

Environmental Policies for Drinks Packaging in Georgia

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Abstract The paper investigates various approaches to an environmental policy regarding drinks containers in Georgia. Currently, most of the waste containers are landfilled or pollute the environment through littering. Separate collection and recycling of drinks containers is almost non-existent.

The paper proposes a solution for Georgia, and provides some cost estimates for this recommended solution. Practical experiences from Austria, Bulgaria and Germany are discussed and yield an international framework.

Keywords: Drinks containers; EPR policy; Waste hierarchy; Georgia

1. Introduction

Packaging waste constitutes a large and increasing fraction of household waste – 30% to 35% with industrialized countries leading, and developing and countries in transition catching up quickly (Tencati *et al.*, 2016). However, whereas the first group of countries has installed waste management systems to collect, recover and recycle packaging waste a long time ago, littering and landfilling glass, paper, aluminum and plastic waste continue to characterize the situation in many countries of the second group (cf. Scortar, 2013, for example, for the case of Romania). In particular, landfilling glass and plastic bottles requires a lot of space, and takes away valuable and often scarce land resources, posing a serious problem for countries oriented on agriculture. Moreover, with respect to plastic waste, this might be problematic for the health of the citizens and for the environment.

This paper introduces alternative approaches to an environmental policy regarding drinks containers in Georgia. Currently, most of the waste containers are landfilled or pollute the environment, and there are no systematic separate collection and recycling activities.

The legal regulations in Georgia allow for “individual” and “collective” systems for implementing the postulated “extended producer responsibility” (EPR) policy for collecting, sorting and recycling the packaging waste. Moreover, the waste hierarchy is obligatory, and reducing packaging waste related to drinks containers has the first

priority. This emphasizes efforts for a “design for environment” regarding drinks containers in the EPR policy (Georgia, 2014).

The local conditions in Georgia regarding drinks producers and importers, packaging producers, waste management system etc. have to be respected in this policy. Then an appropriate system for collecting and sorting drinks containers needs to be designed. Consumers have to be integrated into the policy, otherwise littering will continue in this country with still a low level of environmental awareness (cf. Marshall *et al.*, 2013, or Kalimo *et al.*, 2015, for the role of stakeholders in waste management policies).

After some facts regarding packaging waste in Georgia, the necessary parts of an EPR policy will be discussed.

Thereafter, various policy options will be introduced and thoroughly analyzed. This discussion leads to a recommendation of a policy for Georgia. The financial consequences of this policy will be estimated, with data from Germany providing some guidelines. Moreover, international experiences gathered from a report (EC, 2014) in general, and from Austria, Bulgaria, France, and Germany in particular, will be used as benchmarks.

2. The Current Situation in Georgia

a. Numbers

According to a market study by the Waste Management Technologies in Regions (WMTR) Program on the waste management sector in Georgia (cf. WMTR, 2016), annual plastic waste is estimated to be 26–33 thousand tonnes, paper waste 45–50 thousand tonnes, and glass waste 90–100 thousand tonnes. In addition, the quantity of waste aluminium is difficult to estimate due to a lack of data.

A large proportion of these waste commodities go to landfills, and consequently packaging waste constitutes a growing and already substantial share of municipal solid waste. With increasing quantities of plastic items produced in and imported into Georgia, and with similarly increasing production quantities of glass items and paper and cardboard, this share is likely to increase in the near future.

For example, between 2012 and 2015, the production of plastic containers and PET bottles in Georgia grew by an average of 12% annually (WMTR, 2016, p. 7).

Most of these bottles are single-use bottles. There is no infrastructure to take back refillable bottles, moreover, right now, there is no incentive system for consumers to return empty bottles, and there is no separation of waste at the source. In cities, bottles are usually deposited in waste containers and, therefore, landfilled. Outside of major cities, however, bottles may also end up in the environment.

b. Recycling

Given the fact that most drinks packages currently end up in landfills, there seems to be a great potential to develop a recycling industry in Georgia. After all, energy prices are low, wages are low, and regulations are friendly towards establishing new enterprises, which provide new and interesting jobs. The expectations are that recycling is profitable, that subsidies from the government are not necessary.

The economic success of recycling activities depends to a large extent on the market prices for recycled material. Prices for these basic commodities are determined on geographically larger markets, and therefore affected by many kinds of international developments. This refers, in particular, to the price of recycled plastics, which is also dependent on the price of crude oil.

The general environmental aspects of glass and paper recycling refer mainly to saving energy and reducing greenhouse gases. The environmental effects of recycling plastic cannot be completely assessed at this point (cf. Chaerul *et al.*, 2014 for some experiences from Indonesia). Plastic items, including plastic bottles, may contain problematic chemicals, accumulate in recycled products, and not degrade for a long period of time, posing additional health risks (EC, 2011). More plastic will also mean more leakage of plastics into the environment, in particular the oceans.

In summary, it is thus advisable to try to reduce the consumption of plastic in general — in accordance with the waste hierarchy and the precautionary principle.

3. Constituents of an EPR Policy

The fundamental guidelines of the OECD define EPR as “an environmental policy approach in which a producer’s responsibility for a product is extended to the post-consumer stage of a product’s life cycle”. An EPR policy is mainly characterized by “the shifting of responsibility (physically and/or economically; fully or partially) upstream toward the producer and away from municipalities” (OECD, 2001).

Typically, EPR is meant to provide incentives for producers to a design for the environment (DfE). In the context of beverage containers, DfE could mean that less material is used for all kinds of drinks packaging, that the quantity of drinks packaging is reduced through reusable

or refillable containers, and that drinks containers are collected and consigned for recycling – in accordance with the regulations (cf. Georgia, 2014, Article 9).

From a practical point of view the central question is then, how to implement an EPR policy for beverage containers in Georgia. The following issues associated with EPR policies have to be observed.

a. Goals

The concrete goals of the EPR policy are detailed in the legal documents, which specify in particular national minimum targets for recycling all kinds of packaging waste.

There is, at the same time, the urgent requirement of establishing, keeping, and constantly updating a database regarding all issues of waste management (cf. Georgia, 2014, Ch. IX).

b. Integration of Consumers

The above definition of EPR raises the fact that if an EPR policy should motivate producers to DfE, then this definition blames, at least to some extent, the producers for environmental problems associated with their products — they are the polluters. In the context of beverage containers, drinks producers are thus responsible for the waste they produce with their drinks. The role of the consumer is neglected, although demand for a particular design of certain commodities, demand for drinks in plastic single-use bottles, for example, may lead to the environmental problem in question. Without any further policy guidance, it is in the interest of producers to pay more attention to the market situation and less to the environmental situation. In this context, one must not forget that typically only producers have the knowledge required and relevant for DfE in their products. Policy-makers are therefore dependent on the cooperation of producers, and this cooperation must be stimulated through appropriate policy tools. Thus, DfE will only happen if the market situation is – by chance – in favor of environmentally friendly designs.

In the context of drinks producers, this means that they will, in general, be mostly concerned with the demand for their products, including the packaging (plastic or glass, single-use or refillable bottles, etc.). This is, once again, in their legitimate self-interest. Of course, they will defend their position against any attempts from public authorities to force or motivate changes which contradict their business interests.

Consequently, efforts to implement an EPR policy by postulating DfE in the form of a simple command policy, will, in general, not work. More sophisticated approaches have to be considered in order to reach the desired environmental goals, in particular, consumers have to be integrated (cf. Wiesmeth and Häckl, 2011, for more details on this issue).

c. Tools and Linked Signals

The comparatively small group of drinks producers and drinks importers in Georgia can be addressed by command-and-control policies. However, in order to integrate the large group of consumers, appropriate framework conditions are required. The Code refers in particular to charges and subsidies as instruments in this context (cf. Georgia, 2014, Article 10).

The policy tools should help to link the decisions of the consumers under appropriate framework conditions with the decisions of the drinks producers, such that the goals of the policy can be achieved.

d. Vested Interests

The issue of vested interests gains relevance in situations where one group of stakeholders, let's say the drinks producers, can make decisions on environmental issues, which are positive regarding their costs or revenues, but detrimental for the environment.

The following sections are now devoted to developing an EPR policy for drinks containers in Georgia, which motivates DfE for drinks containers and reduces plastic waste in the first step. The policy can be extended to other areas.

4. EPR policies for waste beverage containers

There is no unique EPR policy for this problem of the drinks containers. The different alternatives have to be considered and analyzed in view of the goals of the policy and the relevant framework conditions.

a. Collection Systems

Treatment and recycling of drinks packaging require the collection of waste containers, of course. There are two basic systems, which are partially compatible: the separate collection system and the take-back system with a deposit. This means it is possible to start with the simple "separate collection system" and enrich it later with aspects of the "take back system". Such a combined system can then gradually be extended to cover larger and larger areas of Georgia.

Separate Collection System: A separate collection system requires separate waste bins for discarded drinks packages, which are then collected separately and delivered to a sorting plant, and consigned and prepared for recycling.

It is possible to have just one bin for drinks packaging, and then to sort the waste mechanically or by hand in a sorting plant. Given the low cost of labour in Georgia, this might be an option to be considered.

It is likely that littering will continue with such a system, a consequence of the "Tragedy of the Commons", and a probably still low environmental awareness.

Take Back System with Deposit: A take back system with a deposit fee focusses much more on individual incentives to return empty bottles due to the mandatory deposit on each drinks container sold.

This system needs a more sophisticated infrastructure: charging and returning the deposit fee, a clearing house and logistics to collect the returned bottles.

By establishing "individual consumer responsibility", this system integrates the aspect of collecting waste drinks packaging with the aspect of preventing littering.

Recommendation for Georgia: A take back system with a deposit will better serve the environment. However, it might be difficult to set up the infrastructure within the short period of time that is left to introduce a collection system for beverage containers given the national recycling targets of 30% for plastic and paper in 2020.

Thus, a combination of the two systems should be considered. As waste paper and waste glass containers on the one hand, and waste plastic containers on the other are of different environmental quality, there should be a stronger focus on plastic bottles.

Georgia could start with a simple separate collection system in some major cities with already established waste collection systems: separate bins for glass and plastic bottles and for waste paper at various locations. After a few years, when the separate collection system including sorting plants, is fully functional, a take back system with a deposit for single-use plastic bottles should complement the separate collection system.

Thus, with this mixed system, a sizable share of waste paper, and glass and aluminium containers will be collected and recycled. But, with the second stage, individual consumer responsibility will provide strong incentives to return more or less all plastic bottles for recycling, thereby reducing landfilling and littering.

b. Implementation of the EPR Policy

The legal regulations (cf. Georgia, 2014, Article 9) allow the implementation of the EPR policy by means of an individual or collective "system". The specific characteristics will be briefly mentioned.

Individual Implementation System: An individual system transfers the above obligations to an individual drinks producer. Thus, in this case this producer has to take care of the required obligations to collect and recycle the containers at the expense of the company.

From an economic point of view, such a system might make sense in the following situations: the drinks producer offers drinks in a geographically limited area mostly in refillable containers, which have to be separately collected anyway. Alternatively, chain stores, with shops all over the country, may consider to set up their own system.

Observe that there are no direct incentives for reducing packaging waste. If recycling plastic bottles, for example, is profitable, then there is no reason to change anything regarding the share of plastic bottles. Perhaps the share will be increased, if this is in line with demand. Moreover, the "deposit leakage" provides incentives to extend the share of drinks in single-use plastic bottles.

Thus, as probably none of the above conditions applies to any one of the drinks producers or importers of drinks in Georgia today, an individual system would simply be too costly to constitute a reasonable alternative to a collective system.

Collective Implementation System – Association: The idea to form an association among drinks producers to implement collectively the obligations of the EPR policy seems a natural thing to do. Drinks producers should be made responsible for their waste, and therefore integrating them directly into such a system with all the obligations seems to be an optimal way to realize the polluter-pays principle. Moreover, to set up such a system seems to be straightforward at first glance.

However, drinks producers have not much experience regarding collecting waste bottles or consigning them to recycling. Thus, the association will have to establish these operations, which is not a problem in itself. One problem arises with sharing the costs of the system within such an association. Moreover, contracts with the recycling industry have to be negotiated. Also, an association might prevent new entrants, and it might form a monopoly.

Why should such an association care about the quality of its services? The public authorities monitoring the system will only have incomplete and limited possibilities to influence the operations.

Other aspects refer to the difficulties to extend such an association to other areas of waste management, for example to packaging waste in general, or to waste electronic and electrical equipment (WEEE). Another association would have to be established with further complications.

Again, there are no direct incentives for reducing packaging waste. To the contrary, profitable prices for recycled plastic provide incentives to increase the share of plastic bottles, thus violating the waste hierarchy.

This system is characterized by vested interests: the drinks producers have their legitimate business interests, of course. They do, however, also have some possibilities to influence environmental issues. Thus, pursuing business interests might be contradictory to environmental issues.

In summary, the, at the first glance, great idea of forcing or allowing drinks producers to establish an association to take care of waste containers loses its initial attractiveness very soon.

Collective Implementation – Compliance Schemes: A compliance scheme is a private company certified and accredited by the public authorities, which is largely independent from the drinks producers. Financing is achieved through license fees for handling the waste drinks packaging. Each drinks producer or importer has to join such a scheme for licensing the packaging. The fees result from competition among the compliance schemes. At a later stage, the fees can be adjusted to support further ecological goals, to force the waste hierarchy, for example.

What are the consequences of such a system? There is a clear incentive for a DfE regarding drinks packaging.

Lighter bottles or refillable bottles reduce the licensing fees – independent from the situation on the recycling markets. In addition to that, if drinks producers are aware that most of their drinks packaging is collected, this provides even more incentives for a DfE. This is one of the consequences of the integration of consumers, mentioned already in Subsection 3.2.

Moreover, there is complete transparency for drinks producers: they know the fees they have to pay for their packaging; beyond that they can care for their business interests and do not have to worry about collection systems and volatile recycling markets.

Clearly, new drinks producers or importers of drinks can easily join such a compliance scheme, and other areas of waste management, packing waste in general, or WEEE, for example, can be added to such a system.

Vested interests are no longer apparent, and drinks producers can reduce their costs by reducing the environmental impacts of their drinks packaging. This integrates the stakeholders in a perfect way: by pursuing their business goals, drinks producers also act to the benefit of the environment.

Why is the possibility for compliance schemes to gain profits in a competitive environment important for the functioning of the system important? Why not have just one compliance scheme, which is not-for-profit? The idea to “civilize” a monopoly by reducing it to a not-for-profit institution has by all experiences a profound negative effect on the quality of the services. Moreover, even more importantly, competition functions as a highly relevant disseminator of information. Thus, companies can learn and do learn from each other, even when they are in competition. A monopoly clearly disables this function. Observe that this is also the case for a temporarily awarded monopoly. In addition, competition helps to reduce profits anyway.

Recommendation for Georgia: The considerations above make clear that Georgia should opt for a collective system based on independent compliance schemes. Only this solution allows a reduction of packaging waste from beverage containers. The licensing fees will assume a competitive level without any interference from the side of the government. However, if need be, the government can adjust the fees in order to pursue certain environmental goals, the further reduction of the quantity of plastics used in drinks packaging, for example.

5. Licensing Fees for Drinks Packaging – Estimates for Georgia

Calculations and estimates for the licensing fees based on data from compliance schemes active in Germany (Interseroh GmbH, and Veolia-Umweltservice GmbH) allow a rough estimation for Georgia. The basic assumptions thereby are that a substantial share of value creation in collecting, sorting and recycling packaging waste in Georgia will accrue to manual labour. Modern equipment will have to be bought abroad.

The calculations then yield a license fee of about 2 tetri per half-litre plastic or glass bottle, corresponding to less than 1 Euro cent.

6. International Experience

There is an extensive and comprehensive survey on the development of EPR systems in the EU-28 by BioDeloitte (EC, 2014), providing much useful and interesting information. In particular, this report shows a large variety of implementation models for all kinds of waste (cf., for example, Table 11 for EPR systems on packaging on p. 43). However, this report shows also that there is a huge variance regarding the performance (technical, economic) of these systems (cf. Section 2.2). One of the aims of the report is then to rank countries according to this performance, and to investigate, for example, whether a centralised scheme, or a competitive system reveals better performance.

When the report comes to the conclusion that "...there is no evidence that a centralised organisation is preferable to the introduction of competition among PROs [producer responsibility organization (corresponds to "scheme" or "system" in the context considered here)] or vice-versa" (cf. p. 25), then this refers, of course, to the performance indicators applied. Clearly, one cannot cover all issues with indicators. But "prevention", for example, is of particular relevance in the context of packaging waste. It is mentioned in the report in Table 6 on p. 36, but does not seem to play a major role in the evaluations of EPR systems for packaging, although individual systems or associative systems for drinks packaging may provide incentives to increase the amount of drinks sold in one-way plastic containers – contrary to the waste hierarchy (cf. also the comments on Germany below). Thus, this issue is of relevance for EPR systems in packaging waste.

In addition, probably none of the systems for packaging waste evaluated in the report is without "flaws" regarding the incentives for the various stakeholder groups. Although a detailed analysis is tedious, this assessment "follows" from the significant variations of the various technical indicators (cf. the figures on p. 50), the information provided in the table on p. 59, and from the examples discussed below. Consequently, the report can only compare and is only comparing less than optimally functioning EPR systems. Such a situation allows, of course, many outcomes, not necessarily supported by economic principles.

The approach pursued in this paper rather refers to a "complete" EPR policy, based on profound economic principles. This allows for the strong policy recommendation above, which, at first glance, seems not to mirror the rather complex reality presented in the report.

The following concrete experiences with systems in Germany, Austria, and Bulgaria support this view. The systems in these countries refer to packaging waste in general and not just to drinks packaging.

Germany: The German system is a collective system based on 10 independent compliance schemes. After initial

difficulties with a monopolistic system, there is now a high-quality system collecting, sorting and recycling all kinds of packaging waste.

There are two issues, both motivating companies to raise the share of single-use drinks containers: the sheer existence of an efficient collection and recycling system, and the fact that certain distributors can set up an individual system (cf. Subsection 4.1). Both issues lead currently to an increase of plastic one-way bottles.

Austria: In 2015, Austria opened the market for compliance schemes with currently 7 schemes in a competitive environment. However, due to the fact that there is no mandatory deposit fee for single-use plastic drinks containers, the collection rate is only 70%-80% (estimated), significantly below the corresponding rate of 98% in Germany.

Bulgaria: As a member state of the EU, Bulgaria has certain obligations regarding waste management. A packaging directive which entered into force in 2004 allows for systems for separate collection, recovery and recycling of the packaging waste.

In 2012, there were 7 operating systems in Bulgaria; a lack of control from public authorities combined with a lack of incentives for citizens and small retailers has rendered the system inefficient. The more or less arbitrary operations of individual and collective systems, without proper supervision from the government, have contributed to these problems.

France: There is just one compliance scheme for packaging waste in France, operating as a not-for-profit organization. According to the figures on p. 50 of EC, 2014, the technical indicators allocate France an average position. Moreover, there are additional command policies, such as the prohibition of single-use plastic bags from July 1, 2006, supporting the EPR system.

Experience with the French system shows that a single, not-for-profit system is "feasible", but given the various performance indicators, it does not show that it is an optimal system. A more detailed analysis is required to investigate the reasons for the only average performance of this system.

7. Concluding Remarks

The above analysis points to issues of relevance for introducing holistic environmental policies in general and for a policy for drinks packaging in a country in transition in particular. Besides observing the local conditions, it is important to integrate all stakeholders adequately into the policy, it is important to link the policy tools with the clearly defined policy goals. This is necessary in order to provide appropriate incentives for compliance with the regulations.

Unfortunately, international experience shows that these guiding principles regarding the dissemination of information and incentives are not always adequately respected in current EPR systems.

The above analysis demonstrates that such a holistic policy is feasible for Georgia, also financially. However, once again, the details of the policy are important. “Obvious” variants of the policy, such as a collective implementation based on some kind of association, may yield inconsistencies. Again, international experiences demonstrate consequences of inappropriate policy designs.

For Georgia, the recommendation is therefore to start with a separate collection system, supplemented or replaced later by a take-back system. Moreover, Georgia should opt for a collective implementation system based on independent compliance schemes in competition. Each drinks producer or importer has to join a compliance schemes and pay the corresponding license fees for drinks packaging.

References

- Chaerul M., Fahrurroji A.R., Fujiwara T. (2014), Recycling of plastic waste in Bandung City, Indonesia, *J Mater Cycles Waste Manag*, **16**, 509-518.
- EC (2011), European Commission DG ENV “Plastic waste: ecological and human health impacts”, *In-Depth Report*, November 2011.
http://ec.europa.eu/environment/integration/research/newsalert/pdf/IR1_en.pdf.
- EC (2014), European Commission DG ENV “Development of guidance on extended producer responsibility (EPR)”, *Final Report* (by BIO Intelligence Service)
http://ec.europa.eu/environment/waste/pdf/target_review/Guidance%20on%20EPR%20-%20Final%20Report.pdf.
- Georgia (2014), Law of Georgia: Waste Management Code
http://environment.cenn.org/app/uploads/2016/06/Waste-Management-Code_FINAL_2015.pdf
- Kalimo H., Lifset R., Atasu A., van Rossem Ch., van Wassenhove L. (2015), What roles for which stakeholders under extended producer responsibility? *RECIEL*, **24**(1), 40-57.
- Marshall R.E., Farahbakhsh K. (2013), Systems approaches to integrated solid waste management in developing countries. *Waste Management*, **33**, 988-1003.
- OECD (2001) Extended producer responsibility: a guidance manual for governments. *OECD*, Paris.
<http://dx.doi.org/10.1787/9789264189867-en>.
- Scortar L.M. (2013), Study on packaging waste prevention in Romania, *Annals of the University of Oradea: economic science*, **22**, 1404-1413.
- Tencati A., Pogutz S., Moda B., Brambilla M., Cacia C. (2016), Prevention policies addressing packaging and packaging waste: Some emerging trends, *Waste management*, **56**, 35-45.
- WMTR (2016), Waste management sector: plastic, glass, paper and aluminum market research. *Waste Management Technologies in Regions*, Georgia, 2016.
- Wiesmeth H., Häckl D. (2011), How to Successfully Implement Extended Producer Responsibility: Considerations from an Economic Point of View, *Waste Management & Research*, **29**(9), 891-901.
- Wiesmeth H., Häckl D. (2016), Integrated Environmental Policy: An Economic Analysis, *Waste Management & Research*.
- DOI: 10.1177/0734242X1667231