PN-ACN-891
113372

EPIQ

Environmental Policy and Institutional Strengthening IQC

1211 Connecticut Avenue, NW
Washington, DC 20036 USA
Fax: 202/289-7601
Email: epiq@irgltd.com

HARVARD INSTITUTE for INTERNATIONAL DEVELOPMENT
12-14, B-dul Libertatii, Bucuresti, ROMANIA
Tel./FAX: 44-40-335 00 67/44-40-335 00 68

ECONOMIC INSTRUMENTS for PROMOTING BATERRIES RECYCLING IN ROMANIA

June 1999

Bucureşti

CONTENT

INTRODUCTION....3

BATTERY CONSUMPTION AND RECYCLING IN ROMANIA....4

RECYCLING BATTERIES AND ACCUMULATORS IN EU....6

EU LEGISLATION ON BATTERIES AND ACCUMULATORS: IMPLEMENTATION CONSIDERATION....7

BATTERY RECYCLING IN THE US....9

PROPOSAL FOR ROMANIA....13

STEPS IN IMPLEMENTING (PROPOSAL)....15

ANNEXES....17

REFERENCES....18

INTRODUCTION

The disposal of lead-acid automobile batteries is a problem in many nations of the world. These post-consumer waste product is not suitable for disposal in a land fill due to the hazards of lead in the environment. *Further, the economic value of the used battery~~wastes~~ may not be sufficient to encourage recycling. The result is that improper disposal is all too common; the lead and acids in discarded lead-acid batteries poses risk of surface and groundwater contamination, with potential threats to public health.*

This paper reviews the existing situation in Romania, the policy instruments for stimulating the recycling of used batteries that have been developed and successfully implemented in the European Union and United States and suggests some policy options for introducing similar instruments in Romania. *Battery recycling could be stimulated through a deposit-refund system for replacement battery sales, along with a strong element of battery producer responsibility.*

Many of the EU nations are working with battery manufacturers to design systems to stimulate the collection and recycling of used lead-acid batteries[1].

Under free market conditions, processors of scrap materials are the most important economic entities involved in battery recycling~~is being done largely by processors of scrap materials~~. This approach is undesirable for several reasons. First, it is inefficient relative to the reverse distribution approach that places responsibility on battery manufacturers and distributors. Transportation costs are higher and the economics are such that many batteries are simply not worth collecting. Owners of used batteries are paid almost nothing for their used batteries, providing them little incentive to return the used battery. Scrap processors often will drain the acids from a battery prior to transporting it. But this causes the battery to dry out internally and increases the likelihood that lead particles will get into the environment. Finally, scrap processors probably should not be dismantling used batteries, as it increases the risk of lead contamination in the environment.

The situation is somewhat different in Romania as it has ~~been~~ in place a battery recycling system that probably would have to be modified considerably to improve its effectiveness.

In Romania ~~some estimation showed that~~ only about 50% of used lead-acid batteries are being recycled currently. Prior to 1989, the collection system functioned reasonably well; both strong regulation and economic incentives were used. Batteries manufactures used to have a captive market for new and replacement batteries. A car owner could change his used battery only if he could prove, with a receipt, that the old one had been disposed at a~~to one~~ recovery center (called REMAT[2]); in exchange of the old battery a noticeable (for that time) payment was made to the owner.

---

[1] For example, in Italy the recovery of discarded lead batteries is subject to a 1995 agreement between the Ministry of Environment, Municipalities and Federambiente and industry associations representing battery manufacturers.

[2] At the time being REMAT centers are privatised and do not belong anymore to the Ministry of Industry.

BATTERY CONSUMPTION AND RECYCLING IN ROMANIA

In Romania, batteries consumption increased significantly in the last 5 years (see Table 1); from 653 thousand in 1994 to 966 thousand in 1998 (48% increase). This is owing to significant growth of the auto fleet in Romania; as a consequence, ~~important quantities of scrap batteries resulted every year~~.

Domestic production increased as well after 1994. The main manufacturers are Rombat SA and Acumulatorul SA along with 3-4 smaller companies. Usually the manufacturers buy standard lead alloy from indigenous lead smelters but imports are frequent for special alloys as calcium or selenium alloys for maintenance free batteries.

TABLE 1: EVOLUTION OF THE AUTOMOTIVE BATTERIES AND ACCUMULATORS CONSUMPTION IN ROMANIA AND THE AVERAGE LIFE

- No[x)]. -

	1994	1995	1996	1997	1998
1. Domestic production	520232	612935	712806	799723	924300
2. Imports	131000	464000	460000	375000	294000
3. Exports	3400	2800	37000	130000	14000
4. Internal Consumption (1+2-3)	647832	1074135	1135806	1044723	1204300
5. New cars output	86000	88000	117000	127000	125000
6. Replacement of used batteries (4-5)	**561832**	**986135**	**1018806**	**917723**	**1079300**

Source: [8], [9], [12]

Life of a battery could be more than 2,5 years, depending on the quality, maintenance, exploitation condition etc. Every year important quantities of used batteries are dumped; from the data of Table 1~~Table 1~~ the estimation shows that, in the period 1990-1998, more than 900 thousand batteries/year end their life's cycle (on average for the last 5 years). The problem is that, without an efficient recovering system, large~~important~~ stock piles have ~~been~~ accumulated over~~in~~ time.

Collecting activity of REMAT registered a sharp decline after 1989; the quantities of batteries gathered every year is stabilised around 600 thousand/year (see ~~Table 2~~ Table 2) so every year 300 to 400 thousand batteries and accumulators are dumped.

TABLE 2: SCRAP BATTERIES AND ACCUMULATORS COLLECTED BY REMAT CENTRES

QUANTITY	1989	1994	1995	1996	1997	1998
Tons	28334	18405	17024	18740	16667	16834
Thou. Pieces*)	1012	657	608	670	595	601

Source: Data from the National Commission for Materials Recycling, 1999

**) Note: Quantities gathered have been estimated based on the total weight assuming~~taking into account~~ 28 kg ~~for~~is the average weight of an accumulator (without acid).*

One of the main customers of used batteries and accumulators is the lead smelter SC Neferal SA that has a modern installation for dismantling and reusing the lead, ~~the~~ plastic (polypropylene) etc. (this installation is unique in Romania). Another potential customer is the lead smelter SC Romplumb SA

Prices offered for scrap batteries and accumulators vary depending on weight of the battery and on the buyer. For instance it has been reported that, in April 1998, one important battery~~ies~~ and accumulators producer (Acumulatorul SA) offered a credit of 10000 lei (about 1,2 $ at that time) toward a new battery if a scrap battery was returned.~~:~~ ~~t~~This amount was more than double the normal price paid by REMAT. In 1998 Neferal SA ~~used to~~ payid 35$/tone of scrap battery compared with 107 $ earned by exporters of scrap batteries and accumulators. As a result only 1000 tons came to Neferal and 9600 tons were exported[3] in Greece, Bulgaria and Turkey.

For lead smelters is cheaper to work with lead from batteries and accumulators than with concentrated lead ore (250$/ton). For instance Romplumb, that works with 20000 tons/year of concentrated lead, ore could ~~make a~~ savinge of $3 millions every year by using the lead from scrap batteries and accumulators.

*

* *

Partial conclusions

On one hand most REMAT centres are not interested in handling batteries due to the low price paid by the smelters and because the environmental problems associated. On the other hand smelters are interested in recycling used batteries as a way to obtain cheaper raw materials and to maintain sales to the battery manufacturers.

If a deposit system is going to be used in Romania, it may be desirable to make the deposit greater than the refund and collect those extra amounts in a special battery recycling fund. The fund could be used to reward individuals for returning used batteries that are now in storage or are found in landfills and elsewhere[4].

---

[3] MIC reported that in 1998 export licences have been issued for 16000 tons of drained batteries and accumulators (equivalent of 11-12000 tons of lead).

[4] Sweden implemented such a system with deposits greater than refunds and achieved a much greater than 100% battery recycling rate for a few years.

RECYCLING BATTERIES and ACCUMULATORS in EU

The overall structure for an effective waste management regime is set out in the: WASTE FRAMEWORK DIRECTIVE and the complementary HAZARDOUS WASTE DIRECTIVE (see Figure 1). Council Directive 75/442/EEC on Waste, as amended by Council Directive 91/156/EEC, provides the basic framework for waste management in the European Union. The Directive requires Member States to ensure that waste is recovered and disposed of without endangering human health or causing harm to the environment. Member States are required to prohibit the abandonment, dumping or uncontrolled discharge of waste.

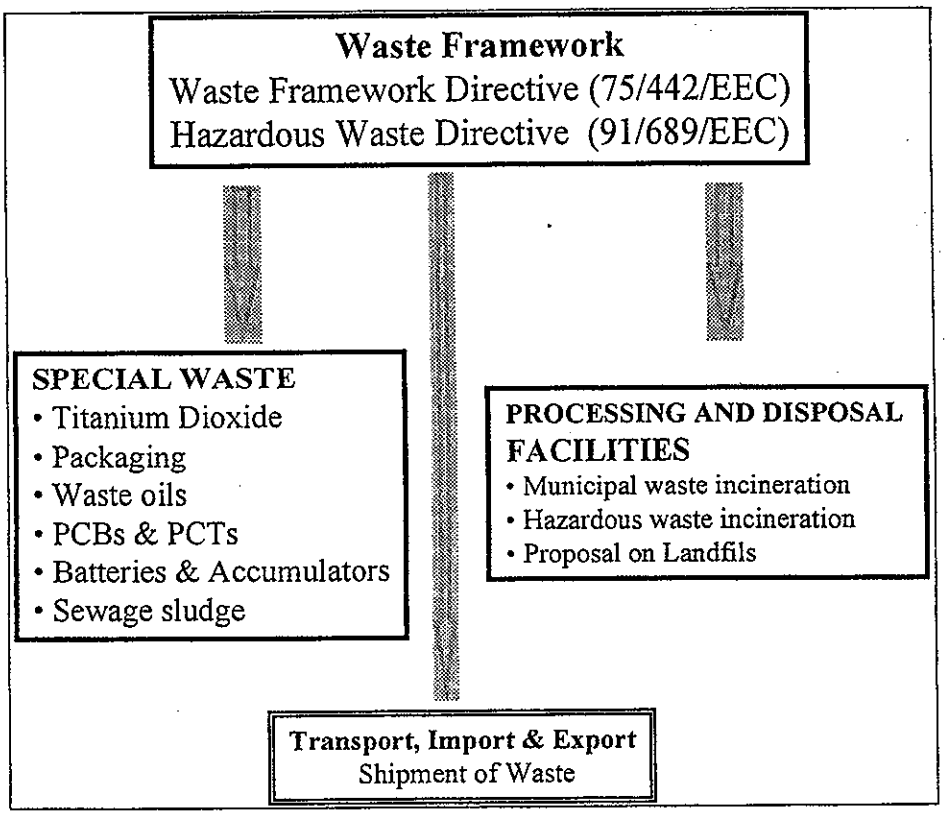


FIGURE 1: EU WASTE FRAMEWORK

These directives establish the framework for waste management structures, which have been complemented by other more specific directives: One group sets down requirements for the permitting and operations of WASTE DISPOSAL FACILITIES. The other group deals with specific types of waste such as oils, packaging and batteries. For the shipments of waste, the rules that apply are contained in the Waste Shipments Regulation.

Within this framework the regulation for batteries and accumulators restlays with the special waste group.

EU LEGISLATION ON BATTERIES AND ACCUMULATORS; IMPLEMENTATION CONSIDERATION

Council Directive 91/157/EEC was adopted as a specific measure within the framework of Council Directive 75/442/EEC on Waste to mandate the separate collection from households of spent batteries and accumulators containing certain amounts of mercury, cadmium or lead with a view to the recovery and controlled disposal. The aim of the Directive on batteries and accumulators (91/157/EEC/18.03.1991) is to approximate laws of the Member States on the recovery and controlled disposals of those spent batteries and accumulators containing dangerous substances in accordance with Annex 1.

The Directive requires Member States to restrict the marketing of certain mercury batteries and requires them to reduce their heavy metal content, to promote the marketing of improved batteries and accumulators, to promote research and favour the use of less-polluting substitute substance in them, **They must ensure the efficient organisation of a separate collection and, where appropriate, the setting up of a deposit system. Economic instruments are allowed to encourage recycling; they must be introduced after consultation.** Consumers must be fully informed about aspects of the risks and disposal opportunities.

Member States shall draw up programmes in order to achieve the following objectives:

- reduction of the heavy-metal content of batteries and accumulators,
- promotion of marketing of batteries and accumulators containing smaller quantities of dangerous substances and/or less polluting substances,
- gradual reduction, in household waste, of spent batteries and accumulators covered by Annex I,
- promotion of research aimed at reducing the dangerous-substance content and favouring the use of less polluting substitute substances in
- batteries and accumulators, and research into methods of recycling,
- separate disposal of spent batteries and accumulators covered by Annex I.

Furthermore, Member States may introduce measures such as economic instruments in order to encourage recycling. These measures must be introduced after consultation with the parties concerned, be based on valid ecological and economic criteria and must avoid distortions of competition.

Implementing issues

The first programmes shall cover a four-year period starting on 18 March 1993. They shall be communicated to the Commission by 17 September 1992 at the latest.

The programmes shall be reviewed and updated regularly, at least every four years, in ~~the~~ light ~~in particular~~ of technical progress and of the economic and environmental situation. Amended programmes shall be communicated to the Commission in good time.

1. Long term programmes to increase public awareness and technical development would have to be developed within or in co-ordination with the waste reduction and management plans.

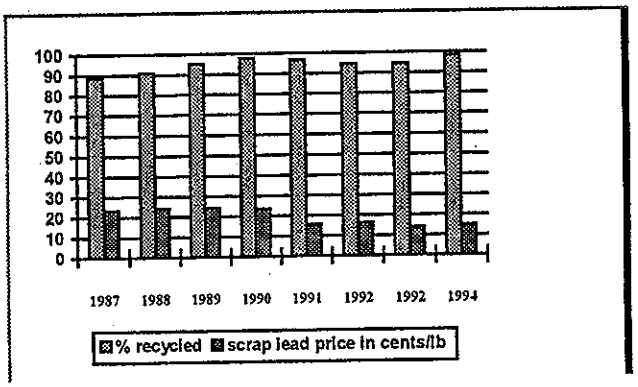
2. The need for ~~the introduction of~~ economic instruments to stimulate~~maximise~~ ~~separate~~ collection should be assessed; public education programmes would be helpful to ensure public co-operation in recovering and recycling waste batteries.

3. A network of collection points will have to be created. Administrative permitting and control procedures ensuring the safe transport and recovery of spent batteries are required under the Waste Framework Directive and the Shipments Regulation.

BATTERY RECYCLING IN THE US

Recycling of lead-acid batteries in the United States may be characterized as a success story. For the past several years the recycling rate has averaged approximately 95% despite large swings in the value of scrap lead (see figure 1). The data suggest that recycling rates may be positively related to the price of lead. The fall in lead prices beginning in 1991 coincided with a fall in the percentage of battery lead recycled.

Figure 2: Battery Lead Recycling in the US



Note: scrap lead prices obtained from Business Cycle Indicators (BCI)

In the United States and throughout the world, most lead-acid batteries are used for starting, lighting and ignition in automobiles, trucks and other vehicles. Lead-containing batteries are also power golf carts, wheelchairs, and fork lifts, and provide emergency standby power. Small sealed lead acid batteries, units with non-liquid electrolytes, are used for emergency lighting, security and alarm systems, and backup power for computers and hospital equipment. A recent survey revealed that only about 1 % of the lead available for recycling in the U.S. is contained in small sealed lead acid batteries (Smith, Bucklin and Associates, 1996). Vehicular starting, lighting and ignition batteries are by far the largest source of -lead available for recycling.

In the U.S., lead-acid battery recycling takes place through a reverse distribution system. Used lead batteries are returned by consumers to retail establishments where new batteries are sold. The used batteries are hauled away by wholesalers or manufacturers of new batteries. Trucks containing new batteries make deliveries at retail establishments and return with a load of used batteries, maximizing the efficiency of the transportation system. Junkyards also are important scrap battery collectors. Most of the used batteries are taken to secondary smelters for reprocessing; however, about 50,000 tons of scrap batteries also are exported to Mexico each year. (Parker, 1998).

In the United States and Canada, 20 secondary lead smelters with a capacity of 1,300,000 metric tons are operating currently. That compares with 47 secondary smelters with a capacity of 1,200,000 metric tons that were active as recently as 1992. Recently closed smelters have been small, inefficient operations, frequently with capacity of 10,000 tons per year or less. Meanwhile, several of the larger facilities have expanded. ~~M~~Battery manufacturers own many of the large secondary smelters ~~are owned by battery manufacturers~~.

The recycling system achieves a return rate of over 95% through careful attention to the economic incentives for each participant in the reverse distribution chain. Voluntary or mandatory deposits are used in most jurisdictions to assure that motorists have incentives to return used batteries. In regions where deposits are not required, motorists are encouraged to return batteries to retailers through public information campaigns, sanctions against improper disposal, and the fact that retailers are almost always willing to accept used batteries.

Retailers have several incentives to accept used batteries.

First, there are various financial rewards for so doing. Used batteries have a positive value and battery retailers receive this value either as a cash payment or in the form of discounts on the list price of new batteries. While this value can be modest, especially when the price of scrap lead is depressed, battery manufacturers try to encourage recycling for another reason. A high recycling rate keeps lead out of the environment and discourages federal and state governments from regulating used lead acid batteries as hazardous waste. Thus, even in states where there is no deposit requirement, battery manufacturers structure the price incentives for retailers of new batteries such that the retailer has an incentive to have~~ed~~ nearly every battery returned.

A second motivation for retailer participation in the battery recycling system is legal. In nearly 75% of the states, retailers are required by law to accept used batteries. When a deposit is imposed, the retailer accepts one return for each new battery sold. Some states have daily limits on the number of batteries that a user may bring back per visit (for refund of deposit, or just to get rid of a used battery), such as 3 per person in Kansas City Missouri, 5 per person in Minnesota, and 2 per person per month in New York, while other states have no limits at all.

Once large quantities of batteries have been collected and returned to secondary lead smelters, they are broken apart and lead and plastics recycled and marketed separately. Since recycled lead is substitutable for new lead in the manufacture of new batteries, battery manufacturers are the principal customers of the secondary lead smelters.

It is useful to explain how the voluntary and mandatory deposit mechanisms operate. No deposit is imposed for the battery in a new car. **When a replacement battery is purchased, a deposit must be paid if the motorist is not able to turn in the used battery at that time.** *The retailer gives the consumer a receipt for the deposit. The consumer has 30 days from the date of purchase (usually - see table 1) to return a used battery and get the deposit back.* Battery manufacturers do not get involved in that transaction. It is only a transaction between the retailer and the consumer, and is designed to motivate consumers to bring their used batteries back. Except in Rhode Island, where the state takes 80% of any unclaimed deposits, retailers are entitled to

keep all unclaimed deposits. Because a receipt for new battery purchase is required to get the deposit back, it is impossible for retailers to pay out more as refunds than they take in deposits.

In states where deposits are not legally required, they are often found nonetheless as retailers find it helps to encourage the return of used batteries. In these jurisdictions, deposits typically range from $5 to $10. **Used lead-acid batteries have an economic value, anywhere from about $1 to as much as $4, depending upon the price of scrap lead. Deposits are set at levels higher than the economic value of a used battery because it is assumed that relatively large deposits will motivate motorists to return a high percentage of used batteries.**

TABLE 3: MANDATORY LEAD-ACID BATTERY DEPOSIT SYSTEMS

State	Amount	Unclaimed Refunds	Refund Period
Arizona	$5	retailer	30 days
Arkansas	$10	retailer	30 days
Connecticut	$5	retailer	30 days
Idaho	$5	retailer	30 days
Maine	$10	retailer	30 days
Minnesota	$5	retailer	30 days
New York	$5	retailer	30 days
Rhode Island	$5	80% state, 20% retailer	7 days
South Carolina	$5	retailer	30 days
Washington	at least $5	retailer	30 days

Source: Weinberg, Bergeson & Neuman.

In some states, retailers find that high return rates are possible simply by making it clear to consumers that their used batteries are welcome. One concern has been that that battery retailers have to set aside some space for storing used batteries while they await pickup. As compensation for this cost, some states have regulations requiring that the battery retailer get at least $1 (in some cases $2) back from the battery distributor who picks up the used battery.

Since used batteries are treated in US as solid waste and not regulated as hazardous waste, they come under the purview of the 50 states, not the federal government. Most states have rules that battery acid cannot be dumped in the sewer system or on land. Storage and transport of used batteries is largely unregulated because battery manufacturers voluntarily take the care to avoid environmental harm. If batteries are stored and transported with the acid still in, there is almost no environmental issue.

In addition to deposits and other financial incentives provided by battery-manufacturers, a supporting infrastructure of information, signs, rules and regulations has been legislated by at least 37 states that follow the model established by the Battery Council International (BCI) an industry trade association for battery manufacturers.

The BCI model has eight sections. Section 1 prohibits the land disposal of lead-acid batteries and includes provision for a financial penalty to be determined by the state. Section 2 requires that retailers of replacement lead-acid batteries must accept from customers used lead-acid batteries at the point of transfer in the same general type and number as new batteries purchased. A **deposit of at least $10 is recommended.** Further, the retailer must post a notice that contains the universal recycling symbol and states (1) "*It is illegal to discard a used lead-acid battery,*" (2) *"Recycle your used batteries,*" and (3) "*State law requires us to accept used lead-acid batteries for recycling in exchange for new batteries purchased.*"

Section 3 of the BCI model calls on the appropriate state agency to print the notices required by Section 2 and distribute the notices to lead-acid battery retailers. A fine should be imposed for retailers that do not post the required signs. Section 4 requires that wholesalers of lead-acid batteries shall accept from their customers at the point of transfer used lead-acid batteries of the same general type and number as purchased, if offered by customers. A wholesaler shall be allowed a period not to exceed 90 days to remove batteries from the retail point of collection.

Section 5 of the BCI model legislation recommends that lead battery cases not be required to bear an identification code otherwise required of rigid plastic containers. Section 6 contains definitions of the terms "lead-acid battery," "retailer," "wholesaler," and "consumer product." Power sources for products such as motorcycles, wheelchairs, bicycles and boats are included in the definition of lead-acid batteries, but batteries in consumer products such as computers, games, telephones, radios and similar electronic devices are excluded.

Section 7 calls on the appropriate state agency to enforce sections 2 and 4, with violations punishable as a misdemeanor. Section 8 provides for severability – if parts of one or more of the sections is deemed invalid, that judgement~~judgment~~ shall not affect or invalidate the remaining sections.

As of January 6, 1998, 37 states had adopted the BCI model legislation. The 13 states that had yet to do so included: Alabama, Alaska, Colorado, Delaware, Kansas, Maryland, Massachusetts, Montana, Nebraska, Nevada, New Hampshire, New Mexico, and Ohio.

Of the 37 states that have adopted the BCI model legislation, only 10 have mandatory deposits. Many of the others already had a system of voluntary deposits. At present there is no evidence to suggest that states with mandatory deposits achieve a higher rate of lead-acid battery recycling than states with only a voluntary deposit system or not deposit at all.

Alternative regulatory models that also could achieve high battery recycling rates include a tax on primary lead, quotas on the amount of new lead that could be produced or imported, and mandatory recycling percentages to be achieved by battery manufacturers. A tax on primary lead production and on imports would make new lead

more expensive, improving the economics of recovering used lead. A quota system for lead, once considered by the U.S. Environmental Protection Agency, would function much the same as a tax on primary lead. Mandatory recycling percentages, accompanied by financial penalties for not meeting the required targets, are used to stimulate newspaper recycling in some jurisdictions. A similar approach could be applied to used batteries.

Each of the alternative approaches has advantages and disadvantages. A tax on primary lead production would reduce the demand for primary lead, adversely affecting producers and employment in that industry. Taxing the lead in imported products could prove cumbersome, but without such a tax, domestic manufacturers of products containing lead would be disadvantaged.

A quota system likely would enrich those who were able to obtain production quotas, since demand for primary lead is probably quite inelastic with respect to price. The quotas could be auctioned to eliminate such windfall gains. Again, however, it might be difficult to monitor the quantity of lead in all imported goods.

A mandatory take-back provision for battery manufacturers, with stated required recycling percentages, would seem to have fewer disadvantages, especially if trading among producers of the required recycled batteries is allowed. If the recycling percentages were high enough, the manufacturers probably would institute a deposit system to assure that used batteries are returned for recycling. The system manufacturers would establish likely would mimic what is observed in states with the BCI legislation.

PROPOSAL FOR ROMANIA

There are a number of obstacles to increasing the rate of lead-acid battery recycling in Romania. The most logical sites for receipt of scrap lead acid batteries are the Remat centers, which currently receive most scrap batteries, and the retail outlets that sell new batteries.

Remat centers do not find the economics of battery recycling attractive and appear uninterested in trying to increase the rate at which scrap lead-acid batteries are recycled. To increase battery recycling, Remat centers would have to offer a better price for scrap batteries; however they would not be able to pass these costs on to secondary lead smelters whose economic conditions are largely determined by world lead prices. Remat centers would incur additional costs without a corresponding increase in revenues.

Likewise, retail outlets would not welcome a requirement that they accept scrap lead-acid batteries as many of them are small and lack storage space for scrap batteries.

To stimulate greater recycling, the entities that receive scrap batteries must be compensated for their additional costs. Also, motorists will need a stronger incentive to return scrap batteries than the prices currently offered at Remat centers (this is about 5000 lei). The question is how can these incentives be provided most effectively.

Two options may be considered.

One option is to focus attention on increasing recycling through the REMAT centers. To do this, a deposit-refund system could be mandated (through law or regulation).

The basic scheme would have motorists pay a deposit at the time of purchase of a new battery. The motorist would receive a receipt for the deposit. The battery retailer would forward all deposits to a central authority. When the motorist took the receipt plus the old scrap battery to a Remat center, the amount of the deposit would be refunded. Remat centers would submit their deposit receipts to the central authority for reimbursement. Based on evidence from jurisdictions where deposit systems are used to stimulate battery recycling, the deposit amount probably should be approximately $5. Some potential problems with this approach stem from the physically different locations of retailers and the Remat centers. Not only does this mean an additional trip for the motorist, but it also means that a central administrative authority would have to collect funds and make disbursements, adding to administrative costs.

A second option is to require that battery retailers accept scrap batteries from motorists. Because of their limited storage space, battery retailers are unlikely to be willing to pay motorists for the scrap batteries. Consequently a simple mandate that retailers accept scrap batteries is not likely to increase recycling because motorists likely would continue to return scrap batteries to Remat centers. Thus, a deposit-refund system probably would be required here as well to motivate motorists. Retail battery stores would collect the deposits at the time of sale of new batteries and would pay the refund from those deposits as soon as the battery that is being replaced is returned. No central government authority would be required to handle the deposits. Battery retailers would be able to recover the costs of providing storage facilities through two means: raising prices (since all retailers would be affected) and keeping unclaimed deposits (when motorists fail to return the scrap battery for a refund). Again a deposit of approximately $5 would appear to be the right magnitude.

Bob. After you will see this version I shall make 2 Figures. I am going to present both of them to stimulate discussions

The second option is recommended recognizing that some small retail battery sellers might not be able to comply with the requirement and could be forced to exit the business.

To deal with the existing inventory of scrap batteries that could be recycled but currently aren't due to the lack of incentive to bring the batteries in to Remat centers, a separate system could be developed. This companion system would impose a modest tax on new battery sales and use the funds to reimburse Remat centers or battery retailers for each scrap battery they accept without a new battery deposit receipt. At first, the amount offered could be set at a level modestly higher than Remat centers currently pay. Over time the amount paid could be increased to attract batteries that are more expensive to collect and return. Once environmental authorities were convinced that the scrap battery inventory had been reduced to an acceptably small amount, this program would be terminated

Steps in implementing (proposal)

STEPS	INSTITUTIONS INVOLVED

1. National Legislative Framework
• compare Directive requirements to existing national laws
• Identify legislative gaps - identify what legislation (if any) is necessary (e.g. to prescribe sanctions or designate competent authorities). - Gov. Decision, Min. Decision
• Options:
  • one main legislative tools, or
  • section within the framework law
	MWFEP, MIC, Min. Transports (MT), Min. of Finance (MF) etc.

2. Establish a legislative timetable (as appropriate).	MWFEP, MIC

3. Identify a national competent authority or authorities to implement the regulation Competent Authorities (CA)
• Determine CA:
  • at central level;
  • at local level.
	MWFEP, MIC, Nat. Commission for Recycling (NCRM), REMAT Centres, APMs

4. Prepare administrative instructions and procedures to the relevant authorities; Legal checkpoints: • definitions; • exceptions; • level of the deposit.	MWFEP, NCRM
5. Authorisation Procedures • national guidelines for procedures; • national guidelines for documents; • establish time limits to avoid administrative problems;	MWFEP, MIC, MLPAT, MT, MF etc.
6. Consult with other concerned government departments and with the groups affected by the regulation (e.g. importers and exporters; major industries; environmental organisations)	MWFEP, MIC, MT
7. Human resources • Provide staff and resources; • Train staff.	MCRM, APMs etc

8. Inform affected industrial sectors and companies of what is required Institutions involved • all interested institutions are consulted before decision took place; • ensure public participation; • Provide the relevant documents, forms and certification to the groups concerned.	MWFEP, MIC
9. After implementation, monitor implementation and report (to the central authority, to other Member States and to the European Commission as needed.)	MWFEP, MIC others
10. Financial Consideration • establishing procedures to collect the deposit; • establishing procedures to reimburse the deposit; • establishing reporting procedures.	MWFEP, MF, MIC

ANNEXES

ANNEX 1: BATTERIES AND ACCUMULATORS COVERED BY THE DIRECTIVE 91/157/EEC

1. Batteries and accumulators put on the market and containing:
   - more than 25 mg mercury per cell, except alkaline manganese batteries
   - more than 0,025 % cadmium by weight,
   - more than 0,4 % lead by weight.
2. Alkaline manganese batteries containing more than 0,025 % mercury by weight placed on the market as from the date laid down in Article 11

Source: EUR-Lex: Community Legislation in Force., Document 391L0157

ANNEX 2: MEANS OF TRANSPORT OUTPUT (1991 - 1998)

	1991	1992	1993	1994	1995	1996	1997
Cars (thou. pieces)	84	74	93	86	88	117	127
Autoutilitarians (pieces.)	1626	2302	2316	1681	1320	1371	1003
Buses (pieces)	930	565	368	378	452	420	188
Lorries. tractors etc. (pieces)	7529	4456	4433	3044	3098	3142	1956

Source. Romanian Statistical Yearbook, 1997 CNS, Bucuresti

REFERENCES

1. Battery Council International. "Proposed Model Battery Recycling Legislation," Chicago, IL.
2. Business Cycle Indicators (BCI). www.mlinet.com/bci/pages/lsm023.htm
3. Smith, Bucklin and Associates. 1996. National Recycling Rate Study.
4. Parker, Thomas A. May 26,1998. "The Economics of Secondary Lead Smelting," presented at the International Recycling Conference, Toronto.
5. Weinberg, David B. May 25, 1998. "Lead-Acid Batteries and the Protection of the Environment," presented at the International Lead & Zinc Study Group International Recycling Conference, Toronto, Canada.
6. Weinberg, Bergeson and Neuman. January 6, 1998. "Summary of State Lead-Acid Battery Recycling Laws,"
7. xxx Guide to the Approximation of European Union Environmental Legislation., COMMISSION OF THE EUROPEAN COMMUNITIES., Bruxells., 1998
8. Weiss G. W., Romania Lead Acid Batteries Recycling Program Prefeasibility Study., Chemonics International., August 1998
9. xxx Romanian Statistical Yearbook., CNS., Bucuresti., 1990-1998
10. xxx...Capitalul., 7 ianuarie 1999., pag. 3
11. Babes A., Reciclarea acumulatorilor uzaţi în Romania., CNRM., Bucureşti 1999