



**Revised Version  
FOR COMMENT**

**(version 3.3)**

**REGIONAL STRATEGY  
FOR THE ENVIRONMENTALLY SOUND MANAGEMENT OF  
USED LEAD ACID BATTERIES  
IN CENTRAL AMERICA, COLOMBIA, VENEZUELA  
AND THE CARIBBEAN ISLAND STATES**

**(PHASE II – STRATEGY DEVELOPMENT)**

**May 2008**

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## **ACKNOWLEDGEMENTS**

This project work was funded under the Basel Convention Partnership Initiative, which is administered by the Secretariat of the Basel Convention under the United Nations Environment Programme. Many stakeholder organizations contributed to work leading to the development of this Regional Strategy. They are listed below in alphabetical order:

### Sponsors

- Environment Canada (in-kind support)
- Global Environmental Facility

### Government Organizations

- Basel Convention Regional Centre, Caribbean (BCRC-CARIBBEAN)
- Basel Convention Regional Centre, Central America and Mexico (BCRC-CAM)
- Caribbean Research Institute (CARIRI), Trinidad & Tobago
- Centro de Estudios y Control de Contaminantes, Honduras
- Department of Environment, Belize
- Department of Environmental Health Services, Bahamas
- Ministerio de Ciencia, Tecnología y Medio Ambiente (CITMA), Cuba
- Ministerio de Medio Ambiente (MMA), Columbia
- Ministerio de Medio Ambiente y Recursos Naturales (MARN), El Salvador
- Ministerio de Medio Ambiente y Recursos Naturales (MARN), Nicaragua
- Ministerio de Medio Ambiente y Recursos Naturales (MARN), Guatemala
- Ministerio de Salud Publica y Asistencia Social Desechos Solidos, El Salvador
- Ministerio de Salud, Costa Rica
- Ministerio de Salud, Panama
- Ministerio de Trabajo y Prevision Social, El Salvador
- Ministerio del Ambiente y de los Recursos Naturales, Venezuela
- Ministry of Health, Dominica
- Ministry of Housing, Lands and the Environment, Barbados
- Ministry of Land and Environment, Jamaica
- Ministry of Physical Development, Environment and Housing, Saint Lucia
- Ministry of the Environment, Trinidad & Tobago
- Secretaría de Estado de Medio Ambiente y Recursos Naturales, Dominican Republic
- Secretaría de Recursos y Ambiente, Honduras
- Secretaría Medio Ambiente y Recursos Naturales (SEMARNAT), Mexico
- Solid Waste Management Authority, Saint Lucia
- United Nations Conference on Trade and Development (UNCTAD), Capacity-building Task Force on Trade, Environment and Development

### Industry organizations

- Automotive Components Limited, Trinidad
- Automotive Power, Jamaica
- Baterias de El Salvador, El Salvador
- Comercializadora de Baterias, Mexico

- Duncan Auto Shop, Venezuela
- Duncan Batteries, Venezuela
- Duncan Fundicion del Centro, Venezuela
- Funmetal, Venezuela
- IMSA – Enertec, Mexico
- International Lead Management Centre (ILMC)
- MAC SA, Columbia
- Manufacturas Multiples, Dominican Republic
- Metaloxa, Dominican Republic
- Record Batteries, El Salvador

#### National Clean Production Centres

- Centro de Producción Más Limpia, Nicaragua
- Centro Guatemalteco de Producción Más Limpia, Guatemala
- Centro Mexicano para la Producción Más Limpia, Mexico
- Centro Nacional de Producción Más Limpia y Tecnologías Ambientales, Columbia
- Centro Nacional de Producción Más Limpia, El Salvador

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## EXECUTIVE SUMMARY

The constituents of used lead acid batteries (ULAB), such as lead and sulfuric acid, may pose a threat to human health and the environment if managed improperly. The *Regional Strategy for the Environmentally Sound Management of Used Lead Acid Batteries in Central America, Colombia, Venezuela and the Caribbean Island States* was prepared under the auspices of the Basel Convention Partnership Initiative to assist developing countries in planning for and adopting policies, programs and measures to support a cooperative and coordinated approach to ensuring the environmentally sound management (ESM) of ULAB in the region. A regional approach is needed because the domestic ULAB recycling capacity of many countries in the region is inadequate (from an ESM perspective), insufficient, or lacking altogether. In addition, several countries (especially Small Island Developing States) do not generate sufficient quantities of ULAB to establish direct consignments with ULAB recyclers located in other countries.

Strategy implementation will initially focus on nine pilot countries (namely, Colombia, Costa Rica, Dominican Republic, El Salvador, Mexico, Panama, St. Lucia, Trinidad and Tobago, and Venezuela) and thereafter is anticipated broadening the group to include other interested countries in the region, such as Jamaica and Guatemala. ULAB that fall under the scope of this initiative include starting or “automotive” batteries, and deep discharge or “industrial” batteries (used for stationary and motive applications).

The Regional Strategy specifically addresses country needs that have been identified through national reports, consultation forums and presentation materials. It is based on the following eight strategic goals, each of which is accompanied by underlying objectives and targets:

1. Secure commitment from relevant stakeholders to promote ESM for ULAB in accordance with the Basel Convention and Basel Technical Guidelines.
2. Assess the degree to which the ESM of ULAB is supported at the national level and certify those that are in compliance.
3. Ensure national laws and compliance programs are sufficient to ensure ESM of ULAB.
4. Implement national programs (in a regional context) to recover ULAB for ESM.
5. Implement financial mechanisms to support the delivery and effectiveness of national ULAB recovery and recycling programs.
6. Transition workers from informal ULAB facilities and operations to the formal ULAB recovery and recycling sector.
7. Raise public awareness concerning the importance of proper battery use and ensuring ESM for the recovery of ULAB.
8. Identify candidate remediation sites where lead contamination has been observed from ULAB activities.
9. Promote technical assistance, including capacity building and technology transfer, including safe battery handling, storage and transportation systems; blood lead monitoring and soil remediation techniques, to enhance the ESM of ULAB in the region.

The Regional Strategy proposes a two-year budget totalling **\$920 K USD** to assist pilot countries finance its implementation, after which time countries will be expected to maintain self-financing ULAB recovery programs. This is feasible considering the fact that ongoing program costs will be generated by revenues from the sale of recovered ULAB (secondary lead is a valuable commodity) and financial intervention options (e.g. deposit-refund, purchase-discounts, waived-charges, advance recycling fees, or taxes). A request for (co)funding will be submitted to international donors such as the Global Environment Fund, the World Bank, and the International Development Bank, as well as other potential bilateral and multilateral funding and cooperation agencies and the private sector.

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## 1 BACKGROUND

Used lead acid batteries (ULAB) are an important and valuable resource of secondary lead. If managed improperly, the constituents of the batteries, such as the lead, lead oxides and sulfuric acid, may pose a threat to human health and the environment. ULAB are classified as a hazardous waste under the *Basel Convention for the Control of Transboundary Movements of Hazardous Wastes and their Disposal* (Basel Convention)<sup>1</sup>. To provide guidance on the environmentally sound management (ESM) of ULAB, Parties to the Convention adopted the *Basel Technical Guidelines for the Environmentally Sound Management of Lead Acid Battery Wastes* and developed the *Basel Training Manual on National Management Plans for Used Lead Acid Batteries*. There are good examples of compliance with the Basel Technical Guidelines and the regulations on the transboundary movement of ULAB in Central America, Colombia, Venezuela and the Caribbean Islands, but implementation and enforcement of the existing requirements for ESM of ULAB throughout the whole region is still a matter of concern.

The *Ministerial Declaration on Environmentally Sound Management of Hazardous Wastes* was adopted by the 5<sup>th</sup> Conference of the Parties to the Basel Convention in December 1999. The Ministerial Declaration called for enhanced partnerships between the public and private sector to improve the manner in which hazardous wastes and recyclables are managed in developing countries, thereby minimizing the potential risks to human health and the environment posed by these substances.

To begin implementing the Ministerial Declaration, a first list of technical assistance projects was approved for funding at the 16<sup>th</sup> session of the Technical Group of the Basel Convention, held in Geneva, Switzerland, during April 2000. This list included the “Sub-regional project for building capacity on the Environmentally Sound Management of Used Lead Acid Batteries in Central America and the Caribbean.” Nine Party<sup>2</sup> countries to the Basel Convention in the region were selected to pilot this project, namely Colombia, Costa Rica, Dominican Republic, El Salvador, Mexico<sup>3</sup>, Panama, St. Lucia, Trinidad and Tobago, and Venezuela.

The project represented Phase I of the regional initiative, which focused on gathering information and identifying any problems linked to the generation, collection, storage, transport, illicit reconditioning, recycling and disposal of ULAB (or its residues) in the pilot countries. A Project launching workshop was held in Trinidad during 3 - 4 May 2001 to initiate the pilot program. Representatives from governments and national cleaner production centres from the pilot countries, and the Basel Convention Regional Centres for Central America and Mexico (BCRC-CAM) and the Caribbean (BCRC-CARIBBEAN, then operated by the Caribbean Research Institute CARIRI) participated at the workshop. The workshop was also supported by the Secretariat of the Basel Convention (SBC), the Capacity-building Task Force (CBTF) on Trade, Environment and Development of the United Nations Conference on Trade and Development (UNCTAD), the International Lead Management Centre (ILMC) and the

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<sup>1</sup> ULAB are identified as hazardous wastes under Annex I (Y31-lead & lead components, Y34-acidic solutions or acids in solid form) and Annex VIII (A1160-waste lead acid batteries, whole or crushed).

<sup>2</sup> The term Party refers to a country government that has agreed to adopt the Basel Convention by means of accession, acceptance, approval, formal confirmation, ratification or succession.

<sup>3</sup> Mexico does not receive project funding for this regional initiative due to its unique economic status amongst the pilot countries (i.e. it is a member of the Organization for Economic Cooperation and Development).

United States Environmental Protection Agency (US EPA). Workshop outcomes included adopting a project work program, assigning organizational roles and responsibilities, and approving guidelines and questionnaires for completing national ULAB inventories.

A follow-up workshop was held in San Salvador, El Salvador during 18 - 20 November 2002 to share key observations from the nine pilot countries with other interested countries and relevant stakeholders in the region. The *Declaration of San Salvador on the Environmentally Sound Management of Used Lead Acid Batteries* (see Annex A), that called for national improvements concerning the management of ULAB, was also signed at this occasion.

Based on this mandate, a strategic planning framework and project proposal was prepared to undertake Phase II of the regional initiative and the development of a *Regional Strategy for the Environmentally Sound Management of Used Lead Acid Batteries in Central America, Colombia, Venezuela and the Caribbean Island States*. The proposal package was initially shared with delegates at COP6 and subsequently approved for financing at the First Session of the Opening Working Group (OEWG1) of the Basel Convention held during 28 April - 2 May 2003.

A Regional Steering Committee consisting of the nine pilot countries, Jamaica, Barbados and the ILMC was tasked to coordinate Phase II project activities. The Committee held its first meeting during 4 - 5 December 2003 in Caracas, Venezuela. Other stakeholders, including representatives from country governments, private companies, universities, research institutes, and non-government organizations in the region were also invited to participate. Two key recommendations were made at the meeting:

1. to consider the inclusion of countries in the region that are not Parties to the Basel Convention<sup>4</sup> in the Regional Strategy; and
2. for participating countries to establish National Committees to coordinate national efforts on ULAB in accordance with a country project model for the determination of a National Strategy for the ESM of ULAB.

The country project model is a seven step process that each country is expected to follow in the preparation of its national action plan (NAP). The first stage is to complete an inventory of the likely sources of ULAB, with particular attention to the quantities, collection mechanisms, collection rates and possible trends in ULAB for the next five years. The inventory should also include a list of licensed (or certified) secondary lead plants, complete with a summary of smelting capacity, environmental control systems and occupational welfare provisions. If possible, unlicensed reconditioners, illegal smelters and legitimate battery retailers should also be noted together with summaries of their operations, noting any environmental threats.

The model requires that measures must be introduced to raise the level of public awareness and the threats posed by the improper recovery of ULAB.

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<sup>4</sup> The following countries are located in the Region but are not Parties to the Basel Convention: Haiti, Grenada, and the USA.

National policies and legislation should be designed to promote ESM and eliminate any recycling in the “informal” sector.

The Basel Technical Guidelines will form the basis for implementing procedures for collection, storage, transport and shipping of ULAB.

For those countries without smelting capacity the model will end at step number 6, and for these countries provision has to be made to export ULAB to a certified smelter for recycling. Those countries with lead smelters proceed to the final stage and ensure that the recycling process is certified to be in compliance with the Basel Technical Guidelines.

The information gathered, collated and analysed in the preparation of NAPs is subsequently used to help devise a logical framework for use in preparing the Regional Strategy.

The BCRC-CAM and the BCRC-CARIBBEAN, in cooperation with the Venezuelan Ministry of Environment and Natural Resources (MARN-Venezuela), prepared a first draft of the Regional Strategy that was published in December 2004 and presented for further discussion at the second meeting of the Regional Steering Committee held during 24-26 January 2006, in El Salvador. The Regional Strategy was subsequently revised to take into account country and other stakeholder input and then finally reviewed at a regional meeting in Trinidad in October 2006.

The Region, as defined by Central America, Columbia, Venezuela and the Caribbean Islands, consists of both Party and non-Party countries to the Basel Convention. The Party status and geographic locations of all countries in the region that could theoretically participate in the implementation of the Regional Strategy are identified in **Annexes B and C** respectively.

Implementation of the Regional Strategy will initially focus on the nine countries in the region that were selected to pilot this project, and eventually broaden in scope to include other interested countries pending their formal confirmation to participate. The inclusion of non-Party countries in the region would also benefit the delivery of the Regional Strategy; however, a final decision regarding this matter has yet to be made.

## 2 CURRENT SITUATION

Phase I of the regional initiative involved the compilation of a ULAB inventory and an assessment of the ESM of ULAB in each of the nine Party countries to the Basel Convention. Other Parties in the region also participated throughout various stages of the regional ULAB initiative. The contributions made by each at key forums are identified in Table 2.1.

**Table 2.1: Party Country Participation at Key Meetings of the Regional ULAB Initiative**

Party Country	PHASE I GATHER INFORMATION		PHASE II DEVELOP REGIONAL STRATEGY			
	Workshop 1 (Trinidad & Tobago) 3-4 May 2001	Workshop 2 (El Salvador) 18-20 Nov 2002	Regional Steering Committee (Venezuela) 4-5 Dec 2003	Regional Steering Committee (El Salvador) 24-26 Jan 2006	Regional Steering Committee (Trinidad) 27-29 Sep 2006	
<b>Pilot Project Countries</b>						
1.	Colombia	Attended & committed to project	Attended and submitted report	Attended	Attended and updated report	Committed
2.	Costa Rica	Attended & committed to project	Attended and submitted report	Attended	Attended and updated report	Committed
3.	Dominican Republic	Unavailable but committed to project	Attended and submitted report	Attended	Attended and updated report	Committed
4.	El Salvador	Attended & committed to project	Attended and submitted report	Attended	Attended	Committed
5.	Mexico	Unavailable but committed to project	Attended and submitted report	Unavailable	Attended and updated report	Committed
6.	Panama	Attended & committed to project	Attended and submitted report	Attended	Attended and updated report	Committed
7.	St. Lucia	Attended & committed to project	Attended and submitted report	Attended	Unavailable	Committed
8.	Trinidad & Tobago	Attended & committed to project	Attended and submitted report	Attended	Attended	Committed
9.	Venezuela	Attended & committed to project	Attended and submitted report	Attended	Unavailable	Committed
<b>Other Countries in the Region</b>						
10.	Bahamas	N/A	Attended and submitted report	N/A (Industry)	N/A	Committed
11.	Barbados	N/A	N/A	Attended and submitted report	Attended	Committed
12.	Belize	N/A	Attended and submitted report	N/A	N/A	Committed
13.	Brazil	Expert attended	Attended and submitted report	N/A	N/A	N/A
14.	Cuba	N/A	N/A	Attended and submitted report	N/A	Committed
15.	Dominica	N/A	Attended and submitted report	N/A	N/A	Committed
16.	Ecuador	N/A	Attended and submitted report	N/A	N/A	N/A
17.	Guatemala	N/A	Attended and submitted report	N/A	Attended and updated report	Committed
18.	Honduras	N/A	Attended and submitted report	N/A	Attended	Committed
19.	Jamaica	N/A	Attended and submitted report	Attended and updated report	Attended and updated report	Committed
20.	Martinique (via Environment West Indies)	N/A	N/A	N/A	Attended and submitted report	N/A
21.	Nicaragua	N/A	Attended and submitted report	Attended and submitted report	Attended and updated report	Committed

The availability and detail of baseline information acquired by the nine pilot countries varied on a case-by-case basis. Country information pertaining to ULAB generation and trade, laws, recovery and recycling, public awareness and education, and environment and health issues is summarized in **Annex D** throughout Tables **D-1 to D-5**.

ULAB facilities and operations in each country may be associated with the “formal sector” or “informal sector.” **Figure 2.1** illustrates past and projected movements of ULAB within these sectors. Formal sector businesses strive to ensure conformity with applicable national laws, policies and best management practices that pertain to their activities. Generally, these businesses possess the necessary government approvals, licenses, permits, and other operational requirements. They also maintain plants, equipment and systems for pollution prevention, control and abatement, adopt procedures to protect worker health and safety, and pay business or corporate taxes. In contrast, informal sector businesses do not operate within a legal context, and generally pose greater risks to human health and the environment. They often include ULAB collection and transport, reconditioning, and backyard smelting activities that involve breaking batteries by hand, indiscriminate dumping of battery acid contaminated with lead, and the use of workers that lack necessary training and safety equipment to ensure a safe and healthy working environment.

The flows of ULAB that involve pilot countries of the region are identified in **Figure 2.2**. Facilities and operations that recover<sup>5</sup>, service<sup>6</sup> and recondition<sup>7</sup> ULAB can be found in all countries in the region. Infrastructure to recycle<sup>8</sup> ULAB in the formal sector has currently been identified in Mexico, El Salvador, Columbia, Panama, the Dominican Republic and Venezuela<sup>9</sup>. However, Columbia has banned the import of ULAB<sup>10</sup> and Mexico is limiting imports of ULAB to USA-derived sources because its secondary lead smelters are currently operating at full capacity. Secondary smelters in Panama and the Dominican Republic have been shut down by their respective governments for breaches of environmental legislation. The smelting capacities of identified ULAB recyclers in the region are noted in **Table 2.2**. It should also be noted that all the companies listed in the tabulation use rotary furnace technology in their smelters and therefore share similar environmental challenges regarding emissions and furnace residues.

It is also worth noting that a critical mass of 15,000-30,000 tonnes of refined lead output per annum is widely regarded as the minimum scale of profitable operation for a conventional pyro-metallurgical secondary lead smelter considering the rising costs of pollution control, prevention, and abatement. This translates into a feedstock requirement of at least 1.6M - 3.2M ULAB per year (or a minimum vehicle population of 3.2M - 6.4M).

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<sup>5</sup> “Recovery” refers to collecting, packaging, transporting, consolidating and shipping ULAB.

<sup>6</sup> “Servicing” is a formal sector activity that involves topping up electrolyte levels, battery recharging, and inspecting battery terminal connections and the working order of the alternator.

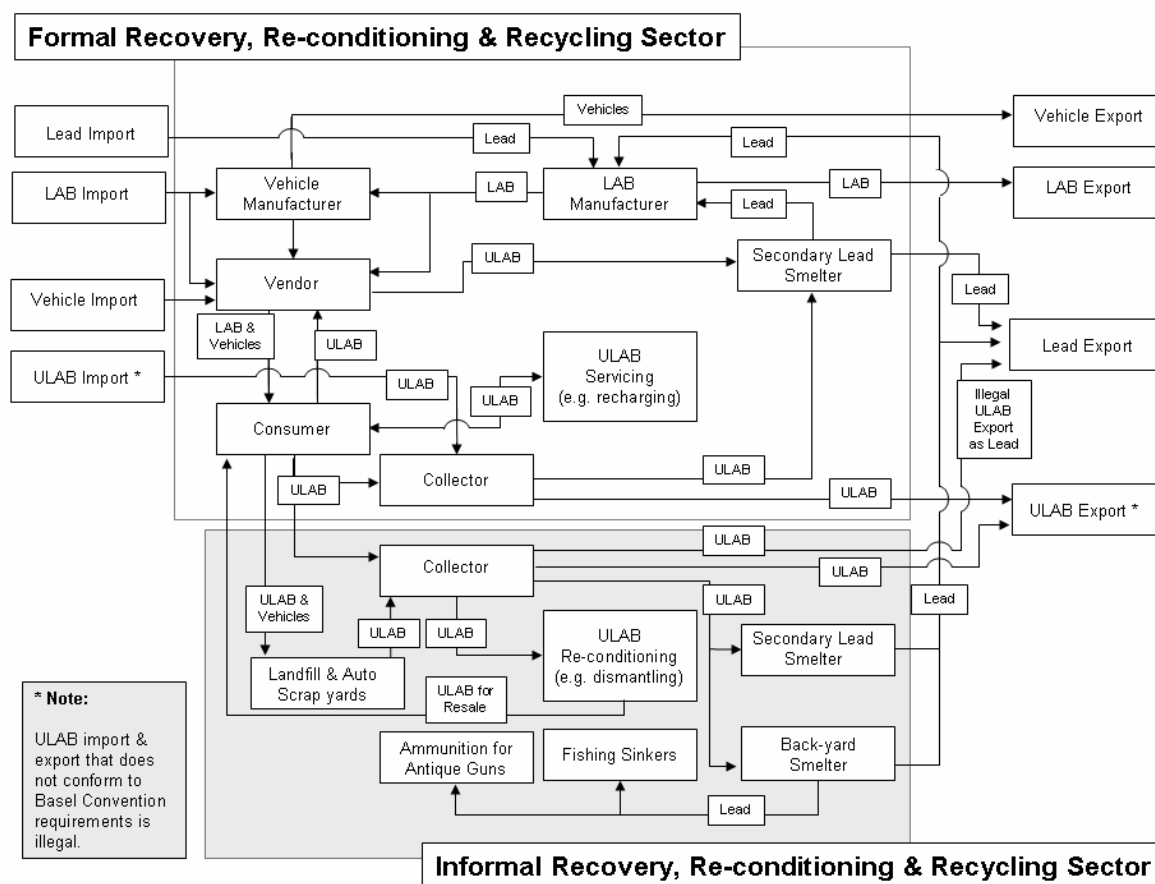
<sup>7</sup> “Reconditioning” is an informal sector activity that involves dismantling and rebuilding ULAB for subsequent re-use or re-sale.

<sup>8</sup> “Recycling” refers to activities that involve breaking ULAB to smelt and refine lead.

<sup>9</sup> Additional ULAB recycling capacity may also exist in Guatemala.

<sup>10</sup> Columbia bans the import of toxic and nuclear wastes to the national territory (including ULAB under Article 81 of the Colombian Constitution (dated 1991). Information acquired during Phase I work reveals that illegal trafficking of ULAB into Columbia is occurring.

**Figure 2.1: ULAB Movement in the Formal and Informal Sectors**



**Table 2.2: Smelting Capacities of Recyclers Identified under the Project**

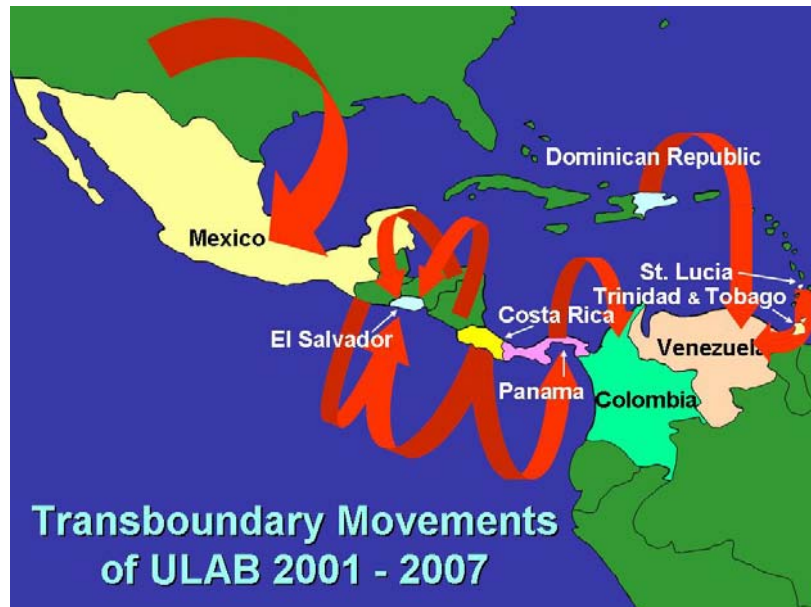
Country	Company Name	Smelting Capacity
Columbia	MAC SA	~ 25,000 tonnes
Cuba	National	unknown
Dominican Republic	Metaloxa	(smelter closed)
El Salvador	Baterias de El Salvador	closed September 2007
Guatemala	Acumuladores Iberia	unknown
Mexico	IMSA - Enertec	~ 100,000 tonnes
Panama	PAMETSA	(smelter closed)
Venezuela	Duncan Fundicion del Centro	~ 25,000 tonnes
	Funmetal	~ 35,000 tonnes

National reports prepared by countries indicate that all ULAB from St. Lucia and Trinidad and Tobago are exported to Venezuela for recycling, while ULAB generated in most of the Central American countries were exported to El Salvador for recycling. Many of the Small Island Developing States (SIDS) in the Caribbean do not generate sufficient quantities of ULAB to establish direct consignments with mainland recyclers<sup>11</sup>. Consequently, these countries must export their small shipments to a

<sup>11</sup> Larger SIDS such as Cuba, Jamaica, and the Dominican Republic are able to export ULAB shipments to mainland ULAB recyclers.

regional ULAB consolidation centre that bulks cargo into consignment-sized loads for export. For most circumstances this will be Trinidad, because Trinidad has a well managed and maintained regional ULAB consolidation centre.

**Figure 2.2: ULAB Import & Export Patterns Involving Pilot Countries in the Region<sup>12</sup>**



ULAB Movements 2001 – 2007

The initial Regional Strategy was based on prevailing transboundary movements and the recycling plant in El Salvador was the principal recycler for Central America.



Projected ULAB Movements 2008 onwards

However, when the Baterias de El Salvador ULAB recycling plant in El Salvador closed in September 2007, the regional was revised in January 2008.

<sup>12</sup> The flows of ULAB depicted in this figure are based on information acquired during Phase I of the regional initiative.

Based on discussions with the Governments in Central America, including El Salvador, projected ULAB Transboundary movements were likely to change as follows: El Salvador will export ULAB to Mexico as their first preference, as will Costa Rica. Panama might export ULAB to Mexico, but can export them to Venezuela as well. The other countries in the Region that are not currently participating in the Pilot Program may or may not follow the example of El Salvador because there is a smelter in Guatemala that is geographically closer than the recycler plant in Monterrey, Mexico. It would therefore be entirely consistent with the Basel Convention to export the batteries to the nearest recycling plant, provided the recovery process was environmentally sound.

The ULAB Project is dynamic and the environmental performance of the recycling plant in Guatemala currently being assessed using the ESM Assessment tool.

It is also interesting to note that some of the islands in the Caribbean region are affiliated with, or are provinces of, countries of the European Union (EU), and therefore bound by the EU *Directive on Batteries and Accumulators and Spent Batteries and Accumulators* that requires battery producers (and first importers) to collect and recycle batteries that have reached the end of their useful life<sup>13</sup>. Examples include France (e.g. St. Martin, St. Barthélemy, Guadeloupe, and Martinique); the Netherlands (e.g. Aruba, Curaçao, Bonaire); and the United Kingdom (e.g. Cayman Islands, Anguilla, Montserrat, and the British Virgin Islands). Within this group, it has been noted that Martinique ships its ULAB to mainland France<sup>14</sup>.

## **2.1 ANALYSIS OF THE PERCEIVED PROBLEM**

The typical life expectancy of an automotive lead acid battery ranges between 18 months to 2 years in the tropical climate of this region. ULAB contain three principle hazardous substances, lead, lead compounds and dilute sulfuric acid. A standard car lead acid battery contains approximately 9.7 kilograms (i.e. 21.4 pounds or 65% by weight) of lead and approximately 4 kilograms (i.e. 8.8 pounds or 27% by weight) of dilute sulfuric acid<sup>15</sup>. ULAB may also contain trace quantities of other toxic heavy metals, including cadmium and arsenic<sup>16</sup>.

Lead is known to bio-accumulate in plants and animals that are found in aquatic and terrestrial environments. In extreme cases, chronic absorption, inhalation or ingestion of lead affects the central nervous system, kidneys, blood and reproductive system of humans. It is also a possible human carcinogen. Sulfuric acid is a highly corrosive substance, which can cause severe chemical burns to unprotected tissue. This acid also contains dissolved lead.

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<sup>13</sup> Revisions to existing EU Battery Directives propose requirements to recover all ULAB for recycling.

<sup>14</sup> Shipping ULAB to Europe may not be considered compatible with Environmentally Sound Management since the negative environmental impacts associated with long-range transport may outweigh the environmental benefits accrued. However, it should be noted that implementing countries of the Basel Convention's Ban Amendment prohibit the export of ULAB to developing countries.

<sup>15</sup> Automotive lead acid batteries represent approximately 88% of all lead acid batteries sold into the global marketplace. The remainder consists of "deep cycle" lead acid batteries which are used for motive (e.g. golf carts, forklifts) and stationary (e.g. utility power) applications.

<sup>16</sup> Cadmium is used to facilitate lead extrusion in the manufacture of lead grid plates (deep discharge batteries only). Arsenic is used as a hardening agent for lead.

If released into the environment, these substances can contaminate air, water, and soil, and enter the food chain. Air pollution results from welding (a trademark of informal reconditioning) and smelting processes that generate high-level lead emissions when particle collection systems are not used (as the case with informal reconditioning and smelting) or malfunction. Unprotected workers of ULAB reconditioning facilities may also be exposed to acid mists of sulfuric acid during the battery recharging process (if overcharging occurs). Water and soil pollution may result from poor recovery and recycling practices that involve dumping or releasing battery acid directly into the environment without prior treatment<sup>17</sup>. This may lead to long-term contamination of water<sup>18</sup> and land, and require remediation that is often found to be very costly<sup>19</sup>.

Many of the problems associated with ULAB in the region stem from a notable lack of public awareness and education concerning the potential risks of improper ULAB management and the importance of safe and environmentally sound management of ULAB. They are also linked to institutional weaknesses (e.g. inadequate regulations and enforcement coupled with shared, but poorly defined, organizational duties), and the lack or insufficient adoption of industry standards and best operating practices. However the problem is not identical throughout the region, since countries do not possess the identical institutional or ULAB management issues.

A critical and common issue for all countries is the adverse health and environmental impact associated with informal ULAB facilities and operations. The dumping of untreated battery acid into the environment is a common practice within the informal community, and many of their facilities and operations either do not have or use equipment to protect worker health and safety. Furthermore, informal sector activities do not typically operate in secured compounds, posing a significant risk to the population (especially children) living close to these sites.

Many countries in the region are considered to be developing countries<sup>20</sup>, in which finding better jobs or undertaking less risky activities is not an easy matter for most individuals who lack a formal education. Poverty, combined with the fact that ULAB have residual monetary value on the secondary market, perpetuates the existence of diverse (yet thriving) informal sectors to recover, recondition and recycle ULAB. Consequently, it is very difficult for government agencies to eradicate these activities.

Furthermore, most small-sized businesses and traders in the informal sector (many of which are operated by impoverished communities) cannot afford to transform their existing facilities and operations into safe and environmentally sound operations in the short, medium or long-term. Most national assessments indicated that pollution prevention, control and mitigation devices, and personal safety equipment was not used in the informal sector, due to a lack of awareness and financial resources. In severe cases, some players within the informal sector knowingly and repeatedly undertake clandestine activities that degrade the health and environment of surrounding communities; undermining ESM efforts and legitimate ULAB trade in the region.

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<sup>17</sup> Informal recovery operations are commonly known to break apart ULAB to release untreated battery acids as a means of "light weighting" shipments.

<sup>18</sup> Contamination of ground (e.g. drinking) and surface water may result.

<sup>19</sup> The cost of site remediation and population health monitoring associated with lead contaminated sites may exceed \$1 million US dollars.

<sup>20</sup> Exceptions include Mexico, USA, United Kingdom, France, and the Netherlands.

While the formal ULAB sector is much more likely to exhibit sound occupational health and environmental practices, opportunities for improvement in these facilities and operations were also observed during site visits. For example, in some cases, facility or operational improvements are necessary to respond to the use of aging and/or improperly maintained recycling technologies (common place in secondary lead smelters that employ rotary furnaces). Opportunities for improvements may also exist in the areas of pollution control, prevention and abatement activities; establishing regimes for employee training; the management of residual process waste streams; and the adoption of applicable industry standards and best management practices (where they exist).

To support ESM, it is important to ensure that national laws provide a suitable level of protection to human health and the environment from the risks posed by ULAB, and that these laws are enforced in a coordinated and consistent fashion by competent authorities. For example, Phase I project work revealed that several Party countries in the region do not maintain notification and movement forms for ULAB (and other hazardous wastes). This is evidenced by the lack of information country data on ULAB imports and exports and lack of national reporting information concerning transboundary hazardous waste movements made available to the Secretariat of the Basel Convention. Moreover, some Party countries are still exporting shipments (successfully) to countries that have an import ban in place for ULAB (as is the case between Panama and Columbia) or to non-Party countries without bilateral, multilateral or regional agreements (as is the case between the Bahamas and the USA). Together, these issues demonstrate that several Party countries in the region are currently operating in contravention to the Basel Convention.

It has also been noted that, in some cases, government Ministries share administrative and enforcement duties under individual national laws. This can pose challenges in the effective and efficient delivery of laws (including inspection and monitoring), particularly if roles and responsibilities of authorities are not clearly defined and if different government Ministries do not coordinate efforts. Within a regional context, the national laws and administrative requirements from one country to the next lack consistencies and undergo irregular enforcement activities by government officials. This climate presents challenges with respect to facilitating international trade and assuring ESM for ULAB.

Lastly, incentives are also clearly needed in both informal and formal sectors to help drive facility and process improvements. However in the region, only Colombia has economic instruments to promote, strengthen and ensure the sustainability of ESM for ULAB, particularly during periods of low international spot market prices for lead (as was the case throughout 1994 to 2004).

## 2.2 IDENTIFICATION OF NEEDS

It is important to ensure that ULAB are managed in a safe and environmentally sound manner throughout all stages of the battery life cycle, including the initial manufacture and use of lead acid batteries (LAB), and the collection, storage, transport, recycling and/or final disposal of ULAB at the end of their useful life. The goals of the Regional Strategy (see Table 2.3) represent the essential needs that were identified throughout the course of Phase I and Phase II activities of this regional initiative. The cooperation and coordination of participating Party countries is essential to ensure that each of these needs is effectively addressed from both a national and regional perspective. A brief description of each essential need follows.

**Table 2.3: Essential Needs for a Regional Strategy**

1. Secure commitment from relevant stakeholders to promote ESM for ULAB in accordance with the Basel Technical Guidelines.
2. Assess the degree to which the ESM of ULAB is supported at the national level and certify those recyclers that are in compliance.
3. Ensure national laws and compliance programs are sufficient to ensure ESM of ULAB.
4. Implement national programs (in a regional context) to recover ULAB for ESM.
5. Implement financial mechanisms to support the delivery and effectiveness of national ULAB recovery and recycling programs.
6. Transition workers from informal ULAB facilities and operations to the formal ULAB recovery and recycling sector.
7. Raise public awareness concerning the importance of proper battery use and ensuring ESM of ULAB.
8. Identify candidate remediation sites where lead contamination has been observed from ULAB activities.

There is a need to secure commitment from relevant stakeholders to promote ESM for ULAB in accordance with the Basel Technical Guidelines, because, being a cooperation and partnership initiative, it is important to clarify which organizations will take part in the Regional Strategy and what their respective contributions, roles and responsibilities will be. Many of these organizations are anticipated to work together under the auspices of multi-stakeholder National and Regional ULAB Steering Committees, which are designed to coordinate all aspects of strategy delivery, and to encourage country-specific ULAB policies, programs and measures that share regional consistencies. Establishing clear political support will also help to encourage industry engagement, and the development of legislative instruments, industry standards, and economic instruments that may be necessary to ensure ESM of ULAB at both a national and regional level. The need for political support is also important from the perspective that the region consists of both Party and non-Party countries to the Basel Convention. Although the potential inclusion of non-Party countries may present challenges, it may also drive program efficiencies by establishing larger economies of scale and it will undoubtedly contribute to a higher level of protection to the health and environment of the region.

Additional information will be required to assess the degree to which the ESM of ULAB is supported at the national level. For the most part, this will involve identifying laws that pertain to ULAB management, identifying ULAB facilities and operations including their management practices, identifying the domestic recycling capacity for ULAB, and quantifying ULAB generated from all sources. Although existing national reports from pilot countries do provide much of this baseline information already, in some cases certain data was either presented/calculated in an inconsistent fashion or missing altogether. Consequently, further refinements of existing baseline studies are necessary to ensure that a reliable source of information exists upon which to base country-specific and regional decisions.

It will also be necessary to ensure that national laws and compliance programs are sufficient to ensure ESM of ULAB. Although in most cases these laws will not be specific to ULAB alone, they can and do provide a legal framework to help protect human health and the environment. For this reason it is important to assess whether existing laws provide the level of protection that is deemed to be necessary, and to address any legislative gaps where they may exist. It may also be useful to consider introducing regulations that make either producers and first importers or retailers of lead acid batteries responsible for designing and delivering ULAB recovery and recycling programs<sup>21</sup>. Wherever possible, every attempt should be made to coordinate national legislative activities and to encourage consistencies in regulatory requirements throughout the region. Regulatory authorities should also receive the necessary training to ensure that existing national laws applicable to ULAB are being administered and enforced properly.

Implementing national action programs (in a regional context) to recover ULAB for ESM is vital to ensure that ULAB are returned to “ESM-compliant” facilities and operations in the formal sector. Doing so will create a strong business case (economic driver) for transitioning into the formal sector and upgrading facilities and operations (where necessary) to participate as an ESM-compliant service centre, or ULAB collector, transporter, and/or recycler. Such an undertaking will need to be supported by the development of regionally consistent ESM criteria and National Action Plans.

These national action programs will need to integrate regionally, because many countries in the region do not have sufficient (or any) capacity to recycle ULAB domestically in an environmentally sound manner. Consequently, they must export ULAB to those countries that do have ample capacity to recycle ULAB in an environmentally sound manner (e.g. Mexico or Venezuela). Also, many SIDS in the Caribbean do not generate sufficient quantities of ULAB to establish direct consignments with mainland ULAB recyclers and must therefore rely on regional collection centres which bulk cargo into consignment-sized loads for export to the mainland. To truly ensure the ESM of ULAB throughout the region, these and other activities must take place within the spirit of international cooperation.

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<sup>21</sup> A variety of program designs are identified in Section 3.6 in the context of common approaches to financing ULAB recovery for ESM.

It is also paramount to foresee the deployment of financial and economic mechanisms, as well as support measures, to facilitate the delivery and effectiveness of national ULAB recovery and recycling programs. Incentives are needed in both informal and formal sectors to help drive facility and process improvements, and to promote, strengthen and ensure the sustainability of ESM for ULAB, particularly during periods of low international market prices for lead. Examples of economic instruments include consumer return incentives (such as deposit-refund systems or advanced recycling fees); incentives for infrastructure development and technology advancement; and incentives for pollution abatement.

During this process, it will be crucial to help transition workers from informal ULAB facilities and operations to the formal recovery and recycling sector. Although providing awareness and training programs on occupational health and safety and ESM for ULAB will help immensely, these players typically do not have the financial ability to transform existing facilities and operations into safe and environmentally sound systems. It should also not be overlooked that the informal sector has proven to be very effective and efficient at retrieving ULAB from abandoned stockpiles, dumps, scrap yards, and other sources that are not typically well serviced by the formal sector.

Given the fact that many individuals in developing countries rely on the income derived from informal sector activities, it is important to identify and adopt solutions that are responsive to the needs of this community. In effect, measures must be able to phase out undesirable informal sector activities such as reconditioning, and focus on desirable activities such as recharging, collection and processing. However, such an approach will also have to ensure that people do not lose the income they derive from the recovery of ULAB or lose their jobs because of recurring health problems. For example, one option may involve a phased-in approach to transitioning those within the informal sector to formal service providers for lead acid batteries and formal ULAB collection centres. At the same time, it is equally important to prosecute the worst and most deliberate offenders to protect community health and the environment.

Many of the problems identified in **Section 2.1** may be averted by simply raising the level of public awareness concerning the importance of proper battery use and ensuring the ESM of ULAB. Public awareness campaigns involving television, radio, newspapers and other media will also help to generate public pressure for informal ULAB facilities and operations (which are often located near residential areas) to improve or discontinue their practices. Country surveys support assertions that the general public and many workers employed through ULAB activities possess a very limited knowledge of the hazards posed by ULAB and of the measures they can take to help ensure ESM for these products. It has also been noted that there is a distinct tendency to use automotive lead acid batteries for utility back-up applications<sup>22</sup> for which they are not designed and which will drastically reduce their useful life<sup>23</sup>.

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<sup>22</sup> A weak infrastructure for the transmission of electrical power exists in some developing countries in the region, contributing to frequent brown-outs and power fluctuations. Consequently many residential homes use lead acid batteries to help alleviate these problems.

<sup>23</sup> Starting batteries are designed for cars and trucks while deep discharge batteries are designed for reserve power, load levelling, emergency back-up, telecommunications, and motive applications.

Consequently, it is equally important to communicate the proper use and maintenance for different types of lead acid batteries.

Finally it is necessary to identify candidate sites for remediation where lead contamination has been observed from ULAB activities. This basically entails reporting sites of suspected lead contamination to government authorities that are directly responsible for assessing and remediating contaminated site issues. This activity, although limited to notifying the appropriate authorities for follow-up action, is important none-the-less from a health and environmental perspective. It should be noted however that the remediation of lead contaminated sites (and provision of funding necessary to accomplish this undertaking) are beyond the scope of this Regional Strategy.

### **2.3 ADDITIONAL RATIONALE FOR A REGIONAL STRATEGY**

In addition to the addressing the problems and needs outlined in Sections 2.1 and 2.2, it is important to note that many countries of the region are Party to the Basel Convention and the *Cartagena Convention for the Protection and Development of the Marine Environment in the Wider Caribbean* (Cartagena Convention)<sup>24</sup> that includes the *Protocol on Marine Pollution from Land-Based Sources and Activities* (see Annex C). Implementing a regional solution that supports the ESM of ULAB demonstrates an ongoing commitment of the Parties to these international agreements. On the other hand, long-term failure to address specific ULAB problems and needs on a regional basis could potentially raise international concerns regarding the scope and magnitude of lead and battery electrolyte contamination in the region, and could adversely impact the tourism and fishing industries of SIDS in the region.

Formalizing national ULAB recovery and recycling programs throughout the region is also anticipated to generate trade benefits for ULAB exporting countries, particularly when the international spot market price for lead is high. This is due to the fact that ULAB represent the one dominant source of lead globally, particularly in light of its declining use for pigments, gasoline additives, fishing weights, ammunition, cathode ray tubes, and solder<sup>25</sup>. In fact, secondary lead production has already overtaken primary lead production, accounting for over 60% of total global lead supply. It is estimated that more than 60% of all secondary lead is derived from ULAB<sup>26</sup>. According to the London Metal Exchange, the average monthly spot market value for lead ranged between \$820 and \$1150 per tonne (US) during 2005.

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<sup>24</sup> The Cartagena Convention in part requires Parties to prevent, reduce and control pollution of the Convention area and to ensure sound environmental management, using for this purpose the best practicable means at their disposal and in accordance with their capabilities.

<sup>25</sup> In addition to being relatively easy to smelt and re-refine, lead can be recycled indefinitely and still match the quality (and price) of primary lead. The quality of secondary lead output depends on the refinery process employed.

<sup>26</sup> The remainder is generally composed from wheel balance weights, pipe, solder, drosses, and lead sheets.

### **3 REGIONAL STRATEGY FOR THE ENVIRONMENTALLY SOUND MANAGEMENT OF USED LEAD ACID BATTERIES IN CENTRAL AMERICA, COLOMBIA, VENEZUELA AND THE CARIBBEAN ISLAND STATES**

The concept of a regional strategy implies that participating countries will work in partnership to coordinate the design and delivery of actions that support each of the strategy's underlying goals, taking into account both national and regional perspectives. Although the Regional Strategy awards countries the flexibility to adopt their own policies and approaches to assure that ULAB are managed in an environmentally sound manner, it is equally important to ensure that national variations, where they may exist, interface well within the context of a regional solution.

Environmentally Sound Management (ESM) is defined under the Basel Convention (Article 2, paragraph 8) as *taking all practicable steps to ensure that hazardous wastes or other wastes are managed in a manner which will protect human health and the environment against the adverse effects which may result from such wastes.* Criteria specific to ESM for ULAB is specified in the *Basel Technical Guidelines for the Environmentally Sound Management of Lead Acid Battery Wastes.*

The Regional Strategy incorporates a 3-option approach to ensure ESM for ULAB recycling (i.e. smelting) in the region. Each of these approaches is illustrated in **Figure 3.1**.

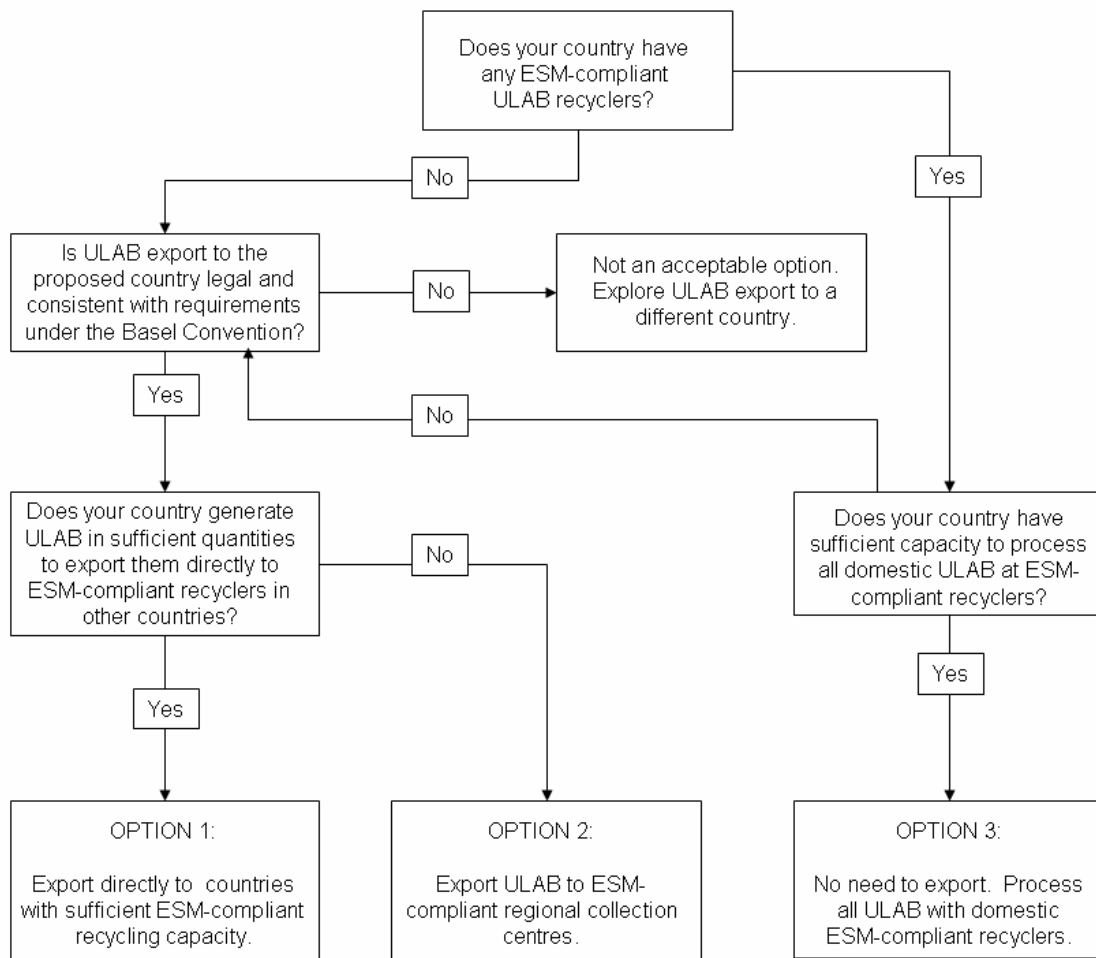
Option 1	Exporting ULAB directly to countries with sufficient ESM-compliant recycling capacity.
Option 2	Exporting ULAB to "ESM-compliant" regional collection facilities.
Option 3	Processing all ULAB with domestic ESM-compliant recovery and recycling facilities.

For the purpose of this Regional Strategy, the term "ESM-compliant" implies conformity with applicable requirements of the Basel Convention, Basel Technical Guidelines, national laws, and other regional criteria that may exist to assure that ULAB facilities and operations subscribe to ESM.

#### **3.1 PRODUCT SCOPE**

ULAB under the scope of this Regional Strategy includes wet cell (flooded) and valve-regulated (hermetically sealed) starting and deep discharge batteries. Starting batteries are designed to provide a short burst of high power used to start gasoline and diesel engines without falling below 80% of full charge. These batteries are also referred to as automotive and starting, lighting and ignition (SLI) batteries. In comparison deep discharge batteries can be discharged down to as low as 20% of full charge, thereby providing a steady level of power for much longer periods of time. These batteries are generally used in stationary (e.g. utility emergency, storage and reserve power) and motive (e.g. forklifts, golf carts, airline ground transport, wheel chairs) applications. Deep discharge batteries may also be referred to as industrial, deep cycle or deep cell batteries.

**Figure 3.1: National Options for Recycling ULAB under the Umbrella of a Regional Strategy**



### 3.2 MISSION STATEMENT

*The Mission Statement defines the purpose of Regional Strategy, and helps to guide activities that take place in the present during times of uncertainty.*

**To manage ULAB in an economically and environmentally sound manner using practices consistent with the Basel Technical Guidelines.<sup>27</sup>**

<sup>27</sup> United Nations May 2002 *Technical Guidelines for the Environmentally Sound Management of Lead Acid Battery Wastes*.

### 3.3 VISION STATEMENT

*The Vision Statement describes the desired outcome that the Regional Strategy aspires to achieve in the future. It may serve as a benchmark to determine whether course corrections are needed along the way to achieve intended results.*

***To strengthen existing and establish new national polices that support the environmentally sound management of ULAB in a regional context.***

### 3.4 GOALS

***Goal 1: Secure commitment from relevant stakeholders to promote ESM for ULAB in accordance with the Basel Technical Guidelines.***

#### OBJECTIVES:

##### **Short-term (6-month)**

- 1.A Identify stakeholder organizations that may share an interest in promoting ESM for ULAB and could implement the Regional Strategy.
- 1.B Secure formal commitment from the senior management of stakeholder organizations to promote ESM for ULAB and implement the Regional Strategy.
- 1.C Establish National ULAB Steering Committees, with representation from interested stakeholder organizations, to plan, coordinate and monitor progress of country-specific activities to fulfill the Regional Strategy.
- 1.D Maintain ongoing meetings of the Regional ULAB Steering Committee to help address and coordinate regional issues and activities.
- 1.E Formalize the mandate, composition, decision-making process, reporting structure, meeting frequency and other operating procedures for National and Regional ULAB Steering Committees.
- 1.F Identify clear roles and responsibilities for all interested stakeholders to facilitate implementation of the Regional Strategy.
- 1.G Prepare, via National ULAB Steering Committees, National Action Plans that assign roles and responsibilities, and establish a budget with timeframes for country-specific activities to fulfil the Regional Strategy.
- 1.H Identify and allocate resources from stakeholder organizations and other support groups for use in implementing the Regional Strategy and National Action Plans.

##### **Long-term (Annually)**

- 1.I Review country performance in meeting objectives under the Regional Strategy, and take corrective action, where necessary, to ensure that goals, objectives and targets are achieved.
- 1.J Review National Action Plans and national ULAB recovery and recycling programs to ensure that they are coordinated and share consistencies on a regional basis.
- 1.K Re-secure formal commitment from country governments and other stakeholder organizations to promote ESM for ULAB and implement the Regional Strategy in the event that there is a change in leadership or senior management.

**Goal 2: Assess the degree to which the ESM of ULAB is supported at the national level.**

**OBJECTIVES:**

**Short-term (1-year)**

- 2.A Identify existing national legislation and international conventions that pertain to ULAB management.
- 2.B Identify all facilities/operations that generate, collect, transport, recycle and trade ULAB.
- 2.C Assess whether existing ULAB facilities/operations comply with applicable national laws and conform to the Basel Technical Guidelines – Certify ESM compliant operations.
- 2.D Establish training programs at Basel Convention Regional Centres to instruct government officials, where necessary, on how to conduct and maintain a national inventory for ULAB using the Seven Stage Model.
- 2.E Complete a national inventory for each country to determine the quantities and types of lead acid batteries (new and used) that are imported, exported, sold, manufactured, used, generated, collected, recycled and disposed each year.
- 2.F Establish training programs at Basel Convention Regional Centres to instruct government officials, where necessary, on how to conduct an ESM Assessment and prepare for a Certification Audit.

**Mid-term (2-year)**

- 2.G Develop and maintain a regional ULAB database to consolidate and track national lead acid battery inventories in the region.

**Goal 3: Ensure national laws and compliance programs are sufficient to ensure ESM of ULAB.**

**OBJECTIVES:**

**Short-term (1-year)**

- 3.A Assess whether existing national laws provide an appropriate level of protection to environment and health during all stages of ULAB management, including collection, storage, transport, shipping, processing, and disposal in ULAB residuals.
- 3.B Assess whether existing national laws pertaining to ULAB management are enforced and contain suitable deterrents to dissuade unlawful conduct.
- 3.C Review the laws and recovery procedures of other countries for use as model legislation to address legislative needs for ULAB that may exist.
- 3.D Identify whether imports and exports of ULAB comply with national laws that incorporate commitments made under the Basel Convention.
- 3.E Assess the level of awareness of government officials involved with compliance promotion, inspection and enforcement concerning national laws and international conventions that pertain to ULAB management.
- 3.F Assess the level of awareness of collectors, transporters and processors of ULAB concerning national laws that pertain to ULAB management.
- 3.G Identify and assess opportunities to harmonize national laws for ULAB at a regional basis.
- 3.H Assess the need for ULAB take-back or extended producer responsibility legislation to enhance recovery of ULAB under national programs.

**Mid-term (2-year)**

- 3.I Establish regional training programs at Basel Convention Regional Centres to instruct government officials, as necessary, on ULAB import/export administrative procedures to ensure conformity to the Basel Convention.
- 3.J Establish in-house national training programs for government officials on national legislative requirements pertaining to ULAB management and facility operations.
- 3.K Implement actions to harmonize legislation pertaining to the management of ULAB in consultation with governments of other countries in the region.
- 3.L Develop compliance promotion programs geared to collectors, transporters and processors of ULAB to raise awareness regarding national laws and requirements applicable to their operations.

**Long-term (5-year)**

- 3.M Establish new or amend existing national laws, as deemed necessary, to correct regulatory deficiencies that may exist concerning the ESM of ULAB.

**Goal 4: Implement national programs (in a regional context) to recover ULAB for ESM.**

**OBJECTIVES:**

**Short-term (1-year)**

- 4.A** Establish regional criteria<sup>28</sup> for use in certifying ULAB facilities and operations that subscribe to ESM.
- 4.B** Identify and review options for collecting and storing ULAB at the national and regional level.
- 4.C** Identify and review options for processing ULAB at the national and regional level.
- 4.D** Assess the financial feasibility of establishing new or enhancing existing domestic recycling capacity for ULAB.
- 4.E** Identify and review options for national and regional transport/shipping routes that facilitate the safe movement of ULAB and ULAB residuals to processing facilities at minimal cost and impact to the environment.
- 4.F** Identify and review options for roles and responsibilities of government, manufacturers, consumers, importers, retailers, transporters and processors under a national ULAB recovery program.
- 4.G** Devise a regional template to assist countries to develop national ULAB recovery program plans and to encourage a harmonized approach to program delivery throughout the region.

**Mid-term (2-year)**

- 4.H** Identify, certify and register national ULAB collection, transport, consolidation and recycling facilities and recovery operations that conform to regional criteria for ESM and the Basel Technical Guidelines as ESM-compliant facilities and operations.
- 4.I** Work with industry and investors to establish or enhance domestic capacity to recycle ULAB, if assessed to be financially feasible.
- 4.J** Provide training programs to assist ULAB facilities and operations to meet regional criteria for ESM and Basel Technical Guidelines.
- 4.K** Prepare national ULAB recovery program plans<sup>29</sup> to collect, transport, consolidate, ship, and process ULAB using facilities and operations that meet regional criteria for ESM and the Basel Technical Guidelines.
- 4.L** Identify how performance will be measured and reported under national ULAB recovery and recycling programs.
- 4.M** Prepare a regional template for use in preparing annual reports for national ULAB recovery program operations.

**Long-term (3-year)**

- 4.N** Implement national plans for ULAB recovery programs.
- 4.O** Audit ULAB collection, consolidation and recycling facilities on a periodic basis to assure facilities and operations conform to regional criteria for ESM and the Basel Technical Guidelines.
- 4.P** Prepare annual reports that document and validate program performance and costing following each calendar year period of national ULAB recovery program operation.

<sup>28</sup> In addition to the *Basel Technical Guidelines for the Environmentally Sound Management of Lead Acid Battery Wastes*, the *Basel Training Manual on National Management Plans for Used Lead Acid Batteries* and the *Green Lead Site Assessment Guide* may provide additional guidance for use in establishing criteria for ESM of ULAB.

<sup>29</sup> National plans for ULAB management should subscribe to the waste management hierarchy whereby the following activities are favoured in order of priority: prevention, minimization, re-use, recycling, energy recovery and disposal. It should be noted however that reconditioning and disposal of ULAB are not recommended options for a national plan (see [Section 2.1](#): Analysis of the Perceived Problem).

**Goal 5: *Implement financial mechanisms to support the delivery and effectiveness of national ULAB recovery and recycling programs.***

**OBJECTIVES:**

**Short-term (1-year)**

- 5.A** Establish regional guidelines for the use of economic instruments and financial intervention options in national ULAB recovery and recycling programs.
- 5.B** Assess the need for collection and transportation incentive payments to defray the associated costs of ULAB storage, handling and shipping, especially in remote communities.
- 5.C** Identify and review options for economic instruments to promote consumer return and recovery of ULAB for recycling in the formal sector.
- 5.D** Identify, review and document economic instruments and financial intervention options to ensure the long-term economic sustainability of national ULAB recovery and recycling programs, especially during times of low international lead prices.
- 5.E** Identify sources of start-up capital that may be necessary to initiate national ULAB recovery program delivery.

**Mid-term (2-year)**

- 5.F** Prepare detailed financial management plans for inclusion in national plans for ULAB recovery programs.
- 5.G** Identify operations and procedures for use in administering national ULAB recovery program revenues to ensure that program expenditures are explicitly linked to the management of ULAB.

**Long-term (3-year)**

- 5.H** Audit and report national ULAB recovery program revenues and expenditures following each calendar year period of operation ([linkage to objective 4.P](#)).

**Goal 6: *Transition workers from informal ULAB facilities and operations to the formal ULAB recovery and recycling sector.***

**OBJECTIVES:**

**Short-term (1-year)**

- 6.A** Identify the extent of the informal recycling sector in each country using information acquired during the preparation of the national inventories.
- 6.B** Identify, visit and document informal recycling facilities and operations in each country.
- 6.C** Identify, review and document options for policies, economic instruments and other supportive measures for use on a regional and national basis to encourage desirable formal sector activities and discourage undesirable informal sector activities ([linkage to objective 5.A](#)).
- 6.D** Provide training to workers of informal ULAB recycling facilities and operations on applicable legal requirements and best management practices to minimize the risk of personal injury and help protect human health and the environment.
- 6.E** Identify and communicate feasible alternatives and associated benefits for workers to participate in the formal ULAB recycling sector.

**Mid-term (2-year)**

- 6.F** Curtail informal ULAB reconditioning operations by working with manufacturers and suppliers to limit the sale of replacement lead acid battery parts to registered businesses.
- 6.G** Curtail informal ULAB recycling operations by working with formal recyclers and manufacturers to ensure that ULAB acquired from registered collectors and transporters are purchased at fair market value<sup>30</sup>.
- 6.H** Establish agreements with vehicle manufacturers to equip new vehicles to be sold in developing countries with valve-regulated lead acid (VRLA) batteries that require the use of expensive specialized equipment (to reseal batteries) and therefore deter informal reconditioning operations.

<sup>30</sup> Such a system, for example, could be based on the London Metal Exchange market value for lead.

**Long-term (5-year)**

- 6.I Formally charge informal recyclers that continue to knowingly contravene national laws and international conventions despite warnings and best efforts to encourage formal recycling.

**Goal 7: *Raise public awareness concerning the importance of proper battery use and ensuring ESM of ULAB.***

**OBJECTIVES:**

**Short-term (1-year)**

- 7.A Establish community liaison groups through non-government organizations and BCRCs in the region to raise awareness regarding the importance of ensuring ESM of ULAB.  
7.B Develop general communication plans and tools to inform consumers about proper use and maintenance for lead acid batteries, and how to support the ESM of ULAB.  
7.C Develop targeted communication plans and tools to discourage the use of ULAB to produce lead fishing sinkers in fishing communities.

**Mid-term (2-year)**

- 7.D Promote the use of international standards by battery manufacturers for use in labelling and designing material safety data sheets for lead acid batteries.

**Long-term (3-year)**

- 7.E Explore opportunities with industry and academia to design a longer lasting battery for tropical climates with minimal hazardous substance content.

**Goal 8: *Identify candidate remediation sites where lead contamination has been observed from ULAB activities.***

**OBJECTIVES:**

**Short-term (6-month)**

- 8.A Identify and maintain a list of government authority contacts that are responsible for contaminated site assessment and remediation.  
8.B Establish and implement a contaminated site notification procedure for use when lead contamination is observed or suspected at existing or former ULAB facilities.

**As required**

- 8.C Interact with appropriate government authorities responsible for contaminated site assessment and remediation to ensure follow-up and corrective measures as appropriate.

### 3.5 ANALYSIS OF THE STAKEHOLDERS

A number of existing and potential stakeholders have been identified throughout the planning and implementation stages of this regional initiative. Figure 3.2 identifies the relationship of these groups while Table 3.2 identifies existing/potential roles of these groups to support delivery of the Regional Strategy. A total of 12 companies are actively participating in the regional initiative (Table 3.3).

Figure 3.2: Relationship of Stakeholders Contributing to the Regional Strategy

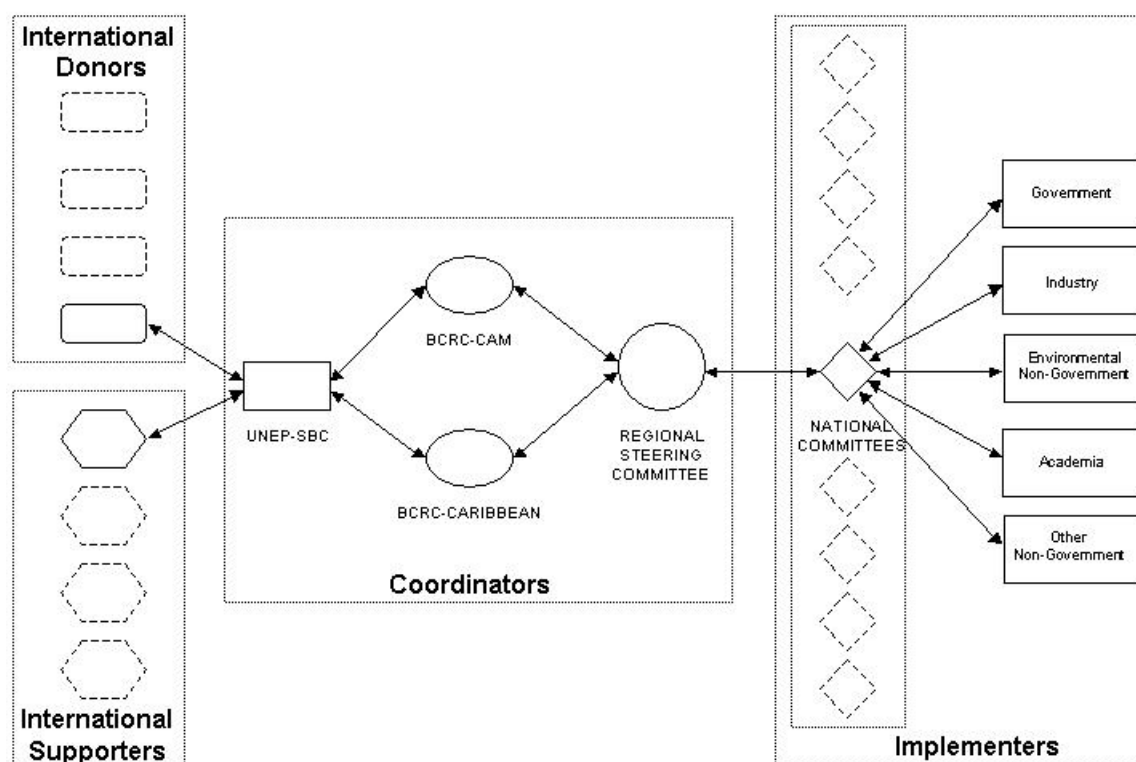


Table 3.1: Companies Currently Participating in the Regional Scheme

Country	Company Name	Type of Business
Colombia	1. MAC SA	▪ LAB Manufacturer & Recycler
Dominican Republic	2. Metaloxa	▪ ULAB Recycler & Oxide Producer
	3. Manufacturas Multiples	▪ LAB Retailer
El Salvador	4. Record Batteries	▪ LAB Manufacturer – closed September 2007
	5. Baterias de El Salvador	▪ ULAB Recycler– closed September 2007
Jamaica	6. Automotive Power	▪ LAB Retailer and ULAB Collector
Mexico	7. IMSA - Enertec	▪ ULAB Recycler
	8. Comercializadora de Baterias	▪ ULAB Retailer and Collector
Trinidad	9. Automotive Components Limited	▪ LAB Manufacturer ▪ ULAB Collector and Exporter
	10. Duncan Batteries	▪ LAB Manufacturer
Venezuela	11. Duncan Fundicion del Centro	▪ ULAB Recycler
	12. Duncan Auto Shop	▪ LAB Service Centre
	13. Funmetal	▪ ULAB Recycler

**Table 3.2: Existing/Potential Roles for Regional Strategy Stakeholders**

Category	Organization	Existing/potential roles
Coordinators	UNEP-SBC	<ul style="list-style-type: none"> <li>▪ Administer Basel Convention and the partnership program developed in response to the 1999 Ministerial Declaration</li> <li>▪ Solicit interest from international donors and supporters for partnership projects</li> <li>▪ Provide technical expertise and guidance on regional partnership project design and delivery</li> <li>▪ Report partnership project outcomes to international donors and other interested Parties</li> </ul>
	BCRC-CAM	<ul style="list-style-type: none"> <li>▪ Coordinate regional activities linked to Basel Convention and partnership programs linked to 1999 Ministerial Declaration</li> <li>▪ Liaise with Parties in region to identify training needs and help address regional and country-specific needs</li> <li>▪ Facilitate and administer regional training and workshops related to the above based on the Basel Convention and the Basel Technical Guidelines</li> <li>▪ Report project outcomes to UNEP-SBC</li> </ul>
	BCRC-CARIBBEAN	
	Regional ULAB Steering Committee	<ul style="list-style-type: none"> <li>▪ Composed of select Party countries in the region</li> <li>▪ Regional advisory body on regional issues linked to the design and delivery of the Regional Strategy</li> <li>▪ Help address regional needs to deliver the Regional Strategy</li> <li>▪ Report regional successes and challenges to BCRC and other regional stakeholders</li> <li>▪ Also engaged in strategy implementation</li> </ul>
Implementers	National ULAB Committees <sup>31</sup>	<ul style="list-style-type: none"> <li>▪ Multi-stakeholder National ULAB Committees to be established in each country (Regional Steering Committee, December 2003 outcome)</li> <li>▪ National advisory body on national issues linked to the design and delivery of the Regional Strategy</li> <li>▪ Develop and coordinate implementation of a National Action Plan for ULAB</li> <li>▪ Help address country-specific needs to deliver the Regional Strategy and National Action Plan</li> <li>▪ Report national successes and challenges to Regional Steering Committee, national governments and other national stakeholders</li> <li>▪ Also engaged in strategy coordination</li> </ul>
	Government	<ul style="list-style-type: none"> <li>▪ Ensure national ULAB import and export conform to existing laws and the Basel Convention</li> <li>▪ Ensure laws are sufficient to protect human health and the environment from risks posed by ULAB</li> <li>▪ Register ESM ULAB facilities and operations</li> <li>▪ Deliver public awareness programs to convey the importance of and build support for ESM of ULAB</li> <li>▪ Provide necessary training on ESM and Occupational Health and Safety to ULAB operators</li> <li>▪ Implement financial mechanisms to support ESM recovery and recycling for ULAB</li> <li>▪ Foster support for clean technologies linked to ULAB processing and recycling</li> <li>▪ Identify existing/former ULAB facilities and operations that may be contaminated with lead</li> </ul> <p><b>Institutional Linkages:</b></p> <ol style="list-style-type: none"> <li>1. Ministry of Environment and Natural Resources</li> <li>2. Ministry of Health and Labour</li> <li>3. Ministry of Finance and Customs</li> <li>4. Ministry of Industry and Commerce</li> <li>5. Ministry of Transport</li> <li>6. Ministry of Education</li> </ol>

<sup>31</sup> The recommendation to establish National ULAB Committees was adopted at the December 2003 Regional Steering Committee meeting in Venezuela. It was advised that representatives from Government, Industry, Non-government Organizations and Academia participate as National Committee members.

**Table 3.2: Existing/Potential Roles for Regional Strategy Stakeholders**

Category	Organization	Existing/potential roles
Other Implementers	Industry	<ul style="list-style-type: none"> <li>▪ Operate in accordance with national law and Basel Convention requirements and Basel Technical Guidelines</li> <li>▪ Share technical expertise on ESM of ULAB</li> <li>▪ Upgrade facilities and operations where economically feasible and seek ESM registration</li> <li>▪ Provide training to employees on ESM and Occupational Health and Safety</li> </ul> <p><b>Institutional Linkages:</b></p> <ol style="list-style-type: none"> <li>1. ULAB collectors and transporters</li> <li>2. ULAB servicing stations &amp; recyclers (smelters)</li> <li>3. Battery manufacturers and distributors</li> <li>4. Trade / Industrial Chambers related to ULAB</li> </ol>
	Environmental non-Government Organizations	<ul style="list-style-type: none"> <li>▪ Help to identify informal ULAB facilities and operations</li> <li>▪ Promote integration of clean production processes and technologies</li> <li>▪ Raise public awareness on ULAB hazards, ESM and safe operating procedures</li> </ul> <p><b>Institutional Linkages:</b></p> <ol style="list-style-type: none"> <li>1. National Clean Production Centres</li> <li>2. Recycling Councils</li> </ol>
	Academia	<ul style="list-style-type: none"> <li>▪ Update national ULAB inventories</li> <li>▪ Help to design national ULAB recovery and recycling programs</li> </ul> <p><b>Institutional Linkages:</b></p> <ol style="list-style-type: none"> <li>1. Universities</li> <li>2. Research Institutes</li> </ol>
	Other non-Government Organizations	<ul style="list-style-type: none"> <li>▪ Promote public awareness on ULAB hazards, ESM and safe operating procedures</li> </ul> <p><b>Institutional Linkages:</b></p> <ol style="list-style-type: none"> <li>1. Trade Unions of ULAB facilities and operations</li> <li>2. Media</li> </ol>
International Supporters	<ul style="list-style-type: none"> <li>▪ Provide in-kind technical expertise and support</li> <li>▪ Provide technical training on ESM and ULAB management</li> </ul> <p><b>Institutional Linkages:</b></p> <ol style="list-style-type: none"> <li>1. Battery Council International (BCI)</li> <li>2. Central American Commission for Environment and Development (CCAD)</li> <li>3. International Lead Management Centre (ILMC)</li> <li>4. Secretariat of Basel Convention (SBC)</li> <li>5. United Nations Environment Conference on Trade and the Development (UNCTAD) Capacity-building Task Force on Trade, Environment and Development (CBTF)</li> <li>6. International donor agencies (listed below)</li> </ol>	
International Donors	<ul style="list-style-type: none"> <li>▪ Support capacity building in developing countries</li> <li>▪ Contribute financial resources to implement the Regional Strategy</li> </ul> <p><b>Institutional Linkages:</b></p> <ol style="list-style-type: none"> <li>1. Andean Development Corporation (CAF)</li> <li>2. Canadian International Development Agency (CIDA)</li> <li>3. Department of Environment and Nature (MINA) of the Netherlands Antilles</li> <li>4. Environment Canada (EC)</li> <li>5. Global Environmental Facility (GEF)</li> <li>6. Inter American Development Bank (IDB)</li> <li>7. International Development Bank</li> <li>8. Ministère de l'Ecologie et du Développement Durable (France)</li> <li>9. North American Commission for Environmental Cooperation (CEC)</li> <li>10. Pan American Health Organization (PAHO)</li> <li>11. UK Department of Environment, Transport and the Regions (DETR)</li> <li>12. United Nations Environment Conference on Trade and the Development (UNCTAD)</li> <li>13. United States Department of Commerce</li> <li>14. United States Environmental Protection Agency (US EPA)</li> <li>15. World Bank</li> <li>16. World Health Organization (WHO)</li> </ol>	

### **3.6 AN OVERVIEW OF COMMON APPROACHES TO FINANCING ULAB RECOVERY FOR ESM**

Waste products that are improperly discarded result in higher costs to society because they become a nuisance issue (e.g. litter) and/or pose risks to human health and the environment. Improperly discarded wastes are also quite expensive to redirect into legitimate and environmentally sound waste management programs. To address this problem, many countries have established recovery or “take-back” programs for a number of product-focused waste streams, including ULAB. Consumer participation, in the form of taking back products at the end of their useful life, is a critical element that often defines the overall success of these programs.

Product take-back programs may employ a variety of economic instruments and incentives to encourage consumers to return ULAB and/or to ensure that sufficient revenue is generated to cover program expenditures. Although instrument selection (and their associated program design) may vary on a case-by-case basis, it is important for decision-makers to carefully evaluate and compare the potential environmental, social and economic costs and benefits of all proposed options before making a final selection. In addition, inconsistently applied or variable incentives/disincentives within the same geographic region may also lead to market place distortions for product purchasing and return (particularly under voluntary approaches).

Common approaches that have been used to finance existing ULAB product take-back programs are outlined in [Table 3.3](#) and are briefly described below, in the context of the scenarios with which they appear to be most commonly associated.

#### **Deposit-refund schemes**

Deposit-refund schemes typically involve the payment of a surcharge (deposit) on the price of a new product, which is refunded to the consumer (in full or part) when the product or its residual is returned to the point of sale or a dedicated collection facility. As a result, this scheme is modelled after the “polluter pays” principle and provides consumers with a direct financial incentive to return products after use. In the case of ULAB, consumers redeem refunds by returning a ULAB within a specified period of time following the purchase of a new LAB (e.g. up to 30 days). Retailer policies may also impose restrictions on claiming refunds. For example, consumers may be required to provide a proof of deposit that was made at the retailer’s premises to be eligible for a refund<sup>32</sup>.

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<sup>32</sup> Considering that LAB have a useful life of several years, a condition to demonstrate proof of deposit may frustrate consumers, reduce the number ULAB eligible refunds, and possibly result in reduced public participation.

**Table 3.3: Economic Instruments and Incentives Applicable to ULAB Management**

Instrument / Incentive	Pros	Cons
<p><b>Deposit-Refund Schemes</b></p> <p><i>Noted examples: most US states</i></p>	<ul style="list-style-type: none"> <li>▪ Direct financial incentive for consumers to return ULAB</li> <li>▪ Modelled after the “polluter pays” principle</li> <li>▪ Non-refundable portions of a deposit (levy) can be used to offset program carrying costs</li> <li>▪ Return-to-retail is convenient for most consumers</li> </ul>	<ul style="list-style-type: none"> <li>▪ Retailers (versus producers) are responsible for program delivery</li> <li>▪ Unredeemed deposits may not completely offset retailer expenses</li> <li>▪ Acquiring program performance data may be more problematic under de-centralized approaches</li> <li>▪ Retailer imposed conditions concerning refund claims may frustrate consumers</li> <li>▪ May require new legislation</li> </ul>
<p><b>“Purchase Discount” Schemes</b></p> <p><i>Noted examples: Philippines</i></p>	<ul style="list-style-type: none"> <li>▪ Direct financial incentive for consumers to return ULAB</li> <li>▪ Generally portrayed as a voluntary industry initiative</li> <li>▪ LAB manufacturers and ULAB recyclers bear all program costs</li> <li>▪ Return-to-retail is convenient for most consumers</li> </ul>	<ul style="list-style-type: none"> <li>▪ Often limited for use in countries with both domestic LAB manufacturing and ULAB recycling</li> <li>▪ Discounts may only apply to LAB branded by the domestic manufacturer</li> <li>▪ A wide network of participating retailers is needed to ensure program effectiveness</li> <li>▪ Discourages the return of ULAB before consumers are ready to purchase a new one</li> </ul>
<p><b>“Waived Charge” Schemes</b></p> <p><i>Noted examples: Germany, Prince Edward Island (Canada)</i></p>	<ul style="list-style-type: none"> <li>▪ Consumers do not pay an extra fee if they return a ULAB when purchasing a new LAB</li> <li>▪ Modelled after the “polluter pays” principle</li> <li>▪ Levy may be used to offset program carrying costs of retailers</li> <li>▪ Return-to-retail is convenient for most consumers</li> </ul>	<ul style="list-style-type: none"> <li>▪ Retailers (versus producers) are typically made responsible for program delivery</li> <li>▪ Levies may not completely offset retailer expenses</li> <li>▪ Acquiring program performance data may be more problematic under de-centralized approaches</li> <li>▪ Discourages the return of ULAB before consumers are ready to purchase a new one</li> <li>▪ May require new legislation</li> </ul>
<p><b>Advance Recycling Fees (Levies)</b></p> <p><i>Noted examples: Sweden, Italy, British Columbia (Canada)</i></p>	<ul style="list-style-type: none"> <li>▪ Extended Producer Responsibility (EPR) programs are managed and financed by LAB manufacturers and first importers</li> <li>▪ Levies provide a sustainable revenue stream to pay for all costs of program delivery</li> <li>▪ All aspects of program delivery are coordinated using a centralized approach (e.g. oversight body) which may facilitate ESM and performance measurement</li> <li>▪ Revenues may be used to offer return incentives to collectors and transporters, and infrastructure development (e.g. return depots)</li> </ul>	<ul style="list-style-type: none"> <li>▪ No direct financial incentive for consumers to return products to collection points</li> <li>▪ Back-drop legislation is usually necessary to ensure full industry participation in program delivery</li> <li>▪ Program revenues and expenditures may be higher than other options if not carefully controlled</li> <li>▪ Levies may generate high revenue surpluses if not carefully controlled, resulting in public mistrust</li> <li>▪ Government-operated programs may allocate revenue from levies for purposes other than managing ULAB</li> <li>▪ May require new legislation</li> </ul>
<p><b>Tax-base Funded Schemes</b></p> <p><i>Noted examples: waste collection programs run by public waste management authorities</i></p>	<ul style="list-style-type: none"> <li>▪ Follows a traditional approach to waste management in which community services are funded through taxes</li> <li>▪ General tax laws are already in place</li> <li>▪ Programs generally target a wide variety of hazardous or difficult to manage waste streams, not just ULAB</li> </ul>	<ul style="list-style-type: none"> <li>▪ Burden of program funding is placed on government and general tax payers (versus producers and product consumers)</li> <li>▪ Government resources may be insufficient to ensure permanent recovery programs for urban, rural and remote communities</li> <li>▪ Sustainable program financing may necessitate tax-hikes or resource diversion from other community services, both of which are not favored politically or publicly</li> <li>▪ No direct financial incentive for consumers to return products to collection points</li> </ul>

Although the amount of the deposit-refund may vary, generally each component is based on a combination of the avoided environmental costs of improper disposal and any residual economic value that the product may retain after use. In practice, higher return rates are often achieved as deposits and refunds are increased to represent a higher percentage of the product price. However it is equally important to consider the potential adverse impacts that inflated deposits may have on consumer purchasing patterns and society at large, especially in developing countries.

The financial and physical responsibility for operating deposit-refund schemes is generally delegated to retailers of LAB. This is the case in the USA for example, in which deposit-refund schemes operate at the state level<sup>33</sup> and LAB deposits range between \$5 to \$10 USD per battery. Under this approach, vendors are generally required to accept the same brand and type of product that they sell from consumers<sup>34</sup> and arrange for pick-up and delivery to collection centres and recycling facilities (often through distributors or service providers). Retailers must also meet applicable requirements for ULAB handling and storage and are usually required to demonstrate to government that the batteries are being sent to formal ULAB recycling facilities (often through shipping dockets, waybills and/or hazardous waste manifests). Retailers could also be required to report the number of lead acid batteries that they import each year to government.

Although vendors may incur additional costs associated with handling returns of designated products, these costs are often offset by the interest earned on deposits, unclaimed deposits<sup>35</sup>, and/or additional subsidies acquired from selling collected products on the secondary market. However, this may not necessarily be the case during periods of low international lead prices, in remote regions, or countries that do not have domestic smelting capacity. In these cases, a non-refundable portion of the deposit could be retained by retailers to compensate their actual expenses<sup>36</sup>. It is also worth mentioning that de-centralized approaches (noted above), which lack a dedicated oversight body to coordinate activities, and instead rely on a large number of independent retailers for program delivery, could make it difficult for government authorities to assure that programs are delivered in a consistent fashion (e.g. conformity to ESM principles) and to consolidate data to provide an accurate measure of program performance (especially under voluntary schemes that typically do not have reporting requirements).

Alternately, deposit-refund schemes could be applied using a centralized approach (refer to advance recycling fees), in which deposits collected at retail are remitted to a dedicated oversight body that controls the distribution of revenue and coordinates program logistics (e.g. collection, transport, recycling). Under this approach,

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<sup>33</sup> State legislated deposit-refund schemes for LAB exist in Arizona, Arkansas, Connecticut, Idaho, Maine, Minnesota, New York, South Carolina, Washington, and Rhode Island. Most other US states operate deposit-refund schemes under voluntary product take-back programs for ULAB.

<sup>34</sup> Some deposit-refund schemes specify a maximum number of products that retail establishments must collect from customers per visit in an effort to help ensure that product collection burdens are shared in a fair and equitable manner.

<sup>35</sup> ULAB management programs in the USA generally allow retailers to keep all unredeemed deposits to help offset program delivery costs. In the state of Rhode Island, retailers are only permitted to 20% of unredeemed deposits (with the remainder remitted to state government).

<sup>36</sup> The levy portion of a deposit-refund scheme should be set and allocated carefully to minimize overcompensation of retailers that are located close to ULAB consolidation and recycling facilities (which experience smaller transport costs).

consumers still claim refunds from retailers, but retailers must file a claim with the oversight body to recoup their costs. Centralized approaches can be beneficial in so far that they provide a systematic framework to assure program consistencies, although administratively, they may be more complex (and more costly) to deliver. This approach is most commonly adopted when a non-refundable portion of the deposit (levy) is applied.

Regardless of whether a centralized or de-centralized approach is adopted, the private sector will be more inclined to participate in deposit-refund schemes on a voluntary basis if the designated product has residual economic value after use (as the case with ULAB). In other cases, backdrop legislation may be necessary to ensure that private sector responsibilities are carried out in a fair and equitable fashion throughout the country.

### **“Purchase Discount” Schemes**

“Purchase discount” schemes offer consumers a markdown on the retail price of a new LAB when a ULAB is returned at the same time. This discount provides consumers with a direct financial incentive to return products after use. ULAB are subsequently kept by participating retailers and sent to a recycler.

Purchase discount schemes are typically negotiated between, financed and run by LAB manufacturers and ULAB recyclers. LAB manufacturers may benefit from this approach through increased sales of their branded LAB and/or discounted purchasing agreements for refined lead with ULAB recyclers. ULAB recyclers also benefit by being able to access a larger feedstock of secondary lead for smelting operations. Purchase discount schemes are also favored in areas where the sale of inexpensive reconditioned batteries from undesirable informal sector activities is commonplace, because the discounts offered on new LAB help to offset the price difference between new and reconditioned LAB. For this reason, a purchase discount scheme has been adopted in the Philippines for example.

However, these schemes are often considered to be economically viable only in countries that possess both domestic LAB manufacturing and domestic ULAB recycling capacity. This is because ULAB take-back is funded entirely by industry (i.e. consumers and government do not subsidize program delivery) and same country shipments for refined lead and ULAB typically result in shorter hauling distances which help to keep transport costs to a minimum. Under purchase discount schemes, LAB eligible for discounts are generally only those that have been branded by participating LAB manufacturers. Therefore retailers that do not sell these brands of LAB are not likely to participate in these programs. Consequently, such a scheme may not, on its own, constitute an effective incentive for consumers to return ULAB if a wide network of participating retailers does not exist. Purchase discount schemes may also discourage the return of ULAB before consumers are ready to purchase a new one (at which time the discount is applied).

### **“Waived Charge ” Schemes (Penalties)**

“Waived charge” schemes charge consumers a financial penalty or fine at the point-of-purchase if they fail to return a ULAB for each new LAB that they purchase. This scheme is also modelled after the “polluter pays” principle, and provides a financial disincentive to discourage consumers from not returning ULAB to a retailer. The charge is waived in cases where ULAB are exchanged for new LAB on a one-to-one basis. Consumers may also redeem the full amount of the charge from the retailer if a ULAB is returned within a specified period of time after the purchase of a new LAB (e.g. up to 30 days). Unlike “purchase discount” schemes, consumers continue to pay the full retail price for new LAB, whether or not a penalty applies.

In all other respects, waived charge schemes tend to function very similarly to deposit-refund schemes for LAB. For example, individual retailers of LAB are tasked with the financial and physical responsibility of administering all aspects of program delivery<sup>37</sup>, and a dedicated oversight body may or may not be established. Retailers also tend to keep revenues accumulated from the charges or fines to offset the costs of program delivery. Germany and the province of Prince Edward Island in Canada have adopted a waived charge scheme in their product take-back programs for ULAB<sup>38</sup>. Like product discount schemes, waived charge schemes may also discourage the return of ULAB before consumers are ready to purchase a new one (at which time the charge is waived).

### **Advance Recycling Fees (Levies)**

An advance recycling fee (ARF) is a surcharge or levy that is placed on designated products to cover the estimated costs for their environmentally sound collection, transport and/or recycling after they have reached the end of their useful life<sup>39</sup>. They are typically used when revenues from unredeemed deposits, charges or taxes are, by themselves, not considered to raise the level of revenue necessary to ensure that some program designs (especially centralized approaches) are self-sustaining. Unlike “back-end” consumer recycling fees (or disposal fees), illegal dumping as a means of fee avoidance is not an issue under ARF schemes.

It should be noted however that ARF, by themselves, do not provide consumers with direct financial incentives to return ULAB to collection points and therefore require programs with strong public relation and communication campaigns to encourage consumers to participate and remain engaged. An ARF also could be integrated as a non-refundable portion of deposit-refund schemes to ensure that consumers remain financially motivated to return ULAB if necessary (refer to deposit-refund schemes). No examples of a levy-based deposit-refund scheme for ULAB have been identified at this time however.

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<sup>37</sup> Government authorities, however, may monitor performance and ensure compliance with applicable legal requirements.

<sup>38</sup> In Germany consumers are charged an additional 10 € for all LAB purchased without the return of a ULAB. An oversight body known as GRS Batterien administers this revenue. In contrast, Prince Edward Island, Canada has adopted a de-centralized approach that is administered by individual retailers. The charge under PEI's program is \$5 CAD.

<sup>39</sup> ARF may also be used as a sustainable source of revenue for other program costs including assessing ESM compliance, reporting and auditing program finance and performance, communications, public relations, and general administration.

ARF schemes are generally adopted in product take-back programs that are coordinated by a dedicated oversight body that is operated by industry, government, or a designated third-party organization. Each type of dedicated oversight body generates program revenue from either product levies that are charged directly to manufacturers and/or first importers of designated products, or product levies that are charged directly to consumers of designated products at the point-of-sale. In some cases, retailers are not required to accept ULAB resulting in the need for separate collection facilities or depots (as is the case in Italy).

In situations where program revenues are generated from levies applied at the level of the manufacturer or first importer<sup>40</sup>, individual companies must remit these levies, accompanied by a statement of their unit product sales, to the board of directors of a dedicated oversight body on a periodic basis. Proprietary information concerning individual company sales, revenues and market share is shared with the board under strict confidentiality agreements<sup>41</sup> and used to validate that a company's financial contribution to the ULAB recovery and recycling program is proportionate to the number of products that it sells into the country. In most cases, individual manufacturers and first importers tend to recoup these levy costs by passing them down through the product supply chain to distributors, retailers and ultimately consumers (usually as a separate fee without marked up). Alternatively, manufacturers, first importers, distributors and/or retailers could make a conscious decision to absorb the cost of these levies (e.g. as part of a marketing strategy to gain more product sales). Program revenues that are generated from levies applied at the consumer-level are collected by retailers and remitted to dedicated oversight bodies on a periodic basis.

Industry-operated dedicated oversight bodies are usually established under the auspices of Extended Producer Responsibility (EPR) programs, which obligate producers (e.g. manufacturers and first importers) to recover and manage the products that they introduce to the marketplace after consumers are finished using them. National law usually prescribes EPR requirements. For example, various permutations of mandatory EPR programs for ULAB that adopt ARF have been established throughout the European Union in response to its *Directives on Batteries and Accumulators and Waste Batteries and Waste Accumulators*.

Under EPR programs, producers generally prefer to work collectively in meeting their responsibilities, mainly due to the linkages that exist between economies of scale and cost-efficiencies of program delivery (e.g. to secure bargaining power in negotiating agreements with service contract providers). To facilitate this, a not-for-profit industry consortium (often referred to as a producer responsibility organization or PRO<sup>42</sup>) is established and tasked with designing and implementing product take-back programs that fulfil applicable legal requirements<sup>43</sup>.

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<sup>40</sup> The EPR program for ULAB in Sweden, for example, charges manufacturers and first importers a levy on LAB sales.

<sup>41</sup> A PRO may, however, be required to disseminate industry product sales information in an aggregate form to the public.

<sup>42</sup> Examples of PROs for ULAB in the European Union include *Returbatt* (Sweden), *GRS Batterien* (Germany) and *Cobat* (Italy). The ARF in Sweden and Italy are 35 SEK and 10 € respectively. In contrast, ULAB program revenues in Germany are raised using a waived-charge scheme.

<sup>43</sup> Requirements of EPR legislation may include meeting prescribed targets for product collection and product recycling.

Decisions of the PRO are made by a board of directors consisting of representatives from participating manufacturers and first importers. In some cases, representatives from government, environmental non-government organizations and the recycling industry are also invited to participate on the board in an effort to win public confidence for the initiative by ensuring transparency of program operations and avoiding any potential for industry collusion.

The governance of an oversight body that is operated by a third party is very similar to that of a PRO. The chief difference however is the composition of the board structure, which tends to ensure that more of a balance between industry and non-industry representation exists for decision-making.

A government-operated oversight body is, as the name suggests, simply a section of government that is principally tasked with controlling the financial aspects of program delivery and registering collectors, transporters and recyclers of ULAB. These duties may also be partially administered by a private sector contractor under contract to government (or alternately a designated arms-length third-party oversight body). The province of British Columbia in Canada has adopted a product take-back program for ULAB modelled on this approach. Under this program, consumers are charged an ARF of \$5 CDN on new LAB sales by retailers. The levies are subsequently remitted by retailers to government authorities and placed into a government-managed environmental trust fund for use in funding program delivery. It is important however, that government organizations use this revenue for its intended purpose (i.e. to recover and recycle ULAB) and not to finance other environmental or social interests (in which case it would be perceived as a tax).

As previously mentioned, levy-based revenues are primarily used to subsidize the cost of transport for ULAB, which is particularly important to ensure that batteries are neither stockpiled or improperly discarded during periods of low international lead prices<sup>44</sup>. Since levies set for ULAB are inversely proportional to lead prices (which fluctuate over time), the levy amount will need to be adjusted periodically to maintain a balance between program revenues and program expenditures, avoiding the potential for huge surpluses to build up. It is also important to ensure cost-efficiency of program delivery, from the perspective of both administrative and operational expenses. In some cases, transportation subsidies are based on transportation incentive payments<sup>45</sup> that are set to the cost of transport in a geographic zone minus the income that transporters are expected to receive from ULAB sales. Transportation incentive payments must be set carefully however, to avoid over compensating the transport of ULAB to recyclers during periods of low lead prices. This could actually stimulate an undesirable reverse effect, whereby ULAB for transport are stockpiled for shipment only during periods of low lead prices (i.e. when high transport subsidies make it much more profitable). In a similar manner, ARF-generated revenue could also be used to provide incentives for ULAB collection and infrastructure development (e.g. facility construction).

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<sup>44</sup> The London Metal Exchange is typically used as a source to track the international prices for a number of metals, including lead.

<sup>45</sup> For example, Italy and the province of British Columbia in Canada have adopted transportation incentive payments for ULAB.

### **Tax-base funded schemes**

Tax-base funded schemes use general tax revenue to fund community waste management services. Under these schemes, a portion of public tax revenue is allocated to government waste management authorities for general use in ensuring that residential wastes (i.e. wastes that are not derived from industry or commercial activities) are collected for proper recycling or disposal. In some cases, this revenue is used to establish permanent or temporary collection services for a wide variety of hazardous or difficult to manage wastes streams (e.g. electronics, paints, pesticides, pharmaceuticals, used oil, batteries, etc.) that may require special treatment for recycling or final disposal. Tax-base funded schemes generally adopt a traditional approach to waste management whereby funding is acquired from public coffers. These schemes do not require new legislation because the legal authority for general taxation is already in place.

However, the financial burden for delivering separate programs to manage designated waste streams under these schemes falls upon government and general tax payers, not the producers and consumers of the products. In many cases, existing tax revenue allocations for waste management may be insufficient to ensure permanent recovery programs for ULAB and other designated waste streams in urban, rural and remote communities. As a result, sustainable program financing may necessitate tax-hikes or resource diversion from other community services, both of which are not favored politically or publicly, especially in the developing world where taxes are often viewed as a social burden. Furthermore, tax-base funded schemes do not provide a direct financial incentive for consumers to return products to collection points.

### **3.7 AN OVERVIEW OF TRANSITIONING WORKERS FROM INFORMAL TO FORMAL ULAB SECTOR ACTIVITIES**

National reports suggest that the scope and magnitude of informal ULAB sector activities varies by country on a case-by-case basis. For this reason, the need to transition workers from informal to formal ULAB sector activities will take on more significance in some countries in the region than others<sup>46</sup>. Similarly, each country may choose to adopt customized policies and approaches to tackle this issue under their National Action Plans. While the Regional Strategy allows for this type of flexibility, it also encourages regional cooperation and coordination throughout all its strategic elements.

In addition to the objectives outlined under Goal 6 of the Regional Strategy (i.e. transitioning workers from informal ULAB facilities and operations to the formal ULAB recovery and recycling sector), it should be noted that many of the problems associated with informal ULAB sector activities may be resolved through a combination of the following, each of which are also associated with additional goals of the Regional Strategy:

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<sup>46</sup> For example, fishing communities that break apart ULAB to extract lead for use in making fishing sinkers, and backyard smelters that break apart ULAB to make lead ingots for sale on the black market may or may not pose significant issues to a given country in the region.

1. adopting national programs to recover ULAB which provide consumers with a direct financial incentive to return ULAB to the formal sector for ESM (linkages to Goal 4 and Goal 5, also see Section 3.6);
2. raising the level of public awareness concerning the importance of proper battery use, maintenance and ensuring ESM of ULAB (linkage to Goal 7); and
3. raising the level of industry awareness regarding national laws and requirements applicable to their operations (linkage to Goal 3).

### **3.8 TWO-YEAR BUDGET FOR THE IMPLEMENTATION OF THE REGIONAL STRATEGY**

The Regional Strategy proposes the following two-year budget totalling \$920 K USD to assist pilot countries in financing its implementation, after which point countries should be maintaining self-financing ULAB programs. This is feasible considering the fact that program costing can be offset by revenues generated from the sale of recovered ULAB (secondary lead is a commodity) and financial intervention options (e.g. deposit-refund, purchase-discounts, waived-charges, advance recycling fees, or taxes). Goals and objectives for which no monetary resources have been allocated will be cost internalized by country governments. The costs associated with these items are considered to negligible and/or part of day-to-day government operations. This budget also assumes that countries will be working cooperatively with one another to implement the Regional Strategy. Cooperative approaches are also anticipated to generate opportunities for regional costing efficiencies, resource sharing, and resource mobilization that could not otherwise be achieved individually.

A request for (co)funding will be submitted to international donors such as the Global Environment Fund, the World Bank, and the International Development Bank, as well as other potential bilateral and multilateral funding and cooperation agencies and the private sector (see Table 3.2).

**TWO-YEAR BUDGET FOR THE IMPLEMENTATION OF THE REGIONAL STRATEGY (EXPRESSED IN US DOLLARS)**

	<b>Year 1</b>	<b>Year 2</b>	<b>TOTAL</b>	<b>NOTES</b>
<b>PERSONNEL</b>				
<i><b>Project Personnel</b></i>				
Regional Project Coordinator (1)	\$35,000	\$35,000	<b>\$70,000</b>	<ul style="list-style-type: none"> <li>▪ proficient in both Spanish &amp; English</li> <li>▪ to assist coordination of regional activities in conjunction with the Regional ULAB Steering Committee</li> </ul>
Trainer (1)	\$15,000	\$15,000	<b>\$30,000</b>	<ul style="list-style-type: none"> <li>▪ proficient in both Spanish &amp; English</li> <li>▪ to provide training on the Basel Convention, Basel Technical Guidelines, and how to conduct ESM site assessments and national ULAB inventories</li> </ul>
Technical Expert (1)	\$15,000	\$15,000	<b>\$30,000</b>	<ul style="list-style-type: none"> <li>▪ proficient in both Spanish &amp; English</li> </ul>
<i><b>Administrative Support</b></i>				
Support Staff from BCRC-CARIBBEAN & BCRC-CAM	\$2,000	\$2,000	<b>\$4,000</b>	
<i><b>Travel on Official Business</b></i>				
Regional Project Coordinator (1)	\$10,000	\$10,000	<b>\$20,000</b>	
Trainer (1)	\$5,000	\$5,000	<b>\$10,000</b>	
Technical Expert (1)	\$5,000	\$5,000	<b>\$10,000</b>	
<b>PERSONNEL SUB-TOTAL</b>	<b>\$87,000</b>	<b>\$87,000</b>	<b>\$174,000</b>	

## TWO-YEAR BUDGET FOR THE IMPLEMENTATION OF THE REGIONAL STRATEGY (EXPRESSED IN US DOLLARS)

	Year 1	Year 2	TOTAL	NOTES
<b>STRATEGY COMPONENTS</b>				
<b>Goal 1: Secure commitment from relevant stakeholders to promote ESM for ULAB in accordance with the Basel Technical Guidelines.</b>				
<b><u>Short-term (6-month)</u></b>				
<b>1.A</b> Identify stakeholder organizations that may share an interest in promoting ESM for ULAB and could implement the Regional Strategy.	\$0		<b>\$0</b>	▪ pilot countries will cost internalize
<b>1.B</b> Secure formal commitment from the senior management of stakeholder organizations to promote ESM for ULAB and implement the Regional Strategy.	\$0		<b>\$0</b>	▪ pilot countries will cost internalize
<b>1.C</b> Establish National ULAB Steering Committees, with representation from interested stakeholder organizations, to plan, coordinate and monitor progress of country-specific activities to fulfill the Regional Strategy.	\$1,000	\$500	<b>\$1,500</b>	▪ teleconference fees
<b>1.D</b> Maintain ongoing meetings of the Regional ULAB Steering Committee to help address and coordinate regional issues and activities.	\$40,500	\$40,500	<b>\$81,000</b>	▪ teleconference fees (\$500 per year) ▪ one face-to-face meeting (Year 2) including country member travel
<b>1.E</b> Formalize the mandate, composition, decision-making process, reporting structure, meeting frequency and other operating procedures for National and Regional ULAB Steering Committees.	\$0		<b>\$0</b>	▪ pilot countries will cost internalize
<b>1.F</b> Identify clear roles and responsibilities for all interested stakeholders to facilitate implementation of the Regional Strategy.	\$0		<b>\$0</b>	▪ pilot countries will cost internalize

**TWO-YEAR BUDGET FOR THE IMPLEMENTATION OF THE REGIONAL STRATEGY (EXPRESSED IN US DOLLARS)**

	Year 1	Year 2	TOTAL	NOTES
<b>1.G</b> Prepare, via National ULAB Steering Committees, National Action Plans that assign roles and responsibilities, and establish a budget with timeframes for country-specific activities to fulfil the Regional Strategy.	\$9,000		<b>\$9,000</b>	▪ National Action Plans to be revised for each of the 9 pilot countries (\$1,000 each)
<b>1.H</b> Identify and allocate resources from stakeholder organizations and other support groups for use in implementing the Regional Strategy and National Action Plans.	\$0		<b>\$0</b>	▪ pilot countries will cost internalize
<b>Long-term (Annually)</b>				
<b>1.I</b> Review country performance in meeting objectives under the Regional Strategy, and take corrective action, where necessary, to ensure that goals, objectives and targets are achieved.	\$0	\$0	<b>\$0</b>	▪ role of National & Regional ULAB Steering Committees
<b>1.J</b> Review National Action Plans and national ULAB recovery and recycling programs to ensure that they are coordinated and share consistencies on a regional basis.	\$0	\$0	<b>\$0</b>	▪ role of National & Regional ULAB Steering Committees
<b>1.K</b> Re-secure formal commitment from country governments and other stakeholder organizations to promote ESM for ULAB and implement the Regional Strategy in the event that there is a change in leadership or senior management.	\$0	\$0	<b>\$0</b>	▪ pilot countries will cost internalize
<b>GOAL 1 SUB-TOTAL</b>	<b>\$50,500</b>	<b>\$41,000</b>	<b>\$91,500</b>	

## TWO-YEAR BUDGET FOR THE IMPLEMENTATION OF THE REGIONAL STRATEGY (EXPRESSED IN US DOLLARS)

		Year 1	Year 2	TOTAL	NOTES
<b>Goal 2:</b>	<b>Assess the degree to which the ESM of ULAB is supported at the national level.</b>				
	<b><u>Short-term (1-year)</u></b>				
<b>2.A</b>	Identify existing national legislation and international conventions that pertain to ULAB management.	\$0		<b>\$0</b>	<ul style="list-style-type: none"> <li>▪ pilot countries will cost internalize</li> <li>▪ to support 3.A and 3.B</li> </ul>
<b>2.B</b>	Identify and train personnel from each country to undertake assessments for ESM and compliance with the Basel Technical Guidelines for ULAB recovery	\$45,000		<b>\$45,000</b>	<ul style="list-style-type: none"> <li>▪ Two 3 day training courses, one for the English speaking countries and one for the Spanish speaking nations at the BCRCs</li> <li>▪ includes costs for assessment trainers</li> </ul>
<b>2.C</b>	Identify, list and assess for ESM all existing ULAB facilities/operations involved with ULAB recovery to ensure compliance with applicable national laws and conformance to the Basel Technical Guidelines.	\$37,000		<b>\$37,000</b>	<ul style="list-style-type: none"> <li>▪ to be completed by each of the 9 pilot countries (\$4,000 each - \$5,000 for Mexico)</li> <li>▪ includes funding for activities specified under 2.C</li> </ul>
<b>2.D</b>	Establish training programs at Basel Convention Regional Centres to instruct government officials, where necessary, on how to conduct and maintain a national inventory for ULAB using the Seven Stage Model.	\$10,000		<b>\$10,000</b>	<ul style="list-style-type: none"> <li>▪ to be run in conjunction with other training sessions for cost-savings</li> </ul>
<b>2.E</b>	Update a national inventory for each country to determine the quantities and types of lead acid batteries (new and used) that are imported, exported, sold, manufactured, used, generated, collected, recycled and disposed each year.	\$18,000		<b>\$18,000</b>	<ul style="list-style-type: none"> <li>▪ each of the 9 pilot countries need to enhance existing national inventories (\$2,000 each)</li> <li>▪ this activity was already sponsored through previous SBC project work</li> </ul>
	<b><u>Mid-term (2-year)</u></b>				
<b>2.F</b>	Develop and maintain a regional ULAB database to consolidate and track national lead acid battery inventories in the region.		\$20,000	<b>\$20,000</b>	<ul style="list-style-type: none"> <li>▪ design to accommodate additional countries in the region and a simple user interface</li> </ul>
<b>2G</b>	Conduct ESM Certification Audits for recyclers and central collection centers to establish a regional database of approved facilities that can receive and process ULAB.		\$30,000	<b>\$30,000</b>	<ul style="list-style-type: none"> <li>▪ costs of independent auditors, registration and follow up to maintain ESM at every stage in the recovery process</li> </ul>

## TWO-YEAR BUDGET FOR THE IMPLEMENTATION OF THE REGIONAL STRATEGY (EXPRESSED IN US DOLLARS)

	Year 1	Year 2	TOTAL	NOTES
<b>GOAL 2 SUB-TOTAL</b>	<b>\$110,000</b>	<b>\$50,000</b>	<b>\$160,000</b>	
<b>Goal 3: Ensure national laws and compliance programs are sufficient to ensure ESM of ULAB.</b>				
<b>Short-term (1-year)</b>				
<b>3.A</b> Assess whether existing national laws provide an appropriate level of protection to environment and health in during all stages of ULAB management, including collection, storage, transport, shipping, processing, and disposal in ULAB residuals.	\$27,000		<b>\$27,000</b>	<ul style="list-style-type: none"> <li>▪ to be completed by each of the 9 pilot countries (\$3,000 each)</li> <li>▪ includes funding for activities specified under 3.B, 3.C, 3.D, 3.E, 3.F, and 3F</li> </ul>
<b>3.B</b> Assess whether existing national laws pertaining to ULAB management are enforced and contain suitable deterrents to dissuade unlawful conduct.				<ul style="list-style-type: none"> <li>▪ funding will be allocated under 3.A</li> </ul>
<b>3.C</b> Review the laws and recovery procedures of other countries for use as model legislation to address legislative needs for ULAB that may exist.				<ul style="list-style-type: none"> <li>▪ funding will be allocated under 3.A</li> </ul>
<b>3.D</b> Identify whether imports and exports of ULAB comply with national laws that incorporate commitments made under the Basel Convention.				<ul style="list-style-type: none"> <li>▪ funding will be allocated under 3.A</li> </ul>
<b>3.E</b> Assess the level of awareness of government officials involved with compliance promotion, inspection and enforcement concerning national laws and international conventions that pertain to ULAB management.				<ul style="list-style-type: none"> <li>▪ funding will be allocated under 3.A</li> </ul>
<b>3.F</b> Assess the level of awareness of collectors, transporters and processors of ULAB concerning national laws that pertain to ULAB management.				<ul style="list-style-type: none"> <li>▪ funding will be allocated under 3.A</li> </ul>
<b>3.G</b> Identify and assess opportunities to harmonize national laws for ULAB at a regional basis.				<ul style="list-style-type: none"> <li>▪ funding will be allocated under 3.A</li> </ul>

## TWO-YEAR BUDGET FOR THE IMPLEMENTATION OF THE REGIONAL STRATEGY (EXPRESSED IN US DOLLARS)

	Year 1	Year 2	TOTAL	NOTES
<b>3.H</b> Assess the need for ULAB take-back or extended producer responsibility legislation to enhance recovery of ULAB under national programs (linkage to Goal 4).	\$0		<b>\$0</b>	<ul style="list-style-type: none"> <li>▪ pilot countries will cost internalize</li> <li>▪ linkage to activities specified under 4.L</li> </ul>
<b><u>Mid-term (2-year)</u></b>				
<b>3.I</b> Establish regional training programs at Basel Convention Regional Centres to instruct government officials, as necessary, on ULAB import/export administrative procedures to ensure conformity to the Basel Convention.	\$40,000		<b>\$40,000</b>	<ul style="list-style-type: none"> <li>▪ delivery of 2 regional courses (\$20,000 each): 1 for the English speaking countries and 1 for the Spanish Speaking nations to be held at the BCRCs.</li> </ul>
<b>3.J</b> Establish in-house national training programs for government officials on national legislative requirements pertaining to ULAB management and facility operations.		\$0	<b>\$0</b>	<ul style="list-style-type: none"> <li>▪ pilot countries will cost internalize</li> </ul>
<b>3.K</b> Implement actions to harmonize legislation pertaining to the management of ULAB in consultation with governments of other countries in the region.		\$0	<b>\$0</b>	<ul style="list-style-type: none"> <li>▪ pilot countries will cost internalize</li> </ul>
<b>3.L</b> Develop compliance promotion programs geared to collectors, transporters and processors of ULAB to raise awareness regarding national laws and requirements applicable to their operations.	\$18,000	\$18,000	<b>\$36,000</b>	<ul style="list-style-type: none"> <li>▪ to be completed by each of the 9 pilot countries (\$2,000 each for both years)</li> </ul>
<b><u>Long-term (5-year)</u></b>				
<b>3.M</b> Establish new or amend existing national laws, as deemed necessary, to correct regulatory deficiencies that may exist concerning the ESM of ULAB.			<b>\$0</b>	<ul style="list-style-type: none"> <li>▪ pilot countries will cost internalize</li> </ul>
<b>GOAL 3 SUB-TOTAL</b>	<b>\$85,000</b>	<b>\$18,000</b>	<b>\$103,000</b>	

## TWO-YEAR BUDGET FOR THE IMPLEMENTATION OF THE REGIONAL STRATEGY (EXPRESSED IN US DOLLARS)

		Year 1	Year 2	TOTAL	NOTES
<b>Goal 4:</b>	<b>Implement national programs (in a regional context) to recover ULAB for ESM.</b>				
	<b>Short-term (1-year)</b>				
<b>4.A</b>	Establish regional criteria for use in accrediting ULAB facilities and operations that subscribe to ESM.	\$5,500		<b>\$5,500</b>	<ul style="list-style-type: none"> <li>▪ review and adopt/customize existing Green Lead ESM Tool and Guidelines</li> <li>▪ criteria to be approved by both Regional and National ULAB Steering Committees</li> <li>▪ Budget will cover costs for printing Guides and Assessment Forms</li> </ul>
<b>4.B</b>	Identify and review options for collecting, storing and transporting ULAB at the national and regional levels.	\$45,000		<b>\$45,000</b>	<ul style="list-style-type: none"> <li>▪ to be completed by each of the 9 pilot countries (\$5,000 each)</li> <li>▪ includes funding for activities specified under 4.C, 4.D, 4.E, and 4.F</li> <li>▪ funding will be allocated under 4.B</li> </ul>
<b>4.C</b>	Identify and review options for processing ULAB at the national and regional level.				<ul style="list-style-type: none"> <li>▪ funding will be allocated under 4.B</li> </ul>
<b>4.D</b>	Assess the financial feasibility of establishing new or enhancing existing domestic recycling capacity for ULAB.				<ul style="list-style-type: none"> <li>▪ funding will be allocated under 4.B</li> </ul>
<b>4.E</b>	Identify and review options for national and regional transport/shipping routes that facilitate the safe movement of ULAB and ULAB residuals to processing facilities at minimal cost and impact to the environment.				<ul style="list-style-type: none"> <li>▪ funding will be allocated under 4.B</li> </ul>
<b>4.F</b>	Identify and review options for roles and responsibilities of government, manufacturers, consumers, importers, retailers, transporters and processors under a national ULAB recovery program.				<ul style="list-style-type: none"> <li>▪ funding will be allocated under 4.B</li> </ul>
<b>4.G</b>	Devise a regional template to assist countries to develop national ULAB recovery program plans and to encourage a harmonized approach to program delivery throughout the region.	\$3,000		<b>\$3,000</b>	<ul style="list-style-type: none"> <li>▪ to be coordinated by the Regional ULAB Committee and approved by National ULAB Committees</li> </ul>

## TWO-YEAR BUDGET FOR THE IMPLEMENTATION OF THE REGIONAL STRATEGY (EXPRESSED IN US DOLLARS)

	Year 1	Year 2	TOTAL	NOTES
<b>Mid-term (2-year)</b>				
<b>4.H</b>		\$30,000	<b>\$30,000</b>	<ul style="list-style-type: none"> <li>▪ to be completed by each of the 9 pilot countries (\$3,000 each - \$6,000 for Mexico)</li> <li>▪ will require use of regional criteria developed under 4.A</li> </ul>
<b>4.I</b>			<b>\$0</b>	<ul style="list-style-type: none"> <li>▪ pilot countries will cost internalize</li> </ul>
<b>4.J</b>		\$18,000	<b>\$18,000</b>	<ul style="list-style-type: none"> <li>▪ to be completed by each of the 9 pilot countries (\$2,000 each)</li> <li>▪ will require use of regional criteria developed under 4.A</li> </ul>
<b>4.K</b>		\$45,000	<b>\$45,000</b>	<ul style="list-style-type: none"> <li>▪ to be completed by each of the 9 pilot countries (\$5,000 each)</li> <li>▪ includes funding for activities specified under 4.K</li> <li>▪ to be coordinated with the development of detailed financial management plans developed under 5.F</li> <li>▪ funding will be allocated under 4.K</li> </ul>
<b>4.L</b>				
<b>4.M</b>		\$3,000	<b>\$3,000</b>	<ul style="list-style-type: none"> <li>▪ to be coordinated by the Regional ULAB Committee and approved by National ULAB Committees</li> </ul>
<b>Long-term (3-year)</b>				
<b>4.N</b>			<b>\$0</b>	<ul style="list-style-type: none"> <li>▪ pilot countries will cost internalize</li> </ul>

**TWO-YEAR BUDGET FOR THE IMPLEMENTATION OF THE REGIONAL STRATEGY (EXPRESSED IN US DOLLARS)**

	Year 1	Year 2	TOTAL	NOTES
<b>4.O</b> Audit ULAB collection, consolidation and recycling facilities on a periodic basis to assure facilities and operations conform to regional criteria for ESM and the Basel Technical Guidelines.			<b>\$0</b>	▪ pilot countries will cost internalize
<b>4.P</b> Prepare annual reports that document and validate program performance and costing following each calendar year period of national ULAB recovery program operation.			<b>\$0</b>	▪ pilot countries will cost internalize
<b>GOAL 4 SUB-TOTAL</b>	<b>\$53,500</b>	<b>\$96,000</b>	<b>\$149,500</b>	
<b>Goal 5: Implement financial mechanisms to support the delivery and effectiveness of national ULAB recovery and recycling programs.</b>				
<b>Short-term (1-year)</b>				
<b>5.A</b> Establish regional guidelines for the use of economic instruments and financial intervention options in national ULAB recovery and recycling programs.	\$5,000		<b>\$5,000</b>	<ul style="list-style-type: none"> <li>▪ to be coordinated by the Regional ULAB Steering Committee and approved by National ULAB Steering Committees</li> <li>▪ to be carried out during first 6 months of Year 1</li> <li>▪ includes funding for activities specified under 6.C</li> </ul>
<b>5.B</b> Assess the need for collection and transportation incentive payments to defray the associated costs of ULAB storage, handling and shipping, especially in remote communities.	\$27,000		<b>\$27,000</b>	<ul style="list-style-type: none"> <li>▪ to be completed by each of the 9 pilot countries (\$3,000 each)</li> <li>▪ includes funding for activities specified under 5.C, 5.D, and 5.E</li> <li>▪ to be completed after regional guidelines for the use of economic instruments has been prepared under 5.A</li> <li>▪ to be coordinated with the activities and associated activities specified under 4.B</li> </ul>

**TWO-YEAR BUDGET FOR THE IMPLEMENTATION OF THE REGIONAL STRATEGY (EXPRESSED IN US DOLLARS)**

	Year 1	Year 2	TOTAL	NOTES
<b>5.C</b> Identify and review options for economic instruments to promote consumer return and recovery of ULAB for recycling in the formal sector.			\$0	▪ funding will be allocated under 5.B
<b>5.D</b> Identify, review and document economic instruments and financial intervention options to ensure the long-term economic sustainability of national ULAB recovery and recycling programs, especially during times of low international lead prices.			\$0	▪ funding will be allocated under 5.B
<b>5.E</b> Identify sources of start-up capital that may be necessary to initiate national ULAB recovery program delivery.			\$0	▪ funding will be allocated under 5.B
<b>Mid-term (2-year)</b>				
<b>5.F</b> Prepare detailed financial management plans for inclusion in national plans for ULAB recovery programs.		\$18,000	\$18,000	▪ to be completed by each of the 9 pilot countries (\$2,000 each)
<b>5.G</b> Identify operations and procedures for use in administering national ULAB recovery program revenues to ensure that program expenditures are explicitly linked to the management of ULAB.			\$0	▪ funding will be allocated under 5.F
<b>Long-term (3-year)</b>				
<b>5.H</b> Audit and report national ULAB recovery program revenues and expenditures following each calendar year period of operation.			\$0	▪ pilot countries will cost internalize
<b>GOAL 5 SUB-TOTAL</b>	<b>\$32,000</b>	<b>\$18,000</b>	<b>\$50,000</b>	

**Goal 6: Transition workers from informal ULAB facilities and operations to the formal ULAB recovery and recycling sector.**

## TWO-YEAR BUDGET FOR THE IMPLEMENTATION OF THE REGIONAL STRATEGY (EXPRESSED IN US DOLLARS)

	Year 1	Year 2	TOTAL	NOTES
<b>Short-term (1-year)</b>				
<b>6.A</b> Identify the extent of the informal recycling sector in each country using information acquired during the preparation of the national inventories.			<b>\$0</b>	▪ pilot countries will cost internalize
<b>6.B</b> Identify and visit informal recycling facilities and operations in each country.			<b>\$0</b>	▪ pilot countries will cost internalize
<b>6.C</b> Identify, review and document options for policies, economic instruments and other supportive measures for use on a regional and national basis to encourage desirable formal sector activities and discourage undesirable informal sector activities.				▪ funding will be allocated under 5.A
<b>6.D</b> Provide training to workers of informal ULAB recycling facilities and operations on applicable legal requirements and best management practices to minimize the risk of personal injury and help protect human health and the environment.	\$27,000		<b>\$27,000</b>	▪ to be completed by each of the 9 pilot countries (\$3,000 each) ▪ includes funding for activities specified under 6.E
<b>6.E</b> Identify and communicate feasible alternatives and associated benefits for workers to participate in the formal ULAB recycling sector.				▪ funding will be allocated under 6.D
<b>Mid-term (2-year)</b>				
<b>6.F</b> Curtail informal ULAB reconditioning operations by working with manufacturers and suppliers to limit the sale of replacement lead acid battery parts to registered businesses.		\$0	<b>\$0</b>	▪ pilot countries will cost internalize
<b>6.G</b> Curtail informal ULAB recycling operations by working with formal recyclers and manufacturers to ensure that ULAB acquired from registered collectors and transporters are purchased at fair market value		\$0	<b>\$0</b>	▪ pilot countries will cost internalize

**TWO-YEAR BUDGET FOR THE IMPLEMENTATION OF THE REGIONAL STRATEGY (EXPRESSED IN US DOLLARS)**

	Year 1	Year 2	TOTAL	NOTES
<b>6.H</b> Establish agreements with vehicle manufacturers to equip new vehicles to be sold in developing countries with valve-regulated lead acid (VRLA) batteries that require the use of expensive specialized equipment (to reseal batteries) and therefore deter informal reconditioning operations.		\$0	\$0	▪ pilot countries will cost internalize
<b><u>Long-term (5-year)</u></b>				
<b>6.I</b> Formally charge informal recyclers that continue to knowingly contravene national laws and international conventions despite warnings and best efforts to encourage formal recycling.		\$0	\$0	▪ pilot countries will cost internalize
<b>GOAL 6 SUB-TOTAL</b>	<b>\$27,000</b>	<b>\$0</b>	<b>\$27,000</b>	
<b>Goal 7: Raise public awareness concerning the importance of proper battery use and ensuring ESM of ULAB.</b>				
<b><u>Short-term (1-year)</u></b>				
<b>7.A</b> Establish community liaison groups through non-government organizations and BCRCs in the region to raise awareness regarding the importance of ensuring ESM of ULAB.	\$45,000		\$45,000	▪ to be completed by each of the 9 pilot countries (\$5,000 each) ▪ includes funding for activities specified under 7.B and 7.C ▪ funding will be allocated under 7.A
<b>7.B</b> Develop general communication plans and tools to inform consumers about proper use and maintenance for lead acid batteries, and how to support the ESM of ULAB.				▪ funding will be allocated under 7.A
<b>7.C</b> Develop targeted communication plans and tools to discourage the use of ULAB to produce lead fishing sinkers in fishing communities.				▪ funding will be allocated under 7.A
<b><u>Mid-term (2-year)</u></b>				
<b>7.D</b> Promote the use of international standards by battery manufacturers for use in labelling and designing material safety data sheets for lead acid batteries.		\$0	\$0	▪ pilot countries will cost internalize

**TWO-YEAR BUDGET FOR THE IMPLEMENTATION OF THE REGIONAL STRATEGY (EXPRESSED IN US DOLLARS)**

	Year 1	Year 2	TOTAL	NOTES
<b>Long-term (3-year)</b>				
<b>7.E</b> Explore opportunities with industry and academia to design a longer lasting battery for tropical climates with minimal hazardous substance content.			\$0	▪ pilot countries will cost internalize
<b>GOAL 7 SUB-TOTAL</b>	<b>\$45,000</b>	<b>\$0</b>	<b>\$45,000</b>	
<b>Goal 8: Identify candidate remediation sites where lead contamination has been observed from ULAB activities.</b>				
<b>Short-term (6-month)</b>				
<b>8.A</b> Identify and maintain a list of government authority contacts that are responsible for contaminated site assessment and remediation.	\$0		\$0	▪ pilot countries will cost internalize
<b>8.B</b> Establish and implement a contaminated site notification procedure for use when lead contamination is observed or suspected at existing or former ULAB facilities.	\$0		\$0	▪ pilot countries will cost internalize
<b>As required</b>				
<b>8.C</b> Interact with appropriate government authorities responsible for contaminated site assessment and remediation to ensure follow-up and corrective measures as appropriate.	\$0		\$0	▪ pilot countries will cost internalize
<b>GOAL 8 SUB-TOTAL</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	
<b>SUB-TOTAL FOR ALL STRATEGY COMPONENTS</b>	<b>\$490,000</b>	<b>\$282,000</b>	<b>\$772,000</b>	

**TWO-YEAR BUDGET FOR THE IMPLEMENTATION OF THE REGIONAL STRATEGY (EXPRESSED IN US DOLLARS)**

	<b>Year 1</b>	<b>Year 2</b>	<b>TOTAL</b>	<b>NOTES</b>
<b>MISCELLANEOUS EXPENSES</b>				
Translation (Spanish to English / English to Spanish)	\$7,000	\$5,000	\$12,000	
<b>MISCELLANEOUS EXPENSES SUB-TOTAL</b>	<b>\$7,000</b>	<b>\$5,000</b>	<b>\$12,000</b>	
<b>GRAND SUB-TOTAL</b>				
UNEP Administration Fee (13%)	\$64,610	\$41,210	\$105,820	
<b>GRAND TOTAL</b>	<b>\$561,610</b>	<b>\$358,210</b>	<b>\$919,820</b>	

## 4 CONCLUSIONS & RECOMMENDATIONS

The countries of this region recognize that the constituents of ULAB, primarily lead and sulfuric acid, may pose a threat to human health and the environment if improperly managed. In response, they have demonstrated an ongoing interest to address national deficiencies that may exist in sound ULAB management (see Section 2.1) and a willingness to support a regional approach for ESM of ULAB. However, developing countries will require financial support and, in some cases, technical assistance to facilitate the improvements deemed necessary.

A regional approach is needed because the domestic ULAB recycling capacity of many countries in the region is inadequate (from an ESM perspective), insufficient, or lacking altogether. In addition, several countries (especially SIDS) do not generate sufficient quantities of ULAB to establish direct consignments with ULAB recyclers located in other countries.

In addition to the above, other benefits of a regional approach include:

1. enhanced protection to community health and the environment
2. improved trade from the sale of recovered ULAB
3. greater leveraging power with service providers (larger economies of scale)
4. opportunities for cost-sharing to help drive operational efficiencies
5. consistencies in program design and delivery
6. coherent messaging to industry, consumers and the general public
7. enhanced capacity building in the region
8. stronger technical expertise through information sharing
9. enhanced promotion, awareness and enforcement of applicable legislation
10. abolishing informal ULAB sector activities throughout the entire region
11. controlling of Transboundary Movements of ULAB (and other wastes)
12. creating more Jobs in the formal ULAB recovery sector

The Regional Strategy lays out a detailed plan to ensure ESM of ULAB and articulates eight strategic goals to foster success in this area. Although country improvements will largely be driven by their respective governments and the efforts of their National ULAB Steering Committees, the importance of countries working together in a cooperative and coordinated manner to encourage regional consistencies in program design and delivery can not be understated.

The following recommendations will help to ensure the effective and timely implementation of the Regional Strategy and help to maintain synergies between national and regional ULAB initiatives:

1. Engage and secure commitment from potential government, industry and other stakeholders early in the process.
2. Identify champions from both government and industry to motivate, drive and monitor the progress of ULAB initiatives at the national and regional levels.
3. Multi-stakeholder National and Regional Steering Committees should convene regularly (National - once every 2 months. Regional – once every six months) and be limited to a manageable size (e.g. not exceeding 15 participants).

4. Elected chairpersons of National ULAB Steering Committees should also be identified as country representatives of the Regional ULAB Steering Committee.
5. National and Regional ULAB Steering Committees should prepare and interchange annual workplans that are organized to respond to each of the goals and objectives of the Regional Strategy, and clearly identify deadlines, budgets and responsible parties for each activity.
6. Meeting records of National and Regional ULAB Steering Committees should be prepared to include an accurate account of attendance, a summary of discussion points, and action items for follow-up.
7. All records, documents, reports and guidelines intended for comment or dissemination to the region and Regional ULAB Steering Committee should be made available in both English and Spanish.
8. Participants of National and Regional ULAB Steering Committees should have strong leadership skills and be able to allocate the time that is necessary to carry out their respective roles and responsibilities.
9. An experienced regional coordinator proficient in both English and Spanish should be elected by the Regional ULAB Steering Committee to help coordinate and complete the regional activities under the agreed workplan.
10. As the Regional Strategy provides the framework for the ESM of ULAB and does not specify recycling options, or direct countries to specific recyclers, it is incumbent on the National and Regional Steering Committees to review NAP in the context of the overall strategy to ensure a consistent approach to achieved the Goals set out in the Strategy document. Such reviews will become increasingly important as more countries in the Region sign up to the strategy.
11. Establish a Regional data base of approved/certified ULAB collection centers, exporters and recycling plants and recover ULAB only through the approved facilities.

## ANNEXES

## **ANNEX A: DECLARATION OF SAN SALVADOR ON THE ENVIRONMENTALLY SOUND MANAGEMENT OF USED LEAD ACID BATTERIES**

Statement and Recommendations adopted at the "Regional Workshop on the Environmentally Sound Management of Used Lead Acid Batteries for Central America and the Caribbean" held in San Salvador, El Salvador during 18 - 20 November 2002.

*The experts participating in the above-mentioned workshop suggest the adoption by high level government officials of the following recommendations and statement as the Declaration of San Salvador on the Environmentally Sound Management of Used Lead Acid Batteries*

We, the representatives of the countries of Bahamas, Belize, Brazil, Colombia, Costa Rica, Dominica, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Panama, St Lucia, Trinidad & Tobago, Venezuela,

Having participated in the "Regional Workshop for the Environmentally Sound Management of Used Lead Acid Batteries (ULAB) in Central America and the Caribbean Region" in San Salvador, El Salvador from the 18 to the 20 of November 2002,

Considering that the environmentally sound management of used lead acid batteries is a priority for our countries in the region in the context of the implementation of the Basel Convention which should be addressed by following a regional approach,

Considering also that our countries are Parties to the Basel Convention for the control of transboundary movements of hazardous wastes and their disposal, and that, our countries have an obligation to transcribe the provisions of the Convention into national legislation,

Taking into account the Regional Agreement on the Transboundary Movements of Hazardous Wastes signed by the Presidents of Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama, in the City of Panama on the 11th of December 1992,

Having identified implementation tools, such as exchange of information and environmental education as essential in order to pursue environmental management of used lead acid batteries,

Recognizing that efforts should be made to ensure that legal and technical criteria for the environmentally sound management of used lead acid batteries are harmonized in the region,

Expressing our will to enhance regional collaboration with the view to achieving environmentally sound management of used lead acid batteries,

### We Recommend:

- To facilitate the implementation, in all their various aspects, of the Basel Convention and the *Regional Agreement on Transboundary Movement of Hazardous Waste*;
- To strengthen the relevant national entities responsible for the management of chemical substances and hazardous wastes in the context of the Basel, Stockholm and Rotterdam Conventions as well as related regional agreements;
- To support the activities of the Basel Convention Regional Centres, in terms of technology transfer and capacity building, including information sharing and dissemination, as well as the development of other supportive tools such as data bases, which assist in the ESM of hazardous wastes and other wastes, particularly used lead acid batteries;
- To promote the adoption and dissemination in all the countries in the region the *Basel Technical Guidelines for the Environmentally Sound Management of Used Lead acid Batteries* with particular attention paid to the adverse impact that the inadequate management of used lead acid battery wastes causes to human health and the environment;
- To introduce specific regulations, to develop suitable infrastructures and to promote the training of human resources in order to develop adequate and responsible management, recycling and final disposal of ULAB;
- To develop public education programmes to sensitise children and members of the general public of the dangers to public health of improper handling of used lead acid batteries;

- . To encourage all relevant sectors to take action that improves the recovery rates for ULAB, strengthens the environmentally sound recycling of ULAB, and to consider such measures that eliminate unregulated activities involving ULAB;
- . To promote technical cooperation in the region with the National Cleaner Production Centres (CNP+L) with the view of developing the technological capacity to support the environmentally sound management and recycling of used lead acid batteries, by following the above mentioned technical guidelines of the Basel Convention for the environmentally sound management of used lead acid batteries;
- . To encourage the Andean countries to elaborate and adopt an agreement to address illegal traffic in the region as well as to ensure the ESM of ULAB; and
- . To ensure that GRULAC, presently being chaired by Trinidad & Tobago, is made aware of this workshop and its recommendations, and to have our common views for a regional approach being presented before the next meeting of the Conference of the Parties to the Basel Convention to be held in Geneva from 09 to 13 December 2002.

## ANNEX B: COUNTRY PARTY STATUS FOR SELECTED INTERNATIONAL TREATIES IN THE WIDER CARIBBEAN REGION<sup>47</sup>

Country	1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal		1983 Cartagena Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region		Cartagena Convention 1999 LBS Protocol		Cartagena Convention 1990 SPAW Protocol	
	Signature Date	Ratified / Acceded	Signature Date	Ratified / Acceded	Signature Date	Ratified / Acceded	Signature Date	Ratified / Acceded
1. Antigua and Barbuda		05-Apr-93 (a)		11-Sep-86			18-Jan-90	
2. Bahamas		12-Aug-92 (a)						
3. Barbados		24-Aug-95 (a)	05-Mar-84	28-May-85				Nov-02
4. Belize		23-May-97 (a)		22-Sep-99				
5. Colombia*	22-Mar-89	31-Dec-96 (R)	24-Mar-83	03-Mar-88	02-Oct-00		18-Jan-90	05-Jan-98
6. Costa Rica		07-Mar-95 (a)		01-Aug-91	06-Oct-99			
7. Cuba		03-Oct-94 (a)		15-Sep-88			18-Jan-90	04-Aug-98
8. Dominica		05-May-98 (a)		05-Oct-90				
9. Dominican Republic		10-Jul-00 (a)		24-Nov-98	03-Aug-00			24-Nov-98
10. France*	22-Mar-89	07-Jan-91 (AA)	24-Mar-83	13-Nov-85	06-Oct-99		18-Jan-90	05-Apr-02
11. Grenada			24-Mar-83	17-Aug-87				
12. Guatemala	22-Mar-89	15-May-95 (R)	05-Jul-83	18-Dec-89			18-Jan-90	
13. Guyana		04-Apr-01 (a)						
14. Haiti	22-Mar-89							
15. Honduras*		27-Dec-95 (a)	24-Mar-83					
16. Jamaica		23-Jan-03 (a)	24-Mar-83	01-Apr-87			18-Jan-90	
17. Mexico	22-Mar-89	22-Feb-91 (R)	24-Mar-83	11-Apr-85			18-Jan-90	
18. Netherlands	22-Mar-89	16-Apr-97 (A)	24-Mar-83	16-Apr-84	06-Oct-99		18-Jan-90	02-Mar-92
19. Nicaragua*		03-Jun-97 (a)	24-Mar-83					
20. Panama	22-Mar-89	22-Feb-91 (R)	24-Mar-83	07-Nov-87		09-Jul-03	16-Jan-91	27-Sep-96
21. Saint Kitts and Nevis		07-Sep-94 (a)						
22. Saint Lucia		09-Dec-93 (a)	24-Mar-83	20-Nov-84			18-Jan-90	25-Apr-00
23. Saint Vincent and the Grenadines		02-Dec-96 (a)		11-Jul-90			26-Jul-91	26-Jul-91
24. Suriname								
25. Trinidad and Tobago		18-Feb-94 (a)		24-Jan-86		28-Mar-03	18-Jan-90	10-Aug-99
26. United Kingdom of Great Britain and Northern Ireland*	06-Oct-89	07-Feb-94 (R)	24-Mar-83	28-Feb-86			18-Jan-90	
27. United States of America*	22-Mar-90		24-Mar-83	31-Oct-84	06-Oct-99		18-Jan-90	16-Apr-03
28. Venezuela*	22-Mar-89	03-Mar-98 (R)	24-Mar-83	18-Dec-86			18-Jan-90	28-Jan-97
29. European Economic Commission (European Union)			24-Mar-83					

<sup>47</sup> Current as of 22 May 2006

**\* NOTES:**

1. Columbia includes: Isla de San Andrés and Isla de Providencia
2. France includes: St. Martin, St. Barthélemy; Guadeloupe; and Martinique
3. Honduras includes: Swan Islands
4. Netherlands includes: Aruba and Netherlands Antilles (Curaçao, Bonaire)
5. Nicaragua includes: Cayos Miskilos and Islas del Maiz
6. France includes: St. Martin, St. Barthélemy; Guadeloupe; and Martinique
7. United Kingdom includes: Cayman Islands, Anguilla, Montserrat, and British Virgin Islands
8. United States includes: Puerto Rico including Isla Mona, Navassa Island, and US Virgin Islands
9. Venezuela includes: Islas Aves, Islas Los Roques, Isla La Tortuga, La Blanquilla, Isla de Margarita

**(a) refers to accession**

**(AA) refers to approval**

**(A) refers to acceptance**

**(R) refers to ratification**

***Other Multilateral Agreements for the Wider Caribbean Region include:***

- Convention on the Conservation of Migratory Species of Wild Animals (CMS)
- International Convention for the Prevention of Pollution from Ships (MARPOL)
- Convention on Biological Diversity (CBD)
- United Nations Convention on the Law of the Sea (UNCLOS)
- Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere (CNWH)
- Inter-American Convention for the Protection and Conservation of Sea Turtles (STC)
- Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)

**ANNEX C: GEOGRAPHIC LOCATION OF COUNTRIES IN THE REGION THAT COULD POTENTIALLY PARTICIPATE IN THE REGIONAL STRATEGY**



## ANNEX D: SUMMARIES OF BASELINE INFORMATION REPORTED BY PILOT COUNTRIES

**Table D1: Pilot Country Data on ULAB Generation per annum and Trade (import/export)**

Pilot Country		Notes
1.	Colombia	~ 1,750,000 ULAB – All recycled domestically ULAB Import Ban (although possible licensed exemption)
2.	Costa Rica	~ 500,000 – Most exported outside of BC compliance, but some pass to the informal sector.
3.	Dominican Republic	~ 500,000 ULAB – currently all exported for recycling
4.	El Salvador	~ 500,000 ULAB recycled, including domestic and imported ULAB – none recycled after September 2007
5.	Mexico	Produces ~ 17 M LAB per annum and recycles approx. 10 M ULAB – Imports large volumes of ULAB from the USA under bi-lateral Agreement
6.	Panama	~ 240,000 ULAB – now exported for recycling
7.	St. Lucia	~ 21,000 ULAB and they are all exported to Trinidad and then shipped to Venezuela for recycling
8.	Trinidad & Tobago	~172,000 ULAB – Exported to Venezuela for recycling
9.	Venezuela	~ 60,000 Tonnes of ULAB, including imports are recycled

**Table D2: Pilot Country Data on Laws Applicable to ULAB Management**

Pilot Country		Notes
1	Colombia	Comprehensive legislation to cover waste, health, safety and environment
2	Costa Rica	No specific Laws for ULAB – laws are for Toxic Waste only – see Summary at <a href="http://www.ilmc.org/Basel%20Project/Costa%20Rica/Project%20Reports/English/Annexes1.doc">http://www.ilmc.org/Basel%20Project/Costa%20Rica/Project%20Reports/English/Annexes1.doc</a>
3	Dominican Republic	Hazardous waste legislation is applicable to ULAB and there are laws for occupational health and safety
4	El Salvador	Legislation exists for the management of ULAB, but does not include occupational Lead in Blood Surveillance.
5	Mexico	Has excellent laws for the control of ULAB management, covering all aspects of health, safety, the environment and the movement of ULAB
6	Panama	See Table 1. of the Country Report for a summary
7	St. Lucia	BC Laws apply, but there is no domestic legislation for the collection or transport of ULAB

**Table D2: Pilot Country Data on Laws Applicable to ULAB Management**

	<b>Pilot Country</b>	<b>Notes</b>
8	Trinidad & Tobago	Laws dating from 1974 do apply, but are out of date and required updating.
9	Venezuela	Comprehensive legal framework for ULAB recovery and controls on the import of ULAB

**Table D3: Pilot Country Data on ULAB Recovery and Recycling**

	<b>Pilot Country</b>	<b>Notes</b>
1	Colombia	<a href="http://www.ilmc.org/Basel%20Project/Colombia/Reports/">http://www.ilmc.org/Basel%20Project/Colombia/Reports/</a>
2	Costa Rica	<a href="http://www.ilmc.org/Basel%20Project/Costa%20Rica/Project%20Reports/">http://www.ilmc.org/Basel%20Project/Costa%20Rica/Project%20Reports/</a>
3	Dominican Republic	<a href="http://www.ilmc.org/Basel%20Project/Dominican%20Republic/Project%20Report/">http://www.ilmc.org/Basel%20Project/Dominican%20Republic/Project%20Report/</a>
4	El Salvador	<a href="http://www.ilmc.org/Basel%20Project/El%20Salvador/Project%20Reports/">http://www.ilmc.org/Basel%20Project/El%20Salvador/Project%20Reports/</a>
5	Mexico	<a href="http://www.ilmc.org/Basel%20Project/Mexico/Project%20Reports/Spanish/">http://www.ilmc.org/Basel%20Project/Mexico/Project%20Reports/Spanish/</a>
6	Panama	<a href="http://www.ilmc.org/Basel%20Project/Panama/">http://www.ilmc.org/Basel%20Project/Panama/</a>
7	St. Lucia	<a href="http://www.ilmc.org/Basel%20Project/St.%20Lucia/Project%20Report/">http://www.ilmc.org/Basel%20Project/St.%20Lucia/Project%20Report/</a>
8	Trinidad & Tobago	<a href="http://www.ilmc.org/Basel%20Project/Trinidad%20&amp;%20Tobago/Reports/">http://www.ilmc.org/Basel%20Project/Trinidad%20&amp;%20Tobago/Reports/</a>
9	Venezuela	<a href="http://www.ilmc.org/Basel%20Project/Venezuela/VenezuelaPreliminar2.doc">http://www.ilmc.org/Basel%20Project/Venezuela/VenezuelaPreliminar2.doc</a>

**Table D4: Pilot Country Data on ULAB Public Awareness and Education**

	<b>Pilot Country</b>	<b>Notes</b>
1.	Colombia	Some limited campaigns by MAC SA
2.	Costa Rica	None
3.	Dominican Republic	None
4.	El Salvador	Some information posted by Grupo Record SA – no longer available
5.	Mexico	Only literature available is displayed at the LAB retailers
6.	Panama	None
7.	St. Lucia	None
8.	Trinidad & Tobago	UWI has published some very helpful leaflets for users and parents
9.	Venezuela	None except for the information on the Battery Label

**Table D5: Pilot Country Data on Environment and Health Issues Related to ULAB**

	<b>Pilot Country</b>	<b>Notes</b>
1	Colombia	<a href="http://www.ilmc.org/Basel%20Project/Colombia/Reports/">http://www.ilmc.org/Basel%20Project/Colombia/Reports/</a>
2	Costa Rica	<a href="http://www.ilmc.org/Basel%20Project/Costa%20Rica/Project%20Reports/">http://www.ilmc.org/Basel%20Project/Costa%20Rica/Project%20Reports/</a>
3	Dominican Republic	<a href="http://www.ilmc.org/Basel%20Project/Dominican%20Republic/Project%20Report/">http://www.ilmc.org/Basel%20Project/Dominican%20Republic/Project%20Report/</a>
4	El Salvador	<a href="http://www.ilmc.org/Basel%20Project/El%20Salvador/Project%20Reports/Spanish/">http://www.ilmc.org/Basel%20Project/El%20Salvador/Project%20Reports/Spanish/</a>
5	Mexico	<a href="http://www.ilmc.org/Basel%20Project/Mexico/Project%20Reports/">http://www.ilmc.org/Basel%20Project/Mexico/Project%20Reports/</a>
6	Panama	<a href="http://www.ilmc.org/Basel%20Project/Panama/">http://www.ilmc.org/Basel%20Project/Panama/</a>
7	St. Lucia	<a href="http://www.ilmc.org/Basel%20Project/St.%20Lucia/Project%20Report/">http://www.ilmc.org/Basel%20Project/St.%20Lucia/Project%20Report/</a>
8	Trinidad & Tobago	Occupational health checks through lead in blood testing is mandatory, but environmental legislation is being updated
9	Venezuela	Full legislative program for health, safety and environmental protection.

## **ANNEX E: LIST OF ABBREVIATIONS**

<b>ARF</b>	Advance Recycling Fee
<b>BCRC</b>	Basel Convention Regional Centre
<b>BCRC – CAM</b>	BCRC – Central America and Mexico (central office in El Salvador)
<b>BCRC – CARIBBEAN</b>	BCRC – Caribbean (central office in Trinidad & Tobago)
<b>CAD</b>	Canadian dollars
<b>CAF</b>	Andean Development Corporation
<b>CARICOM</b>	Caribbean Community
<b>CARIRI</b>	Caribbean Research Institute (former administrator of BCRC-CARIBBEAN)
<b>CBD</b>	Convention on Biological Diversity
<b>CCAD</b>	Central American Commission for Environment and Development
<b>CITES</b>	Convention on International Trade in Endangered Species of Wild Flora and Fauna
<b>CMS</b>	Convention on the Conservation of Migratory Species of Wild Animals
<b>CNWH</b>	Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere
<b>COP</b>	Conference of the Parties
<b>ESM</b>	Environmentally Sound Management
<b>EU</b>	European Union
<b>GEF</b>	Global Environmental Facility
<b>GRULAC</b>	The Group of Latin American and Caribbean Countries
<b>ILMC</b>	International Lead Management Centre
<b>LAB</b>	Lead Acid Battery
<b>MARN – El Salvador</b>	Ministry of Environment and Natural Resources – El Salvador
<b>MARN – Venezuela</b>	Ministry of Environment and Natural Resources – Venezuela
<b>MARPOL</b>	International Convention for the Prevention of Pollution from Ships
<b>NGO</b>	Non-Governmental Organization
<b>OECS</b>	Organization of Eastern Caribbean States
<b>OEWG</b>	Open Ended Working Group
<b>PAHO</b>	Pan American Health Organization
<b>SBC</b>	Secretariat of the Basel Convention
<b>SEK</b>	Swedish Krowns
<b>SICA</b>	The Central America Integration System
<b>SIDS</b>	Small Island Developing States
<b>SLI</b>	Starting, Lighting and Ignition (Lead Acid Battery)
<b>STC</b>	Inter-American Convention for the Protection and Conservation of Sea Turtles
<b>ULAB</b>	Used Lead Acid Batteries
<b>UNCLOS</b>	United Nations Convention on the Law of the Sea
<b>UNCTAD</b>	United Nations Conference on Trade and Development
<b>UNDP</b>	United Nations Development Program
<b>UNEP</b>	United Nations Environment Program
<b>USD</b>	United States (USA) dollars
<b>US EPA</b>	United States Environmental Protection Agency
<b>UWI</b>	The University of the West Indies
<b>VRLA</b>	Valve-regulated Lead Acid (Battery)
<b>WHO</b>	World Health Organization

## **ANNEX F: USEFUL SOURCES OF INFORMATION**

### **NATIONAL REPORTS**

1. Ministry of Environment of Colombia (MMA). January 8 2002. *Baseline Study in Central America and the Caribbean – Report of Colombia Project.* (<http://www.ilmc.org/Basel%20Project/Colombia/Reports/>)
2. Ministry of Health. November 2002. *Lead Acid Batteries in Costa Rica – Country Report.*(<http://www.ilmc.org/Basel%20Project/Costa%20Rica/Project%20Reports/>)
3. Ministry of Conservation of Marine Coastal Resources. April 2002. *Environmentally Sound Management of Used Lead Acid Batteries in Central America and the Caribbean - Dominican Republic.* (<http://www.ilmc.org/Basel%20Project/Dominican%20Republic/Project%20Report/>)
4. El Salvador Ministry of Environment and Natural Resources (MARN). April 2002. *Environmentally Sound Management of Used Lead Acid Batteries in Central America and the Caribbean – El Salvador Study.* (<http://www.ilmc.org/Basel%20Project/El%20Salvador/Project%20Reports/>)
5. Centro Mexicano para la Producción Más Limpia. November 2002. *Programa Para el Manejo ambiental y responsable de baterías usadas de plomo ácido – México.* Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT) Nov 2002 *BAPU reciclando en México* (<http://www.ilmc.org/Basel%20Project/Mexico/Project%20Reports/Spanish/>)
6. Ministerio De Salud. Nov 2002. *Manejo Ambientalmente Adecuado De Baterías Plomo – Ácido En La República De Panamá.* (<http://www.ilmc.org/Basel%20Project/Panama/>)
7. Saint Lucia Solid Waste Management Authority (SLSWMA). November 2002. *Used Lead Acid Battery Recycling Program - St. Lucia Technical Study* (<http://www.ilmc.org/Basel%20Project/St.%20Lucia/Project%20Report/>)
8. Ministry of the Environment of Trinidad and Tobago. Jan 2002. *BASEL CARIBBEAN SUB-REGIONAL CENTRE / CARIRI-UWI PROJECT ON USED LEAD-ACID BATTERIES.* (<http://www.ilmc.org/Basel%20Project/Trinidad%20&%20Tobago/Reports/>)
9. Ministerio del Ambiente y de los Recursos Naturales (MARN) Venezuela. Oct 2002. *PROYECTO NACIONAL DE MANEJO AMBIENTALMENTE SEGURO DE BATERÍAS USADAS DE ÁCIDO-PLOMO EN VENEZUELA - REPORTE TÉCNICO PRELIMINAR* (<http://www.ilmc.org/Basel%20Project/Venezuela/>)

### **WORKSHOP MATERIAL**

1. Proceedings of Phase I launching workshop (Trinidad and Tobago, 3 - 4 May 2001)
2. Proceedings of Phase I follow-up workshop (El Salvador, 18 - 20 November 2002)
3. Proceedings of the First Meeting of the Regional Steering Committee (Venezuela, 4 - 5 December 2003)
4. Proceedings of the Second Meeting of the Regional Steering Committee (El Salvador, 24-26 January 2006)

### **GUIDANCE**

1. *Basel Technical Guidelines for the Environmentally Sound Management of Lead Acid Battery Wastes* (<http://www.basel.int/meetings/sbc/workdoc/techdocs.html>)
2. *Basel Convention Training Manual on National Management Plans for Used Lead Acid Batteries* (<http://www.basel.int/meetings/sbc/workdoc/techdocs.html>)
3. *Template for a Country Project Model for the ESM of ULAB* (<http://www.ilmc.org/Basel%20Project/Country%20Project%20Model/>)
4. *Green Lead Site Assessment Form and Guide* (<http://www.ilmc.org/Green%20Lead/English/Audits%20and%20Assessment%20Procedures/>)
5. *Green Lead Site Assessment Guide and Guide in Spanish* (<http://www.ilmc.org/Green%20Lead/Espanol/Auditorias%20y%20Procedimientos%20de%20Valoracion/>)

## **INTERNATIONAL CONVENTIONS**

1. *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal*
2. *Cartagena Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region*
  - a. *Cartagena Convention LBS Protocol*
  - b. *Cartagena Convention SPAW Protocol*
3. *Declaration of San Salvador on the Environmentally Sound Management of Used Lead Acid Batteries*

## **USEFUL WEB SITES**

<b>Organization</b>	<b>Web Address</b>
1. Secretariat of Basel Convention (SBC)	<a href="http://www.basel.int">www.basel.int</a>
2. International Lead Management Centre (ILMC)	<a href="http://www.ilmc.org">www.ilmc.org</a>
3. Environment Canada – Extended Producer Responsibility and Stewardship	<a href="http://www.ec.gc.ca/epr">www.ec.gc.ca/epr</a>
4. UN Conference on Trade and Development	<a href="http://www.unctad.org">www.unctad.org</a>
5. Battery Council International - Recycling	<a href="http://www.batterycouncil.org/recycling.html">www.batterycouncil.org/recycling.html</a>
6. Green Lead Project	<a href="http://www.greenlead.com">www.greenlead.com</a>
7. MAC SA	<a href="http://www.mac.com.co/html/sitio/">http://www.mac.com.co/html/sitio/</a>
8. Grupo Record	N/A
9. Grupo IMSA	<a href="http://www.grupoimsa.com/">http://www.grupoimsa.com/</a>
10. Automotive Components Limited	<a href="http://www.acl-tt.com/home.htm#car">http://www.acl-tt.com/home.htm#car</a>
11. Duncan Batteries	<a href="http://www.duncan.com.ve/">http://www.duncan.com.ve/</a>