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)

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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 Contaminates, Honduras
- Department of Environment, Belize
- Department of Environmental Health Services, Bahamas
- Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA)
- Ministerio de Ciencia, Tecnología y Medio Ambiente (CITMA), Cuba
- Ministerio de Ambiente, Vivienda y Desarrollo Territorial de Colombia
- 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 Local Government 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
- Baterias MAC SA, Colombia
- Comercializadora de Baterias, Mexico
- Duncan Auto Shop, Venezuela
- Duncan Batteries, Venezuela
- Duncan Fundicion del Centro, Venezuela
- Funmetal, Venezuela
- IMSA – Enertec, Mexico
- International Lead Management Center (ILMC)
- 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 Tecnologias Ambientales, Colombia
- Centro Nacional de Producción Más Limpia, El Salvador

Academia

- Universidad Centroamericana, El Salvador
- Universidad de El Salvador, El Salvador
- Universidad Don Bosco, El Salvador
- University of the West Indies, Trinidad & Tobago

Environmental Non-government Organizations

- Environment West Indies, Martinique

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- United States of America
- Venezuela

EXECUTIVE SUMMARY

ULAB include starting or “automotive” batteries, and deep discharge or “industrial” batteries (used for stationary and motive applications). The constituents of used lead acid batteries (ULAB), such as lead and sulphuric acid, may pose a threat to human health and the environment if managed improperly.

In the Group of Latin America and Caribbean (GRULAC) there have been several documented cases in which ULAB has not been managed in an environmentally sound manner and has led to a number of adverse impacts, including lead poisoning and lead contaminated sites in some vulnerable communities. Consequently the mismanagement of ULAB may have long-term implications, not only for a country’s environmental health, but also for its economic and social growth and development. Within the GRULAC, a number of countries, particularly the Caribbean Small Island Developing States (SIDS), have resource constraints and challenges associated with the environmentally sound management (ESM) of ULAB.

In this regard, some Basel Party States of the GRULAC agreed to develop a *Regional Strategy for the Environmentally Sound Management of Used Lead Acid Batteries in Central America, Colombia, Venezuela and the Caribbean Island States.* This Strategy was prepared, under the Strategic Plan for the implementation of the Basel Convention, to assist Party countries in planning for and adopting policies, programs and measures to support an integrated, coordinated and life cycle approach for ESM of ULAB in the region. The Strategy recognizes concepts and approaches such as the “polluter pays” principle[1], extended producer responsibility[2], product stewardship and environmental management systems as important elements in support of the ESM of ULAB.

The implementation of the Regional Strategy will, *inter alia*, build upon the successes achieved by the nine pilot countries (namely, Colombia, Costa Rica, Dominican Republic, El Salvador, Mexico, Panama, St. Lucia, Trinidad and Tobago, and Venezuela) under Phase I of the regional ULAB initiative, which involved information gathering and needs assessment. Implementation of the Regional Strategy is however meant to be inclusive, and as such, will solicit the cooperation and active participation of all Basel Party States in the region.

The Regional Strategy specifically addresses both regional and national needs that have been identified through national reports and consultation forums. It is based on the following nine strategic goals, each of which is accompanied by underlying objectives and timeframes:

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;
3. Ensure national laws and compliance programs are sufficient to ensure ESM of ULAB;

[1] Principle 16 of the Rio Declaration on Environment and Development (Rio de Janeiro, 3-14 June 1992)
[2] Organization for Economic Cooperation and Development’s *Extended Producer Responsibility: Guidance Manual for Governments (2001)*

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 remediation sites where lead contamination has been observed from ULAB activities; and
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 Strategy advocates that national ULAB recovery programs are economically sustainable, and where necessary, supported by financial intervention options (e.g. deposit-refund, purchase-discounts, waived-charges, advance recycling fees, or taxes). However, financial and technical assistance from development and donor agencies will be required to support national efforts to establish ULAB recovery programs in some GRULAC States.

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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 lead and sulfuric acid, may pose a threat to human health and the environment. ULAB are classified as a hazardous waste under the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal* (Basel Convention) [3]. 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 Waste Lead Acid Batteries* and developed the *Training Manual for the preparation of national used lead acid batteries environmentally sound management plans in the context of the implementation of the Basel Convention*. 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 5th 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 16th 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[4] countries to the Basel Convention in the region were selected to pilot this project, namely Colombia, Costa Rica, Dominican Republic, El Salvador, Mexico[5], 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 launching workshop was held in Trinidad during 3 - 4 May 2001 to initiate this project work. Representatives from governments and national clean production centres of 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

[3] ULAB are identified as hazardous wastes under Annex I (Y31-lead & lead compounds, Y34-acidic solutions or acids in solid form) and Annex VIII (A1160-waste lead acid batteries, whole or crushed).
[4] 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.
[5] 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).

Development (UNCTAD), the International Lead Management Centre (ILMC) and the 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*, which 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, 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 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[6] 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.

In addition, several countries presented needs and requirements for managing ULAB. This information was 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 draft Regional Strategy was subsequently revised and finalized, taking into account country and other stakeholder input, at the Regional Consultation meeting held in Chaguaramas, Trinidad during 27-28 September 2006. The *Declaration of Chaguaramas on the*

[6] The following countries are located in the Region but are not Parties to the Basel Convention: Haiti, Grenada, and the USA.

Environmentally Sound Management of Used Lead Acid Batteries (see Annex A) was also drafted and agreed upon at this consultation forum.

The Region, as defined by Central America, Colombia, 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 could be further enhanced by the inclusion of non-Party countries in the region through the execution of bi-lateral, multi-lateral and/or regional agreements pursuant to Article 11 of the Basel Convention[7].

[7] Article 11 of the Basel Convention states that "… Parties may enter into bilateral, multilateral, or regional agreements or arrangements regarding transboundary movement of hazardous wastes or other wastes with Parties or non-Parties provided that such agreements or arrangements do not derogate from the environmentally sound management of hazardous wastes and other wastes as required by this Convention."

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
Pilot Project Countries						
1.	Colombia	Attended & committed to project	Attended and submitted report	N/A	Attended and updated report	Attended and finalized strategy
2.	Costa Rica	Attended & committed to project	Attended and submitted report	Attended	Attended and updated report	Attended and finalized strategy
3.	Dominican Republic	Unavailable but committed to project	Attended and submitted report	Attended	Attended and updated report	Attended and finalized strategy
4.	El Salvador	Attended & committed to project	Attended and submitted report	Attended	Attended	Attended and finalized strategy
5.	Mexico	Unavailable but committed to project	Attended and submitted report	N/A	Attended and updated report	Attended and finalized strategy
6.	Panama	Attended & committed to project	Attended and submitted report	Attended	Attended and updated report	N/A
7.	St. Lucia	Attended & committed to project	Attended and submitted report	Attended	N/A	Attended and finalized strategy
8.	Trinidad & Tobago	Attended & committed to project	Attended and submitted report	Attended	Attended	Attended and finalized strategy
9.	Venezuela	Attended & committed to project	Attended and submitted report	Attended	N/A	Attended and finalized strategy
Other Countries in the Region						
10.	Bahamas	N/A	Attended and submitted report	N/A (Industry)	N/A	Attended and finalized strategy
11.	Barbados	N/A	N/A	Attended and submitted report	Attended	Attended and finalized strategy
12.	Belize	N/A	Attended and submitted report	N/A	N/A	Attended and finalized strategy
13.	Brazil	Expert attended	Attended and submitted report	N/A	N/A	Attended and finalized strategy
14.	Cuba	N/A	N/A	Attended and submitted report	N/A	N/A
15.	Dominica	N/A	Attended and submitted report	N/A	N/A	Attended and finalized strategy
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	N/A
18.	Honduras	N/A	Attended and submitted report	N/A	Attended	N/A
19.	Jamaica	N/A	N/A	Attended and submitted report	Attended and updated report	Attended and finalized strategy
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 updated report	Attended and updated report	Attended and finalized strategy
22.	St. Kitts & Nevis	N/A	N/A	N/A	N/A	Attended and finalized strategy
23.	St. Vincent & the Grenadines	N/A	N/A	N/A	N/A	Attended and finalized strategy

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 potential 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[8], service[9] and recondition[10] ULAB can be found in all countries in the region. Infrastructure to recycle[11] ULAB in the formal sector has currently been identified in Mexico, El Salvador, Colombia, Panama, the Dominican Republic and Venezuela 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).

[8] "Recovery" refers to collecting, packaging, transporting, consolidating and shipping ULAB.
[9] "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.
[10] "Reconditioning" is an informal sector activity that involves dismantling and rebuilding ULAB for subsequent re-use or re-sale.
[11] "Recycling" refers to activities that involve breaking ULAB to smelt and refine lead.

Figure 2.1: ULAB Movement in the Formal and Informal Sectors

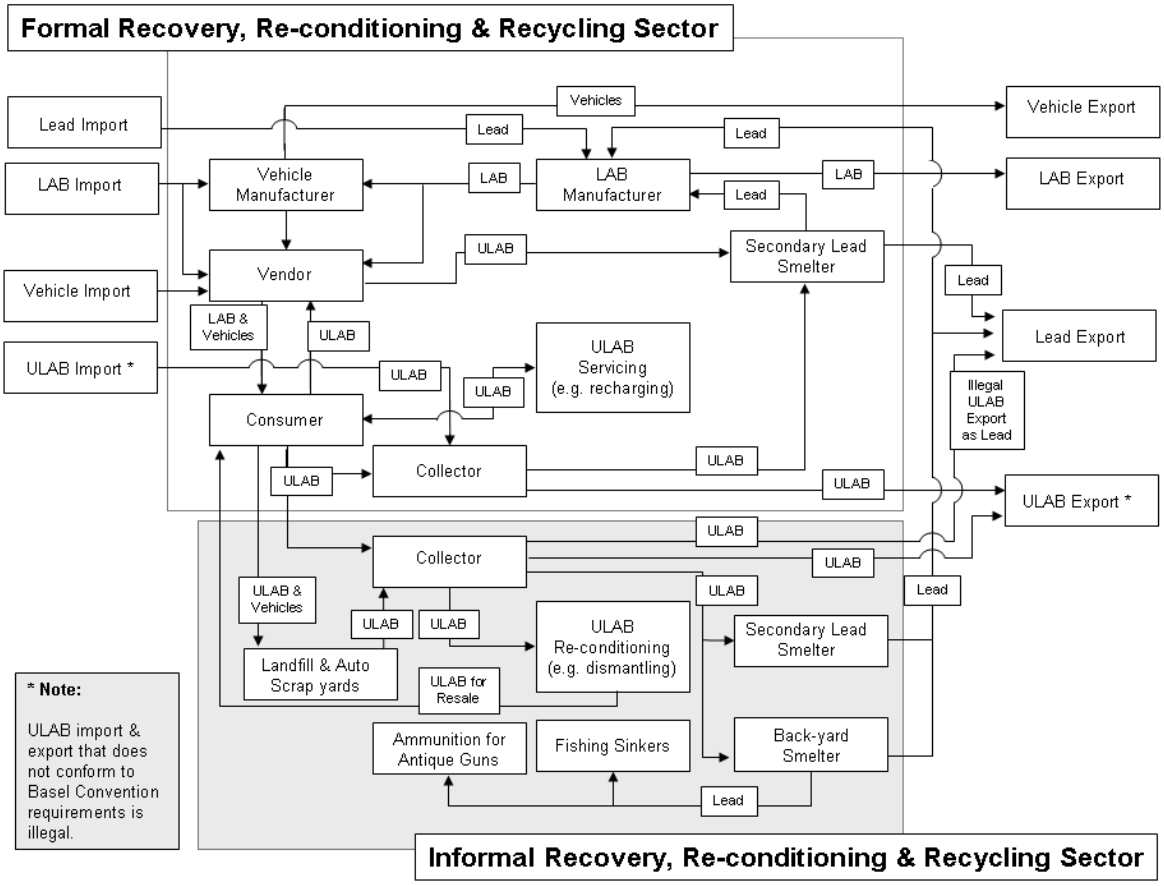


Table 2.2: Smelting Capacities of ULAB Recyclers Identified under the Regional Strategy

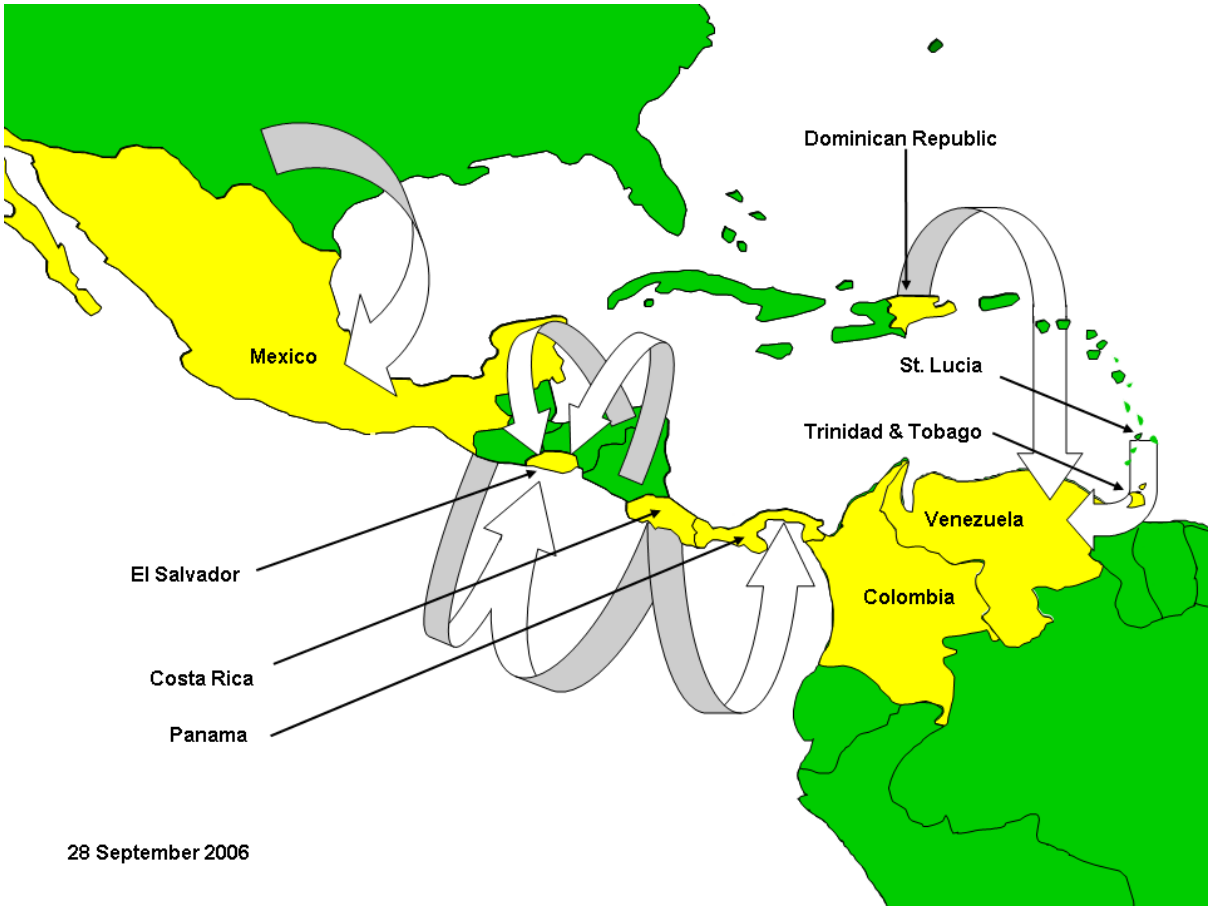
Country	Company Name	Smelting Capacity
Colombia	Baterias MAC SA	~ 25,000 tonnes
Dominican Republic	Metaloxa	(smelter closed)
El Salvador	Baterias de El Salvador	~ 30,000 tonnes
Mexico	IMSA - Enertec	~ 100,000 tonnes
Panama	PAMETSA	(smelter closed)
Venezuela	Duncan Fundicion del Centro	~ 25,000 tonnes
	Funmetal	~ 35,000 tonnes

National reports prepared by countries indicate that most ULAB from St. Lucia and Trinidad and Tobago are exported to Venezuela for recycling, while ULAB generated in most of the Central American countries is 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[12]. Consequently, these countries must export their small shipments to a regional ULAB consolidation centre that bulks cargo into consignment-sized loads for

[12] Larger SIDS such as Cuba, Jamaica, and the Dominican Republic are able to export ULAB shipments to mainland ULAB recyclers.

export. For example, Trinidad maintains a regional ULAB consolidation centre that services Trinidad and Tobago, Barbados, Jamaica[13] and St. Lucia.

Figure 2.2: ULAB Import & Export Patterns Involving Pilot Countries in the Region[14]



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[15]. 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[16].

[13] Only some of Jamaica's ULAB are currently exported to Trinidad. Jamaica is anticipated to consign ULAB shipments directly with a smelter in Venezuela.
[14] The flows of ULAB depicted in this figure are based on information acquired during Phase I of the regional initiative.
[15] Revisions to existing EU Battery Directives propose requirements to recover all ULAB for recycling.
[16] 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.

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 two principle hazardous substances, lead compounds and dilute sulphuric 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 sulphuric acid[17]. ULAB may also contain trace quantities of other toxic heavy metals, including cadmium and arsenic[18].

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. Sulphuric acid is a highly corrosive substance, which can cause severe chemical burns to unprotected tissue. This acid also contains dissolved 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 acrid mists of sulphuric 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[19]. This may lead to long-term contamination of water[20] and land, and require remediation that is often found to be very costly[21].

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; lack of skills to identify, monitor and correct unsafe practices in used lead acid batteries), 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

[17] 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.

[18] 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.

[19] Informal recovery operations are commonly known to break apart ULAB to release untreated battery acids as a means of “light weighting” shipments.

[20] Contamination of ground (e.g. drinking) and surface water may result.

[21] The cost of site remediation and population health monitoring associated with lead contaminated sites may exceed $1 million US dollars.

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[22], 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.

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 or to non-Party countries without bilateral, multilateral or regional agreements (as is the case between the Bahamas and the USA.

[22] Exceptions include Mexico, USA, United Kingdom, France, and the Netherlands.

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 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.
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 remediation sites where lead contamination has been observed from ULAB activities.
9. Promote technical assistance, including capacity building and technology transfer, to enhance the ESM of ULAB in the region.

There is a need to secure commitment from relevant stakeholders to promote the ESM for ULAB in accordance with the Basel Technical Guidelines. It is therefore important to identify all the stakeholder organizations which will participate in the implementation of the Regional Strategy and to clarify their respective contributions, roles and responsibilities. Many of these organizations will be required 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, at the national and regional levels, will also help to encourage industry engagement, the development of legislative instruments, industry standards, and economic instruments that may be necessary to ensure the ESM of ULAB at both the national and regional levels. The Strategy may be submitted to relevant ministries and/or Cabinet in the respective countries for endorsement. Regional political support can be garnered by communicating the Strategy to regional forums of heads of governments, such as meetings of the Health and Environment Ministers of the Americas and regional economic integration groups (e.g. the Caribbean Community or CARICOM and the South American Community of Nations). 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[23]. 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 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

[23] A variety of program designs are identified in Section 3.6 in the context of common approaches to financing ULAB recovery for ESM.

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 programs will need to integrated 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. El Salvador, 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.

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. Such recycling provides a means of subsistence for many communities throughout the region and existing ULAB collection operations should be encouraged, albeit safely and within legal frameworks, rather than be abolished outright.

Thus, 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. Appropriately designed public awareness campaigns involving television, radio, newspapers and other media, targeting susceptible communities, 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[24] for which they are not designed and which will drastically reduce their useful life[25]. Consequently, it is equally important to communicate the proper use and maintenance for different types of lead acid batteries.

It is necessary to identify candidate sites for remediation where lead contamination has been observed from ULAB activities, using inexpensive techniques, to allow corrective actions to be taken to minimized continued exposure to lead-contaminated materials and soils. 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.

Nevertheless, technical assistance, including capacity building and technology transfer, is required to strengthen the region's ability to manage ULAB in an environmentally sound manner. Training is required for key public sector groups, particularly health officials, customs officials, the judiciary and other enforcement officers, to enhance the enforcement network at both the national and regional level. Training in the use of cost-effective systems for blood-lead monitoring and the identification and remediation of lead-contaminated sites should be accessed, through academic or other institutions with such capabilities. Increased capacity will assist in minimizing the illegal traffic of hazardous wastes, including ULAB, in the region, as well as to enhance the level of compliance. Technical and financial resources are also required to improve existing and establish new infrastructure for the collection, storage, transport and recycling of ULAB within many of the countries. Also, increasing the region's research and development capabilities will help to foster the development of clean technologies as well as environmentally friendly alternatives, where necessary.

It is also 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*

[24] 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.

[25] 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.

the Marine Environment in the Wider Caribbean (Cartagena Convention)[26] 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[27]. 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[28]. According to the London Metal Exchange, the average monthly spot market value for lead ranged between $820 and $1150 per tonne (US) during 2005.

2.3 RATIONALE FOR A REGIONAL STRATEGY

The following were identified as rationale in support of the development of a regional strategy for the ESM of ULAB, namely:

1. ULAB contain hazardous constituents, such as lead and sulphuric acid, which pose a serious risk to the human health and the environment if improperly managed.
2. In the region there have been several cases in which ULAB has not been managed in an environmentally sound manner and has consequently resulted in adverse impacts on the health of vulnerable groups, including children, and sites severely contaminated with lead.
3. Limited capacity, particularly access to smelting facilities, exists within a majority of countries in the region to manage quantities of ULAB generated domestically.
4. It is critical to eliminate the illegal traffic and informal sector activities involving hazardous waste in the region, specifically ULAB.

Consequently some Basel Party states of the Group of Latin America and the Caribbean (GRULAC) have agreed to adopt a regional approach to support the ESM of ULAB in the region.

[26] 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.
[27] 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.
[28] 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 Waste Lead Acid Batteries.*

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.

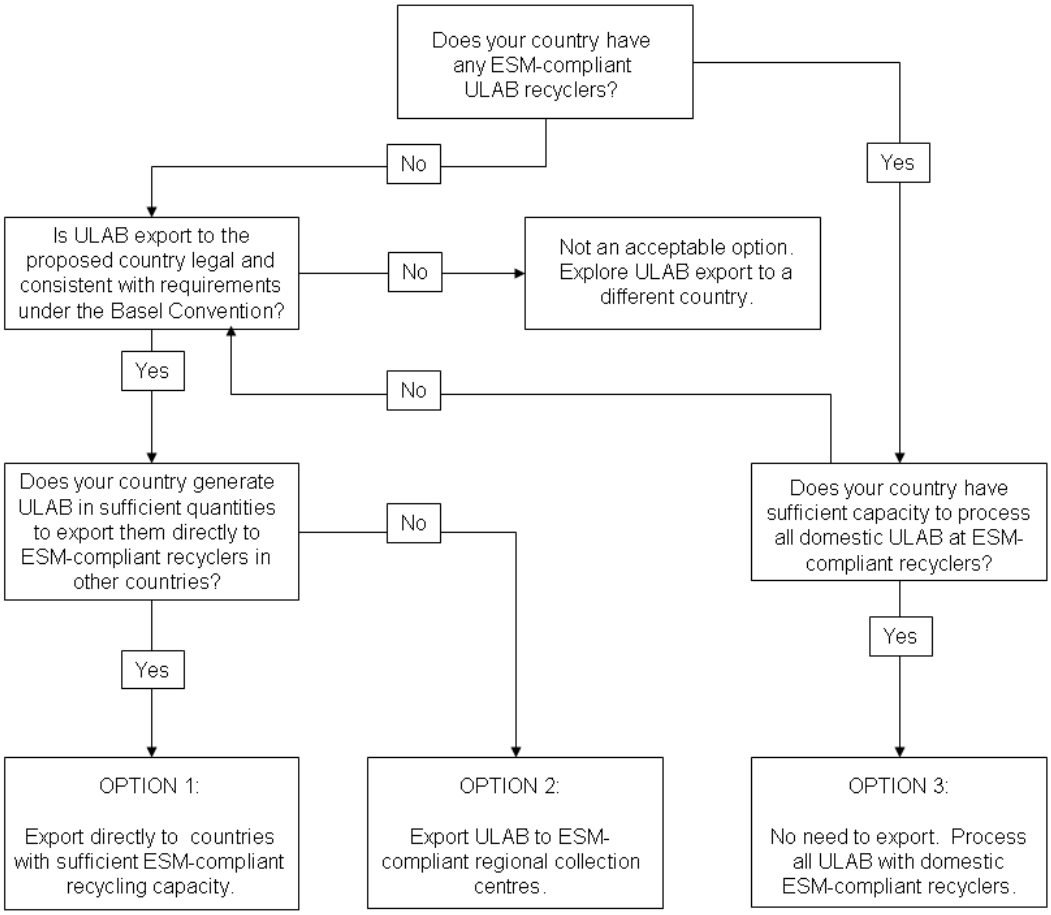
For the purpose of this Regional Strategy, the term "ESM-compliant" implies conformity with applicable requirements of the Basel Convention, Basel Technical Guidelines, national laws, and other regional criteria that may exist to assure that ULAB facilities and operations subscribe to ESM.

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 the Regional Strategy, and helps to guide activities that take place in the present during times of uncertainty.

To manage ULAB, utilizing a regional approach, in an economically and environmentally sound manner using practices consistent with the Basel Technical Guidelines.[29]

[29] United Nations May 2002 *Technical Guidelines for the Environmentally Sound Management of Waste Lead Acid Batteries.*

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 and programmes 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 (up to 1 year)

1.A Identify relevant stakeholder organizations that share an interest in promoting ESM for ULAB and seek their endorsement in the implementation of 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 the regional ULAB steering committee to help address and coordinate regional issues and activities by programming and coordinating meetings

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 Prepare, via National ULAB Steering Committees, National Action Plans that clearly define roles and responsibilities, and include a detailed financial management plan and budget with timeframes. for country-specific activities in support of the Regional Strategy,

1.G Identify and allocate resources from stakeholder organizations and other support groups for use in implementing the Regional Strategy and National Action Plans.

Long-term (up to 5 years)

1.H Review country performance in meeting objectives under the Regional Strategy, and take corrective action, where necessary, to ensure that goals, objectives and timeframes are achieved.

1.I 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.J 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 (up to 1year)

2.A Identify and record all facilities/operations (formal and informal sectors) that generate, collect, transport, recondition, recycle and trade ULAB

2.B Assess whether existing ULAB facilities/operations comply with applicable national laws and conform to the Basel Technical Guidelines.

2.C 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.

2.D 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[30].

Mid-term (up to 3 years)

2.E 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 (up to 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 Identify and assess opportunities to harmonize national laws for ULAB at a regional basis, while respecting each country's sovereignty.

3.F Assess the need for ULAB take-back or extended producer responsibility legislation to enhance recovery of ULAB under national programs.

3.G Identify existing national legislation and international conventions that pertain to ULAB management.

Mid-term (up to 3 years)

3.H 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.I Establish in-house national training programs for government officials on national legislative requirements pertaining to ULAB management and facility operations.

3.J Implement actions to harmonize legislation pertaining to the environmentally sound management of ULAB in conformity with the provisions of the Basel Convention in consultations with governments of the region.

3.K Develop compliance promotion programs geared to collectors, transporters and processors of ULAB to raise awareness regarding national laws and requirements applicable to their operations.

[30] Use of the Seven Stage Model for the Environmentally Sound Management of ULAB, as agreed upon by the Regional Steering Committee for ULAB at the 4-5 December 2003 regional ULAB workshop in Venezuela, is recommended.

Long-term (up to 5 years)

3.L Develop new or amend existing national laws, as deemed necessary, to correct regulatory deficiencies that may be applicable to the ESM of ULAB.

3.M To promote the drafting and implementation of national technical standards in accordance with the Basel Convention technical guidelines for the ESM of ULAB.

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

OBJECTIVES:

Short-term (up to 1 year)

4.A Establish regional criteria[31] for use in accrediting ULAB facilities and operations that subscribe to ESM.

4.B Identify and review options for collecting, storing, transporting (including shipping routes), recycling ULAB at the national and regional levels at minimal cost and impact to the environment and public health.

4.C Assess the financial feasibility of establishing new or enhancing existing domestic recycling capacity for ULAB.

4.D Identify and review options for roles and responsibilities of government, manufacturers, consumers, importers, retailers, transporters and processors under a national ULAB recovery program.

4.E 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 (up to 3-years)

4.F 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.G Work with industry and investors to establish or enhance domestic capacity to recycle ULAB, if assessed to be financially feasible.

4.H Provide training programs to assist ULAB facilities and operations to meet regional criteria for ESM and Basel Technical Guidelines.

4.I Prepare national ULAB recovery program plans[32] to collect, transport, consolidate, ship, and process ULAB using facilities and operations that meet regional criteria for ESM and the Basel Technical Guidelines.

4.J Identify how performance will be measured and reported under national ULAB recovery and recycling programs.

4.K Prepare a regional template for use in preparing annual reports for national ULAB recovery program operations.

Long-term (up to 5 years)

4.L Implement national plans for ULAB recovery programs.

4.M 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.N Prepare annual reports that document and validate program performance and costing following each calendar year period of national ULAB recovery program operation.

[31] In addition to the *Basel Technical Guidelines for the Environmentally Sound Management of Waste Lead Acid Batteries*, the *Training Manual for the preparation of national used lead acid batteries environmentally sound management plans in the context of the implementation of the Basel Convention* and the *Green Lead Site Assessment Guide* may provide additional guidance for use in establishing criteria for ESM of ULAB.

[32] 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 (up to 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 (up to 3 years)

5.F 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 (up to 5 years)

5.G Audit and report national ULAB recovery program revenues and expenditures following each calendar year period of operation (linked to objective 4.N).

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

OBJECTIVES:

Short-term (up to 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 implement policies, programmes and mechanisms, including financial options and other supportive measures, at the national level to encourage the transition from the informal to the formal sector (linked 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 financial intervention options to facilitate the transition of workers from informal to formal sector activities.

6.F Identify economic assistance programmes to assist workers in the informal sector to transition to the formal sector.

Mid-term (up to 3 years)

6.G 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.H 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[33].

6.I 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.

[33] Such a system, for example, could be based on the London Metal Exchange market value for lead bullion.

Long-term (up to 5 years)

6.J 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 (up to 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 and implement 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 and tyre balancing weights, in fishing and other susceptible communities.

7.D Assess and raise the level of awareness within the public and private sectors regarding applicable legislation governing the collection, storage, transport, shipping and recycling of ULAB, as well as the provisions of the Basel Convention.

7.E Assess and raise the level of awareness within the general public, civil society and other stakeholder groups regarding the health hazards, as well as the value of ESM of ULAB and existence of related national and/or regional programmes.

Mid-term (up to 3 years)

7.F 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 (up to 5 years)

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

7.H To develop and incorporate courses on environmental protection matters, including hazardous waste management, in the curriculum of all educational levels.

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

OBJECTIVES:

Short-term (up to 1 year)

8.A Identify the relevant agencies that are involved in the assessment of contaminated sites and the appropriate follow-up actions to ensure their remediation

8.B Develop and implement national protocols to guide the remediation of contaminated sites.

Goal 9: Promote technical assistance, including capacity building and technology transfer, to enhance the ESM of ULAB in the region.

OBJECTIVES:

Short-term (up to 1 year)

9.A Identify and consider the utilization and sharing of clean technologies and environmentally friendly alternatives to support the ESM of ULAB in region, where appropriate.

9.B Identify and share technical expertise and resources where it exists in the region that support the ESM of ULAB, including safe battery handling, storage and transportation systems; blood lead monitoring and soil remediation techniques.

9.C Implement training courses for key public sector groups, primarily customs and enforcement officers.

9.D Identify and solicit technical expertise and resources, where it resides outside the region, to strengthen the capacity of GRULAC countries to address issues related to the ESM of ULAB.

Mid-term (up to 3-years)

9.E Identify industry best practices that are applicable for use in the region and promote their adoption, including industry environmental and product stewardship initiatives.

9.F Encourage industry to assist in capacity building and knowledge transfer within the formal sector to support the ESM of ULAB at the national level.

Long-term (up to 5 years)

9.G Promote research and development of cleaner production technologies and environmentally friendly alternatives for application in the region.

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.

Figure 3.2: Relationship of Stakeholders Contributing to the Regional Strategy

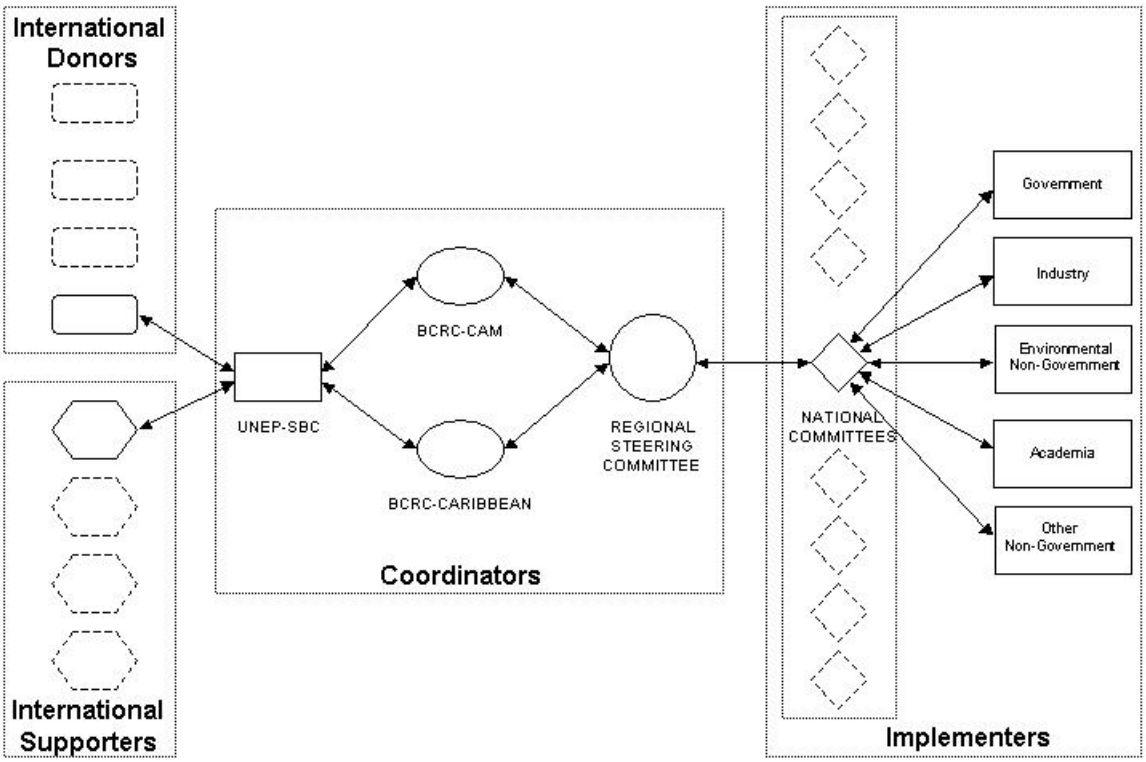


Table 3.1: Enterprises identified during the preparation of the Regional Strategy, which are interested in supporting implementation of the regional scheme

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
	5.	Baterias de El Salvador	▪ ULAB Recycler
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
Venezuela	10.	Duncan Batteries	▪ LAB Manufacturer
	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	▪ Service Basel Convention ▪ Ensure the necessary coordination with relevant international bodies ▪ Assist in the implementation of the 1999 Ministerial Declaration, Strategic Plan and the partnership program. ▪ Solicit interest from international donors and supporters for partnership projects ▪ Provide technical expertise and guidance on regional partnership project design and delivery ▪ Report partnership project outcomes to international donors and other interested Parties
	BCRC-CAM BCRC-CARIBBEAN	▪ Coordinate regional activities linked to Basel Convention, 1999 Ministerial Declaration and Strategic Plan ▪ Liaise with Parties in region to identify training needs and help address regional and country-specific needs ▪ Facilitate and administer regional training and workshops related to the above based on the Basel Convention and the Basel Technical Guidelines ▪ Report project outcomes to UNEP-SBC
	Regional ULAB Steering Committee	▪ Composed of select Party countries in the region ▪ Regional advisory body on regional issues linked to the design and delivery of the Regional Strategy ▪ Help address regional needs to deliver the Regional Strategy ▪ Report regional successes and challenges to BCRC and other regional stakeholders ▪ Also engaged in strategy implementation
Implementers	National ULAB Committees[34]	▪ Multi-stakeholder National ULAB Committees to be established in each country (Regional Steering Committee, December 2003 outcome) ▪ National advisory body on national issues linked to the design and delivery of the Regional Strategy ▪ Develop and coordinate implementation of a National Action Plan for ULAB ▪ Help address country-specific needs to deliver the Regional Strategy and National Action Plan ▪ Report national successes and challenges to Regional Steering Committee, national governments and other national stakeholders ▪ Also engaged in strategy coordination
	Government	▪ Ensure national ULAB import and export conform to existing laws and the Basel Convention ▪ Ensure laws are sufficient to protect human health and the environment from risks posed by ULAB ▪ Register ESM ULAB facilities and operations ▪ Deliver public awareness programs to convey the importance of and build support for ESM of ULAB ▪ Provide necessary training on ESM and Occupational Health and Safety to ULAB operators ▪ Implement financial mechanisms to support ESM recovery and recycling for ULAB ▪ Foster support for clean technologies linked to ULAB processing and recycling ▪ Identify existing/former ULAB facilities and operations that may be contaminated with lead ***Institutional Linkages:*** 1. Ministry of Environment and Natural Resources 2. Ministry of Health and Labour 3. Ministry of Finance and Customs 4. Ministry of Industry and Commerce 5. Ministry of Transport 6. Ministry of Education

[34] 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	▪ Operate in accordance with national law and Basel Convention requirements and Basel Technical Guidelines ▪ Share technical expertise on ESM of ULAB ▪ Upgrade facilities and operations where economically feasible and seek ESM registration ▪ Provide training to employees on ESM and Occupational Health and Safety ***Institutional Linkages:*** 1. ULAB collectors and transporters 2. ULAB servicing stations & recyclers (smelters) 3. Battery manufacturers and distributors 4. Trade / Industrial Chambers related to ULAB
	Environmental non-Government Organizations	▪ Help to identify informal ULAB facilities and operations ▪ Promote integration of clean production processes and technologies ▪ Raise public awareness on ULAB hazards, ESM and safe operating procedures ***Institutional Linkages:*** 1. National Clean Production Centres 2. Recycling Councils
	Academia	▪ Update national ULAB inventories ▪ Help to design national ULAB recovery and recycling programs ***Institutional Linkages:*** 1. Universities 2. Research Institutes
	Other non-Government Organizations	▪ Promote public awareness on ULAB hazards, ESM and safe operating procedures ***Institutional Linkages:*** 1. Trade Unions of ULAB facilities and operations 2. Media
International Supporters		▪ Provide in-kind technical expertise and support ▪ Provide technical training on ESM and ULAB management ***Institutional Linkages:*** 1. Battery Council International (BCI) 2. Central American Commission for Environment and Development (CCAD) 3. International Lead Management Centre (ILMC) 4. Secretariat of Basel Convention (SBC) 5. United Nations Environment Conference on Trade and the Development (UNCTAD) Capacity-building Task Force on Trade, Environment and Development (CBTF) 6. International donor agencies (listed below)
International Donors		▪ Support capacity building in developing countries ▪ Contribute financial resources to implement the Regional Strategy ***Institutional Linkages:*** 1. Andean Development Corporation (CAF) 2. Canadian International Development Agency (CIDA) 3. Department of Environment and Nature (MINA) of the Netherlands Antilles 4. Environment Canada (EC) 5. Environmental Foundations 6. Global Environmental Facility (GEF) 7. Inter American Development Bank (IADB) 8. Ministère de l'Ecologie et du Développement Durable (France) 9. North American Commission for Environmental Cooperation (CEC) 10. Pan American Health Organization (PAHO) 11. UK Department of Environment, Transport and the Regions (DETR) 12. United Nations Environment Conference on Trade and the Development (UNCTAD) 13. United States Department of Commerce 14. United States Environmental Protection Agency (US EPA) 15. World Bank 16. World Health Organization (WHO)

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[35].

[35] 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
Deposit-Refund Schemes *Noted examples: most US states*	▪ Direct financial incentive for consumers to return ULAB ▪ Modelled after the "polluter pays" principle ▪ Non-refundable portions of a deposit (levy) can be used to offset program carrying costs ▪ Return-to-retail is convenient for most consumers	▪ Retailers (versus producers) are responsible for program delivery ▪ Unredeemed deposits may not completely offset retailer expenses ▪ Acquiring program performance data may be more problematic under de-centralized approaches ▪ Retailer imposed conditions concerning refund claims may frustrate consumers ▪ May require new legislation
"Purchase Discount" Schemes *Noted examples: Philippines*	▪ Direct financial incentive for consumers to return ULAB ▪ Generally portrayed as a voluntary industry initiative ▪ LAB manufacturers and ULAB recyclers bear all program costs ▪ Return-to-retail is convenient for most consumers	▪ Often limited for use in countries with both domestic LAB manufacturing and ULAB recycling ▪ Discounts may only apply to LAB branded by the domestic manufacturer ▪ A wide network of participating retailers is needed to ensure program effectiveness ▪ Discourages the return of ULAB before consumers are ready to purchase a new one
"Waived Charge" Schemes *Noted examples: Germany, Prince Edward Island (Canada)*	▪ Consumers do not pay an extra fee if they return a ULAB when purchasing a new LAB ▪ Modelled after the "polluter pays" principle ▪ Levy may used to offset program carrying costs of retailers ▪ Return-to-retail is convenient for most consumers	▪ Retailers (versus producers) are typically made responsible for program delivery ▪ Levies may not completely offset retailer expenses ▪ Acquiring program performance data may be more problematic under de-centralized approaches ▪ Discourages the return of ULAB before consumers are ready to purchase a new one ▪ May require new legislation
Advance Recycling Fees (Levies) *Noted examples: Sweden, Italy, British Columbia (Canada)*	▪ Extended Producer Responsibility (EPR) programs are managed and financed by LAB manufacturers and first importers ▪ Levies provide a sustainable revenue stream to pay for all costs of program delivery ▪ All aspects of program delivery are coordinated using a centralized approach (e.g. oversight body) which may facilitate ESM and performance measurement ▪ Revenues may be used to offer return incentives to collectors and transporters, and infrastructure development (e.g. return depots)	▪ No direct financial incentive for consumers to return products to collection points ▪ Back-drop legislation is usually necessary to ensure full industry participation in program delivery ▪ Program revenues and expenditures may be higher than other options if not carefully controlled ▪ Levies may generate high revenue surpluses if not carefully controlled, resulting in public mistrust ▪ Government-operated programs may allocate revenue from levies for purposes other than managing ULAB ▪ May require new legislation
Tax-base Funded Schemes *Noted examples: waste collection programs run by public waste management authorities*	▪ Follows a traditional approach to waste management in which community services are funded through taxes ▪ General tax laws are already in place ▪ Programs generally target a wide variety of hazardous or difficult to manage waste streams, not just ULAB	▪ Burden of program funding is placed on government and general tax payers (versus producers and product consumers) ▪ Government resources may be insufficient to ensure permanent recovery programs for urban, rural and remote communities ▪ Sustainable program financing may necessitate tax-hikes or resource diversion from other community services, both of which are not favored politically or publicly ▪ No direct financial incentive for consumers to return products to collection points

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[36] 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[37] 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[38], 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[39]. 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,

[36] 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.

[37] 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.

[38] 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).

[39] 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[40], 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[41]. 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[42]. 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.

[40] Government authorities, however, may monitor performance and ensure compliance with applicable legal requirements.
[41] 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.
[42] 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[43], 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[44] 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 mark 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[45]) is established and tasked with designing and implementing product take-back programs that fulfil applicable legal requirements[46]. 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

[43] The EPR program for ULAB in Sweden, for example, charges manufacturers and first importers a levy on LAB sales.
[44] A PRO may, however, be required to disseminate industry product sales information in an aggregate form to the public.
[45] 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.
[46] Requirements of EPR legislation may include meeting prescribed targets for product collection and product recycling.

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 either NOT stockpiled or improperly discarded during periods of low international lead prices[47]. 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[48] 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).

[47] The London Metal Exchange is typically used as a source to track the international prices for a number of metals, including lead.
[48] 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[49]. 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:

[49] 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 and maintaining the level of public awareness as early as possible, concerning the importance of proper battery use, maintenance and ensuring ESM of ULAB (linkage to Goal 7).

3. Raising the level of industry awareness regarding national laws and requirements applicable to their operations (linkage to Goal 3).

4 CONCLUSIONS & RECOMMENDATIONS

The countries of this region recognize that the constituents of ULAB, primarily lead and sulphuric 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 with respect to the ESM of ULAB (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. Improved control of transboundary movements for ULAB (and other wastes)
12. Creating employment opportunities in the formal ULAB recovery sector

The Regional Strategy lays out a detailed plan to ensure ESM of ULAB and articulates nine 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 work plans 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 work plan.

ANNEXES

ANNEX A: DECLARATION OF CHAGUARAMAS ON THE ENVIRONMENTALLY SOUND MANAGEMENT OF USED LEAD ACID BATTERIES IN THE WIDER CARIBBEAN REGION

Statement and Recommendations adopted at the "Regional Consultations Meeting on the Environmentally Sound Management of Used Lead Acid Batteries for Central America, Columbia, Venezuela and the Caribbean Island States" held in Chaguaramas, Trinidad and Tobago, 27-28 September 2006.

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

We, the representatives of the countries of The Bahamas, Barbados, Belize, Colombia, Costa Rica, Dominica, Dominican Republic, El Salvador, Jamaica, Mexico, St. Kitts and Nevis, St Lucia, St. Vincent and the Grenadines, Trinidad & Tobago,

1. *Having* participated in the "Regional Meeting to Finalize the Regional Strategy for the Environmentally Sound Management of Used Lead Acid Batteries (ULAB) in Central America, Colombia, Venezuela and the Caribbean Island States" in Chaguaramas, Trinidad & Tobago, from the 27th to the 28th of September 2006;

2. *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;

3. *Considering* also that our countries are Parties to the Basel Convention for the control of the 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;

4. *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;

5. *Taking into account* the Declaration of San Salvador [50] on the Environmentally Sound Management of Used Lead Acid Batteries by representatives of Bahamas, Belize, Brazil, Columbia, Costa Rica, Dominica, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Saint Lucia, Trinidad and Tobago and Venezuela adopted on 20 November 2002;

6. the Presidents of Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama, in the City of Panama on the 11th of December 1992;

7. *Taking into account* the "Regional Strategy for the Environmentally Sound Management of Used Lead Acid Batteries in Central America, Colombia, Venezuela and the Caribbean Island States" developed by national experts of the region in cooperation with UNEP/ the Secretariat of the Basel Convention and the International Lead Management Center (ILMC);

8. *Having* identified implementation tools, such as exchange of information and environmental education as essential in order to pursue the environmentally sound management of used lead acid batteries;

9. *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;

10. *Expressing* our willingness to enhance regional collaboration with a view to achieving the environmentally sound management of used lead acid batteries and to implement the regional

[50] Complete text of the San Salvador Declaration can be found on the Secretariat of the Basel Convention website, www.basel.int.

strategy for the environmentally sound management of Used Lead Acid Batteries in GRULAC countries;

We Recommend:

1. Facilitation of the implementation, in all their various aspects, of the Basel Convention and the *Regional Agreement on the Transboundary Movement of Hazardous Waste*;
2. Strengthening of 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 ensure synergies and implementation at the national and regional levels;
3. Support for 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 will assist in the environmentally sound management of hazardous wastes and other wastes, particularly used lead acid batteries;
4. Promotion of 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 inadequate management of used lead acid battery wastes causes to human health and the environment;
5. Introduction of specific regulations, develop suitable infrastructures and promote the training of human resources in order to develop adequate and responsible environmentally sound management, recycling and final disposal of ULAB;
6. Development of public education programmes to sensitise children and members of the general public of the dangers to public health of the improper handling of used lead acid batteries;
7. Encouragement of all relevant sectors to take actions that improve the recovery rates for ULAB, strengthens the environmentally sound recycling of ULAB, and to consider such measures that will eliminate unregulated activities involving ULAB;
8. Promotion of technical cooperation in the region with the National Cleaner Production Centres (CNP+L) with a view to developing the necessary technical 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;
9. Encouragement of GRULAC countries to address issues related to the illegal traffic of hazardous wastes in the region, and in particular ULAB;
10. Ensuring that GRULAC, CARICOM and other regional organizations are made aware of the "Regional Strategy for the Environmentally Sound Management of Used Lead Acid Batteries in Central America, Colombia, Venezuela and the Caribbean Island States";
11. Presentation of common views with regard to the regional management of ULAB and other hazardous waste before the next meeting of the Conference of the Parties to the Basel Convention to be held in Nairobi from 27th November 2006 to 1st December 2006.

ANNEX B: COUNTRY PARTY STATUS FOR SELECTED INTERNATIONAL TREATIES IN THE WIDER CARIBBEAN REGION[51]

	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*[52]		*Cartagena Convention 1990 SPAW Protocol*[53]	
		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.	El Salvador	22-Mar-90	13-Dec-91						
11.	France*	22-Mar-89	07-Jan-91 (AA)	24-Mar-83	13-Nov-85	06-Oct-99		18-Jan-90	05-Apr-02
12	**Grenada**			24-Mar-83	17-Aug-87				
13.	Guatemala	22-Mar-89	15-May-95 (R)	05-Jul-83	18-Dec-89			18-Jan-90	
14.	Guyana		04-Apr-01 (a)						
15	**Haiti**	22-Mar-89							
16.	Honduras*		27-Dec-95 (a)	24-Mar-83					
17.	Jamaica		23-Jan-03 (a)	24-Mar-83	01-Apr-87			18-Jan-90	
18.	Mexico	22-Mar-89	22-Feb-91 (R)	24-Mar-83	11-Apr-85			18-Jan-90	
19.	Netherlands	22-Mar-89	16-Apr-97 (A)	24-Mar-83	16-Apr-84	06-Oct-99		18-Jan-90	02-Mar-92
20.	Nicaragua*		03-Jun-97 (a)	24-Mar-83					
21.	Panama	22-Mar-89	22-Feb-91 (R)	24-Mar-83	07-Nov-87		09-Jul-03	16-Jan-91	27-Sep-96
22.	Saint Kitts and Nevis		07-Sep-94 (a)						
23.	Saint Lucia		09-Dec-93 (a)	24-Mar-83	20-Nov-84			18-Jan-90	25-Apr-00
24.	Saint Vincent and the Grenadines		02-Dec-96 (a)		11-Jul-90			26-Jul-91	26-Jul-91
25	**Suriname**								
26.	Trinidad and Tobago		18-Feb-94 (a)		24-Jan-86		28-Mar-03	18-Jan-90	10-Aug-99
27.	United Kingdom of Great Britain and Northern Ireland*	06-Oct-89	07-Feb-94 (R)	24-Mar-83	28-Feb-86			18-Jan-90	
28	**United States of America***	22-Mar-90		24-Mar-83	31-Oct-84	06-Oct-99		18-Jan-90	16-Apr-03
29.	Venezuela*	22-Mar-89	03-Mar-98 (R)	24-Mar-83	18-Dec-86			18-Jan-90	28-Jan-97
30.	European Economic Commission (European Union)			24-Mar-83					

[51] Current as of 22 May 2006
[52] Protocol on Marine Pollution from Land-Based Sources and Activities (LBS Protocol).
[53] Protocol Concerning Specially Protected Areas and Wildlife to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (SPAW Protocol).

*** NOTES:**

1. Colombia 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

Within the Wider Caribbean Region, signatories of the Basel Convention which have not yet ratified include: Haiti and the United States of America (USA).

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
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
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 http://www.ilmc.org/Basel%20Project/Costa%20Rica/Project%20Reports/English/Annexes1.doc
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
8.	Trinidad & Tobago	Laws dating from 1974 do apply, but are out of date and required updating.

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

	Pilot Country	Notes
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

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

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

	Pilot Country	Notes
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
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

	Pilot Country	Notes
1.	Colombia	http://www.ilmc.org/Basel%20Project/Colombia/Reports/
2.	Costa Rica	http://www.ilmc.org/Basel%20Project/Costa%20Rica/Project%20Reports/
3.	Dominican Republic	http://www.ilmc.org/Basel%20Project/Dominican%20Republic/Project%20Report/
4.	El Salvador	http://www.ilmc.org/Basel%20Project/El%20Salvador/Project%20Reports/Spanish/
5.	Mexico	http://www.ilmc.org/Basel%20Project/Mexico/Project%20Reports/
6.	Panama	http://www.ilmc.org/Basel%20Project/Panama/
7.	St. Lucia	http://www.ilmc.org/Basel%20Project/St.%20Lucia/Project%20Report/
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

ARF	Advance Recycling Fee
BCRC	Basel Convention Regional Centre
BCRC – CAM	BCRC – Central America and Mexico (central office in El Salvador)
BCRC – CARIBBEAN	BCRC – Caribbean (central office in Trinidad & Tobago)
CAD	Canadian dollars
CAF	Andean Development Corporation
CARICOM	Caribbean Community
CARIRI	Caribbean Research Institute (former administrator of BCRC-CARIBBEAN)
CBD	Convention on Biological Diversity
CCAD	Central American Commission for Environment and Development
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CNWH	Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere
COP	Conference of the Parties
ESM	Environmentally Sound Management
EU	European Union
GEF	Global Environmental Facility
GRULAC	The Group of Latin American and Caribbean countries
ILMC	International Lead Management Centre
LAB	Lead Acid Battery
MARN – El Salvador	Ministry of Environment and Natural Resources – El Salvador
MARN – Venezuela	Ministry of Environment and Natural Resources – Venezuela
MARPOL	International Convention for the Prevention of Pollution from Ships
NGO	Non-Governmental Organization
OECS	Organization of Eastern Caribbean States
OEWG	Open Ended Working Group
PAHO	Pan American Health Organization
SBC	Secretariat of the Basel Convention
SEK	Swedish Krowns
SICA	The Central America Integration System
SIDS	Small Island Developing States
SLI	Starting, Lighting and Ignition (Lead Acid Battery)
STC	Inter-American Convention for the Protection and Conservation of Sea Turtles
ULAB	Used Lead Acid Batteries
UNCLOS	United Nations Convention on the Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
USD	United States (USA) dollars
US EPA	United States Environmental Protection Agency
UWI	The University of the West Indies
VRLA	Valve-regulated Lead Acid (Battery)
WHO	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/)*
6. *Seven Stage Model for the Environmentally Sound Management of ULAB* as agreed upon by the Regional Steering Committee for ULAB at the 4-5 December 2003 regional ULAB workshop in Venezuela (http://www.ilmc.org/Basel%20Project/Venezuela/ILMC%20Presentations/)

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

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