Evaluation of the consequences associated with implementing the EU directive 2006/66/EF on batteries and discarded batteries

Contents

Evaluation of the consequences associated with implementing the EU directive 2006/66/EF on batteries and discarded batteries 1
1. Main message 3
1.1 Purpose 3
1.2 Today's recycling scheme for discarded batteries 4
2. The most important changes and suggestions for implementation in Norway 4
2.1 Changes in product regulation chapter 3 4
2.2 Changes in waste regulation chapter 3 5
3. Costs 6
3.1 Costs associated with information work 7
3.2 Costs associated with receiving and processing 7
3.2.1 Receiving duty 7
3.2.2 Collection duty 7
3.2.3 Processing 8
3.3 Reporting and approval 8
3.3.1 Summation 9
3.4 Distribution of costs 10
4. Sources 10

1. Main message

The purpose of the battery directive is to minimize the batteries' negative environmental impact through reducing the use of environmentally hazardous heavy metals and prevent discarded batteries from ending up in the environment. The most important changes from today's regulation are:
Manufacturer's responsibility is implemented for all batteries, even for those which do not contain hazardous materials. All manufacturers/importers of batteries must be associated with an approved recycling company. New recycling requirements and new requirements for collection of portable batteries.
All battery vendors get a receiving duty for discarded batteries in the same category as the ones they sell.

Collection, processing and recycling portable batteries constitute the largest costs of implementing the directive. The battery directive is expected to give a total increased cost of 4.8 million NOK every year until the collection requirements are met. Then the cost will drop to about 2.5 million NOK per year for the following years.

The bulk of the costs will be shouldered by the importers through membership in recycling companies, but they are expected to cover their costs by increasing the price of each battery slightly. The estimated price increase per battery is about 4 Norwegian cents.

The authorities will have some increased costs associated with following up on the return companies.

In Norway, the expected environmental effect of the efforts will be limited, since we have already implemented a number of requirements to prevent spreading of hazardous substances in batteries. It is still assumed that requiring that all batteries are collected will lead to collection of even more batteries with hazardous substances for environmentally good processing. Recycling the resources in the batteries will be positive.

1.1 Purpose

The purpose of the battery directive is to minimize the negative environmental effects of batteries through;

- reducing the use of the heavy metals mercury, cadmium and lead in batteries
- preventing discarded batteries from polluting the environment
- giving a simpler message to the end users: all types of discarded batteries are to be returned
- protect resources through recycling metals
- harmonizing requirements for a better function of the EU's inner market

1.2 Today's recycling scheme for discarded batteries

Today, mainly environmentally hazardous batteries and other rechargeable batteries are being collected in Norway. Other batteries are treated as residual waste and follow the waste stream to landfills or incineration.

We have a system for collection of environmentally hazardous batteries which is based on the manufacturer's responsibility. This means that manufacturers and importers of these batteries are obligated to collect, recycle or process, organize and fund a nationwide system for collection and recycling or safe disposal of such batteries. Result-wise, the Norwegian recycling system for batteries has been a success, and collection has reached the industry agreement's collection goals for years.

Two recycling companies have been established. Batteriretur AS has the manufacturer's responsibility for starter batteries and industrial batteries, and AS Rebatt has the manufacturer's responsibility for portable rechargeable batteries. Participation in the companies is open to anyone covered by the manufacturer's responsibility.

2. The most important changes and suggestions for implementation in Norway

Norway already has regulations setting an upper limit for the contents of heavy metals in batteries and a labelling requirement, as well as requirements for collection and safe processing of discarded, environmentally hazardous batteries and other rechargeable batteries, in the product regulation chapter 3 and waste regulation chapter 3, respectively. These regulations cover many of the requirements in the new EU directive. However, the directive sets additional limits for how much pollutants batteries may contain, additional requirements for labelling, options for disassembly, collection and recycling of all batteries.

We consider it more suitable to make the necessary changes and additions through changing the existing regulations. We recommend that existing voluntary manufacturer's agreements are maintained.

2.1 Changes in product regulation chapter 3

We suggest that the parts of the directive dealing with batteries as a product, articles 4, 6 and 21 (on prohibition, marketing and labelling) are implemented through changing §§ 3-13 and 3-14 as well as a new § 3-14a in the product regulation.

The most important changes are;

- Prohibition of sale and marketing of portable batteries (removable and mounted in products) with a cadmium content of more than 0.002 weight percent (except for use in emergency or alarm systems, medical equipment and wireless power tools).

The sale of such batteries with a content of mercury and cadmium is from what we know very limited today, so that few operators will be affected by the prohibitions, and costs will therefore be minimal.

- Requirement for products to be designed so that it is easy and safe to remove the battery and to be accompanied by a manual for dismounting and information on battery type.

- More batteries are to be labelled with a crossed out waste bin and heavy metal content, if any. Car batteries and portable batteries shall also have capacity labelling.

Since there is little or no manufacturing of batteries or products with batteries in Norway, this will have little impact on Norwegian industry. The products are expected to be designed and labelled in accordance with these requirements when they are imported to Norway. Therefore, there will be no cost requirements in Norway in connection with this.

These requirements are absolute requirements in the directive which must be implemented in each country, and the changes are therefore not described in further detail.

2.2 Changes in waste regulation chapter 3

The changes to chapter 3 of the waste regulation must safeguard the directive's expansion of scope and several new requirements, as well as give operators normally regulated in other recycling arrangements (chapter 1 of the waste regulation on EE waste and chapter 4 on discarded vehicles). These changes make a major revision of chapter 3 necessary. At the same time, the Climate and Pollution Agency wishes to make some changes in order to make regulation of the recycling arrangement for batteries more similar to the regulation of other recycling arrangements for waste, without entailing new requirements.

The main changes we suggest are:

- A new requirement for the recycling companies to obtain a collection rate of 30% for portable batteries. This is a way to ensure that Norway meets the directive's requirements for collection, and at the same time ensure that all batteries delivered to reception points are collected. The Climate and Pollution Agency will evaluate this percentage if they find it appropriate in order to ensure collection of all discarded batteries from reception points. We further suggest a stricter requirement particularly for Norway that the recycling companies must collect and recycle all portable batteries which are sorted and delivered to vendors and other reception points also after the collection percentage has been reached, in order to ensure that batteries delivered for recycling are processed correctly.

- A new requirement that vendors are obligated to receive portable non-hazardous discarded batteries. This obligation has previously only been valid for lead batteries, nickel cadmium batteries and other rechargeable batteries. This new requirement follows from the directive. In order to ensure that the burden is not unreasonable for the vendors, we suggest that they shall only be obligated to receive the types of batteries that they sell. The Climate and Pollution Agency suggests that vendors store batteries until they are collected by a recycling company, or the recycling

company's subcontractor, or they can choose to deliver to an approved reception point which ensures that the requirements for processing and recycling are met.

- Importers and manufacturers of batteries mounted in EE products and vehicles will have a new obligation through the recycling companies to make sure that mounted batteries are processed and recycled, as well as to report in accordance with the requirements in chapter 3 of the waste regulation. The obligations are maintained through membership in approved recycling companies for EE waste or discarded vehicles. This requirement follows directly from the directive.

- A new requirement that recycling companies or processing plants that do not process on behalf of recycling companies are given an obligation to meet the directive's requirements for recycling efficiency. Processing and recycling plants must report to the Climate and Pollution Agency if they don't report through an agreement with a recycling company.

Other suggested changes are:

- A new requirement that importers and manufacturers safeguard the manufacturer's responsibility by being affiliated with an approved recycling company. Compared to current regulations, this involves a change in the sense that most obligations are now directed at the recycling companies and that the only duty remaining with the importers and manufacturers directly, is **to be** a member of an approved recycling company.

- We also suggest another requirement particularly for Norway that recycling companies shall be approved by the Climate and Pollution Agency. The Agency has good experiences with approval arrangements for return systems the way it has also been implemented in several of the other return systems.

- That the individual approved recycling companies' membership registries together shall constitute the manufacturer registry in Norway. The directive requires that such a registry exists. A new requirement will be that the Agency every year, or upon request, shall have a compilation of these. The number of importers of loose batteries is relatively limited compared to for example the number of importers of EE products, and we therefore do not suggest establishing a separate manufacturer registry for batteries similar to the EE registry.

- A new requirement that the vendor is obligated to inform that they accept discarded batteries corresponding to the type of batteries they sell, and that importers and manufacturers are obligated to inform of the recycling arrangement in general. This follows directly from the directive.

- That the directive's ban on land filling and incineration of car batteries and industrial batteries is taken into chapter 9 on land filling and chapter 10 on incineration respectively.

3. Costs

The cost evaluation includes the actions which are expected to be caused by the

requirements in the directive not already in the existing Norwegian regulation, as well as requirements specific to Norway. We have assessed the costs for each requirement.

The changes to the product regulation are not assumed to entail notable costs in Norway, since we do not have Norwegian manufacturers.

3.1 Costs associated with information work

Vendors and recycling companies are obligated to inform consumers that they can return the batteries free of charge to vendors, the advantages of recycling batteries, the negative effects of batteries on the environment, etc.

Vendors shall provide information in shops as well as in all written advertising material where batteries are mentioned. There are approximately 10,000 battery vendors. Many vendors get their advertising material from chains and therefore it is difficult to estimate how many operators are affected by the requirement. The cost will also vary very much from the large chains to smaller shops.

Out of 10,000 vendors, approximately 4,500 are kiosks, gas stations, etc. [1]. If we assume that these operators use promotional papers, etc. very little, costs will be very limited, since a few information posters will be sufficient to meet the information requirement.

The recycling companies are obligated to inform end users, as well as to fund the necessary campaigns to meet the collection rate. This information work can be done in several ways. As an example, the recycling companies for EE waste in cooperation with several operators, including Avfall Norge, conducted a campaign in connection with collecting small electronics in 2009. This campaign had a total cost of approximately 3,500,000.- NOK [2]. This campaign's extent could be seen as a minimum compared to what could be necessary if recycling companies experience problems reaching the required collection rate. Thus the Climate and Pollution Agency estimates that the recycling companies' expenses for information campaigns can amount to between 3,500,000.- and 5,000,000.- NOK per campaign. If we assume that the need for campaigns is greater during the first years, and that campaigns are conducted only every two years, the cost per year for the first two years can be estimated to be between 1.75 and 2.5 million NOK. The cost will be greatly reduced when the required collection rate of 30% has been reached and is assumed to be zero.

3.2 Costs associated with receiving and processing

3.2.1 Receiving duty

Vendors will have costs in connection with processing of collected materials on their own premises as well as collaboration with a recycling company to arrange collection of batteries. The cost is assumed to be low and is difficult to assess. Receiving batteries will also involve a need to store these batteries. Since the new obligations involve small batteries, this is not assumed to involve great costs.

3.2.2 Collection duty

Today recycling companies are obligated to collect lead batteries and rechargeable batteries from vendors, while they shall ensure collection of industrial batteries. The regulatory change

extends the collection duty to include all portable batteries. This means that the recycling company must ensure collection from a much larger number of vendors. In addition, the amounts collected will be increased. By "ensure" it is to be understood that recycling companies shall collect or make sure that other operators collect waste from vendors free of charge. The cost shall thus be carried by the importers or vendors through the membership fee to the recycling company. This is in line with the manufacturer's responsibility.

Portable batteries

Today, 282 tons of portable batteries out of 1,500 tons in the market are collected [3]. However, when the requirement to collect 30% of the amount in the market takes effect, the amount will increase to 500 tons assuming that the collected amount equals Batteriretur's requirement with a suggested additional transportation cost of 2,500 NOK per ton [3]. This will, assuming that the collected amount equals the collection requirement, represent an annual increased cost of approximately 545,000.- NOK for collecting portable batteries. [4]

1
Source: I-51-1-org.no
[2] Avfall Norge

3.2.3 Processing

The amounts for processing because of the regulatory change will only increase for portable batteries. If we assume that the amounts for processing increase as in the above example, the increased amount for processing will be about 218 tons per year. Batteriretur estimates that processing will cost 6,000 NOK per ton [5]. Processing costs per year will thus increase with approximately 1,700,000.- NOK.
[6]

3.3 Reporting and approval

Recycling companies will have some new requirements for reporting. Information on the amount of loose batteries in the market can be obtained from the Directorate of Customs and Excise, or from the importers themselves. Recycling companies need this information anyway in their current operations / for invoicing their members. We therefore do not expect this to involve significant costs.

Recycling companies for car wrecks will have new reporting requirements. However, the information to be given is already with the recycling company so that the cost will be very small.

For the EE recycling companies, it will be a challenge to find data for the batteries mounted in EE products. However, it will be sufficient to make analyses for this at regular intervals, which can involve a cost of approximately 500,000.- NOK for a consultancy assignment each time. However, it will be more expensive the first time. The first year, a consultancy can cost approximately 1,000,000.- NOK. If we assume that the analysis is done every 5 years, we can assume a cost of 100,000.- NOK per year in the following years.

[3] Source: Batteriretur AS
Change collection costs = (Amount new requirement - Amount 2009)*xN01(/tons = (500 tons - 282 tons)*2,500 NOK/tons = 545,000.- NOK

[5] Source: Batteriretur AS
[6] Change processing costs (Amount new requirement - Amount 2009)*yNOK/tons = (500 tons - 282 tons)*6,000 NOK/ton = 1,700,000.- NOK

The rest of the new reporting requirements concern information which recycling companies need in their daily operations anyway, so that consolidating these will involve very little increase in costs.

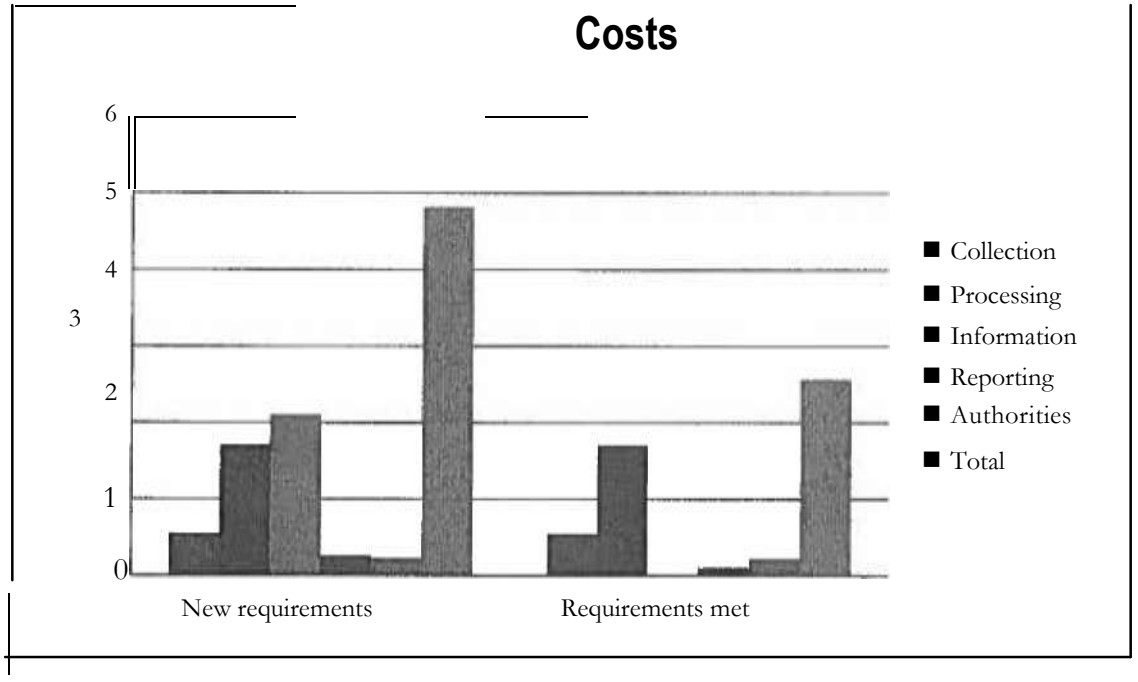
The authorities will have new assignments in connection with approval of recycling companies, working with annual reports and consolidating the national manufacturer registry. The requirement for approval of recycling companies is specific for Norway. The increased use of resources is assumed to be between 1/8 and 1/4 man-labour year. 1 man-labour-year costs approximately 1.2 million NOK. The increased costs for the authorities are

thus estimated to 230,000 NOK per year [1].

3.3.1 Summation

In total, the battery directive is expected to give annual increased costs of 4.8 million NOK because we assume that there is a need for information in order to meet the requirement for collection of portable batteries. When the requirement is met, we assume that the information cost will be smaller and that they will drop to about 2.5 million NOK in the following years [8]. We assume that it takes two years to establish the new knowledge of battery return in the population. The cost for the first 10 years will then amount to about 30 million NOK. [9]

Table: Rough estimate for extra costs of regulatory change.



3.3.2 **Environmental effects**

Portable batteries consist mainly of steel, zinc and manganese oxides. Batteries manufactured before 1996 can contain small amounts of mercury. Increased collection of portable batteries will first and foremost contribute to increase recycling of the metals in the batteries. This will help save the environment by reducing the need for extracting materials from mines. However, this is a limited environmental effect. Increased collection of portable batteries with hazardous substances will also give an increased amount of such batteries for good environmental processing and thus counteract pollution.

---

[7] Calculation: (1/8+1/4)/2*1.2 million NOK=225,000 NOK

[8] Calculation:
First two years: Information + Collecting portable batteries + Processing portable batteries + One time cost reporting distributed over four years + Authorities' costs = (1.7 million + 2.5 million)/2 NOK + 545 K NOK + 1.7 million NOK + 1 million/4 + 230 K NOK = 4.8 million NOK
After collection requirement is met (estimated): 0 NOK + 545 K NOK + 1.7 mill NOK+100K+230K NOK= 2.5 mill NOK

[9] Calculation: 4.8 mill NOK *2+2.5 mill NOK*8 = 30 mill NOK

3.4 Distribution of costs

Manufacturers and importers
Manufacturers and importers will initially get all the costs except for the authorities' costs. The costs are expected to decrease somewhat as collection goals are reached and information campaigns can be reduced to a minimum.

Consumers
All costs for the industry will have to be covered by profit from the sale of new products. A price increase on new batteries can therefore be expected. If we for convenience assume that the collection requirement has been reached and that the increased costs are to be distributed on all sold portable batteries and that 1,500 tons of portable batteries are sold annually, an average battery[10] will have an estimated price increase of up to 4 Norwegian cents[11] .

Authorities
The authorities will have increased costs for administration of the regulations through approval of recycling companies and new reporting routines. The costs are estimated to approximately 230,000 NOK per year.

4 Sources

Source: HSH-org.no
[2]Avfall Norge
[3]Batteritur AS

[10] Assuming that an AA battery weighing 23 grams constitutes an average battery. [11] 2,570,000.- NOK / 1,500,000 kilos of batteries— 3.7 NOK per kilo. 3.7 NOK /kilo*0.023 kilo=0,078 NOK=3.6 Norwegian cents