

Evaluation Tool for EPR Programs

**report prepared by
Thomas Lindqvist and Chris van Rossem
IIIEE, Lund University
Box 196, SE-221 00 Lund, Sweden**

Introduction

Environment Canada and the Recycling Council of Ontario (RCO) have asked the authors to develop an evaluation tool for EPR programs. The evaluation tool should be used for quantifying the degree to which EPR principles, elements and factors are addressed within the design and operation of product stewardship programs in Canada. The evaluation tool has been tested on three examples of product stewardship programs in Canada: Electronics Recycling Alberta, Ontario Blue Box Program, and Quebec's SOGHU Used Oil Program.

The EPR evaluation tool has been developed at the International Institute for Industrial Environmental Economics (IIIEE) at Lund University. The authors have extensively benefited from the experiences and ideas of colleagues and students active at the IIIEE. The work has been divided so that Thomas Lindqvist has led the work of developing the evaluation tool and Chris van Rossem the three case studies. The results have continuously been discussed between the authors.

The purpose of a good evaluation tool is to give guidance on potentials for improvements and further development. This evaluation tool has been developed to serve such a purpose. The evaluation is limited to quantifying the degree to which EPR principles, elements and factors are addressed within the design and operation of a program. The focus is hence on environmentally relevant issues. This does not mean that the authors have the view that other factors are unimportant when making decisions about the design of EPR programs. However, EPR has developed into a principle of environmental law and policy, and has features that have proven to be useful for addressing environmental challenges.

The evaluation tool is thought of being used as a self-evaluation instrument. The structure of the evaluation should guide interested parties in identifying strengths and weaknesses in existing and planned programs. A tool of this type is always limited by the necessity of a certain degree of subjective judgements. This tool is not an exemption. In order to have a tool that is comparatively easy to use, and demanding a limited only limited resources for the implementation, a number of simplification has to be made. However, we do not see this as problem, but rather as an advantage. Our experience from other evaluation tools used for analysing EPR systems are that the quality and usefulness of the results are often not justifying the resources necessary to perform the evaluation. Our hope is that this tool strikes a useful balance between required resources and usefulness of results.

Though we have tried to incorporate many years of experiences of EPR system research, we are aware that the evaluation tool will benefit from further development and we encourage readers and users to take part in this process.

Outline of structure for the evaluation tool

The OECD definition of EPR as specified in the Guidance Manual for Governments is used as a starting point for developing the tool. This manual refers to EPR in the following way:

“OECD *defines* EPR as an environmental policy approach in which a producer’s responsibility, physical and/or financial, for a product is extended to the post-consumer stage of a product’s life cycle. There are two related features of EPR policy: (1) the shifting of responsibility (physically and/or economically; fully or partially) upstream to the producer and away from municipalities, and (2) to provide incentives to producers to incorporate environmental considerations in the design of their products.”

The IIIIEE is normally using a more extensive definition of EPR that includes the full life cycle and also responsibilities related to the provision of information about the products. However, in this report the OECD definition is used.

Based on the OECD manual and experiences from studies conducted at IIIIEE, the evaluation tool is built on two main environmentally related goals:

1. *Design improvements of products* – the EPR system should provide incentives for manufacturers to improve the products and the systems surrounding the life cycle of the products.
2. *High utilisation of product and material quality through effective collection and re-use or recycling* – this goal can be sub-divided into three sub-goals
 - a. *Effective collection* – A primary goal with an EPR policy is to ensure a high collection rate of the product in focus in order to avoid littering and abandoned products in nature. A related goal is to divert selected discarded products from the general waste stream in order to facilitate a more proper treatment and utilisation of the product and its material.
 - b. *Environmentally sound treatment of collected products* – Before being further processed many products need a pre-treatment in the form of dismantling and/or sorting. The aim of this can be to secure special treatment of hazardous components and materials, and to improve the possibilities for re-use and recycling.
 - c. *High utilisation of products and materials in the form of re-use and recycling* – The EPR implementation should secure that products or their components, when appropriate, can be re-used, and that the materials are recovered and used for substituting the use of virgin materials, thus saving raw materials and avoiding the environmental impacts related to the extraction and processing of these materials.

The proposed evaluation tool can be visualised in a chart as below. The chart shows the two main goals in first column. The second goal has been divided into three goals as

above. These goals are each operationalised through a set of sub-goals expressed as questions. The following column contains for each question a key for how a particular implementation and its results should be evaluated.

System and product design improvement		Question	Key to grading	Grade	Aggregated grade	Aggregated grade
		Question	Key to grading	Grade		
		Question	Key to grading	Grade		
High utilisation of product and material quality through effective collection and re-use or recycling	Collection	Question	Key to grading	Grade	Aggregated grade	Aggregated grade
		Question	Key to grading	Grade		
	Treatment	Question	Key to grading	Grade	Aggregated grade	
		Question	Key to grading	Grade		
	Re-use and Recycling	Question	Key to grading	Grade	Aggregated grade	
		Question	Key to grading	Grade		
		Question	Key to grading	Grade		

The key leads to a grading between zero and three for each question. The grade three denotes that the system being evaluated is considered to have addressed the EPR principles, elements and factors in a successful way, while the grade zero speaks about a very low degree of EPR implementation.

The grading system is already on its lowest level by necessity a subjective evaluation and it does not necessarily lend itself to aggregation in the way indicated in the table. It has, however, been seen as important to allow for an aggregation on two levels. Caution is recommended for the interpretation of the results, and in particular when it concerns the aggregated levels. The full table will give better possibilities for identifying potentials areas for development of a program.

Case Studies

The following pages will present the use of the evaluation tool for the three Product Stewardship Programs proposed by Environment Canada and RCO. Information about the programs have been collected by examining material available on relevant web sites, in reports, and through direct contacts with interested parties. The grading given to the various aspects of the programs is the authors' and based on the information that has been available and our interpretation of this information. Justification for grading has been given to allow for other interpretations and adjustments of the evaluations.

The case studies assumes a familiarity with the programs in question or that other sources are used for an introduction to the organisation of the programs.

The Evaluation Tool

Main goals	Sub-goals (formulated as questions)	Set of criteria for determining the scores for each question	Score (0-3)	Aggreg. score
System and product design improvement	Will the individual producer benefit directly from product design improvements?	<p>The most direct way of benefiting from design improvements is to achieve a financial incentive. A producer can be rewarded financially for improvements in various ways depending on for instance the type of products in question. For more complex products it is often a question of creating systems where the individual producer pays the real costs, while for less complex products (such as packaging) a direct relationship between materials, weight or similar can be used for determining the individual costs of a particular producer. The possibility of benefiting fully from individual implementations will depend on whether there are “competing” collective systems that are fully or partly financed by unavoidable fees or by tax money.</p> <ul style="list-style-type: none"> - There are no direct financial benefits from the EPR system for the individual producer if the product is re-designed, but such benefits (if acknowledged) will be shared by all producers irrespective of their individual efforts. (0) - A smaller part of the savings will be benefiting the producer in question. For instance, individual approaches compete with collective systems substantially financed by taxes or otherwise substantially subsidised. (1) - Most of the savings will be benefiting the producer, but all design improvements will not be covered because certain more than negligible costs are covered by a collective system. (2) - The individual producer will benefit financially from design improvements, either at the time of payment or retroactively when costs have been determined after the end-of-life treatment of the discarded product. (3) 		
	Will the individual producer benefit directly from system design improvements?	<p>EPR systems also allow for system improvements that go beyond the design of the product in question. Such improvements can relate to the collection system, the sorting, recycling, and similar (here referred to as the product system). The possibility for the individual producer to benefit from engaging in designing such improvements will depend on the implementation of the EPR system, including the possibility for new actors to enter into collection and recycling activities.</p> <ul style="list-style-type: none"> - There are no direct financial benefits from the EPR system for the individual producer if he initiates a product system improvement, but such benefits (if acknowledged) will be shared by all producers irrespective of their individual efforts. (0) - A smaller part of the savings will be benefiting the producer that developed the system improvements. (1) - Some of the savings will be benefiting the producer, but all types of system improvements will not be acknowledged in this way. (2) - The individual producer will be able to fully realise the financial benefits for such system improvements, when these are implemented. (3) 		
	Will the producers collectively benefit from product and system design improvements?	<p>EPR systems may, or may not, be reflecting cost savings initiated by the producer collective.</p> <ul style="list-style-type: none"> - The fees paid (costs covered) by the producers will not be influenced by design or system improvements, but are decided by a process not necessarily linked to real costs. (0) - Cost reductions achieved by design or system improvements will not directly influence the costs borne by producers, but will likely have a long-term cost reducing effect. (1) - A substantial part of the cost reductions achieved by design or system improvements will be transferred to the individual producer or the producers as a collective and influence the costs they have for the EPR system. (2) - All costs reductions achieved by design or system improvements will be transferred to the individual producer or the producers as a collective and influence fully the costs they have for the EPR system. (3) 		

Main goals		Sub-goals (formulated as questions)	Set of criteria for determining the scores for each question	Score (0-3)	Aggreg. score
High utilisation of product and material quality through effective collection and re-use or recycling	Collection	Does the system include measures to secure goal achievement for collection targets?	EPR systems are most often giving specific collection targets that should be achieved in given time frames. High collection results can be attained by building systems that are convenient, by giving financial incentives in the form of refunds, and improving the awareness. To secure that targets are met various measures can be taken, mainly in the form of disincentives for not reaching a target. - No targets are established in explicit or implicit form. (0) - Targets are given in quantitative form (% or absolute figure), but it is uncertain what will happen if they are not reached, or consequences of non-achievement are not “worse” than efforts necessary to reach targets. (1) - Targets are given in quantitative form and not reaching targets will likely (that is, there is some uncertainty as new decisions must be made formally) lead to consequences that are less attractive than attaining set targets. (2) - Non-achievement of collection targets will undoubtedly be followed by sanction that is generally perceived as less attractive than efforts necessary to reach targets. (3)		
		Are there tangible incentives in the form of direct or future financial benefits for striving towards higher collection results?	Stated targets are often set to secure goal achievements, while higher rates of collection are also potentially achievable. As collection results are linked to costs, it is often necessary to have clearly tangible incentives if higher rates should be strived for and measures influencing the collection rates be taken (improving convenience of collection, introducing refunds). - No targets are established in explicit or implicit form, or collection targets are substantially lower than those reached by EPR systems for the same product group in other places. (0) - Collection targets are published and achieving collection rates (comparable with high international standards) will help to create a good image for the producers collectively or individually. (1) - Achieving collection rates (comparable with high international standards) is important for the producers and achieving higher collection rates will lead to less, or no stress, from in particular environmental movements and authorities, making future legislation a minor concern. (2) - Producers have financial benefits from higher collection rates and these benefits can be substantiated and are perceived as important drivers for striving towards higher collection results by producers. (3)		
	Treatment	Does the system provide measures to ensure compliance with the legislation and other regulations for treatment of discarded products during collection, sorting, dismantling and treatment?	The collection system, as well as following stages of end-of-life treatment – sorting, dismantling, recycling, etc. – are often connected with potentially environmentally damaging activities, some of minor importance and others of a clearly hazardous nature (for instance removal of hazardous components from vehicles and electrical and electronic equipment, and removal of air bags and fluids from cars). - Rules are not in place, or there is no functioning enforcement of existing rules and breaches of rules can be frequent. (0) - Rules and enforcement system is in place, but resources for enforcement are limited and the situation is likely to lead to unwanted treatment in more than limited cases. (1) - Rules and enforcement system is relevant and functioning, but control is still insufficient according to some group of relevant stakeholders. (2) - Rules and enforcement system is relevant and largely functioning well, and only minor improvements are asked for. (3)		

Main goals		Sub-goals (formulated as questions)	Set of criteria for determining the scores for each question	Score (0-3)	Aggreg. score
Re-use and Recycling <small>(Re-use will here include refillable containers, while recycling is used for products whose material is processed and re-used. Recycling thus covers down-cycling as well as high-grade recycling, when material is used for a purpose similar to its original. Energy utilisation of the products material will also be recognised.)</small>		Does the system provide incentives to promote Best Environmental Practice for the treatment of discarded products during collection, sorting, dismantling and treatment?	<p>Legislation and regulations give a baseline for what should be done by collectors, dismantlers, recyclers, etc. Additional measures will, however, further improve the environmental quality of work.</p> <ul style="list-style-type: none"> - Best Environmental Practice is not promoted by the system in any noticeable way. (0) - Information on Best Environmental Practice is available for actors in an easy-to-access way, but it is unlikely that corresponding measures will be implemented by many actors. (1) - Best Environmental Practice is promoted actively by spreading information about possible measures and the motives for taking them, and these measures are likely adopted by many actors. (2) - Measures in this direction will be clearly acknowledged and are promoted by training activities and/or verified by management systems, and are likely to be adopted by a majority of actors. (3) 		
		Is re-use and recycling measured?	<p>To have a system in place to measure the obtained levels of re-use and recycling is fundamental to the control of the goal achievements.</p> <ul style="list-style-type: none"> - No system is in place for measuring results. (0) - Results are estimated, but stated figures are not traceable and cannot be challenged. (1) - Results are estimated in a transparent way. However, it is likely that accuracy is not high and that alternative measurements are equally relevant and would give more than marginally different results. (2) - Results are traced in a way that is fully transparent and designed to achieve as accurate results as can reasonably be demanded. (3) 		
		Are there measures to secure goal achievement for stated re-use and/or recycling targets?	<p>It is important to have clear incentives for reaching the targets set.</p> <ul style="list-style-type: none"> - No targets are established in explicit or implicit form. (0) - Targets are given in quantitative form (% or absolute figure), but it is uncertain what will happen if they are not reached, or measures that will be taken for non-achievement are not “worse” than reaching targets. (1) - Targets are given in quantitative form and non-conformance will likely (that is, there is some uncertainty as new decisions must be made formally) be followed by measures that are less attractive than attaining set targets. (2) - Non-achievement of these targets will undoubtedly be followed by sanction that is generally perceived as less attractive than measures to reach targets. (3) 		
		Are there incentives for striving towards high re-use and/or recycling levels?	<p>Re-use of products or components is judged as more in line with the EPR approach, and is in priority followed by high-grade material recycling, other forms of material recycling (down-cycling), and lastly energy utilisation.</p> <ul style="list-style-type: none"> - No incentives exist for above target levels, while such levels are technically feasible. (0) - Intangible incentives exist for above compliance levels (such as image creation), but positive economic implications are very unlikely. (1) - Incentives exist for above-target levels and for striving upwards in the waste hierarchy and towards recycling rates comparable with high international standards, but the economic benefits of these incentives are likely to be quite limited. (2) - High re-use levels are promoted (in line with the technical possibilities for re-use) and financial benefits are likely to be higher than costs, and there are tangible financially-related incentives for high-grade material recycling of material that can't reasonably be re-used as products or components. (3) 		

Electronics Recycling Alberta: Program Evaluation

Main Goal: System and product design improvement

Sub-goal 1: Will the individual producer benefit directly from product design improvements?

Rating: There are no direct financial benefits from the EPR system for the individual producer if the product is re-designed, but such benefits (if acknowledged) will be shared by all producers irrespective of their individual efforts (0)

Justification: Since the advanced disposal surcharge (ADS) is based on per unit sold (regardless of inherent properties) there are no incentives for producers who design products to reduce end-of-life costs (battery type, hazardous material content, precious metal content, disassembly time, etc.)

In addition the ADS is applicable on all sales in or into the province of Alberta, including products sold on lease, for the designated products. This penalises a producer, who as part of the business offer, has included the end-of-life responsibility in the product price. This has an effect of deterring any corporate initiative for individual responsibility.

Sub-goal 2: Will the individual producer benefit directly from system design improvements?

Rating: There are no direct financial benefits from the EPR system for the individual producer if he initiates a product system improvement, but such benefits (if acknowledged) will be shared by all producers irrespective of their individual efforts. (0)

Justification: Since the ADS can be adjusted depending on the ratio between funds generated and funds needed for collecting, transporting, and processing electronics (incentives paid), then any system improvements that lead to reductions in cost could be realised by producers (however shared by all) in the long-term.

Since only municipalities are eligible as collectors (producers are not eligible to apply as collectors) there is little incentive for producers to become involved in the collection of products.

Sub-goal 3: Will the producers collectively benefit from product and system design improvements?

Rating: Cost reductions achieved by design or system improvements will not directly influence the costs borne by producers, but will likely have a long-term cost reducing effect. (1)

Justification: Since the ADS can be adjusted depending on the ratio between funds generated and funds needed for collecting, transporting, and processing electronics (incentives paid), then any improvements that lead to reductions in cost could be realised by producers in the long-term.

Main Goal: High utilisation of product and material quality through effective collection and re-use or recycling

Collection – sub-goal 1: Does the system include measures to secure goal achievement for collection targets?

Rating: No targets are established in explicit or implicit form (0)

Justification: It is generally recognised that it is not entirely straightforward or even feasible to set collection rates for durable products such as electronics due to the lag time from purchase to disposal. However, the lack of any target, even indicative, such as kilograms/person/year, is a clear shortcoming of the program.

Collection – sub-goal 2: Are there tangible incentives in the form of direct or future financial benefits for striving towards higher collection results?

Rating: Producers have financial benefits from higher collection rates and these benefits can be substantiated and are perceived as important drivers for striving towards higher collection results by producers (3)

Justification: In this case it is not the *producer* that has the incentive to improve collection rates, but designated *collectors* (municipalities) of electronics. Collectors have an incentive to collect greater quantities of these materials as the incentive is based on tonnes collected.

Treatment – sub goal 1: Does the system provide measures to ensure compliance with the legislation and other regulations for treatment of discarded products during collection, sorting, dismantling and treatment?

Rating: Rules and enforcement system is relevant and functioning, but control is still insufficient according to some group of relevant stakeholders. (2)

Justification: All collectors, transporters and processors must adhere to all applicable environmental regulations (international, federal, provincial/state, and municipal)

Treatment – sub-goal 2: Does the system provide incentives to promote Best Environmental Practice for the treatment of discarded products during collection, sorting, dismantling and treatment?

Rating: Measures in this direction will be clearly acknowledged and are promoted by training activities and/or verified by management systems, and are likely to be adopted by a majority of actors. (3)

Justification: Processors that are eligible and accepted and approved to participate in the system must in addition to complying with all applicable environmental regulations (international, federal, provincial/state, and municipal) have an Environmental Management System (EMS) in place.

Reuse and Recycling – sub-goal 1: Is re-use and recycling measured?

Rating: Results are estimated in a transparent way. However, it is likely that accuracy is not high and that alternative measurements are equally relevant and would give more than marginally different results. (2)

Justification: Under the program description and requirements for processors, it would appear that there is a mechanism in place to measure material flow to downstream activities including plastics processing, metal markets, hazardous waste disposal, etc. Processors must retain this information for a period of two years, including manifests, bills of lading, and chain of custody for all materials. Processors must provide ‘annual recycling volume reports’ to the Authority (program operator), however it is not specified what this includes.

However, since exporting of electronics is allowed (only to OECD and developed nations), it may be problematic to get accurate and detailed information as required in the program (above)

Reuse and Recycling – sub-goal 2: Are there measures to secure goal achievement for stated re-use and/or recycling targets?

Rating: No targets are established in explicit or implicit form (0)

Justification: There are no targets for recycling, component reuse, etc., however processors are required to ‘maximise the use of recycling of Electronics and components by giving priority to material recycling processes with energy recovery being considered as a secondary option and landfill incineration considered as last and final option and only if done in accordance with all corresponding environmental management requirements. All incineration facilities must utilize continuous air monitoring systems.

Reuse and Recycling – sub-goal 3: Are there incentives for striving towards high re-use and/or recycling levels?

Rating: No incentives exist for above compliance levels, while such levels are technically feasible (0)

Justification: Although there are the above requirements on preferred treatment of waste electrical and electronic equipment, processors are paid the same per tonne of material processes, regardless of the treatment methods employed.

Ontario Blue Box Program Evaluation

Main Goal: System and product design improvement

Sub-goal 1: Will the individual producer benefit directly from product design improvements?

It is difficult to assign one score for the Blue Box Program that would be applicable to all individual producers for the following reasons:

1. Category structure in “Schedule of Stewards Fees”
 - All plastics pay the same fee, regardless of chemistry although the recovery and recycling rates for each are known (municipal datacall and waste generation sampling)
 - All paper based packaging pays the same fee, regardless of type (gable-top, aseptic, OBB, OCC, although the recovery and recycling rates for each are known)
2. The non-substitutable nature of certain packaging types (e.g, newsprint cannot be substituted)
3. The retroactive nature of current year fee schedule (any design changes made would not be realised for at least 2 years)
4. The fact that the collection rates (targets) are not binding – plus that they vary considerably – leads to a situation where certain materials that have very low collection rates (because municipalities don’t collect them as they are not profitable – or extremely costly), pay very little into the pay-in model. This creates a situation where recyclable materials with high collection rates are paying considerably more than non-recyclable packaging, even with the funding formula equalisation factor, collection rate factor attempting to correct this anomaly. See specific comparisons in the RCO letter to the Minister.

Rating: Most of the savings will be benefiting the producer, but all design improvements will not be covered because certain more than negligible costs are covered by a collective system. (2)

Justification: Given that “pay in model” to finance the Blue Box Program is apportioned to specific materials (3 separate formulas for 1. Municipal financial payments, 2. Market development costs and 3. Program delivery and admin costs) which results in a \$/kg for each material, *there is a direct incentive for producers to reduce the weight of packaging placed on the market. Additionally, since the fees vary between materials on a cents/kg basis, incentives exist to steer producers to the least cost materials.*

* note the municipal financial payments formula considers 3 factors 1. Net material costs (40%), 2. Recovery rate (40%) 3. Equalization (20%) (the incremental costs for each material to reach 75% recovery)

However this calculation model does not seem to be addressing the issues to the full extent possible: see specific examples of product packaging choices and applicable fees -

RCO letter to the Minister – where impacts of the funding formula are compared for recyclables vs. non-recyclable packaging choices

Sub-goal 2: Will the individual producer benefit directly from system design improvements?

Lets assume we mean producers as users of certain material types or packaging

Rating: - A smaller part of the savings will be benefiting the producer that developed the system improvements (1)

Justification: Since there is no cross subsidisation between material types (however there is cross subsidisation for categories within plastics and paper packaging) and that Activity-Based Costing (ABC) is used to determine the proportional cost to handle each material type (pay-in model) in the blue box system, then any improvements in the system should bring down the cost/kg of that material.

However, given that the municipality in which that system improvement takes place is financially rewarded through the municipal allocation model formula, the individual producer, in effect, shares the savings with the municipality. Plus the cost/kg reductions will benefit all producers in the system that are using that material type.

* Another point that might influence the rating is that given the low collection rates (targets) for certain materials

Sub-goal 3: Will the producers collectively benefit from product and system design improvements?

Rating: A substantial part of the cost reductions achieved by design or system improvements will be transferred to the individual producer or the producers as a collective and influence the costs they have for the EPR system. (2)

Justification: Same arguments as in sub-goal 2. It does not score (3) because these benefits are shared with municipalities.

Main Goal: High utilisation of product and material quality through effective collection and re-use or recycling

Collection – sub-goal 1: Does the system include measures to secure goal achievement for collection targets?

2003- Original Blue Box Plan

Rating: Targets are given in quantitative form (% or absolute figure), but it is uncertain what will happen if they are not reached, or consequences of non-achievement are not “worse” than efforts necessary to reach targets. (1)

Justification: There is an overall recovery rate target of 45% diversion of Blue box wastes from disposal but not targets for individual material types, i.e. glass, paper,

plastics, etc. There are indications of what diversion rates would be expected from each material but no binding targets

2004 – Program Year

Rating: Targets are given in quantitative form (% or absolute figure), but it is uncertain what will happen if they are not reached, or consequences of non-achievement are not “worse” than efforts necessary to reach targets. (1)

Justification: Although there is an **increased** overall “basket of goods” target of 60% diversion by **2008** – requested by the Minister Dec 22, 2003 – material specific targets are not specified. There are indicative targets for materials – but not binding. Since municipalities are “responsible for the collection and management of the blue box systems (Ontario Reg. 101/94), it is not sure who is responsible for meeting the targets – industry or municipalities or the province. Especially since the current materials that municipalities are required to collect include – newspaper, glass bottles and jars, aluminium cans, steel cans and PET bottles.

2005 – Program Year

Rating: Targets are given in quantitative form (% or absolute figure), but it is uncertain what will happen if they are not reached, or consequences of non-achievement are not “worse” than efforts necessary to reach targets. (1)

Justification: There are recommended targets – to meet 50% blue box materials diversion

Through Material Specific Targets (below) that would obtain 61.6% diversion of the targeted materials and an overall BB waste diversion of 50% (based on the next least cost tonne concept).

Newsprint	75%
Old magazines	35%
Telephone Directories	50%
Residential printed paper	25%
Corrugated cardboard	70%
Polycoat and aseptic containers	10%
PET Bottles	50%
Steel cans	60%
Aluminium cans	50%
Glass bottles and jars	65%

New measures were suggested/recommended by WDO “60% Diversion of Blue Box Waste, Material Specific Targets and Municipal Benchmarks” in July 2004 that would place responsibility on the province, municipalities, and stewards. The Minister has not yet responded and no “Notice of Approval” acknowledging these new responsibilities to take effect in the BBPP of 2003

2005 and Beyond & 2008 Material Specific Targets

Waste Diversion Ontario recommends that “there is significant consensus that material specific targets for achieving 60% diversion by 2008 should not be established until

information on the generation of BB materials is improved and until the technical, economic and environmental effects of achieving these targets are thoroughly assessed.

Collection – sub-goal 2: Are there tangible incentives in the form of direct or future financial benefits for striving towards higher collection results?

Rating: Achieving collection rates (comparable with high international standards) is important for the producers and achieving higher collection rates will lead to less, or no stress, from in particular environmental movements and authorities, making future legislation a minor concern (2)

Justification: Collection (recovery) rates by material are reported and are publicly available, however, as discussed above the recommended material specific targets to reach 50% diversion of blue box wastes have not been approved by the Minister and incorporated into the Blue Box Program Plan. The reason I would rate it a 2 and not 0 (because there are no binding targets) is because the current known collection rates (results) will most likely influence the Minister’s decision on whether to approve the recommended material specific targets (based on the next least cost tonne) or some other criteria (all materials reach 60% - for example)

Also in the BBPP there are incentives for municipalities to collect more materials as they are paid (Municipal Allocation Funding Model) on a per tonnage basis. Simply put, the more they collect, the more funds received, regardless of the cost to collect the material. In addition the model also pays municipalities on a material-by-material basis. The result is that lighter-weight and low revenue materials receive a proportionally higher amount of funding. Therefore there is an incentive for municipalities to add materials (more than is required by law)

Treatment – sub-goal 1: Does the system provide measures to ensure compliance with the legislation and other regulations for treatment of discarded products during collection, sorting, dismantling and treatment?

Rating: Rules and enforcement system is relevant and functioning, but control is still insufficient according to some group of relevant stakeholders. (2)

Justification:

Generally speaking there is not much risk from treating packaging and printed material waste.

Some concern raised by certain actors:

- Concern has been raised by WDO – that better and more specific information (breakdown of certain categories and corresponding weights) is needed concerning where materials are sent for reprocessing (markets) by municipalities once sorted at the material recovery facilities (MRF) This will be addressed by altering the annual datacall, making this information provision mandatory
- Fire Marshals Office: One major fire at a plastics recycling facility in Hamilton, Ontario – Plastimet in 1997. Resulted in a report “Improving Fire Safety at Ontario’s Recycling and Waste Handling Facilities”

- Aerosol cans: perceived explosion risk when collecting – processing
- Mixed glass, processing residues: breakage during collection and sorting results in unmarketable glass that is most often landfilled
- In systems where blue box materials are collected in a single stream – the resulting **fibres** sent for reprocessing at newsprint mills have resulted in complaints about increased levels of contamination of glass, metals and plastics which need to be further processed (screened out) and then disposed (cost)
- Landfilling of plastic materials that are collected but not marketable – due to contamination

Treatment – sub-goal 2: Does the system provide incentives to promote Best Environmental Practice for the treatment of discarded products during collection, sorting, dismantling and treatment?

Rating: Best Environmental Practice is promoted actively by spreading information about possible measures and the motives for taking them, and these measures are likely adopted by many actors. (2)

Justification: Built into the Blue Box Program Plan are the E&E Fund (effectiveness and efficiency) and Market Development Program which makes some funding available to promote “best practices” to minimise costs and improve effectiveness. These programs could be considered measures to promote measures (above compliance).

Specifically these include:

Glass Diversion Fund – is focused on specific measures aimed toward improving the marketability and end market applications of Ontario’s mixed residential glass.

Glass Market Development Investment Fund - designed as a vehicle through which to make investments in implementation projects. The fund is managed by Stewardship Ontario under the direction of the Board of Directors and its Projects Committee. There is currently approximately \$2 million in the fund to invest. In March 2005, Stewardship Ontario released a Request for Proposals (RFP) for the first project under this fund. The RFP is soliciting bids from one or more glass recycling companies, Ontario-based, Canadian or worldwide – to provide a recycling capacity in Ontario that can receive up to 60,000 tonnes of mixed broken glass (MBG) per year.

Importantly – municipalities are only eligible for funding for materials that are marketed. This means that there is an incentive to have collection systems and MRFS’s that reduce contamination that ultimately results in lower total tonnes of marketed material (more landfill).

Reuse and Recycling – sub-goal 1: Is re-use and recycling measured?

Rating: Results are estimated in a transparent way. However, it is likely that accuracy is not high and that alternative measurements are equally relevant and would give more than marginally different results. (2)

Justification: Stewardship Ontario is required to produce an annual “Mass Balance Report” on Recyclables collected/processed/marketed from Ontario programs. Data on

diversion activities is gathered from municipalities and recycling programs through the annual datacall and waste generated is based on waste audits and stewards reporting. There are recognised gaps in the data in terms of processing flows to various treatment facilities.

Reuse and Recycling – sub-goal 2: Are there measures to secure goal achievement for stated re-use, recycling and/or recovery targets?

Rating: Targets are given in quantitative form (% or absolute figure), but it is uncertain what will happen if they are not reached, or measures that will be taken for non-achievement are not “worse” than reaching targets. (1)

Justification: Only diversion targets are included in the BBPP, which implies that in this case 50% and subsequently 60% of blue box materials need to be diverted from landfill (marketed) but nothing about recovery levels, re-use, or recycling

There are no stated targets for recovery, reuse and recycling in the BBPP. There are however stipulations under the Waste Diversion Act 25.(2) that states: “A waste diversion program developed under the Act for a designated waste shall not promote any of the following:

1. The burning of the designated waste
2. The landfilling of the designated waste
3. The application of the designated waste to land
4. Any activity prescribed by the regulations”

Reuse and Recycling – sub-goal 3: Are there incentives for striving towards high re-use and/or recycling levels?

Rating: No incentives exist for above target levels, while such levels are technically feasible. (0)

Justification: The Blue Box Program – promotes recycling only

* This question may be unfair for certain materials in the blue box program: printed paper and certain paper packaging where reuse is not relevant.

* Also, considering that the Waste Diversion Act – allows for individual systems for handling a stewards responsibilities – and with the example of Brewers Retail – deposit refund system for refillable bottles and one way cans – we might want to think about if we are just looking at the blue box program or at the higher level of the backdrop regulation.

Quebec SOGHU Oil Program Evaluation

Main Goal: System and product design improvement

Sub-goal 1: Will the individual producer benefit directly from product design improvements?

Rating: There are no direct financial benefits from the EPR system for the individual producer if the product is re-designed, but such benefits (if acknowledged) will be shared by all producers irrespective of their individual efforts (0)

Justification:

Oil

Since in the SOGHU model, producers pay per litre of oil put on the market, there is no incentive to reduce litres sold as this would obviously mean a reduction in revenues generated.

Filters

The same logic applies to oil filters, as EHC is calculated on a per unit basis. Even though there is differentiation based on size (not weight), it is unlikely that producers could be able to re-design (resize) the filter to avoid costs.

Containers

Regardless of the size of container the charge is calculated on a per litre basis, so if you packaged in 1 litre or 4 litres the charge/litre is the same. Therefore there is no incentive to package oil in larger size containers (to reduce total plastic waste) as the cost to producers is the same regardless

Sub-goal 2: Will the individual producer benefit directly from system design improvements?

Rating:

- *Backdrop Legislation/Regulation:* All costs reductions achieved by design or system improvements will be transferred to the individual producer or the producers as a collective and influence fully the costs they have for the EPR system. (3)

- *SOGHU Program:* There are no direct financial benefits from the EPR system for the individual producer if he initiates a product system improvement, but such benefits (if acknowledged) will be shared by all producers irrespective of their individual efforts. (0)

Justification:

- *Backdrop Legislation/Regulation:* Since the legislation allows for individual systems to be established by brand owners to fulfil their legal requirements, an individual producer

operating or contracting out their management system will be able to capture all financial benefits.

SOGHU Program: - The way in which the financing mechanism operates limits the possibilities for individual producers to gain any direct benefits if product system improvements are made. This is because the level of financial incentive per litre, filter or container (paid to collectors) is set based on how much money is estimated to be needed to achieve the collection rates divided by the expected amount of marketed oil, filters and containers by brand-owners participating in the SOGHU program. The fees have already been estimated for the years 2006-07 and 2008, based on expected volumes of material marketed and increased recovery rates. These are the main variables that determine stewards fee – which are not differentiated, i.e. any improvements will be shared by all producers.

Sub-goal 3: Will the producer collective benefit directly from product and system design improvements?

Rating: A substantial part of the cost reductions achieved by design or system improvements will be transferred to the individual producer or the producers as a collective and influence the costs they have for the EPR system. (2)

Justification: If the design and system improvements lead to increased collection rates, then any cost savings that are realised (other than collection costs) might be marginalized by increases in collection, transportation, or processing costs. However, if what is meant by this question is that net system costs are reduced then SOGHU members will share these savings through reduced EHC charged by SOGHU equally.

Main Goal: High utilisation of product and material quality through effective collection and re-use or recycling

Collection – sub-goal 1: Does the system include measures to secure goal achievement for collection targets?

Rating: Non-achievement of collection targets will undoubtedly be followed by sanction that is generally perceived as less attractive than efforts necessary to reach targets. (3)

Justification: Collection targets are established and are as follows:

	2005	2008
Oil	70%	75%
Filters	50%	75%
Containers	50%	75%

In addition, fines of up to \$25,000 CAD and \$250,000 CAD for a natural or legal person respectively, who commits an offence under sections 5-7 (targets) or 9-11. These fines are doubled in the case of a second or subsequent offences

Collection – sub-goal 2: Are there tangible incentives in the form of direct or future financial benefits for striving towards higher collection results?

Rating: Producers have financial benefits from higher collection rates and these benefits can be substantiated and are perceived as important drivers for striving towards higher collection results by producers (3)

Justification: In this case it is not the *producer* that has the incentive to improve collection rates, but designated *collectors* of used oil, filters and plastic containers. Collectors have an incentive to collect greater quantities of these materials as the incentive is based on litres collected (oil), and kilograms collected (filters and containers)

There is also a higher incentive for areas that are considered to be remote, increasing as the areas are further away from main processing markets, less densely populated and further away from main transportation lines.

Return Incentives are as follows

ZONE	USED OIL (\$/litre)	USED FILTERS (\$/kg)	USED CONTAINERS (\$/kg)
1	0.03	0.65	1.00
2	0.04	0.65	1.00
3	0.07	0.80	1.10
4	0.07	0.82	1.10
5	0.07	0.85	1.15
6	0.09	0.90	1.20
7	0.07	0.90	1.30
8	0.10	0.95	1.30
9	0.10	0.95	1.30

Treatment – sub-goal 1: Does the system provide measures to ensure compliance with the legislation and other regulations for treatment of discarded products during collection, sorting, dismantling and treatment?

Rating: Rules and enforcement system is relevant and functioning, but control is still insufficient according to some group of relevant stakeholders. (2))

Justification: Within the program developed by SOGHU, there are precautions taken to ensure that collectors (transporters) and processors connected to the program have the required environmental permits for their activities. However, no such precautions are directly taken to ensure collection facilities are operating under the legal obligations as a collection site. Whether or not this is cause for concern is uncertain at this time of the evaluation, as many of the designated collection sites are municipalities or car dealers, garages and retailers of oil products (with garages) have existing certificates of approval or exemptions from the requirement for such certificates to collect such wastes.

As part of the “Collectors and Processors Agreement” all parties approved by SOGHU must have signed the agreement and attach the following requirements

Collectors

Valid permit from the Ministry of the Environment
Transportation of Dangerous goods Training Certificate

Business License
Letter of confirmation from CSST
Insurance certificate
Letter of Regulatory compliance
Description of Transfer centre

Processors

Valid permit from the Ministry of the Environment
Business License
Letter of confirmation from CSST
Insurance certificate
Letter of Regulatory compliance

Potential issues that might arise include (need to be evaluated):

- Generators (car garages, retailers, etc) potentially mix various oils that make it difficult to re-refine oils to base oil, which would render the oil most to be processed to residual fuel oil or heavy distillate fuel oil.

- Although in terms of compliance with legislation, it would appear that the enforcement system is functioning well, some stakeholders have questioned the appropriateness of promoting certain treatment methods through the program, even though they are currently in compliance with legislation (Environmental Quality Act – Regulation respecting hazardous materials c. Q-2, r.15.2.) Specifically, this refers to the approved use of untreated used oil for energy generation purposes provided that the fuel-burning equipment has at least 3 megawatt capacity and that the oil meets certain standards (set forth in Schedule 6) arsenic, cadmium, chromium, lead, halogen, PCB, Flashpoint of 38 Celsius (min), calorific value 18500 kJ/kg (min) Water content max 20% and sulphur content maximum 1.5%

- The processing of used oil in greenhouses employing used oil burners that are less than 3 megawatts is allowed assuming that the user has already obtained an authorization from the Minister of the Environment. There are at least 4 of these greenhouses on the list of approved processors. (uncertain if they are less than 3 megawatts)

The other approved processing operations in the SOGHU program include;

- Facilities that meet the criteria of the Government, the ASTM or other recognized equivalent specifications allowing resale in the sale of re-refined Lubricating oil.
- Used oil that meet the specifications for sale with a view to manufacturing asphalt concrete described in the appropriate regulations
- Used oil meeting the specifications for the sale to a cement kiln as fuel as described in the regulations
- Used oil meeting the specifications for sale for a use as fuel recognized by the Government, other than in a cement kiln, as described in the applicable government standards
- The specifications for other uses conforming to the applicable government standards.

Treatment – sub-goal 2: Does the system provide incentives to promote Best Environmental Practice for the treatment of discarded products during collection, sorting, dismantling and treatment?

Rating: Best Environmental Practice is not promoted by the system in any noticeable way. (0)

Justification: Most of the focus is on ensuring that the collection targets are met with few incentives to encourage treatment operations that go beyond compliance. In fact performance of the system is rated primarily on this criteria alone. In numerous documents on the SOGHU website, simply state that the program will be in compliance with all applicable government regulations¹.

However, a small percentage (roughly 3-5%, or a base amount of 240 000 and a marginal increase of 1.5% in excess of 8 million) of funds gathered from stewards. This money shall be used to assess the performance of the system, auditing, monitoring the agreement, assistance in achieving the objectives, participation in information, education and awareness, development of markets for recovered and reclaimed materials, development of recovery and reclamation technologies. Considering the limit amount of resources devoted to this, the incentive is considered to be low

Reuse and Recycling – sub-goal 1: Is re-use and recycling measured?

Rating: No system is in place for measuring results. (0)

Justification: Although it is possible to track the amount of materials that are processed by the various approved processors through the Collectors Incentive claim forms (must be signed by generator (collection site, collector and processor confirming the volumes and weights of oils, filters and containers, respectively), there is no way of confirming or measuring subsequent activities at the processors. It is however possible accurately report the amount of oil recovered (energy recovery) when used oil is delivered to a processor that directly burns untreated motor oil in their facility. There are no mass balance reports for used oil processed for fuel oil, gas oil, re-refined base oil.

Reuse and Recycling – sub-goal 2: Are there measures to secure goal achievement for stated re-use and/or recycling targets?

Rating: No targets are established in explicit or implicit form (0)

Justification: Only collection targets are included in the SOGHU program, which implies that this material must be recovered, recycled or reused to various degrees depending on prevailing market conditions. However, the fact that there is no recycling, recovery or reuse targets, the program scores a zero.

However in the agreement between Recyc-Quebec and SOGHU section 7.1.4. does state – for all recovered materials, the rate of reclamation shall be 100% effective from 2005.

¹ SOGHU (2005) Manual for collectors and Processors pg. 7

However, the reclamation requirement shall apply to oil and fuel containers only to the extent that their reclamation do not represent an economic constraint such that they threaten the competitiveness of SOGHU's member businesses

Reuse and Recycling – sub-goal 3: Are there incentives for striving towards high re-use and/or recycling levels?

Rating:

- **Oil & Filters:** No incentives exist for above compliance levels, while such levels are technically feasible (0)

Containers: High re-use levels are promoted (in line with the technical possibilities for re-use) and financial benefits are likely to be higher than costs, and there are tangible financially-related incentives for high-grade material recycling of material that can't reasonably be re-used as products or components. (3)

Justification:

- **Oil and Filters:** Significant re-refining capacity exists however no differentiated incentives for collectors to deliver to these facilities are included in the program

- **Containers:** There is a financial recycling incentive available for processors who remove oil residues from containers and yield a clean plastic pellet stream that can be reprocessed into finished plastic goods (container to container, or other secondary products i.e) plastic lumber.

Summary of evaluation the case study programs

Electronics Recycling Alberta

The table below gives a summary the evaluation of the Electronics Recycling Alberta program. The table indicates a number of areas of potential further developments. It seems obvious that the program implementation is not well addressing an important part of the EPR approach that is to stimulate environmental improvements through product and product system design. The evaluation points in particular to the fact that the Program provides very limited incentives for individual producers to emphasise such a development.

While there table points to a well developed program to secure environmentally appropriate treatment of collected products during the post-consumer treatment, it illustrates the lack of stated targets and ambitions for collection and recycling, and the absence of incentives to promote activities above the basic levels of material utilisation of collected products.

System and product design improvement	Will the individual producer benefit directly from product design improvements?		0	0.3	0.3	
	Will the individual producer benefit directly from system design improvements?		0			
	Will the producers collectively benefit from product and system design improvements?		1			
High utilisation of product and material quality through effective collection and re-use or recycling	Collection	Does the system include measures to secure goal achievement for collection targets?	0	1.5	1.6	
		Are there tangible incentives in the form of direct or future financial benefits for striving towards higher collection results?	3			
	Treatment	Does the system provide measures to ensure compliance with the legislation and other regulations for treatment of discarded products during collection, sorting, dismantling and treatment?	2	2.5		
		Does the system provide incentives to promote Best Environmental Practice for the treatment of discarded products during collection, sorting, dismantling and treatment?	3			
	Re-use and Recycling	Is re-use and recycling measured?		2		0.7
		Are there measures to secure goal achievement for stated re-use and/or recycling targets?		0		
		Are there incentives for striving towards high re-use and/or recycling levels?		0		

Ontario Blue Box Program

The Ontario Blue Box Program has a quite even distribution of the grading over the various aspects included in the evaluation tool. This points to many possibilities of strengthening the EPR implementation in the Program. The Program rewards packaging using less material and allows for individual systems to be implemented, which potentially enhances the incentives for product and product system design improvements. However, the fact that the Program is partly financed by the authorities means that these incentives are diluted, and creates a clear disincentive for alternative programs to be established.

The evaluation results also indicate important potentials to create more incentives for high collection rates and for promoting more recycling.

System and product design improvement	Will the individual producer benefit directly from product design improvements?		2	1.7	1.7	
	Will the individual producer benefit directly from system design improvements?		1			
	Will the producers collectively benefit from product and system design improvements?		2			
High utilisation of product and material quality through effective collection and re-use or recycling	Collection	Does the system include measures to secure goal achievement for collection targets?	1	1.5	1.5	
		Are there tangible incentives in the form of direct or future financial benefits for striving towards higher collection results?	2			
	Treatment	Does the system provide measures to ensure compliance with the legislation and other regulations for treatment of discarded products during collection, sorting, dismantling and treatment?	2	2		
		Does the system provide incentives to promote Best Environmental Practice for the treatment of discarded products during collection, sorting, dismantling and treatment?	2			
	Re-use and Recycling	Is re-use and recycling measured?		2		1
		Are there measures to secure goal achievement for stated re-use and/or recycling targets?		1		
		Are there incentives for striving towards high re-use and/or recycling levels?		0		

Quebec SOGHU Oil Program

The Quebec SOGHU Oil Program has been the most difficult to evaluate. The program allows for parallel systems to be organised and provides in this way interesting incentives for identifying and potentially implementing system improvements. It has, however, been difficult for us to judge the strength of these incentives. The table presents an evaluation, which is given clear recognition to these incentives.

The evaluation results point clearly to the fact that the most substantial areas for improvement of the management of post-consumer products is in the treatment and recycling phases, while the collection systems provides few obvious areas for improvement measures.

System and product design improvement	Will the individual producer benefit directly from product design improvements?		0	1.7	1.7	
	Will the individual producer benefit directly from system design improvements?		3			
	Will the producers collectively benefit from product and system design improvements?		2			
High utilisation of product and material quality through effective collection and re-use or recycling	Collection	Does the system include measures to secure goal achievement for collection targets?	3	3	1.5	
		Are there tangible incentives in the form of direct or future financial benefits for striving towards higher collection results?	3			
	Treatment	Does the system provide measures to ensure compliance with the legislation and other regulations for treatment of discarded products during collection, sorting, dismantling and treatment?	2	1		
		Does the system provide incentives to promote Best Environmental Practice for the treatment of discarded products during collection, sorting, dismantling and treatment?	0			
	Re-use and Recycling	Is re-use and recycling measured?		0		0.5
		Are there measures to secure goal achievement for stated re-use and/or recycling targets?		0		
		Are there incentives for striving towards high re-use and/or recycling levels?		1.5		