status. For instance, if we have determined based on life cycle thinking that specific kinds of wood should better be used as raw material and not as a fuel, this premise is valid not only if the wood has the legal status of “waste”, but also if the wood has the status of “product”. After all, it is only the technical nature of the wood that determines its environmental impact and its most appropriate application and not its legal status. Therefore the third step is not limited to waste recycling but also to materials use in closed cycles in general. In line with this, the fourth step “other recovery, e.g. energy recovery” has been extended to use of materials as fuels.

The hierarchy is not to be applied as a dogma. We always have to strive towards the best environmental outcome, seen from a life cycle perspective. This means that we have to deviate from the hierarchy if it is demonstrated that this is actually better for the environment based on life cycle thinking. This means for instance that if we want to compare recycling to energy recovery, we do not only have to look at the environmental impacts that occur during the recycling or incineration itself, but also have to take into account the impacts that are avoided by replacing primary materials by recycled materials or fuels by waste. We also have to examine whether mixed waste can be separated at source so as to avoid that we end up with a waste stream that can only be incinerated. We also have to look at possibilities to design products in such a way that they are better reusable or recyclable. And we also have to look at logistical systems that guarantee that the recyclable product is actually returned for recycling once it has become waste.

The hierarchy in the materials decree is an obligation for policy makers to design measures in such a way that they steer citizens and companies behaviour towards the hierarchy. It is not imposed as a direct obligation to every individual citizen or company.

The materials decree foresees a procedure for deviating from the hierarchy. If a certain policy measure would work against the hierarchy, its deviation from the hierarchy needs to be motivated by a consultation platform that consists of all relevant stakeholders (involved public authorities, NGO's, companies…) that are part of the material cycle under question. This platform needs to be consulted by the competent waste authority before a policy measure can deviate from the hierarchy. It is this platform that needs to perform the "life cycle thinking exercise". The diverse composition of this platform will need to guarantee that no elements are overlooked during this exercise.

Working with the hierarchy and with life cycle thinking will be a learning process. Any one who has tried to perform a life cycle thinking exercise, knows how difficult it is to mark the system barriers, to formulate the right questions and preassumptions and to gather the necessary data. Engaging the right stakeholders to evaluate what are the best options and organising consultation with different parties, is another difficult task. However, it is a process policy makers will have to go through if they want to formulate a more integrated, efficient and effective, scientifically underpinned policy that is also socially accepted.

2.3 Marking the difference between waste and non waste

The waste definition is quite subjective because it refers to the intention of the holder. In the past, the waste definition has lead to a lot of different interpretations in particular cases. The new waste framework directive has tried to clarify the distinction between waste and non waste by devoting more attention to end of waste and byproducts and to delineating what materials fall under the scope of the directive. These principles have also been transposed in the Flemish materials decree.

Firstly, there is an article that clarifies what material streams are never to be treated as waste. This does not mean that these materials are excluded from the scope of the materials decree. It only means that some materials are not to be treated as waste in the framework of the materials decree, namely gaseous effluents and CO_2 that is captured and stored, animal manure that falls within the scope of manure legislation, waste water, unexcavated soil and buildings permanently connected to the soil and radioactive waste.

Secondly, there is an article that clarifies when a waste ceases to be waste. This article is based on article 6 of the Waste Framework Directive. Apart from the end of waste criteria that will be laid down in a TAC procedure and implemented via a Regulation, the

Flemish materials decree foresees the possibility to lay down Flemish end of waste criteria for those waste streams for which no European end of waste criteria exist. The waste framework directive explicitly foresees the possibility for Member States to lay down end of waste criteria on a „case by case“ basis. The question is if this „case by case“ is to be interpreted as „company X produces waste Y on moment Z“ or as a specific waste stream that needs to fulfill certain criteria in more general terms. Our interpretation is the latter, as the waste framework directive explicitly states that if Member States make use of the possibility to mark the end of waste, technical standards or criteria should be notified to the Commission. We do not think that the Commission wants to receive all the decisions made in „company X produces waste Y on moment Z“ cases. Moreover those very specific cases would not even be based on general criteria or standards, so there would be nothing to notify. Therefore, we think that the case by case decisions refer to specific criteria that have been laid down for specific waste streams on a national level. The Flemish materials decree foresees the possibility of laying down very specific end of waste criteria. These criteria have to be set up under the same conditions as those laid down in the waste framework directive. This enables the Flemish authorities to maintain existing standards, for instance, for compost and other biological waste streams to be used as soil improver, for recycled aggregates to be used as construction material or for excavated soils that are used in another location. More clearly than before, the „end of waste“ will always be placed at the end of a process and not at the beginning of a process. In other words, the one who is treating the waste and wants to place the recycled material as a non waste on the market, will have to make sure that the end of waste criteria have been fulfilled at the moment he places the material on the market and that the product legislation, such as REACH, is fulfilled.

Thirdly, there is an article in the Flemish waste decree that implements article 5 of the Waste Framework Directive on byproducts. The criteria that need to be fulfilled to be classified as a byproduct are very similar to the end of waste criteria. Actually, we think that if a waste stream is not good enough to be qualified as „end of waste“, it should not be good enough to be labelled as a „byproduct“ either and vice versa. To avoid that end of waste criteria can be circumvented by qualifying a material stream as a byproduct or vice versa, in this way creating legal uncertainty, we have foreseen that end of waste criteria developed for specific waste streams will also apply as criteria for labelling these material streams as byproducts.

2.4 New policy instruments for sustainable materials management

The new Flemish materials decree foresees the basis for the main policy instruments that will be used in a sustainable materials management policy.

Planning instruments are foreseen in the form of plans and programs that need to be laid down under certain requirements. As a minimum, waste management plans and prevention programs need to be set up according to what is required by the waste framework directive. However, the possibility has been foreseen to upgrade these plans and programs to fully integrated plans or programs that do not only handle the prevention or management of waste, but address several measures that are to be taken in one or more material chains to lower the environmental impact over the complete life cycle and covering not only waste management aspects but also other aspects such as energy efficiency, lower direct and indirect emissions to environmental media, biodiversity etc. The added value of these plans/programs is that they start from a holistic view on a complete life cycle of certain products and not from isolated aspects of this life cycle, such as waste management.

Market based instruments form another important pillar of the materials decree. They come in different forms. There is the extended producer responsibility which can be imposed on more products or waste streams than what is required under existing European directives. There is the polluter pays principle that foresees the possibility to allocate the costs of waste management to the most appropriate actors in a material chain. This forms for instance the basis for continuing household waste charging schemes. There is the possibility to grant subsidies to companies or local communities that undertake initiatives to lower the environmental impact of materials use. There is a requirement to green all public procurement by local and regional authorities. There is a possibility to lay down taxes on specific waste treatments such as landfilling or incineration.

Regulatory instruments have also been foreseen. A novelty here is that not only the treatment of waste can be regulated (such as a landfill or incineration ban), but also the use of materials that are non waste. In particular, this possibility will be used for imposing certain requirements on the use of materials that have lost their waste status so as to guarantee their environmentally sound application. There is also the possibility to lay down specific requirements on the separate collection and recycling of specific waste streams. The materials decree also foresees the life cycle approach when granting environmental permits. Classical environmental permits tend to focus on limiting environmental risks to their immediate environment due to emissions to air, water and soil. The question whether a specific activity makes sense from a life cycle perspective has until now received less attention. Aspects such as materials efficiency, achieved recycling rates, the output of certain recycling processes, etc. are often overlooked if they are not relevant in assessing the environmental risk to the immediate environment. Therefore the materials decree foresees the possibility to take these life cycle aspects into consideration when granting a permit.

The materials decree also foresees the requirement for waste producers and waste handlers to register data on waste quantities generated and treated, not only for hazardous waste, as foreseen in the waste framework directive, but for all waste. The possibility has been foreseen to lay down obligations on monitoring quantities of materials (also non waste) that are produced or consumed, so as to be able to better monitor material flows.

3 Conclusion

For a large part the new Flemish materials decree will build upon the old waste legislation and guarantee the continuation of the successes of Flemish waste policy of the past 20 years, a policy that was mainly focused on diverting waste from landfills and incinerators by stepping up recycling. The new materials decree will contribute to widening this waste policy to a materials policy that has a much wider focus, namely lowering the environmental impact of materials use over their complete life cycle. This policy will have to be shaped in the coming years and will require a lot of cooperation, both between different public authorities active in different policy domains as between public authorities, industry and NGO's.