

TWO CASES IN CROATIAN WASTE MANAGEMENT POLICY

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This case study is designed to inform citizens about Croatia's accession to the EU in the area of the environment, in an easy-to-understand way. It serves both as educational and lobbying tool aimed at informing citizens on the latest developments in environmental law and implementation, as well as influencing policy and decision makers in Croatia. The case study is part of a Zelena Akcija project to lobby for better waste management and Environmental Impact Assessment procedures in Croatia. The Project brings together experts from Hnutí DUHA, the largest environmental organisation in the Czech Republic, with Zelena Akcija to propose solutions for some of Croatia's most pressing environmental problems. The project is funded by the European Commission but does not necessarily represent the views of the EC.

For further copies or information, please contact Mladenka Tesic: mladenka@zelena-akcija.hr



Green Action's Comments on the Draft Proposal of the Waste Management Strategy of the Republic of Croatia

1) Introduction:

Green Action welcomes the creation of a waste strategy for the Republic of Croatia as part of efforts to resolve the problems existing as a result of years of neglect of waste prevention and management in the country. Accession to the EU provides a unique opportunity for substantial progress to be made in this priority area, and we hope that this chance to move towards a genuinely sustainable system for dealing with waste will be used as effectively as possible. From the Strategy it is clear that waste prevention and management is not only a question of dealing with undesirable materials, but also of making use of valuable resources, and the challenge which faces Croatia is not only to minimise waste, but to make good use of materials such as wood waste and construction waste which are currently taking up valuable landfill space, and also of the various streams of municipal waste.

Our comments in this paper are intended to promote a Waste Prevention and Management Strategy which is in line with EU Directives, but which also goes beyond EU legislation in areas where we feel that the *acquis* is not sufficient to ensure sustainable waste prevention and management.

2) The Vision:

In Section 1.5 a vision is set out of Croatia with no landfills. This seems like an attractive idea, but there is a strong danger that singling out landfills for reduction may merely lead to more incineration rather than waste prevention, re-use and recycling. A more holistic vision would be the 'zero waste' vision, which although far from becoming reality in Croatia, takes account of the need to address the quantity and toxicity of products at all stages in the product cycle rather than trying to manage the waste from badly designed products and materials. It would be safer to assume that landfills will be necessary for some time to come and to concentrate on reducing both the quantity and the toxicity of waste being disposed

of, to make landfill sites safer and less polluting, by maximising prevention through financial incentives and legal measures, maximising re-use, maximising recycling and composting through door-to-door collections of recyclable materials and financial incentives, and where suitable, to back up this process with MBT treatment, to leave smaller volumes of stabilized waste for final disposal.

Recommendations to policy-makers:

The vision of Croatia without landfills expressed in Section 1.5 should be changed to reflect the necessity of maintaining sanitary landfills for a minimal amount of mechanically and biologically treated waste. The vision needs to be one of 'zero waste', encompassing the prevention of waste, not only a reduction in the volume for final disposal, and also to encompass the necessity of removing certain problem materials from usage altogether.

3) Strategic Objectives:

The first three Strategic Objectives set out in Section 3.1 are very unclear and do not adequately express the waste hierarchy, as we explore below. We would like to see objectives set out for each separate level of the waste hierarchy, with prevention as the absolute priority, and the means to accomplish this clearly set out.

We agree that a rational waste policy would contribute to employment in Croatia, and would like to see some analysis of how this goal fits with the waste hierarchy. For example, re-use and recycling processes generally employ many times more people than incineration or landfilling, and we would like to see this benefit reflected in a clear preference for re-use and recycling over energy recovery.

Education is recognised as an important goal in achieving public participation in waste prevention and management, but it is

not clearly shown whose responsibility this is or which methods of education will be used. The need for education cannot be stressed enough, and it is vital that the outputs and responsibilities for these tasks are made very clear.

Overall the Strategic Objectives are not coherent enough to ensure a common understanding of what it is that should be achieved. Below we present some additional concepts which should be included in the Objectives.

Recommendations to policy-makers:

The first three Strategic Objectives should be formulated to express the waste hierarchy more clearly.

The high value of re-use and recycling for employment should be taken into account when considering the relative merits of different levels of the waste hierarchy.

Responsibilities for education, plus methods and outputs need to be clearly laid out. In addition to the objectives set out in the Strategy, we would like to see the following included:

- Reducing raw materials and energy consumption
- Increasing the ratio of consumption of secondary raw materials
- Reducing personal resource consumption and changing consumption patterns
- De-coupling economic development and environmental impact
- Harmonizing the aims of the social, the economic, and the healthcare sectors with environmental aspects
- The inclusion of a wide range of social interests in planning processes

4) The Waste Hierarchy:

The waste hierarchy governing the order of preference for waste minimisation, treatment and disposal options is set out as a basic principle governing the Strategy in section 1.2.a). However, it needs to be set

out more clearly in order to show the preference for recycling over energy recovery expressed in EU Directive 94/62/EC of 20 December 1994 on Packaging and Packaging Waste¹. Although Article 1.3.3 of 2004/12/EC amending 94/62/EC stipulates that “Member States shall, where appropriate, encourage energy recovery, where it is preferable to material-recycling for environmental and cost-benefit reasons,” this applies to very few if any cases, and appears to be the result of industry lobbying rather than ecological and economic calculations.

Energy recovery is much less efficient than recycling as waste is a relatively inefficient fuel, and because burning waste creates the need for the extraction and processing of new primary raw materials, which uses more energy than using recycled materials.² An elevation of waste-to-energy over recycling would also contradict the ruling of the European Court of Justice in the case of 13.02.2003 which stated that waste-to-energy plants constitute disposal and not recovery, because they are ‘used principally’ to dispose of waste, and energy generation is more an addition than the main purpose of the plants. Table 1.4 also shows the massive difference in cost between incineration and landfilling in various European countries, which makes it additionally hard to see any justification for incineration, either with or without energy recovery. A clearer depiction of the EU’s waste hierarchy would be:

Prevention

Re-use

Recycling and composting

Incineration with energy recovery (which may be preferred to recycling where it is preferable for environmental and cost-benefit reasons)

Final disposal (Landfilling, Incineration without energy recovery)

Although we do not agree that incineration with energy recovery presents a preferable option to landfilling, especially when the waste to be landfilled has been treated so that it is stable and non-toxic, we recognise that if Croatia chooses to comply with EU legislation, the waste hierarchy needs to be formulated as above. These preferences should be consistently applied when considering waste prevention and management options, and when recommending recovery

or final disposal options, evidence should be publicly available regarding the unsuitability of prevention, re-use and recycling options.

Recommendations to policy-makers:

The waste hierarchy should be more clearly formulated as shown above.

A rigorous application of the waste hierarchy is not satisfactorily present in the Waste Strategy, as it is visible that the lower parts of the hierarchy (incineration with and without energy recovery) are preferred in many instances without due consideration of the upper processes (prevention, re-use, recycling). Specifically, this is shown as follows:

4.1) Waste Prevention

There are no targets for waste prevention, nor even plans to set targets after further research, even though this is the first priority for a satisfactory waste policy and there is almost no strategy for achieving a reduction in waste, nor any steps laid out on how a future strategy will be developed. Section 3.3.2 Objective 1b) outlines the intention to support cleaner production projects and practices, but does not give any details about who is responsible and what form this support will take, nor does it give any targets or clear objectives, either for non-hazardous or hazardous waste. A strategy for preventing waste could include means to increase the re-use of packaging such as returnable bottles, as well as a more robust approach towards materials such as PVC which are impossible to produce, process, recycle and dispose of safely. It is also necessary to outline methods for reducing waste and the authority responsible for implementing them. Targets for reducing the amount of waste for final disposal are not a substitute for waste prevention targets and there is a danger that they will be used as a pretext for incineration instead of a stimulant for prevention, re-use and recycling.

Recommendations to policy-makers:

Waste prevention targets need to be set, with well-thought-out means for meeting them and a clear division of responsibilities, both for hazardous and non-hazardous

materials. If there is not enough data on waste streams to do this immediately, it should be made clear when this will happen. The strategy to support cleaner production should be explained more, with clear targets and responsibilities.

A list of ‘problem materials’ should be drawn up, which would be broader than the materials currently mentioned in the strategy such as PCBs and Hg and Cd batteries. These are materials which cause hazards throughout their life-cycle, and which pose problems in preventing waste generation, and which can be totally or partially replaced in production. Examples are PVC, the phthalates DEHP and DBP, and mercury. Measures for a reduction in use or a ban should be proposed for all of these materials. Taxes could also be imposed on types of waste which are particularly common but unnecessary. This would depend on an analysis of waste types, but could for example include single-use plastic carrier bag or multi-layer packaging.

Re-use:

Re-use is sadly neglected in the Waste Strategy, yet re-useable drink bottles could make a significant contribution to reducing packaging waste. This will not happen by accident, however, and obligations of sellers and producers need to be laid out if a revival of re-usable bottles is to take place. A target for re-usable packaging is laid out in the Ordinance on Packaging but not in the Waste Strategy, and neither document contains any means of reaching this target.

Recommendations to policy-makers:

Re-use of packaging, especially bottles and carrier bags, should be encouraged and a strategy and incentives to implement this should be clearly explained.

An obligation should be put on shops larger than 200m² to stock at least one brand of beverage in returnable bottles for every kind of beverage in single-use containers, where a returnable version exists on the market. The deposit fee should also be defined, as well as sellers’ and producers’ obligations concerning taking back packaging.

4.2) Recycling:

Separated waste collection is referred to as a condition for the successful re-use and recy-

cling of waste, but it is not specified that this should mean door-to-door collections as well as public collection points. Countries and cities which have achieved high diversion rates have done this by making recycling a convenient and cheap option for their inhabitants, and this includes door-to-door collections of recyclable materials and organic waste. Public collection points on their own do not generally result in more than a token percentage of recycling. In Section 1.4 the study of three EU countries' waste management systems appears to hail Denmark's waste management system as a success even though 81% of waste is incinerated (Table 1.3). We would consider this as an example of a failed waste policy rather than a successful one, based on the waste hierarchy.

Of the three examined, only Austria's waste management system provides any kind of model, and it would perhaps be fruitful to examine regions and cities outside of Europe which have achieved high diversion rates for waste, such as Edmonton in Canada (pop. 697 657) which has attained a 60% diversion of residential waste from landfill without any incineration, and is aiming to further increase its diversion rate. Nova Scotia in Canada (pop. 936 921) had managed to raise its waste recovery (without incineration) rates to 46% by 2002, and San José, California, (pop. 954 000) recycles more than 64% of its solid waste. Given the possibilities for recycling packaging and other municipal solid waste materials, the aim of recycling 25% of municipal waste by 2025 is rather timid, if it is including composting of bio-degradable materials. Given the targets in table 3.3 for different waste streams, a much higher percentage of recycling of municipal waste overall should be achievable by 2025.

The potential of composting is not fully explored in the Strategy. The aim of diverting 65% of the 1995 amount of bio-degradable waste from disposal by 2025 is a good one, but it is not explained how this will be achieved, which could affect the chances of success. A door-to-door collection of biodegradable and 'green' garden waste is needed, at least in urban areas, and strategies to encourage home composting should be introduced to help meet this target.

Recommendations to policy-makers:

Targets for the proportion of households served by door-to-door separated waste collections should be set out, and responsibilities for implementation should be clarified. In order to achieve this, successful cities, regions and countries in and outside of Europe should be examined in order to see what is possible and how.

Incentives should be stipulated in order to encourage citizen participation in recycling and composting schemes. These might include financial incentives, refusal to collect waste containing recyclable elements, or more novel solutions such as a 'garbage lottery', in which residual waste from one-family households is selected at random and if no recyclable or biodegradable waste is found, the household wins a reward.

It should be clarified whether the 25% recycling rate by 2025 includes composting. If it does it should be increased.

Strategies for increasing composting, both communal and at home, should be more clearly laid out, with a stipulation to implement a door-to-door organic waste collection, at least in major cities, and a clear division of responsibilities for meeting the composting target.

Plans for recycling, cleaning, composting and MBT plants should be laid out in at least as much detail as plans for incineration facilities, and preferably more detail, since Croatia is far from having exact enough data on which to base plans for incineration capacity.

4.3) Disposal:

Although EU policy often differentiates between incineration with and without energy recovery, our concerns apply equally to both these processes and we are therefore grouping them together, with landfilling, as disposal³. In addition, in some parts of the Waste Strategy it is not clear whether proposed incineration includes energy recovery or not. Our main concern about the position of incineration in the strategy is that it appears to be advocated without sufficient consideration of prevention, re-use, and recycling, especially for hazardous waste but also for municipal waste. Landfilling is decisively marked as something to be avoided, whereas incineration is freely advocated.

4.3.1) Hazardous Waste: The Strategy⁴ suggests different methods of incinerating various streams of hazardous waste. In Section 3.3.2 Objective 2c), for example, it is presumed necessary to incinerate hazardous waste, even before an assessment of the waste volumes, types and management methods has been carried out. Likewise in Section 2.3.11 a need for 'at least three open-type facilities for thermal processing of animal waste' is identified, without any examination of whether any of this waste could be avoided or composted. The problem of asbestos is outlined in Section 2.3.2 but no means of dealing with it is outlined. It is of great concern that the only facilities mentioned for handling hazardous waste are landfills, various incineration facilities, and deep-well landfilling, whilst public concerns about such facilities are dismissed as the 'nimby effect'. In many cases public opposition is based on well-founded concerns about human health and the environment and instead of being dismissed, should be taken into account as a strong signal for the need to reduce, re-use, re-process and neutralise hazardous waste instead of burning it and/or landfilling it.

Barely any plans are presented for the prevention of hazardous waste generation, except batteries, even though the EU has a target of reducing the quantity of hazardous waste generated by 20% of the 2000 amount by 2010, and indeed the plans for the expansion of incineration capacity will *increase* the quantity of hazardous waste generated. No indication is given of strategies for researching or increasing the re-use and recycling of hazardous waste. The emphasis on final disposal and specification of 1-2 hazardous waste management centres in central Croatia also violates the proximity principle and a more de-centralised approach for collection, re-use, recycling and neutralisation needs to be considered.

4.3.2) Municipal waste: For municipal waste, the picture is similar. Section 3.3.2 Objective 2b) outlines plans to build 2-4 waste-to-energy plants, including one in Zagreb. The other locations are to be decided upon after expert analysis of waste volumes, types and management methods. Why, therefore, is the Zagreb waste-to-energy plant already planned, in spite of this lack

of thorough analysis, and in spite of the lacking implementation of the upper elements of the waste hierarchy? Prevention, re-use and recycling systems should be in place and operating to their maximum extent before waste-to-energy plants are considered as an option for the reduction of residual waste. Likewise it is necessary to have facilities for the neutralisation or disposal of hazardous waste in operation before incineration facilities can be constructed. It is also noticeable that the plans for waste-to-energy plants are much more exactly specified than plans for recycling, composting and Mechanical-Biological Treatment facilities, which suggests an implicit bias towards incineration.

Incineration of waste in the existing capacities is encouraged⁵ as a means to minimise risk from waste and no means of addressing prevention, re-use, or re-processing is set out. Section 3.3.1 rightly outlines the need for a more thorough assessment of the quantity and types of waste being generated in Croatia and the current state of waste management. However, the planned survey of thermal power plants and industrial plants which can process waste is in danger of becoming a kind of numbers game in which the waste hierarchy, public health and environmental effects are sidelined in favour of quick-fix solutions. We firmly reject the idea that risk from waste will be minimised by incineration, as the process decreases the volume but *increases the toxicity* of waste. This is especially true of industrial plants which were not designed as waste incinerators and which are even more likely than purpose-built incinerators to exceed emissions levels and cause public health concerns. It is widely recognised that monitoring and enforcement capacities regarding waste are severely lacking in Croatia and it is therefore naive to suppose that incineration facilities, whether for hazardous or non-hazardous waste, would operate purely as intended and within legal emissions limits. Zagreb has already had unpleasant experiences with the PUTO hazardous waste incinerator. Problems attributed to it included: 1) health problems among local people which they attributed to the incinerator, including hormonal disorders, indigestion and breathing difficulties, 2) fruit trees stopped bearing fruit and birds vacated the

area 3) several incidents of fire at the plant, for example in October 2001, when thick purple smoke billowed from the plant for days, which irritated the eyes and caused breathing difficulties, for which local people pressed charges against the owners of PUTO 4) burning illegally-imported hazardous waste 5) emissions and hazardous waste violations, for which the Environmental Inspectorate initiated a number of legal proceedings against PUTO during 2000 and 2001 5) the major fire of August 2002, in which around 100 tonnes of hazardous waste burned, and which caused the plant to be closed down indefinitely.⁶ There is no evidence that monitoring and enforcement capacities have yet improved to a degree which would have prevented the above hazards to human health and the environment.

Recommendations to policy-makers:

No use of incineration facilities, either with or without energy recovery, should be advocated or constructed or operated before complete inventories of waste have been completed, and all other options for prevention, re-use, recycling and neutralisation have been exhausted.

It is unacceptable to use certain areas with existing industrial facilities and high levels of pollution as 'sacrificial zones' where waste can be incinerated in plants which were never designed for that purpose. At the minimum an EIA for the changed purpose of the plant and a public consultation must be carried out.

Enforcement and monitoring capacities for the supervision of landfills and incineration facilities must be increased and adequate resources allocated for that purpose. Until that time no new incineration capacity should be created.

5) Implementation:

Implementation, enforcement and monitoring of the waste prevention strategy and the legislation which stems from it is the key to its success, but is the part of the process which is most likely to be neglected. This has already evident in the problems with the PUTO incinerator, which were not satisfactorily resolved, the continuing problem with fly-tipping, and the fact that although fees for packaging were already stipulated under

the old packaging regulation, none have yet been paid by producers (Section 2.3.6).

Many of the requirements set out in the Strategy could be similarly neglected if not made clearer and backed up with well-thought-out and rigorously enforced legislation. For example the implementation of separated waste collection must be clarified to include door-to-door collection of separated household waste, at least in urban areas, together with financial incentives for citizens to participate and penalties for non-participation.

The specifications for the number of facilities for incineration are currently much more exact than the plans for re-use, recycling, neutralisation, MBT, and composting, and are therefore much more likely to be realised, at great and possibly unnecessary expense to citizens and the environment. Larger, centralised plants are perhaps tempting because they are easier to organise, but they cannot result in a socially just and rational waste prevention and management system. A great deal of work is necessary to educate and involve people at all levels to realise this, as many decision-makers and citizens see waste management as simply a choice between landfills and incinerators.

Recommendations to policy-makers:

Measures for implementation must be more carefully set out, particularly in the areas of prevention, re-use and recycling, in order to ensure that these processes are not sidelined in favour of disposal.

Public opinion should be actively sought when creating legislation, making regional plans, and when locating new facilities. Citizens should be treated as important participants with valid opinions, not as people whose views are unworthy of consideration.

The proximity principle should be adhered to when locating waste processing or disposal centres.

Education on the different options available for waste prevention and management is crucial in moving public and local authority perceptions away from dated waste management practices and a strategy for this should be more clearly laid out, with clear responsibilities and expectations.

Green Action's Comments on the Packaging and Packaging Waste Ordinance

The waste management hierarchy, the polluter pays principle and the requirement that waste management may not adversely impact human health and the environment at large are key elements of EU legislation for guaranteeing environmentally sound management of waste. The waste management hierarchy includes prevention, reuse, recycling, recovery and disposal, therefore giving priority to the **prevention** of waste as a foremost objective.

Even though the latest Croatian Packaging and Packaging Waste Ordinance has this term explained in the introductory Glossary, there is neither clear reference to this concept nor clear mechanisms for achieving it later in the document. It is our view that in addition to setting the recycling target of 55% by the year 2008, as stated under the Article 27, it is necessary to **set clear targets on waste prevention**, including packaging waste, and develop concrete policy mechanisms to support waste prevention and reuse. The targets set out in Article 26.5 for the Annual Aims for shares of returnable packaging for drinks are a positive step, but stand little chance of being achieved without a clear strategy and supporting legislation.

The main measure for prevention adopted so far in the EU is the IPPC (Integrated Pollution and Prevention Control) Directive, which lists among the basic obligations of the operator that waste production is avoided in accordance with Council Directive 75/442/EEC of 15 July 1975 on waste. Moreover, the use of low-waste technology and the use of less hazardous substances are listed among the considerations that should be addressed as part of the definition of Best Available Technologies (BAT) in accordance with the IPPC directive. Needless to say, Croatia would have to adopt the IPPC directive in the near future and therefore should already make progress towards achieving its objectives. Waste pre-

vention should include cleaner technologies at the level of production processes, better product eco-design and more eco-efficient production and consumption patterns.

The emphasis in this Ordinance is put on recycling, whereas more comprehensive strategy to promote packaging waste prevention should be in place. Every material object placed on the market is bound, sooner or later, to become waste, and every production process produces some waste. Even waste recovery processes, whether energy recovery or material recovery, generate some residual waste that is not amenable for further recovery and therefore requires disposal. Our view is also that, in order for producer responsibility-based mechanisms to work effectively, the legal responsibility for meeting the target must rest as close to the product design phase as possible. This helps to shift the focus from end-of-pipe solutions to clean production activities further up the pipeline, and allows flexibility in the meeting of targets according to individual companies or industry sector.

It should be noted that packaging waste prevention does not only include setting targets on the weight and volume of waste generated, since it is questionable whether weight or volume are always the most appropriate indicators of the environmental burden of waste. Therefore, moving towards more lightweight packaging does not necessarily reduce the environmental impact of packaging, either during its end-of-life phase or over its entire life-cycle. GA welcomes the introduction of measures to reduce the amount of heavy metals in packaging according to Article 9, which is in line with the Council Directive on Packaging and Packaging Waste 94/62/EC of 20 December 1994. However, the same stimulating fee is set under Article 15. Paragraph 2, for both **glass and PET** containers. GA strongly recommends the usage of refillable glass bottles for drinks instead of PET.

Firstly, for economic reasons, because the production of a kilogram of plastic resin (for PET bottle) uses nearly nine times the energy of producing a kg of glass. And the glass can be recycled into a new bottle, whereas PET bottle can never be used as beverage container again but is “downcycled” into new products like fibrefill for carpets, clothing and plastic timber, and other products which cannot be recycled a second time. As far as glass is concerned, a refillable glass bottle can be reused up to 15 times before it is melted down to make new glass products and there is virtually no limit to the number of times glass can be remelted with no loss of quality⁷. Secondly, for environmental reasons, since manufacturing PET resin generates more toxic emissions (nickel, ethylbenzene, ethylene oxide, benzene) than manufacturing glass. Producing a 16 oz (500 ml) PET bottle generates more than 100 times the toxic emissions to air and water than making the same size bottle out of glass⁸.

Furthermore, the amount of disposal and returnable fee for single use drink containers, which is to be paid by the producer, is clearly set in the Article 13, paragraph 3, and Article 14, paragraph 2, whereas there is **no amount of the deposit fee (kaucija) for multiple use returnable containers**. In addition, it is stated that other procedures could be ensured by the producer for multiple use returnable containers, apart from setting/collecting a deposit fee, however these are not clearly defined, but left to the industry to decide. GA assumes that this lack of clear definition and fixed and uniform amount of the deposit fee leaves room for the abuse of regulations set by this Ordinance by the industry who will set deposit fees as they see fit. Recent Czech experience shows for example that deposit fees for multiple use returnable bottles were different in every shop, which created much confusion when it comes to monitoring and keeping records on returned bottles. Czech

environmental NGOs therefore pressed the government to introduce fixed and uniform deposit fees like in Scandinavian countries, USA and some Canadian provinces and the obligation of sellers to offer returnable glass bottles to consumers for drinks like in Israel, Slovakia and Great Britain, which was successful in the end.

Another GA concern is that this system of producers reporting the amount and paying the fee for the packaging and packaging waste it produces to the Fund for Environmental Protection and Energy Efficiency can lead to Croatian industry's "greenwashing" as we can see from the experience of other countries who introduced the Green Dot system. The industry gets an additional PR and marketing tool to promote itself as environmentally responsible, whereas most probably would not report the exact figures of the packaging/packaging waste they produce since its proper management entails costs of collection and recycling. Moreover, the industry solely gives data on recycling and sets the benchmark for the evaluation of packaging/packaging waste generation and recovery. Since the bottom line is of primary interest to every business, GA is concerned that the industry would set the recycling rate too low and try to persuade the government that higher environmental standards and recycling rates cannot be achieved. Therefore GA recommends the introduction of additional mechanisms, rather than relying solely on the industry's biased data reporting. Experiences from some EU countries show that the introduction of policy mix, namely voluntary agreements and other economic instruments, such as tradable certificates can bring much better results than regulation alone. For example,

the UK has introduced the system of tradable certificates in the context of directive 94/62/EC on packaging and packaging waste. Tradable certificates are also generally favoured since they provide the most cost-effective means to implement environmental objectives. It should also be noted that it is most likely that the EU will support the introduction of tradable certificates to implement and achieve recycling targets across the EU member states in the context of a producer responsibility scheme. They would allow companies to fulfil their obligations by buying certificates both nationally and in other countries, either freely on the market or from recycling organisations. This would be one way to create an incentive to separately collect and recycle more waste, including packaging waste, at a lower cost by putting into competition the various recycling organisations and other actors involved in the recycling chain.

Finally, through the Green Dot system in some EU countries and the Czech Republic for example, the money received from producers for non-returnable packaging is being invested into waste separation schemes in the local communities. However, Croatian Packaging and Packaging Waste Ordinance does not define how and whether the money paid by the industry into the Fund for Environmental Protection and Energy Efficiency will be invested in waste prevention and separation programmes.

Recommendations to policy-makers:

set clear targets on packaging waste prevention and develop concrete policy mecha-

nisms to achieve this
provide financial or legislative incentives for producers to introduce better product eco-design that would reduce both quantity and hazardousness of packaging/packaging waste
launch education and information campaigns for producers and consumers with clear goals and responsibilities for their implementation
introduce policies that would tackle unsustainable production and consumption patterns
deposit fees should cover a minimum 10% of the wholesale price to avoid the deposit being set too low in order to encourage consumers to return packaging
over time the deposit-return system of drink bottles can be extended to food in glass containers, for example pickles, jam, honey, tomato puree, mustard, and other products of the preserves industry
the use of refillable bottles should be encouraged over single use containers through economic instruments or introduction of other incentives
encourage production of glass instead of PET bottles through financial or legislative incentives
shops of areas larger than 200 sq.m. should be obliged to offer drinks in returnable glass bottles
set fixed and uniform deposit fee for multiple use returnable packaging and clearly define what other measures can be introduced to ensure multiple use of packaging
taxes could be imposed on types of packaging waste which are particularly common but unnecessary. This would depend on an analysis of waste types, but could for example include single-use plastic carrier bag or multi-layer packaging

¹ "Whereas, until scientific and technological progress is made with regard to recovery processes, reuse and recycling should be considered preferable in terms of environmental impact" Preamble of European Parliament and Council Directive 94/62/EC of 20 December 1994 on Packaging and Packaging Waste.

² Case no. C-458/00, Commission Vs. Grand Duchy of Luxembourg, 13.02.2003 http://www.eel.nl/index.asp?ssc_nr=864

³ This also follows the ruling of the European Court of Justice: Case no. C-458/00, Commission Vs. Grand Duchy of Luxembourg, 13.02.2003 http://www.eel.nl/index.asp?ssc_nr=864

⁴ Sections 2.1, 3.3.2 Objective 2d), Section 2.3.5, and Section 2.3.11

⁵ Section 3.3.2, Objective 3, and Section 3.1.3

⁶ Tesić, Mladenka, Interview with Members of UZOJ - Jakuševac Association for Environmental Protection, Zagreb, 2004

⁷ See www.climnet.org

⁸ Berkley Ecology Centre, April 1996

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