

# ANALYSIS OF THE CHALLENGES IN THE DEVELOPMENT OF THE RECYCLING VALUE CHAIN IN CENTRAL AMERICA



**IRR** Regional Initiative  
for Inclusive Recycling



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## I. PREFACE

The Regional Initiative for Inclusive Recycling (IRR) was created to improve the access of informal, independent recyclers at the base of the recycling chain to formal recycling markets in Latin America and the Caribbean. The IRR partners are the Multilateral Investment Fund (MIF) and the Water and Sanitation Division (INE/WSA) of the Inter-American Development Bank (IADB), the Avina Foundation, the Latin American Network of Recyclers (Red-LACRE), PepsiCo Latin America and Coca Cola Latin America.

The actions supported by the IRR are designed to facilitate the occupational recognition and increase the appreciation of the work of informal recyclers, through the formation of a platform of strategic, multi-sectorial alliances. The IRR seeks to provide an institutional home for dialogue and action, and broad potential for national and regional co-ordination between national and local governments, the private sector and recycler organizations.

This analysis of the challenges for the development of recycling value chains in Central America is the product of discussions between IRR partners and private companies with operations in the Central American region who share a commitment to increase the quality and quantity of materials recycled. These companies considered that in order to achieve this, it would be necessary to strengthen all the links of the value chains, to understand better how they function in the region, and to identify meaningful opportunities to engage informal recyclers at the base of the chain in this process.

The goal of this document is to identify and facilitate joint actions to strengthen and consolidate recycling value chains in the region. The document seeks to provide current and accurate information on legal, organizational and market aspects of the Central American recycling value chain to: decision-makers in national and municipal governments; private enterprises at different levels of the chain; recycler and civil society organizations working in the sector.

The study has been developed by the Central American Association for the Economy, Public Health and the Environment, (ACEPESA), a technical assistance organization with more than 20 years experience in research, local capacity building, and the promotion of public policies in the areas of sustainable integrated solid waste management, water and sanitation. In this project, ACEPESA has been supported by the Foundation Alliance for Development (ALIARSE), an organization which fosters the creation of public-private partnerships in Costa Rica, promoting educational, health, and environmental projects involving private companies and public institutions.

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*“Con un carretón de caballo, otro gallo me cantara”*

*“With cart and horse, things would be different for me”.*

Interview with Francisco Aguirre, Nicaraguan Informal Recycler from Managua,

El Nuevo Diario (13/10/2014)

## I. EXECUTIVE SUMMARY

The words of informal recycler Francisco Aguirre, which serve as the preamble for this executive summary, summarise the sentiments of thousands of informal recyclers in Central America who aspire to improve their working conditions, and, at the same time, achieve an increase in the income generated by their work.

This document, the *Analysis of the Challenges for the Development of the Recycling Value Chain in Central America*, developed in the framework of the Regional Initiative for Inclusive Recycling (IRR), sets out to identify the elements or drivers that could bring about the creation of inclusive value chains which benefit and strengthen the most vulnerable recyclers at the base of the chain. The study looks at the plastic, paper and cardboard and non-ferrous metals value chains in Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and Panamá.

The research for current study took place between October 2014 and June 2015 and includes both a desktop study of existing documents and fieldwork in the six selected countries. The team held interviews with stakeholders at different levels of the value chain, to explore their perceptions and opinions. Those interviewed included recyclers at the base of the chain, small, medium, and large recycling centers, industrial end-users and government organizations. The goal was to understand the barriers or limitations they encountered to increase competitiveness and the opportunities to drive the development of inclusive recycling value chains for the selected materials.

The analysis focuses on three key dimensions for the inclusion of recyclers working at the base of the value chain, identified in the 2013 IRR Report *Characterization of the Informal Recycling Sector in Latin America and the Caribbean*. Specifically: the **legal dimension**, which considers the scope of national and regional integrated solid waste management (ISWM) legislation and its incentives for recycling; the **organizational dimension**, including the development of organizational processes in the sector and the existence of national spaces for multi-sectorial co-ordination; and the **market dimension**, related to the flows of materials, prices at each level of the value chain and the conditions of sale required to achieve better prices for collected material. The study presents a SWOT (strengths, weaknesses, opportunities and threats) analysis for each country and for the region as a whole, focusing on the motivations for action from the point of view of key stakeholders. Finally the conclusions and key recommendations arising from the study are summarized in the last chapter of the study.

The conclusions in relation to the **legal dimension** suggest that despite efforts underway in some countries in the region to advance towards a legal framework based on integrated solid waste management (ISWM), here Costa Rica stands out for example, in general these laws, policies, and plans, largely fail to include a focus on the recognition and inclusion of recyclers at the base of the value chain. Nicaragua is an exception to this trend in that the national recyclers movement, the Network of Nicaraguan Recycling Entrepreneurs (Red-Nica), participated in the development and socialization of the ISWM Law, up to and including its approval in general form in July 2014. Notwithstanding this, until the law is approved in detail and then implemented, recyclers at the base of the value chain will not benefit from the measures that it contains. At the same time, these countries are suffering from the failure to put into action incentives to stimulate recycling, even where these incentives are present in the legislation in force. This suggests that the responsible regulatory bodies lack the resources for robust and effective law implementation and enforcement. Costa Rica is unique among the six countries in having implemented the EPR (Extended Producer Responsibility) principle for special wastes but not for consumer goods packaging and packing.



The six countries all lack institutional spaces for dialogue and/or co-ordination linked to the sector, which could work towards promoting recycling, reconciling conflicting interests or providing a common approach to solving the problems which confront both the informal and the formal recycling sectors. The institutional landscape is bare, and currently neither national nor local authorities nor the private sector are actively facilitating dialogue. Interventions tend to focus upon specific short-term co-ordination, sometimes within one specific sub-sector, such as those offered by recycling industry associations for example the Association of Recyclers of Nicaragua (ASORENIC) formed in 2008 and the National Recycling Alliance, formed in Costa Rica in 2011.

In terms of the **organizational dimension**, with the exception of Nicaragua, the process of organizing informal recyclers is only just beginning in the region. To date, only two national movements have succeeded in formalizing their organizations, the Nicaraguan Network of Recycling Entrepreneurs (Red-Nica), in 2012 and the National Movement of Recyclers in Panama, in 2015. These movements have little in the way of financial resources and are limited in their technical capacity to take forward these processes at national level.

During the past 10 years, in the six countries studied, there have been activities to formalise micro-enterprises, co-operatives and associations for informal and semi-formal workers in the recycling value chain. These have usually been linked to international co-operation projects. In spite of these efforts in the majority of cases this project based formalization processes have failed to produce higher income levels for informal recyclers. The study illustrates that the income levels at the lowest levels of the value chain<sup>1</sup> are classified as “extremely poor” and “poor,” and fluctuate between US\$1.73 and US\$6.00 per day.

Moreover, informal recyclers that work independently are generally earning more than those that have joined an association, co-operative or micro-enterprise. Thus the study concludes that even though the process of formalization brings with it improved working conditions and access to contracts with formal stakeholders, it also introduces additional costs to doing business which are not taken into account in informal work processes. Hence, informal recyclers report that they only begin to perceive clear benefits from organizing, at the point that they are able to improve their recycling infrastructure and equipment, consolidating their businesses as formal recycling centres and commercialising greater quantities of material. The majority of the organizations established to date, will continue to require external technical assistance and ongoing capacity building activities to achieve a measure of sustainability over the longer term.

In general, the actors in the value chain highlight two key changes in the recycling business in the region in the past five years. Although, at the base of the value chain, the number of people adopting recycling as an economic survival strategy to overcome the lack of better employment opportunities, continues to grow, at the highest levels of the value chain, there has been a reduction in the number of large recycling centres and end-user industries. This suggests that Central American industries are not competitive in the global marketplace, and especially, that they cannot compete for recyclables with industries in Asia.

Finally, under the **market dimension**, the study notes an appreciable increase in the price obtained for recyclable material as one moves “up” the chain towards the end users. In all of the countries studied, the international price for oil has a strong influence on price fluctuations for all materials. This is logical as transport represents the pricing component that has the most weight in the cost structure of the industry. In the same way, the Asian markets also exert a very strong influence on domestic prices for materials in the region. The competing forces of supply and demand create scarcity or over-abundance of materials, which in turn creates an increase or a decrease in prices.

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<sup>1</sup> Informal recyclers, recyclers organized in associations, cooperatives or micro-enterprises and small recycling centres.

An analysis of materials flows demonstrates that 5% of fiber (paper and cardboard), 25% of plastic and 1% of ferrous and non-ferrous metals recovered are processed in the region. El Salvador, Panamá and Costa Rica represent the countries which import the most fiber, Honduras is the most significant importer of plastic, and Guatemala is the most active importer of ferrous and non-ferrous metals. The rest of the material generated in the region is processed and commercialized elsewhere, in particular in Asia, South America and North America.

A SWOT<sup>2</sup> Analysis based on the findings of the study is presented in summary form in the following table.

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> <li>■ Formation of local recycler organizations and national recycler movements.</li> <li>■ Actions to stimulate co-operation between informal recyclers and the public or private sectors to increase their access to recyclable materials.</li> <li>■ Creation of business associations in the recycling sector (end-users and large recycling centers).</li> <li>■ Existence of formal recycling enterprises.</li> <li>■ Industry access to innovative recycling technology.</li> <li>■ Markets for all of the materials studied.</li> <li>■ Broad availability of ports for exporting from the region.</li> <li>■ History of support to informal recyclers and small junk shops.</li> <li>■ Verbal agreements which are in force and which work.</li> </ul>	<p><b>At the base of the value chain</b></p> <ul style="list-style-type: none"> <li>■ Limited success of efforts to stimulate inclusive recycling (IR).</li> <li>■ Weak national movements lacking capacity to influence decisions made by other actors.</li> <li>■ Weak levels of consolidation of existing initiatives to improve their performance, modernization and capacity building in the areas of negotiation and marketing of materials.</li> <li>■ Lack of resources to invest in infrastructure and equipment that would allow for upscaling in the value chain and improve access to better markets.</li> </ul> <p><b>In terms of the recycling industry</b></p> <ul style="list-style-type: none"> <li>■ Few recycling end-users in Central America.</li> <li>■ Current levels of trust between the lowest levels of the value chain and the buyers are too low to support the formation of stable medium and long term business relationships.</li> </ul>
OPPORTUNITIES	THREATS AND BARRIERS
<ul style="list-style-type: none"> <li>■ Existence of specific legislation on the topic of ISWM approved and in force.</li> <li>■ Existence of the Regional Initiative for Inclusive Recycling (IRR).</li> <li>■ A body of municipal experience in inclusive recycling and support for the formalization of informal recyclers on the part of local governments and the private sector.</li> <li>■ Training programmes directed at people working in recycling.</li> </ul>	<p><b>In the Public Sector</b></p> <ul style="list-style-type: none"> <li>■ Limited resources available for national ministries and municipal governments to promote inclusive recycling.</li> <li>■ Lack of approved regulatory frameworks for ISWM, and where there is a regulatory framework weak or absent implementation.</li> <li>■ Policy or economic support for recycling does not always translate into an inclusive vision rooted in informal recycler integration.</li> <li>■ The lack of spaces for dialogue and co-ordination between the different links in the value chain and the public sector.</li> </ul>

2 Strengths, Opportunities, Weaknesses and Threats



## OPPORTUNITIES

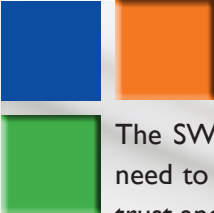
- Opportunities for financing from International co-operation for programmes to support informal recyclers as well as other actions to promote recycling.
- Opportunities for financing recycling in the formal sector.
- Creation of national registers of companies and recycler organizations, as well as registration and analysis of materials flows.
- Regional harmonization of information systems on material movements.
- Actions for the development of inclusive policies and social security at national and regional level.

## THREATS AND BARRIERS

- The lack of technical assistance from institutions responsible for procedures for obtaining operating permits and certification, in combination with the high costs of these procedures.

### **In the Private Sector and Civil Society**

- The vulnerability of the sector to changes in the international market, such as the introduction of new players whose activities represent an increase in competition at national level, such as brokers.
- Presence in the region of enterprises promoting waste-to-energy plants as an option for energy recovery from waste.
- Violence and insecurity which affect informal recycling activities and is associated with gangs particularly in Guatemala, Honduras and El Salvador. Also activities related to money-laundering and narcotics that have an affect on the prices of some materials.
- A lack of resources to change the habits of public and private actors and encourage source separation.



The SWOT demonstrates that the Central American recycling sector presents challenges which will need to be overcome in order to foster a truly inclusive value chain, characterized by relationships of trust and co-ordination, with availability and free exchange of information and a level of innovation that brings benefits to all levels of the value chain, with special consideration for the most vulnerable levels and participants.

The study recommends a series of actions to face these and other challenges identified in the SWOT analysis. The actions are designed to be taken by public institutions, local governments, recycling enterprises and international co-operation organizations that influence in the economic process between the different levels of the value chain. These actions will be designed to create fairer and more equitable relationships between informal recyclers and other actors in the value chains.

The recommendations are grouped into: regulatory and normative aspects; policies for the integrated and inclusive solid waste management; implementation of incentives and financing; the creation and roll-out of national and regionally co-ordinated information systems; capacity building and training for all involved stakeholders; support for the accompaniment and strengthening of national movements; and other activities that promote the formalization of informal recyclers.

## I ABBREVIATIONS AND ACRONYMS

### Regional

BCIE	Banco Centroamericano de Integración Económica
BID	Banco Interamericano de Desarrollo
FOB	Free on Board
GIRS	Gestión Integral de Residuos Sólidos
GIZ	Gesellschaft für Internationale Zusammenarbeit
JICA	Agencia de Cooperación Internacional del Japón
OIT	Organización Internacional del Trabajo
OMS	Organización Mundial de la Salud
OPS	Organización Panamericana de la Salud
PET	Politereftalato de etileno
RSE	Responsabilidad Social y Empresarial
SICA	Sistema de Integración Centroamericana

### Guatemala

AGEXPORT	Asociación Guatemalteca de Exportadores
MARN	Ministerio de Ambiente y Recursos Naturales
SAT	Superintendencia de Administración Tributaria

### El Salvador

ANEP	Asociación Nacional de la Empresa Privada
ASIPLASTC	Asociación Salvadoreña de la Industria del Plástico
ASI	Asociación Salvadoreña de la Industria de El Salvador
COAMSS	Consejo de Alcaldes del Área Metropolitana de San Salvador
FUNDE	Fundación Nacional para el Desarrollo
FUNDEMAS	Fundación Empresarial para la Acción Social
INSAFORP	Instituto Salvadoreño de Formación Profesional
MARN	Ministerio de Medio Ambiente y Recursos Naturales
OPAMSS	Oficina de Planificación del Área Metropolitana de San Salvador
RESSOC	Proyecto Emprendedurismo Social y Eco Gestión de Residuos Sólidos

### Honduras

INVEMA	Inversiones Materiales
SERNA	Secretaría de Energía, Recursos Naturales, Ambiente y Minas

### Nicaragua

ANA	Autoridad Nacional del Agua
ASORENIC	Asociación de Recicladores de Nicaragua
FONARE	Foro Nacional de Reciclaje
FUDEMI	Fundación para el Desarrollo de la Microempresa
INIFOM	Instituto Nicaragüense de Fomento Municipal
MARENA	Ministerio de Ambiente y los Recursos Naturales
MIFIC	Ministerio de Fomento, Industria y Comercio

MINSA	Ministerio de Salud
REDNICA	Red de Emprendedores Nicaragüenses del Reciclaje
UCA	Universidad Centroamericana

### Costa Rica

ACEPESA	Asociación Centroamericana para la Economía, la Salud y el Ambiente
ACIPLAST	Asociación Costarricense de la Industria del Plástico
ALIARSE	Fundación para la Sostenibilidad y la Equidad
ANAI	Asociación Nacional de Alcaldes e Intendentes
AREL	Asociación de Recicladores de Liberia
BNCR	Banco Nacional de Costa Rica
CICR	Cámara de Industrias de Costa Rica
DIGECA	Dirección de Gestión de Calidad Ambiental
FEMETROM	Federación Metropolitana de Municipalidades
IFAM	Instituto de Fomento y Asesoría Municipal
IMAS	Instituto Mixto de Ayuda Social
INA	Instituto Nacional de Aprendizaje
ITCR	Instituto Tecnológico de Costa Rica
PROCOMER	Promotora de Comercio Exterior
PYMES	Pequeña y Mediana Empresa
MEP	Ministerio de Educación Pública
MINAE	Ministerio de Ambiente y Energía
MINSA	Ministerio de Salud
REDCICLA	Red de Reciclaje de Costa Rica
REDCONSERVA	Red Costarricense de Recuperadores de Residuos Valorizables
UCR	Universidad de Costa Rica
UNA	Universidad Nacional de Costa Rica
UNGL	Unión Nacional de Gobiernos Locales

### Panamá

ANCON	Asociación Nacional para la Conservación de la Naturaleza
APEDE	Asociación Panameña de Ejecutivos de Empresas
FAS PANAMA	Fundación de Acción Social por Panamá

## I. INTRODUCTION

The *Regional Initiative for Inclusive Recycling (IRR)* was created in 2011 with the goal of integrating informal recyclers in Latin America and the Caribbean into formal recycling markets. The IRR partners are the Multilateral Investment Fund (MIF); the Water and Sanitation Division of the Inter-American Development Bank Group (IDB Group), the Avina Foundation, the Latin American Network of Recyclers (Red-LACRE), PepsiCo Latin America and Coca Cola of Latin America. The IRR seeks to build strategic alliances for recycling between different stakeholders with the goal of improving the socio-economic situation of informal recyclers; promoting the development of regulatory frameworks which are favorable to an inclusive recycling market; and stimulating the active participation of the private sector in the construction of this market.

This research is framed by the specific IRR objective to, “increase the capacity for co-ordination at national and regional level between national and local authorities, the private sector and recycler organizations, to create conditions which favor higher levels of inclusion of recyclers in the value chain”. In particular when referring to work with the private sector the IRR looks to “facilitate the traceability of recyclable materials used as inputs to the recycling industry, facilitate the provision of socio-economic solutions for this social sector and stimulate larger value chain enterprises to recognize and include informal recyclers in the operation of their value chains”.

The objectives of the present study are as follows:

### General Objective

Identify the elements and policy drivers that could motivate the creation of inclusive value chains for plastics, paper and cardboard and non-ferrous metal recycling in Central America (Panamá, Costa Rica, Nicaragua, Honduras, El Salvador and Guatemala).

### Specific Objectives

- Analyze stakeholder relations between different links of the plastics, paper and cardboard and non-ferrous metal recycling chains in Central America.
- Identify opportunities for the creation of value chains between different stakeholders active in the recovery and recycling of plastics, paper, cardboard and non-ferrous metals, that can strengthen the lowest links of the chain; as well as identifying the obstacles, strengths and weaknesses that could impede their development.
- Develop priority actions and an action plan with tasks and deadlines, clearly assigning roles and actions to be taken by each of the key stakeholders, in order to take advantage of the identified opportunities.

This study undertaken by the Central American Association for the Economy, Public Health and the Environment (ACEPESA) and the Alliance for Development Foundation (ALIARSE) takes the concept of a **value chain** as its point of departure. The value chain is “a model of analysis and intervention that seeks to add sustainable economic and social value to the people who make up the poorest and most vulnerable links in the supply chains” (Fundación CODESPA, 2010).

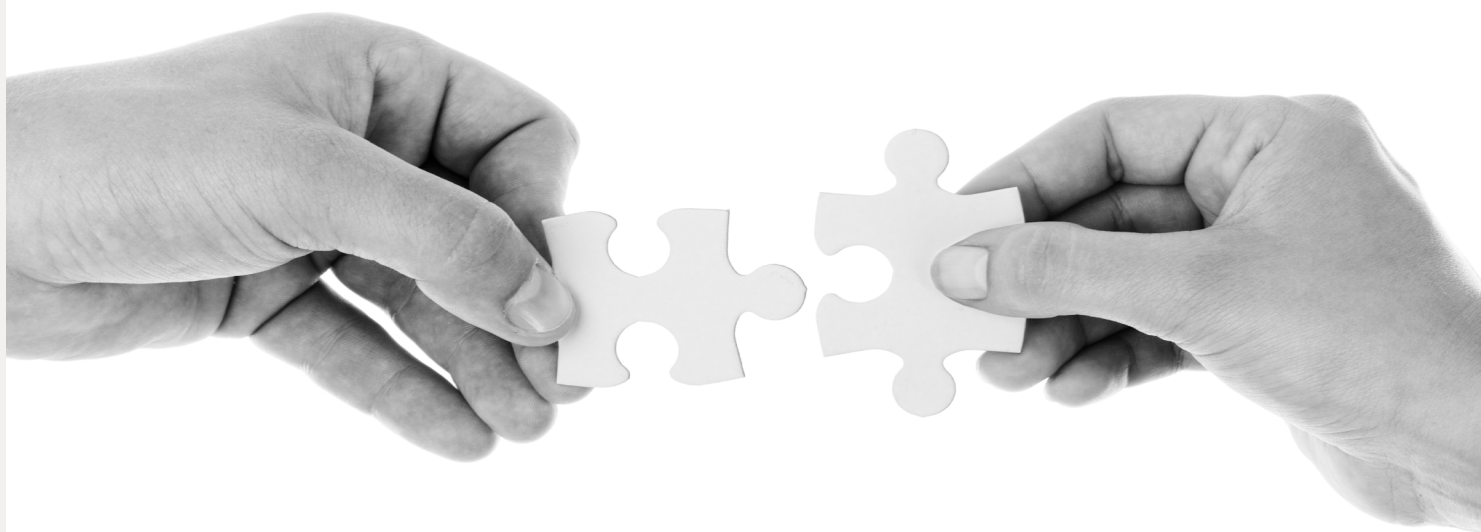
This way of looking at inclusive development, rooted in the value chain, is designed to create four types of systematic upgrading and improvement. First, process improvement, improvement of efficiency through the adoption of new technologies. Second, product improvement through the production of goods with a higher added value. Third, functional improvement, which implies the strengthening of capacities and acquisition of new combinations of skills and knowledge; and fourthly, chain or cross sector improvements, which stimulates key actors to move towards, marketing materials to new, although frequently related or adjacent, industries, (Humphrey & Schmitz, 2002).

The explicit focus on the value chain has the goal of *“meeting the demands of the market in order to generate income and add value in the chain, both at the level of products and at the level of stakeholder relations, generating, in addition, advances in economic efficiency, conditions of equality, trust, environmental sustainability and organizational strengthening”* (Weiskopf and Landero, 2009).

Hence, the study promotes the idea that the *“group of involved actors work in close coordination to satisfy the changing economic demands of the market, exchanging information and innovations, which also benefit the most vulnerable links in the chain”* thereby creating capacity in all the involved actors in a sustainable way (Fundación CODESPA, 2010).

This approach implies an institutional intervention, which through targeted actions, provides support to the removal of the obstacles facing actors working at different points in the chain. This creates a particular impact in situations where there are asymmetrical power relationships or where the value chains are long and value added is concentrated at the higher and more powerful levels, at the expense of weakening and impoverishment of the less powerful and lower links. Because of the political nature of changing power balances, these types of interventions require the implementation of coordinated public-private actions that target the challenges present in the value chains.

This document is structured around three main sections: a) Research Methodology; b) Principle Findings, and c) Conclusions and Recommendations.



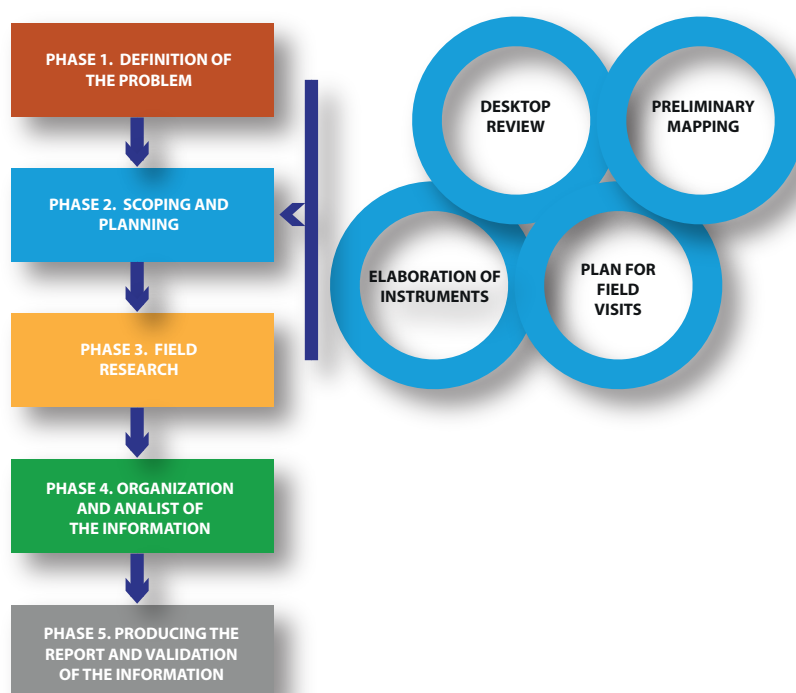
## I. II. RESEARCH METHODOLOGY

This report was undertaken using the applied research methodology of descriptive investigation, which was considered to best address the study objectives.

Since national monitoring and statistical systems for solid waste management in Central America do not include “recycling” in a consistent way, available information is often dispersed amongst different institutions and is generally incomplete. As part of the study methodology, research instruments were developed to explore the experiences, opinions and assessments of a sample of key stakeholders in order to complement information obtained from official sources. The techniques which have been used to validate the information collected include observation, interviews, surveys and questionnaires, and focus group discussions.

In accordance with the proposed design for the research, the methodological process was undertaken in five phases, as presented in Figure 1.

*Figure 1 Phases of the Study*



### 2.1. Phase I. Definition of the Problem

The methodology was designed to provide answers to the following research questions:

- What is the scope of national/regional legislation to promote and strengthen the recycling value chain for the selected materials? If there are incentives built into the legislation, what are they, how do they work, and how do we know whether they have proved effective?



- Who are the key stakeholders in the value chains for plastics, paper and cardboard, and non-ferrous metals in Central America? How and to what extent do each of these actors, in each of the recycling value chains, participate in the market for secondary materials?
- What are the materials flows for each of the selected material value chains? What volumes are handled in the different countries of the region and in each link of the value chain? What are the prices paid and received at each level in the supply chain? What factors cause the fluctuation of prices over time at the highest levels, end-users in each value chain?
- What are the conditions (transaction costs) which govern the participation of the lowest, informal and semi-formal levels of the value chain, and how can these be managed to allow marketing of materials at better prices and under more favorable conditions (such as quality specifications, transaction procedures, existence of cartels or rent-seeking behavior)?
- What are the opportunities and challenges to promote the formation of value chains for the materials selected which contribute to the strengthening of the links at the base of the chain?

## 2.2. Phase II. Scoping and Planning

In **Phase II** of the study, the team prepared the field work, undertaking the following activities:

- a. Desktop review of the subject in general.
- b. Preliminary mapping of sector enterprises and other related actors.
- c. Elaboration of instruments for data collection and information analysis.
- d. Preparation of the field visit plan to apply the study instruments in each selected country.

Each of these activities is discussed in greater detail below.

### *Desktop Review*

The desktop review began with the identification of literature that could provide elements for the development of the conceptual framework for the research: experiences in value chains in the recycling sector or other productive sectors which could enrich the recommendations of the study. The desktop review was also useful for identifying questions or themes for further investigation, which were then included in the data collection instruments.

The literature review was organized according to the following search criteria for secondary sources: (1) value chains; (2) recycling; (3) inclusive recycling; (4) experiences in the development of value chains; and, (5) corporate social responsibility, CSR. Based on these criteria, 30 documents were identified, 21 of which proved to offer information which was relevant to the study. The team also analyzed available regulatory documents related to ISWM and the official information available for the import and export of recyclable materials for El Salvador, Nicaragua, Costa Rica and Panamá.

### *Preliminary mapping*

The preliminary mapping of sector actors identified 134 recycling end users and recycling centres (mainly large and medium sized) involved in the processing, pre-processing and trading of the selected materials. These were distributed as follows: 24 firms in Guatemala; 24 in El Salvador; 16 in Honduras; 24 in Nicaragua; 30 in Costa Rica; and 16 in Panamá. **Annex I** presents the detailed results of the stakeholder mapping process in the six countries. This preliminary map was adjusted, based on the field trip findings, during the course of the investigation.

The principal source of information used to develop the map were the national reports of the UN-Habitat program, *Technical Assistance and Institutional Strengthening in the Management of Solid Wastes in Central America* (2010-2012), supplemented by information available on the internet.

In addition the team developed a list of the representatives of the national movements of, recyclers and of the relevant regulatory body for each country as presented in **Annex 2**.

### *Elaboration of instruments*

**Four target groups** were identified for the elaboration of research instruments:

- a. Representatives of national recycler movements in each country, together with representatives of associations or cooperatives of formalized recyclers.
- b. Recycling centers and junk shops, classified provisionally into four sub-categories<sup>3</sup>,
  - Small (handling 0 to 10 tonnes of material per month);
  - Medium-sized, (handling 10 to 30 tonnes of material per month);
  - Large class B, (handling 30 to 100 tonnes of material per month); and
  - Large class A, (handling more than 100 tonnes of material per month).
- c. Recycling industry.
- d. Representatives of national regulatory bodies for ISWM.

For each of the target groups, the team prepared a specific interview guide.

In order to investigate the subject of gender differences and to identify measures to promote gender equality questions related to the perception of existing differences in the activities undertaken by men and women working in the sector were included in the interview guides as well as questions related to perceived problems, needs, income levels and participation in positions of leadership. In a similar way, the review of legislation in each country included an analysis of the inclusivity of the laws and regulations.

### *Plan for field visits*

The field visits for the gathering of information took place between the 24th of November and the 12th of December 2014. In each country the teams sought to interview, the following cross section of stakeholders: a representative of the ISWM regulatory body; a representative of the national recycling movement; representatives of associations or cooperatives of recyclers, where these existed; at least two small, two medium-sized, and three large junk shops, processors, and/or recycling centres.

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<sup>3</sup> This classification is based on experience, as presented by one of the Costa Rican recycling industries, but there is really no regional consensus as to classification by size.



ters; and four recycling end-user industries, in countries where these exist. Where there were too few end-user industries, the number of large recycling centres was increased. The goal was to interview a total of **84 people** in the six countries. With respect to the end-user industries, the team ranked countries according to existing material processing or production capacity, taking into account the presence of recycler industries in a country which provide recycling coverage to the region as a whole. With these criteria guiding the selection, the team chose the following industries in each country:

- **Paper:** El Salvador. The Kimberly Clark processing plants are located in El Salvador.
- **Cardboard:** Costa Rica. The company Empaques Santa Ana is located in Costa Rica and receives cardboard from the rest of the region.
- **Non-ferrous metals:** El Salvador and Guatemala. These countries import non-ferrous metals accumulated in the rest of the region.
- **Plastic:** A variety of pre-processing and plastic end-user industries are located in each country, and were included in the field research.

In preparation for the visit to each country, the team sent 281 emails and made 178 telephone calls to 117 representatives of the various sectors, in order to coordinate the visit of the consultants and ensure the success of the planned interviews. 60 people responded positively, and **Annex 3** shows the results of this process for each country.

## 2.3. Phase III. Field Research

The bulk of the field work took place between 24th November and 12th December 2014, in which primary information was collected through interviews with key actors in the recycling value chains in each country. Of the 84 interviews planned, 69 were actually held, a success rate of 82%. Table 1 presents the results of the interviews per country and per stakeholder category.

*Table 1 Number of interviews conducted by country and actor (2014)*

Country	Regulatory Body	Recyclers' Move-ments	Cooperatives /Asso-ciation	Recycling Centres			Pre-Proces-sing	End-user industries	Trade Institutions	Municipal Public Service Companies	Totals
				Small	Medium	Large					
Guatemala	1	1	0	6	3	0	0	2	1	-	14
El Salvador	1	1	1	4	1	1	1	3	-	-	13
Honduras	1	1	1	1	1	1	0	0	-	-	6
Nicaragua	1	1	2	2	2	3	2	1	1	1	16
Costa Rica	1	1	1	1	1	2	1	3	1	0	12
Panamá	0	1	0	1	0	4	0	1	-	1	8
Totals	5	6	5	15	8	11	4	10	3	2	69

Source: Developed by the research team.

The majority of the people interviewed were from the intermediate links in the chain, mainly recycling centres and pre-processor levels. In second place were representatives from the end-user industries. Annex 4 presents a list of the people interviewed in each country.

There were serious difficulties in following the planned interview program in both Honduras and Panamá, and indeed, the appointments with people in these two countries were difficult to confirm in advance. Even when

confirmed, the interviewees often failed to arrive at the appointed time. In these cases, the research team offered an alternative date and time for the interview, and/or the possibility of conducting the interview by phone. If the person refused these options, the team contacted other people identified in the original mapping or recommended by other national interviewees.

In Guatemala, the initial response rate from the selected enterprises was very low, and so the team was obliged to undertake a second round of visits with the support of a local organization, which contacted additional junk shops and recycling centers. However, even with this additional effort, no Guatemalan recycling industries participated in the primary data collection process.

Finally, the team supplemented the field work in El Salvador, Honduras and Panamá with a series of unannounced visits to small and medium-sized recycling centres located in areas of high concentration of recycling businesses with the aim of undertaking impromptu interviews.

## 2.4. Phase IV. Organization and Analysis of the Information

Following the field work, the consulting team held a series of meetings to socialize the results of the visits and define the strategy to systematize the information and analyze the data obtained.

## 2.5. Phase V. Producing the Report and Validation of the Information

In order to validate the information compiled from the field work, the team held four validation sessions between 11 and 13 May, 2015: one was a face to face meeting with Costa Rican entrepreneurs in the recycling value chain; and the other three were web conferences for regulatory bodies, recycling companies and representatives of national recycler movements. The current report incorporates the suggestions and recommendations generated in those meetings.



## I. III. PRINCIPAL FINDINGS

This chapter consists of five sections, each of which addresses one of the research questions. The first section presents the current regulatory framework governing ISWM in the six countries studied. The second section presents the situation of stakeholders in the recycling chain, in terms of recognition and formalization of informal recyclers, income levels and working conditions. This section further includes a discussion on the different types of organizations that exist at different levels of the chain, and the role of the national regulatory body. The third section concentrates on the materials flows analysed in terms of import and export data, material prices and the nature of price fluctuation. In the fourth section, the rules and conditions for participation in the market, the terms and benefits offered by recycling centres and end-users to their suppliers and communications between different links in each of the value chains are examined. The chapter concludes with a regional SWOT analysis that summarises strengths, opportunities, weaknesses and threats to recycling activities in the region.

### 3.1. Regulatory Framework

This section presents the scope of national legislation for integrated solid waste management (ISWM), in terms of the promotion and strengthening of the recycling value chain in the six countries studied. The section also discusses the presence or absence of policies, goals, and incentives to stimulate recycling and assesses their effectiveness.

The regulatory framework establishes the “*rules of the game*” that govern the recycling chain in Central America. This means that it includes both existing and draft laws that seek to promote recycling and generate socio-economic and environmental benefits for involved stakeholders. There is a move, in the region, towards the adoption of ISWM laws and policies, moving from traditional collect-and-dispose approaches towards the promotion of integrated systems characterized by recovery and valorization of recyclable materials.

Table 2 presents a summary of laws and related governance instruments in the Central American region. It highlights articles related to the research including: incentives, recycling/valorization, the value chain, the informal sector and gender. At first glance, it is obvious that there is broad diversity and considerable differences in the legislative advances in the six countries. Only Costa Rica, with its law in force, and Nicaragua, with a partially approved law still under discussion in the National Assembly, have included ISWM in their legal framework. These are also therefore the two countries which have placed the greatest emphasis on developing a normative framework which promotes recycling.

Nicaragua stands out as having developed the only law which introduces into legislation the concept of the informal recycler, as well as a number of legal provisions designed to protect and support this group. This law is characterized by inclusive language and explicit treatment of the value chain. Not surprisingly, representatives of the informal recycling sector participated in the formulation of the law. This level of participation has not occurred during the drafting of laws in any other Central American country. In Costa Rica both recycling and solid waste valorization are given significant weight in the ISWM law, but there is neither recognition nor explicit inclusion of actors at the lowest levels of the recycling value chain. The recycling (end-user) industry participated actively in the formulation of the law, in contrast to actors at other levels of the chain.

Table 2 Summary of legislation and articles related to the main research questions (2014)

Country	Legal Instrument	Title and Number of Instrument	Status	Related Aspects				
				Incentives/ Stimuli	Recycling and Valorization	Value Chains	Informal Sector	Gender
Guatemala	Law	Integrated Solid Waste Management and Handling Law <sup>4</sup>	Proposed to the Environmental Commission of the Congress of the Republic in 2010. Not yet approved.	Title 1, Chapter 3, Article 8, Letter g	Title 3, Chapter 2, Article 32	Not mentioned	Not mentioned	Not mentioned
El Salvador	Law	Environmental Law Vol. No. 339, No. 79, San Salvador, Official Gazette of the Republic of El Salvador, Central America 4 May 1998. <sup>5</sup>	In force	Articles. 2, 32 and 33. Generation of actions to minimize the negative effects on the environment.	Article. 52. National Program for Integrated Solid Waste Management	Not mentioned	Not mentioned	Not mentioned
	Strategies	National Environmental Strategy, (2013) <sup>6</sup>	In force	No data	No data	No data	No data	No data
	Plan	Solid Waste Management Improvement Plan for El Salvador, (2010)	In force	No data	No data	No data	No data	No data

Source: Developed by the authors.

<sup>4</sup> [http://www.acumuladoresiberia.com/reciclaje/descargas/pdfs/Propuesta\\_de\\_Ley\\_de\\_Desechos\\_Solidos.pdf](http://www.acumuladoresiberia.com/reciclaje/descargas/pdfs/Propuesta_de_Ley_de_Desechos_Solidos.pdf)

<sup>5</sup> Downloaded 15 June 2015. <http://elsalvador.regulations.org/media/ley%20de%20medio%20ambiente.pdf>

<sup>6</sup> MARN., 2013. Estrategia Nacional de Medio Ambiente. The Strategy covers water resources, climate change, environmental sanitation (sic) and biodiversity.

Country	Legal Instrument	Title and Number of Instrument	Status	Related Aspects				
				Incentives/ Stimuli	Recycling and Valorization	Value Chains	Informal Sector	Gender
Honduras	Regulation	Integrated Solid Waste Management Regulation (2010) <sup>7</sup>	In force	Articles 2, 81, 82 and 83, fiscal and other types of incentives for companies; awards.	Article. 10, 21, 28, part of SWM, 75, 78 and 84, Establishment of recycling programs and systems.	No data	No data	No data
Nicaragua	Law	Special Law for the Integrated Hazardous & Non-Hazardous Solid Waste Management Register №. 20116895. Chapter of National <sup>8</sup> Legislation.	Approved by the National Assembly. In general in July 2014, Final and specific approval is pending.	Art. 14, Marena responsibilities, 76, Incentives, 77, Extensions and exemptions, 78, endorsement of requests, 80, municipal incentives and 110. Stimulating markets for products and sub-products.	Art. 21, 43, waste valorization, 44, micro, small and medium-sized enterprises consisting of managers and informal recyclers, 45, 46, 47, 50 65, 80, 108, 112	Art. 44, informal recyclers as the base of the value chain	Specific mention of female and male informal recyclers. Art. 16, 17, 43, 44, 80, 84 and 105	Uses inclusive language
Costa Rica	Law	Law for the Integrated Solid Waste Management No. 8839, 13 July 2010 <sup>9</sup> .	In force, with regulations in force, Phase 1 of National Recycling Strategy in development.	Art. 2, contributions to ISWM, 20, fiscal and other incentives, 21, incentives for generators 74, empowers municipalities to establish incentives.	Art. 2, market development, Arts 4, 6, 8, 20, reuse and valorization 22, commercialization structures, 23, community actions 30, donating, selling, exchange 32, normative and legal aspects, 38,	Not mentioned	Art. 7k, promotion and training for micro-enterprise, Art 8k, SWM agreements and transitional actions, VII,	El Art. 8k and 20, empowers municipalities to establish partnerships with women's organizations to increase their participation in waste management.

<sup>7</sup> <http://www.tsc.gob.hn/biblioteca/index.php/reglamentos/202-reglamento-para-el-manejo-integral-de-residuos-solidos>

<sup>8</sup> <http://legislacion.asamblea.gob.ni/SILEG/Iniciativas.nsf/0/e6b32d91d9b2f6e8062578a30071fdd?OpenDocument&ExpandSection=1&TableRow=3.1>

<sup>9</sup> [http://www.pgrweb.go.cr/scij/Busqueda/Normativa/normas/nrm\\_texto\\_completo.aspx?param2=1&nValor1=1&nValor2=692108&nValor3=83023&nValor4=NO&strTipM=TC](http://www.pgrweb.go.cr/scij/Busqueda/Normativa/normas/nrm_texto_completo.aspx?param2=1&nValor1=1&nValor2=692108&nValor3=83023&nValor4=NO&strTipM=TC)

Country	Legal Instrument	Title and Number of Instrument	Status	Related Aspects				
				Incentives/ Stimuli	Recycling, and Valorization	Value Chains	Informal Sector	Gender
Costa Rica					source separation, 39, technical support to regulatory body, 40, municipal ownership and other responsible parties, 41, special waste management 42, EPR, 50, infractions and related sanctions, 74, users have to pay for valorization.		municipalities facilitate separate collection of recyclables.	
Panama	Draft Law	N 130, (Draft Law N°139)	Presented in 2010 and remains stalled in the Panama National Assembly	No data	No data	No data	No data	No data
	Law	Law 59	Approved on 22 October 2009	No data	Designates the 17th of May each year as the National Recycling Day.	No data	No data	No data
	National Plan	National Solid Waste Management Plan	Approved in 2005	No data	No data	No data	No data	No data

Source: Developed by the authors.

Costa Rica is the only one of the six countries with extended producer responsibility (EPR) legislation in force at national level. This is the principle governing the activities outlined in the 2014 “*Declaratory Special Waste Regulation*”, N° 38272-S, January 2014.”<sup>10</sup> Which regulates the following materials: used automobile tires; lead-acid batteries; wristwatch batteries, carbon-magnesium, carbon-zinc, and lithium-cadmium batteries; air conditioners, refrigerators, cold transport and industrial refrigeration systems; used crankcase and lubrication oils; plastic packaging used for lubrication and crankcase oils; metal, plastic and glass packaging for agricultural chemicals post triple-rinse treatment; WEEE, white goods, waste from electronic<sup>11</sup> and electric appliances; fluorescent and compact fluorescent bulbs and strips; refrigerants; mattresses; polystyrene (in all its forms, expanded and unexpanded); and non-ferrous metals.

A number of the enacted and proposed laws propose the introduction of incentives which seek to prevent or avoid the generation of certain types of wastes and/or promote their valorization and integrated sustainable management. The principle types of incentives mentioned include the following:

- incentives for the importation of machinery, technologies and supplies through the exemption of customs and excise taxes including Value Added Tax (VAT). The goal of these incentives is not specific to recycling, and they are designed for general purposes.
- development of programs with fiscal incentives and disincentives related to environmental protection. These are targeted to facilitate the mitigation or transformation of polluting activities or processes, or production processes that make excessive or inefficient use of natural resources. The incentives include fiscal benefits for parties engaging in or creating processes, projects, or products that are environmentally beneficial, or that support resource conservation.
- establishment of lines of credit to support small and medium-sized enterprises (SMEs).
- encourage business leaders to include environmentally appropriate and/or clean technologies or processes in their production activity, using incentive and disincentive programs and promoting international and national financial and technical co-operation.
- economic, fiscal, financial, technological, social and educational incentives for eligible natural or legal persons who formulate, implement, participate in or create initiatives, plans, programs, projects or investments in equipment for hazardous and non-hazardous waste management with the goal of optimizing the integrated management of these wastes.
- Promoting the use of eco-labeling or eco-certification to bring to market sustainable sub-products, materials, and products, via financial and moral incentives.
- Recognition and awards for (legal and natural) persons who engage in Best Environmental Practices and Cleaner Production.

In spite of all of these provisions, Table 3 suggests that, with the exception of the lead agencies, few if any of the actors interviewed during the fieldwork were aware of either the legal framework or the incentives available to stimulate recycling; nor could a single person interviewed identify any examples of the implementation of these incentives in practice.

10 Regulated by Executive Decree No. 33745-S of February 8, 2007 “Regulation on Waste Tires”

11 Regulated by Executive Decree No. 35933-S of February 12, 2010 “Regulation for Integral Waste Management Electronics”.

Table 3 Summary of comments and observations on national legislation (2014)

Country	Lead Agency	Recycling Chain Stakeholders
Guatemala	<b>MARN</b> is updating the national policy which dates from 2005 as well as seeking the approval of Law 4240. The elements required to improve the current legal situation include political will, the prioritization of ISWM in the national legislative agenda and the strengthening of municipal governance.	<b>Recycling Centers and recycling industries</b> confirm that there are no incentives and that they need more support from the government in training, access to health insurance, certificates for materials recovery and a reduction or elimination of taxes established by the Superintendency for Tax Administration (SAT).
El Salvador	<b>MARN</b> mentions that they developed the Environmental Sanitation Strategy (2013) which includes hazardous and solid waste management. The regulation for special waste management does not include provisions for recycling. Incentives for recycling activities are found in the Environmental Law and the Ministry has implemented specific actions in this area but the implementation of these initiatives has been slowed due to its effect on the Treasury's revenue collection powers. The Ministry is working on the development of other types of incentives. There is a ministerial level agreement to develop regulations for the operation of recycling centres.	The <b>recycling industry</b> does not recognize any advances in the legislation and states that incentives for recycling do not exist. They consider that the policies related to recycling lack coherence. Neither <b>processors</b> nor <b>recycling centers</b> nor <b>informal recyclers</b> know anything about existing incentives in the law, nor are they familiar with the law itself.
Honduras	<b>SERNA</b> states that amongst the ISWM legal instruments the most important is the ISWM Regulation in force since 2011. The application of legal instruments has been weak, and characterized by difficulties in co-ordination and project management. There are also problems in financing and assistance from the central government, which creates disincentives for investment by private companies, as there is no pressure on them to improve their SWM. In 2014, SERNA and the Pan American Health Organization of the World Health Organization (PAHO/WHO) lobbied for the approval of the <i>Integrated Solid Waste Management Policy</i> .	<b>Recycling centers</b> do not know anything about provisions for incentives in the existing legislation. <b>Informal recyclers and cooperatives</b> , do not know anything about the legislation or its provisions for recycling incentives.
Nicaragua	<b>MARENA</b> says that the policies that regulate or stimulate recycler activities are found in the non-hazardous waste regulation and the national waste policy. These instruments have not been updated since the were passed in the mid-2000s. At municipal level, local authorities have formulated bylaws and local regulations and a range of other initiatives.	<b>Recycling centers</b> proposes that the law recognizes that recyclable material comes from products which have already been taxed and hence taxes on this material is equivalent to double taxation and hence this material should be exempt from VAT which is charged at 15% in Nicaragua. <b>Processors</b> propose an exemption on export taxes, and the <b>recycling industry</b> proposes the introduction of fiscal incentives.
Costa Rica	<b>MINSA</b> considers that since the law is still in its infancy (passed in 2010) it is necessary to wait a bit longer before evaluating the application of the law. To improve the legal situation, it is necessary to determine which mechanisms are necessary to enforce municipal compliance "since this law has not been tough enough to supersede municipal autonomy principles." There is theoretical support for the strengthening of recycling, but few actions have been implemented in practice.	<b>Recycling enterprises and large recycling centre</b> consider that formalizing the informal recyclers and informal small recycling centres is a pending task.
Panamá	The Panamanian legal framework consists of nine legal provisions including laws and decrees, which independently address the issue of solid waste recycling. Among these is the law to create a Urban and Domestic Cleansing Authority and a decree to create the Recycling Commission that promotes recycling in governmental institutions. There is a draft law for Waste Minimization, Reuse, Recycling and Valorization.	<b>FAS PANAMA</b> presented Law 59, (approved on 22 October, 2009), in the implementation framework of the Project R+: Recycler+ and Enjoy+ financed by the CSR program of the National Brewery. The development of this law (59) was supported by other stakeholders including: the National Environmental Authority, the Ministry of Education, the National Park Group of Panama, Marviva, ANCON, Swiss Contact, the Fundación Natura, Papelera Istmeña, Fibras Panamá, Moldeados Panameños and Plastigías.

Source: developed by the authors



## Conclusions

In spite of the adoption of ISWM legislation in various countries, this has so far failed to bring about a significant increase in recycling at municipal level. Generally speaking the regulatory bodies tasked with implementing these laws seldom have the resources to do so effectively.

Moreover, these legal and regulatory instruments largely focus on municipal SWM services and not on the recycling value chain. Nicaragua is the only country that has developed a draft law which recognizes and seeks to include recyclers at the base of the chain in the municipal ISWM systems.

In terms of incentives, they appear in theory in the text of various legal instruments but the application of these laws is weak and hence the actors in the value chain fail to perceive benefits from these provisions.



Photo Image 1. Informal Recycler in Costa Rica

## 3.2. Principal Actors in the Recycling Chain

This section describes the stakeholders in the plastics, paper, cardboard and non-ferrous metals recycling chains and their participation in the market by stakeholder and material. The following actors have been identified:

**Wastepicker with a sack**, recovers materials directly from street set-outs and on dumpsites and does not pay for this material. He/she sells the material to local recycling centers.

**Itinerant waste collector (IWC) with hand- or horse cart**, collects a greater quantity of material than the wastepicker but also sells this material to local recycling centers due to his/her relatively low mobility. He works in the streets collecting material from households, businesses and markets, as well as recovering recyclables from street set-outs.

**Itinerant waste buyer (IWB) with vehicle and loudspeaker, covers various neighborhoods**, advertising the “purchase” of desired materials via the loudspeaker and usually paying a very modest price. Nevertheless, their first approach is usually to offer to “clear your patio” or “take away your old refrigerator” in order to secure the material without paying. Some itinerant waste buyers have their own recycling centers or alternatively they will sell the materials to multi-material recycling centers that buy the whole load (rather than only certain materials).

**Cooperatives and associations of informal recyclers**, some groups of informal recyclers have organized themselves in cooperatives or associations with the goal of improving their working conditions. These collectives operate in a similar way to recycling centers in that they collect, process, and store all types of materials

In 2009, ASORENIC surveyed the entire recycling value chain Nicaragua, an estimated that around 26,000 people (margin of error 5%) participated in the chain. The detailed information for each link in the chain is as follows:

- Micro recycling centers, generate direct employment for more than 5,000 families and indirect employment for more than 10,000 people.
- Small and medium recycling centers, generate direct employment for more than 10,000 families and indirect employment for more than 10,000 people.
- Large recycling centers, generate direct employment of more than 5,000 heads of households and indirect work for at least 10,000 families.
- Large exporters, generate direct employment for 1,000 workers and it is estimated that there are about 500 people benefitting from indirect employment.

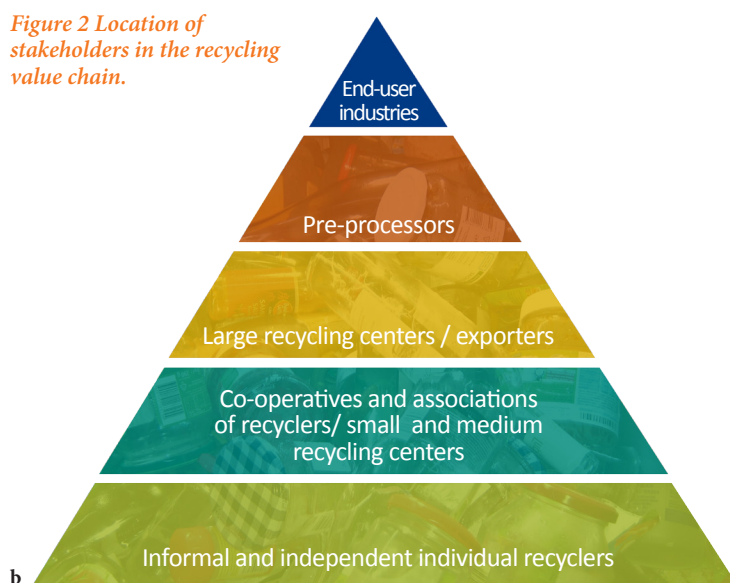
although in other respects they are a very diverse group. For example, the majority collect recyclable materials directly from source, although some continue to collect material from dumpsites.

Still others have sites for materials storage either on their own land or through a temporary concession for use. In terms of means of transport, some of them do not own transport, some have tricycles or horse or hand carts, and others have occasional support of the municipality in the collection of materials.

**Small and medium-sized recycling centers.** Usually these private enterprises buy all types of materials, although in some cases they specialize in ferrous scrap, and are called “chatarreros”. In the capitals of Nicaragua and El Salvador, there are part of the city dedicated to recycling where a large number of small recycling centers are located side by side, buying ferrous scrap, although they will also receive other materials if someone comes to sell them.

Large recycling centers, pre-processors, and exporters. These actors use their own vehicles to buy their preferred materials from smaller recycling centers and bring them back to their facilities. Some work with a variety of materials, others specialize in one specific type. They sell graded, sorted, clean materials (sometimes baled or shredded) to local recycling end-users or for export.

*Figure 2 Location of stakeholders in the recycling value chain.*



Source: Developed by the authors.

**End-user industries** are at the end of the chain and produce final or intermediate products. In the case of plastics, there are also **intermediate processors** or **pre-processors** who produce flakes or pellets and market them to domestic end-users or export them.

Other important stakeholders in the recycling value chain are the various forms of business associations that bring together formalized recycler associations and cooperatives, recycling centers and/or recycling companies, and consumer goods producers, which work together to promote recycling and/or corporate social responsibility (CSR).

In addition to the commercial aspects of the recycling chain, the regulatory body in each country has an important role in developing policies and guidelines that establish the institutional framework which governs the activities of recycling businesses in the region.

*Table 4 Formalization and Recognition Processes for Recycler Organizations in Central America (2014)*

Country	Existence of a National Movement	Year of formation	Movement is a legal entity	Number of members nationwide	Percentage associated with the National Movement	Reach (capital and other cities)
Nicaragua	Yes	2008	Yes (2012)	3.500	33	National 9, cooperatives in 6 municipalities
Honduras	Yes	2011	No	25	No data	Tegucigalpa & San Pedro Sula
El Salvador	Yes	2012	No	150	No data	National
Guatemala	Yes	2013	No	No data	No data	Municipality of Zacapa
Costa Rica	Yes	2013	No	200	No data	National
Panamá	Yes	2013	Yes (2015)	173	No data	Panamá City

Source: Developed by the authors.

### 3.2.1. Advances in the Formalization and Recognition of Recycler Organizations

Informal recyclers in Nicaragua initiated the process of organizing recyclers at the base of the chain, an initiative which later spread to the other countries in the region. Despite these organizational efforts, the majority of recyclers are still working individually. Interviews were conducted with representatives of the national recycler movements (Annex 2) and the leadership of some of the existing recycler cooperatives and associations. Table 4 shows a summary of the most important results.



Photo Image 2. Members of the Board of Directors of a Recycler Cooperative in Nicaragua.

In **Nicaragua**, the Network of Nicaraguan Recycling Entrepreneurs (REDNICA) was formed in 2008 to represent the interests of dump pickers working at the La Chureca dumpsite in Managua. In 2012, REDNICA was legalized and registered as a national association.

The mission of REDNICA is: to promote the integrated development of men and women dedicated to recycling in Nicaragua, as well as to promoting the organizational, legal, scientific, technical, economic, social, and cultural development of the recycling sector and the persons working in it.<sup>12</sup>

REDNICA is working to organize the approximately 10,500 informal recyclers estimated to be active at national level<sup>13</sup>. As part of its mission, the Network has supported the formation and strengthening of nine cooperatives: Centroamérica Limpia (Managua); Nueva Vida Limpia (Ciudad Sandino); Chureca Guardabarranco (Managua); Chureca Nuevo Amanecer (Managua); Por un reciclaje inclusivo en Nicaragua (Distrito 2, Managua); Mujeres Emprendedoras de la Isla de Ometepe; the women's co-operative "Luz del Futuro" of Bluefields; a co-operative in Jinotega; and one in León. In its most recent Annual Meeting REDNICA documented the participation of 600 affiliates.

Between 2012 and 2013, Red Nica, as one of the member organizations of the Latin American Network of Recyclers (Red-LACRE) and with the financial support of the Avina Foundation and the Bill and Melinda Gates Foundation, undertook a series of national events in the six countries, ultimately leading to the formation of national recycler movements.

In **Guatemala**, the Movement of Recyclers was created in 2013 but has not yet registered as a legal entity. The representative of the movement interviewed during this research is based in the municipality of Zacapa and stated that there are 42,000 people active in informal recycling in the country, of which 1200 people work in Zacapa. He could not say whether there are other recyclers' associations or cooperatives operating in the country.

The Movement of Recyclers in **El Salvador** was created in 2012; it is not yet a legal entity and lacks resources to advance the process of registration, as well as to push the organizational process at national level. The Movement consists of about 150 members, dispersed over the whole country.

In **Honduras** the National Network of Recyclers was formed in 2011 and has 25 members of which 13 are women. In addition, these people are part of the "Mixed Cooperative of Material Sorters", which was founded in 2012. Both entities operate primarily in Tegucigalpa and San Pedro Sula.

In 2013, 100 representatives of informal recycler communities throughout **Costa Rica** organized the "National Recycler Movement", which has yet to obtain legal status.

In **Panamá**, efforts to organize informal recyclers have centred upon the largest dumpsite in the country, el Cerro Patacón which is under the administrative control of the Urbalia Company. In 2013, these recyclers formed the "Network of Recyclers of Cerro Patacón," and were later joined by informal recyclers from the peri-urban communities of Kuna Nega, Villa Cárdenas and Chilibre (all located in Panama City). Resolution N°009-PJ-04 granted legal status to the National Movement of Recyclers of Panama in February 2015.

12 [http://legislacion.asamblea.gob.ni/SILEG/Iniciativas.nsf/0/c7a348be1e89a921062579ce005a8a00/\\$FILE/Emprendedores%20Nicaraguense%20del%20Reciclaje.pdf](http://legislacion.asamblea.gob.ni/SILEG/Iniciativas.nsf/0/c7a348be1e89a921062579ce005a8a00/$FILE/Emprendedores%20Nicaraguense%20del%20Reciclaje.pdf)

13 According to data from the study "Caracterización socioeconómica and de salud de recicladores/as de base", UCA/WIEGO, 2014, 10.000 families depend upon the activity.

According to its coordinators, there are currently 166 documented members of the National Movement. The Movement works to promote the formalization of informal recyclers, improve their working conditions, and push for their incorporation in formal ISWM schemes. The Movement has signed a Memorandum of Understanding (MoU) with the Environmental Advocacy Center of Panama (CIAM) which seeks to create joint initiatives to promote ISWM and climate change mitigation.

The Urbalia company contests this figure stating that in their judgement there are only 10 members of the Movement, despite their strong support and continuous efforts with many governmental agencies to promote and consolidate the Cerro Patacón network. This discrepancy between figures suggests problems of legitimization and recognition of the national recycler organization.

#### **a. Recognition of Recycler Organizations**

With the exception of Red Nica, the leadership and legitimacy of the national movements remains weak in all of the other countries of the region. The movement leaders have had limited opportunities to develop themselves and their capacities as leaders at national level or to learn from the example of others (coordination, negotiation, representation, construction of formal communication channels.) They all lack financial resources to organize, mobilize, or even to hold meetings.

In **Nicaragua** by contrast, Red Nica is broadly recognized by national and municipal authorities, as is evidenced by its participation in the meetings of the commission tasked with the formulation of the *Special Law for the Integrated Management of Hazardous and Non-Hazardous Wastes*. This law, approved in general in July 2014, contains 12 articles proposed by Red Nica, “oriented towards restoring rights and dignifying the work” of people working as informal recyclers. Red Nica has also worked on capacity building and the implementation of communication strategies.

The representative of the informal recyclers in **Guatemala** considers that their network is recognized by national and municipal governments, and is invited to sector meetings. He highlights the support provided by local authorities in the loaning out of meeting rooms for their meetings. The National Movement has been active giving television and radio interviews to share information about the work and accomplishments of informal recyclers. Notwithstanding these points, the representative of the regulatory body had not heard of the existence of the national movement of recyclers.

In **El Salvador**, the representatives of the movement see the lack of a legal registration as the main reason why they are not officially recognized at national level. In spite of this, representatives state that they are recognized and treated with respect by the municipalities, by the Association of Mayors of the Metropolitan Region of San Salvador (COAMSS), and the Planning Office of the Metropolitan region (OPAMSS). Both of these institutions are connected to the international co-operation project RESSOC (see **section b**). However, this recognition does not extend to recyclers working in other regions of the country.

In **Honduras** informal recyclers are recognized by the authorities and have participated in projects with companies in the beer-brewing industry. They have also received equipment (forklifts, a digital scale, and a baler) from TetraPak Panamá, as a result of coordination efforts by the municipal gover-



nment of Tegucigalpa. However, larger value chain stakeholders still refer to informal recyclers as “zopilotes” (buzzards in English) while denying the value and dignity of their work and perpetuating the stereotypes of Honduran recyclers as criminals and drug addicts.

Some of the recyclers’ organizations in **Costa Rica** are recognized by local authorities, and have participated in municipal projects. However, these same municipalities have not always delivered the support that was promised in the framework of these projects. For example, in the case of the Association of Recyclers of Liberia (ARELI), there was a three-year delay in the construction of the municipal recycling center. Also, in the Canton of Garabito, the municipal authorities have so far failed to make available a truck, assigned exclusively to separate collection of recyclables, even though there was an agreement to do so.

The informal recyclers’ organization in **Panamá** has access to storage facilities in the Cerro Patacón. In spite of this, the negative perception of recyclers continues which introduces important challenges in terms of their relationship with the firm that holds the landfill concession.

#### **b. International development cooperation contributions to formalization and strengthening of recycler organizations**

In the last 10 years, international development cooperation has financed a number of projects in different countries of the region which have sought to stimulate recycling and formalize the work of informal recyclers. A selected list of these projects includes the following: Basmanagua, financed by Italian Cooperation in Managua, Nicaragua; creation of an ISWM program for solid waste in Bluefields, Corn Island and the Rama, Nicaragua, financed by the MIF and implemented by the UNDP; RESSOC financed by the European Union and conducted in Managua, Nicaragua and San Salvador, El Salvador. *The International Labor Organization (ILO)* worked with national recycler movements in Guatemala and Honduras in the eradication of child labor in this sector.

The activities of these projects include the: creation of recycler cooperatives and capacity building for these cooperatives; design and implementation of municipal and private separate collection routes for recyclable materials; donation of collection vehicles or other equipment; and in a few cases, the construction of recycling centers. Notwithstanding these efforts, a number of these projects have created situations that raise doubts about the long term sustainability of their results; for example, vehicles in poor condition, recycling centers which have yet to obtain the correct environmental permits and limited administrative and financial capabilities in the formalized associations and cooperatives. A number of the stakeholders interviewed, mentioned the need to include a technical monitoring phase for established recycler organization in the medium term, which includes an exit strategy to ensure that the systems continue operating once the project support phase comes to an end.

#### **c. Agreements between Recyclers; Organizations and Other Stakeholders**

The research confirms that the existence of agreements between recyclers at the base of the chain and other stakeholders is a reflection of the level of organization of the national movement. The results suggest that the agreements can be achieved by providing support and technical assistance to

the respective movement leadership in each country. Details of the agreements identified in each country are presented below.

In **Nicaragua**, Red Nica has signed a series of agreements with private companies, academia and municipalities to give a boost to their activities. Among these are an agreement with:

- the *Fundación Zamora Terán*, (FZT), signed in August, 2014, to guarantee appropriate waste management for that organization and promote good practices in schools which are beneficiaries of the FZT educational program, “*Una Computadora por Niño*” (“A computer for every child”);
- the *Unión Nicaragüense para la Responsabilidad Social Empresarial*, uniRSE;
- the *Universidad Centroamericana* (UCA); and
- the municipalities of Bluefields, Altagracia, Moyogalpa and Ciudad Sandino.

The recycler cooperative operating in Ciudad Sandino received a concession from the municipal government of a piece of land where they have been allowed to construct a recycling center.

In addition, in 2013 the *Alliance for Inclusive Recycling* was formed with the participation of Red Nica, the Nicaraguan Recyclers Association (ASORENIC), the Avina Foundation, Africa 70, the Young Environmentalists’ Club and the Platform for Sustainable Development in Nicaragua. The Alliance functions as platform to articulate the actions of the private sector and social and environmental civil society organizations with the aim of promoting solid waste recovery and recycling<sup>14</sup>.

In **El Salvador**, the five co-operatives established in the framework of the RESSOC project have signed agreements with the municipal governments in the cities where they deliver their services.

In Panama the recyclers have signed an agreement with the National Brewery of Panama, in the framework of the “*Cambia tu barrio*” (Change your neighborhood) project, which seeks to raise the national recycling rate.

The recycler representatives in **Guatemala, Honduras** and **Costa Rica** did not report signing agreements with other stakeholders in the value chains.

## Conclusions

The level of development of the recycler movements in the region is very uneven, whereby Red Nica stands head and shoulders above the other national movements as the most consolidated.

Both national and local recycler organizations require financial support and technical assistance to strengthen their organizations and to mobilize funds for operations, as well as for advocacy and outreach. In this way they could achieve greater visibility to the national and local authorities and the private sector, and strengthen the connections between organizational leadership in the countries in the region, supporting horizontal learning.

It is with these imperatives in mind that national movements propose the formation of the Council for Central American Integration of Recyclers (CICAR) which has the objective of combining forces “to improve occupational health and dignify the work of the recyclers in Central America” according to David Narváez of Red Nica.

<sup>14</sup> <http://www.avina.net/esp/6344/crean-alianza-estrategica-para-reciclaje-inclusivo-en-nicaragua>

### 3.2.2. Changes perceived in the recycling sector by recyclers at the base of the chain

The informal recyclers in each of the six countries commented on the changes that they have seen in the sector in the past five years. In general terms, they all agreed that in comparison with five years ago, there are more people working in recycling at the lowest level of the value chain.

In **Nicaragua**, the Red Nica leadership considers that there are currently a greater number of more organized recyclers and that there are also more intermediaries than was the case five years ago. This perception is shared by members of the two co-operatives interviewed for the study and for them, this translates to more competition for material.

The people interviewed also noticed a reduction in the number of recycling enterprises and large recycling centers, but they did not agree on the causes of this reduction. Some consider that they disappeared on account of poor administrative practices as well as the increases in taxation introduced by the national government.

The president of the **Guatemala** national movement notes that there has been an increase in the number of informal recyclers at the base of the chain, although there is no concrete information on how many. He further notes that in the same period, a number of recycling enterprises and recycling centers have disappeared, which he attributes to the fact that *“they went bankrupt because they were unable to compete with the largest companies”*.

The people interviewed in **El Salvador** also perceive an increase in the number of informal recyclers and intermediaries now as compared to five years ago. Most people become informal recyclers because there are no other work options available. The increase in the number of intermediaries is attributed to people having seed capital which they are willing to use to start a business in this sector. They have not noticed a change in the number of recycling enterprises or large recycling centers, but some of them have changed their place of business.

The President of the national recycler movement in **Honduras** believes that today there are more unorganized recyclers, but there is no information on how many. He also believes that some recycling enterprises and recycling centers have “grown” in the same period, especially in San Pedro Sula.

The people interviewed in **Costa Rica** signaled that a number of scrap yards have disappeared, but in general, the numbers of recycling centers and recycling enterprises have increased. There has been heavy pressure on some smaller recycling centers to fulfil the environmental permitting requirements of the Ministry of Health and municipal governments, but due to the cost of these processes, they have not yet been able to comply with the requirements, which threatens the continued existence of their enterprises.

Informal recyclers in **Panamá** consider that the Foundation FAS Panamá is providing important support to small formal recycling centers. This foundation operates such a recycling center in Ciudad del Saber. The economic interest in recycling has been growing in Panama in recent years, and some recycling enterprises have moved from Panama City to Chorreras.



## Conclusions

Informal recyclers perceive an increase in the number of people involved in waste recovery and classification particularly at the base of the chain, which is already leading to greater competition for materials. The situation appears to be related to the employment situation in all of the countries in the region, which pushes people into recycling as one of the few open economic niches where work is available.

The closing of recycling centers and recycling enterprises might be attributable to competition in the international markets for the material.

### 3.2.3. Average Monthly Income per Person

Table 5 shows the average monthly income per person reported by informal recyclers interviewed for the study, together with the result from small recycling centers. The income information was provided by recyclers in all the countries except Honduras. The sector is positioned between extreme poverty and poverty<sup>15</sup>, daily income ranges from between US \$ 1.73 and US\$ 6 per day.

In general, informal recyclers who worked independently were observed to earn more than those who are in cooperatives or associations or people working in small recycling centers. The exceptions to this were Panama where the small recycling center workers received more than individual informal recyclers and El Salvador, where the incomes for both groups were the same.

*Table 5 Average Monthly Income for People Working as Individual or Associated Recyclers and Small Recycling Centers by Country (2014)*

Country	Recycler at the base of the Chain		Small Recycling Center, US\$
	Individual, US \$	Associated, US \$	
Guatemala <sup>1/</sup>	314 - 353	196 - 235	n/d
El Salvador	300	70-80 - 250	215 - 300
Honduras	n/d	n/d	n/d
Nicaragua <sup>2/</sup>	91 - 136 <sup>3/</sup>	52 a 181	n/d
Costa Rica <sup>4/</sup>	n/d	122	n/d
Panamá <sup>5/</sup>	n/d	79	160

1/ Rate of exchange, US \$ 1 x 7,65 quetzales 26 January 2015

2/ Rate of exchange, US \$ 1 x 26,4 1 December 2014

3/ A medium sized recycling center owner said that this is \$360

4/ Rate of exchange; US \$ 1 x 542,47 del 23 December 2014

5/ Everyone interviewed indicated that their income was variable and depends on external factors like the international market for each material. To compensate for the lack of specific answers, the numbers which we have presented and are estimated by multiplying the quantities documented or reported by the prices per material, and then adding the materials together to obtain an aggregate. This is a reasonably reliable way to estimate the monthly average income for those stakeholders who were willing to provide general information on materials and quantities, but not on prices.

15 CEPAL considers that "extreme poverty" or "indigence" is understood as a situation in which the person does not have sufficient resources to satisfy their basic food needs. The World Bank developed a methodology to measure poverty comparing buying power of income, for them local currency is expressed in terms of its equivalency in buying power through the use of dollars for equivalent buying power (EBP). The value used responds to the average national poverty line adopted by countries with the lowest level of income in the world. In 1991, an international poverty line equivalent to US\$ 1 EBP per day at 1985 prices was estimated, hence the line is known as 1 dollar per day. In 2000, the poverty line was recalculated to 1993 prices and was set to 1.08 dollars EBP. Subsequently over the base of the new indices for EBP generated by the International Comparison Programme of 2005, a new threshold of 1.25 US\$ EBP per day was determined. Taken from: <http://www.cepal.org/cgi-bin/getprod.asp?xml=/MDG/noticias/paginas/1/40211/P40211.xml&xml=/MDG/tpl/p18f-st.xml&base=/MDG/tpl/top-bottom.xml>

### 3.2.4. Recycler Working Conditions

Table 6 summarizes the perception of the interviewees as relates to their working conditions, considering their means of transport, the location of sale, the facilities that they are offered by the buyers and the impacts of work on their health.

*Table 6 Reported working conditions and environment for recyclers in Central America (2014)*

Country	Means of transporting materials	Storage Facility	Conditions of sale	Health Impacts
Guatemala	On foot and hand carts	Not present	The buyers pay daily. Sometimes they provide gloves.	Smoke affects the lungs and also sight.
El Salvador	On foot, hand cart or bicycle	Eco-points (very small points of sale)	Not present	The means of transport do no effect their health in fact the work is healthy because it provides exercise.
Honduras	On foot	Not present	Payment in cash at the moment of sale of the materials.	They work outdoors and are therefore exposed to rain and changing temperatures, and this causes illnesses.
Nicaragua	On foot, hand cart, bicycle, tricycle, motorcycle or horse and cart	One cooperative is working in a facility constructed by an international cooperation project. Another co-operative has no place of business.	There is no support from the buyer and in one case the recyclers felt intimidated by their buyer.	They do not suffer from any negative health impacts.
Costa Rica	On foot or with a cart	Not present. Sorting and separation carried out on the street. During the rainy season paper and cardboard get wet and they are often unable to sell it.	Payment in cash.	They work outdoors and are therefore exposed to rain and changing temperatures, and this causes illnesses.
Panamá	On foot	Galera Cerro Patacón	The price paid "is not very good" and "it's not a fair price."	They do not suffer from any negative health impacts.

Source: Developed by the authors, based on interviews performed in the field.

Most informal recyclers in Central America do their work on foot. In some cases they have access to means of transport such as hand carts or bicycles. Nicaragua is the only place where horse drawn carts are used.

Recyclers in almost all cases lack a fixed place of business or have a very small space which limits their capacity to commercialize materials at better prices. Given this situation, they perceive daily cash payments from buyers as an advantage.

As part of the research, the team explored the level of confidence in relations between value chain stakeholders and recyclers at the lower levels of the chain. The results suggest that these relationships are characterized by ambivalence.

For example, recyclers in **El Salvador** expressed their confidence in their buyers, saying that they had selected these buyers because they paid better than others and that when prices go down they explain the reasons and treat the recyclers with respect. But they also confessed that in practice they do not have other choices of where to sell the materials.

In **Honduras**, this level of confidence in buyers is absent and the recyclers stated that the buyers were prejudiced against them as people, because of their occupation as "wastepickers."

The two co-operatives interviewed in **Nicaragua** do not trust their buyers; stating instead that they require compactors and transport in order to be able to access buyers that offer more favorable conditions.

In **Costa Rica** the informal recyclers trust their buyer because they have always been prompt and reliable both in collecting the material and in paying for it in cash.



Photo image 3. Informal Recycler with horse cart selling material in Managua.



Photo image 4. Vehicle used to transport non-ferrous metals in El Salvador.

## Conclusions

The formation of cooperatives or associations as a strategy to improve working and living conditions for the informal recycling sector is still in its initial stages. In most cases, the formalization process has failed to produce an increase in recycler incomes. Recyclers still do not have sufficient space, nor the basic equipment required to accumulate the quantities of materials necessary to secure better prices. In some cases, despite the formalization of a cooperative, the marketing of materials continues to be an individual private activity. For this reason, even when their work is more formal and hence they need to make payments related to permits, taxes and the like, their net financial benefit goes down, because they are still selling materials at the same prices that they were getting before joining a cooperative.

One element that affects the recyclers' ability to sell for higher prices is the location of the cooperatives. Those that are located in primary or secondary cities can choose which intermediate processors and recycling centers to sell to, selecting those that they consider to be more "honest" in terms of prices and weight. In contrast, when the organizations are located at a distance from the cities, they have only one or two options, and are obliged to sell to whomever will buy from them locally, as well as accepting inferior conditions of sale.

Movement of the recycling activity from the dumpsites to the city streets marks a significant change in working conditions, but requires greater support to build mutual trust, develop capacities, upgrade the technical processes and solicit and obtain storage and processing spaces for larger quantities of materials.

One element that stands out in relation to health impacts is that the majority of interviewees did not believe that they experienced health impacts from the work that they are doing. This is in contrast to the conclusions from the study done by UCA, WIEGO and REDNICA "Caracterización Socioeconómica y de Salud de Recicladores (as) de Base," which identifies a series of health impacts for recyclers whose primary place of work is Nicaraguan dumpsites. Possible explanations for these discrepancies are that waste pickers seldom associate their injuries or sicknesses with their work. Alternatively it may be that formalized recyclers working as a collective find that this work is so much better and less risky than working on the landfill, that they see only the improvements and not the risks.

### 3.2.5. Classification of Recycling Centers

The stakeholders in the six countries did not present a uniform classification of recycling centers, since the recycling centres that accumulate and store materials and the recycling industry itself have diverse forms of classifying them that varies according to the type of material and the volumes handled. Table 7 presents the information provided by different actors in Guatemala, Nicaragua and Costa Rica.

*Table 7 Classification of Recycling Centers*

Country	Type of Actor	Type of Material	Small	Medium	Large/ Very Large Processor
Guatemala	Medium recycling center	Multiple materials	1 to 7 tonnes per month	between 7 and 27,6 tonnes per month	More than 27,6 tonnes per month
Nicaragua	Large recycling center	Plastics	20 tonnes per month	65 tonnes per month	108 tonnes per month
Nicaragua	Large recycling center	Cardboard	1 to 10 tonnes per month	10 to 20 tonnes per month	More than 20 tonnes per month
Costa Rica	Recycling Company	Cardboard	Less than 1 to 10 tonnes per month	10 and not more than 30 tonnes per month	A/30 and not more than 100 tonnes per month. B/More than 100 tonnes per month

Source: developed by the authors

The forms in which materials are received by the recycling industries interviewed also varies widely, whereby:

- recycling industries buy directly from other industries, typical in Panamá;
- recycling centers and recycling industry receive material from a reduced number of medium-sized and large suppliers;
- medium-sized recycling centers set up small subsidiary recycling centers in other neighborhoods in order to capture more material; and
- recycling centers including exporters that receive material from all types and sizes of suppliers from individual informal recyclers, neighbors, recycling centers, private companies amongst others.

The landscape is dominated by two clearly distinguished extremes, on the one hand the informal recyclers and on the other the exporters, processors and recycling enterprises. In between these two extremes, is a continuum of “intermediaries” of different sizes and types.

The variety of suppliers that a processor or recycling company has appears to be related to ease of access, for example, those located in urban centers are more accessible both for individual recyclers delivering material in hand or horse drawn carts, as well as larger recycling centers delivering material in their own motorized vehicles.

But there is also a direct relationship between the material requirements demanded by the buyer, and the type of supplier that can meet those conditions since when there is a minimum volume requirement (for example one tonne or more), only those recycling centers that have the capacity to store and transport that quantity at any one time can sell directly to that enterprise.





Photo image 5 Medium recycling center in Nicaragua

### 3.2.6. Organization of Other Levels of the Recycling Chain

Guatemala, Nicaragua and Costa Rica are the only three countries where there are organizations grouping actors in the upper levels of the recycling chain.

For example, in **Guatemala**, the **Guatemalan Recyclers Business Association**<sup>16</sup> was formed in 2011 with the participation of 17 enterprises in the sectors of plastics, paper, cardboard, glass, lead-acid accumulators, electronics, tyres, ferrous and non-ferrous metals. The business association is supported by the Chamber of Industry. Its goals are: to be recognized as a representative business association for the formal recycling industry in Guatemala; to promote legislation that provides better benefits and opportunities to the association; to dignify and upgrade

the technical characteristics of the work through the generation of added value in the handling processors of the recyclers; and to stimulate change in behavior and awareness at collective and individual level in relation to the conservation of natural resources guaranteeing their preservation for future generations. The business association supports capacity building activities for its workers on the subject of recycling and can also provide them with a special status which allows them to pay less tax and VAT.

The **Nicaragua Association of Recyclers**<sup>17</sup> (ASORENIC) was founded in 2008 as “an answer to the government’s closing of recycling enterprises and scrap dealers, and as a way to connect stakeholders at all levels of the recycling chain, promoting the recognition of and respect for the sector by means of providing services that improve the quality of life of its members”. The Association’s activities have included: promoting the celebration of the National Recycling Day; the development of a proposal for minimum requirements for recycling centers according to their size; and participation in the discussion of the draft Special Law for Integrated Management of Hazardous and Non-Hazardous Wastes.

The Association comprises of 29 enterprises and allied organizations<sup>18</sup>, but claims to support the entire sector. It also offers its support to recycling projects with a social dimension, such as projects developed by the Los Pipitos Foundation, and the recycling program of the Matagalpa Special Family Foundation<sup>19</sup>. Some of its members have suggested that at the present time, this organization is currently rather weak.

In 2011, the **Alliance for Recycling** was founded in **Costa Rica**, with the goal of increasing the quality and quantity of recyclables collected in that country. Its founders were the Ministry of Health, the Institute for Municipal Strengthening and Support (IFAM) and the private companies, Coca-Cola, Empaques Santa Ana, Florida

<sup>16</sup> <http://www.nubeonce.com/gremial/sites/>

<sup>17</sup> Downloaded from, <http://www.asorenic.org/asorenic.php>

<sup>18</sup> Enterprises, recycling centres, junk shops, independent recyclers, are the members and allies of the ASORENIC, 2015

<sup>19</sup> These programs provide additional resources to those coming from Fundación Los Pipitos which is oriented towards increasing the political and social profile of interests of people with disabilities, to chart the country’s updated development goals for the medium and long term and the organization of Matagalpa Special Families Foundation that focuses on the integral development of people with disabilities.

Bebidas, VICAL, Kimberly Clark and Total PET. The Foundation ALIARSE functions as the Technical Secretariat. In 2014, the Total PET company closed its operations and withdrew from the Alliance, but the Alliance remains active with the support of the remaining partners.

The Alliance is a public-private association and is unique in Costa Rica for its commitment to maintain spaces for dialogue between local authorities and private companies. The Alliance has provided an institutional home for the development of projects financed both by international cooperation organizations and by private companies. These projects include National Recycling Seminars as well as the installation of Eco-points for collection of recyclables, operated by local environmental leaders<sup>20</sup>.

### Conclusiones

In all the countries studied there is a pronounced lack of institutional spaces for sector dialogue and coordination to promote recycling, reconcile different viewpoints and find common solutions to problems facing the informal and formal sectors. There are no permanent and formalized national or municipal platforms either organized by the private sector or government institutions. There are however some instances of coordination and communication within certain segments of the recycling sector, such as those offered by the trade associations of the recycling industry or larger recycling enterprises.

### 3.2.7. Role of the Regulatory Body

Solid waste management and specifically recycling and material valorization falls under two different ministries in Central America. In Guatemala, Honduras, El Salvador and Nicaragua the regulatory body is the Ministry of the Environment, while in Costa Rica and Panamá the governing body is the Ministry of Health.

The role played by each of these bodies in the regulation, strengthening and other activities related to recycling and the sector dedicated to this activity are explored below in greater detail.

In Guatemala, the governing body is the **Ministry of Environment and Natural Resources (MARN-Guatemala)**, charged with the formulation, coordination, implementation and evaluation of environmental policies and solid waste management. Its principal functions include:

- a. Develop the regulations, indices, manuals, guidelines and other tools necessary to establish the parameters for integrated solid waste management governance, prevent air, water and land contamination and allows the efficiency of applied mitigation measures to be measured.
- b. Provide technical assistance to municipalities to support their compliance with the law; draft solid waste management regulations; and design and implement municipal solid waste management plans.
- c. Formulate and implement educational programs and materials, together with the Ministry of Education.

MARN-Guatemala reported that had not as yet had any contact with the national recycler movement and had previously been unaware of its existence.

<sup>20</sup> The National Recycling Seminars are organized by an inter-institutional comisión (public-private) that includes the Ministry of the Environment and Energy, the Ministry of Health as well as diverse private companies linked to recycling. For their part, the Ecopuntos are located in the municipalities of Hatillo, San Sebastián, y Pavas. All of these points are the property of the Municipality of San José and are managed by community groups trained by the project that is executed by the Recycling Alliance of Costa Rica.



**The Ministry of Environment and Natural Resources (MARN-El Salvador)** is the governing body for solid waste management, according to the Environmental Law in El Salvador. MARN-El Salvador has a National Solid Waste Plan which focus on: improving infrastructure and a plan for waste recovery for recycling (tyres, common and electronic and electrical waste). MARN-El Salvador has so far worked on the development of guidelines for source separation and to regulate recycling centers.

The interviewees mentioned a number of other institutions with regulatory responsibilities in the area of solid waste management including the Ministries of Health, the Ministry of Economy, the Treasury, the Ministry of Education; and the Salvadoran Institute for Professional Training (INSAFORP). Despite this there is no inter-institutional working group for ISWM and the Ministry has not undertaken activities with the informal recyclers.

The **Energy, Natural Resources, Environment and Mines Secretariat, (SERNA)** is the regulatory body in Honduras and is responsible for the regulation of solid waste. In 2011, a regulation to promote waste recovery and valorization was approved and in 2012, the strategic components for this activity were defined. A final draft policy is expected to be approved in 2015.

According to SERNA there are no policies or norms that regulate or stimulate the activities of informal recyclers. The formalization of this link in the value chain, introduction of requirements for protective equipment, and the formation of micro-enterprises to market the materials are the strategies which are envisioned to improve the current conditions of work for informal recyclers, the regulatory body's budget limitations are seen to be the main obstacle to implementing these strategies.

In Nicaragua, the **Ministry of Environment and Natural Resources (MARENA)** regulates hazardous and non-hazardous waste management and establishes technical regulations. The Environmental Education Department promotes environmental education programs at national level. MARENA participates in activities related to recycling alongside the Ministry of Health (MINSALUD), the National Water Authority (ANA), the Ministry of Industry and Commerce Promotion (MIFIC), the Nicaraguan Institute for Municipal Development (INIFOM) and the municipal governments.

Informal recyclers in Nicaragua see MARENA as the government institution that has supported them most and most directly, ensuring their participation in different processes such as the drafting of the Special Law for Integrated Hazardous and Non-Hazardous Waste Management.

The **Ministry of Health (MINSALUD)** in Costa Rica is responsible for all phases of solid waste management governance and provides leadership, management, monitoring and supervision on how solid waste management takes place in all sectors. The promotion of recycling has been the focus of a range of activities aimed at municipal staff, decision-makers and environmental managers. Other public institutions who support these activities include the Ministry of Environment and Energy (MINAE), the Institute of Municipal Development and Technical Assistance (IFAM) and the National Union of Local Authorities (UNGL).

MINSALUD recognizes the need for informal recyclers to organize themselves and comply with laws and regulations that are in force. Nevertheless, the interviewees at various levels of the value chain shared the opinion that there is an urgent need to modify the current focus in the application of the regulations on the part of the

regulatory body. That is to say, they need to implement strategies that permit informal recyclers to formalize their work gradually. For example the high costs of complying with the regulations to operate a recycling center constitute a threat to the financial sustainability of the small recycling centers, which in extreme cases has resulted in their closure).

In the case of **Panama** it was not possible to obtain any primary information from the regulatory body. However, secondary sources indicate that the **Authority for Urban and Household Cleansing** is responsible for solid waste management in the country.

### Conclusions

In each country there are institutions which have been assigned to function as the regulatory body for solid waste management, as well as other institutions that share responsibilities for the subject. Across the six countries, the general tendency is that recycling is not a priority in the national policy agenda. Similarly, with the exception of the Ministry of Environment and Natural Resources of Nicaragua, there are no indications that informal recyclers are recognized by the regulatory body nor are there any attempts to include them in recycling systems.

### 3.2.8. Gender

Gender represents a cross-cutting topic for the analysis of value chains. The data shows that the majority of people working in the sector are men, with the exception of the recyclers at the base of chain and their associations or co-operatives. In fact, in the two cooperatives visited in El Salvador and in Nicaragua, the majority of the associates were women.

The prevailing discourse among respondents throughout the chain is that gender differences do not exist, and hence in a first approach one might affirm that there is no inequality between men and women in the sector. However, when focusing on the specific situation at different levels or links in the chain, the inequality between women and men in the sector become more obvious: a) in the **functions** of male and female workers whereby women tend to doing the sorting of recyclables or alternatively administrative tasks while men work in carrying and loading or other work that requires greater physical strength; and b) in the largely traditional **attitudes** to the role of women which can limit their access to leadership posts and/or create hostile conditions in the workplace. It was not possible to obtain information about the remuneration of women and men in the different companies, and hence it is not possible to state whether there are gender differences in this aspect.

The study did not identify significant differences in gender attitude between different links in the chain or between different countries, since in general traditional concepts of gender roles prevail in the sector, limiting the participation of women in decision-making. In the case of informal recyclers, there appears to be a fledgling involvement of women in leadership functions in the cooperatives and national movements. In Costa Rica and Panamá, the women presidents of the national recycler organizations commented on the existence of “*machismo*”, a form of gender discrimination that weakens women’s leadership in relation to their colleagues, and introduces a high and unproductive complexity in decision-making processes.

Table 8 presents the variety of opinions related to gender differences in the functioning of women and men in different levels of the value chain.

*Table 8 Opinions from Value Chain Stakeholders on Gender-based Function Differentiation in the Sector, (2014)*

Actor	Gender –based Function Differentiation
<b>Recyclers at the base of the chain</b>	<ul style="list-style-type: none"> <li>■ Discourse is that the contribution of women is equal to that of men, perhaps there are some types which women cannot do but in general there are no problems or specific needs for women in recycling work.</li> <li>■ Women consider that they receive the same income as men.</li> <li>■ There is a general perception that women are better negotiators and secure better prices. Women have more skills, and show more leadership.</li> <li>■ Women's work is seen positively as being "without complaints, more honest and flexible".</li> <li>■ Some people point out the existence of machismo, which interferes with collaborative and team work. There are some men who do not respect women, who are 'exploited, abused, maltreated and threatened.'</li> <li>■ One person mentioned the 'difficulty' that some women have to do recycling work 'with their children' and that women get sick more often.</li> </ul>
<b>Recycling center</b>	<ul style="list-style-type: none"> <li>■ There is a broad perception that women carry out administrative work and materials sorting 'because they are faster' and 'more thorough'. There are only a few cases where women operate machinery. Men are put in charge of work that requires strength such as lifting heavy loads because this is 'rough work'.</li> <li>■ When differences in the income received by men and women are acknowledged they are explained as relating to the fact that women are doing less heavy work. The locations for primary collection are also seen as too dangerous for women.</li> <li>■ One person mentioned as a specific problem, that there is a lack of sex education and that therefore women are frequently pregnant.</li> </ul>
<b>Processing / large recycling centres</b>	<ul style="list-style-type: none"> <li>■ The women do the administrative work or sort the materials, and the men do the loading. The majority of suppliers are men, but this does not influence the results of the negotiations.</li> </ul>
<b>End-use recycling industries</b>	<ul style="list-style-type: none"> <li>■ Women are only working in the administration, and not in the operations.</li> <li>■ There is a discourse that women workers are 'more honest, responsible and serious' in contrast to men who 'get distracted when performing the same work.'</li> <li>■ In one recycling industry, women are not allowed to enter the plant because of incidents where the men 'just did not respect them' making sexual comments.</li> </ul>

Source: Developed by the authors on the basis of interviews.

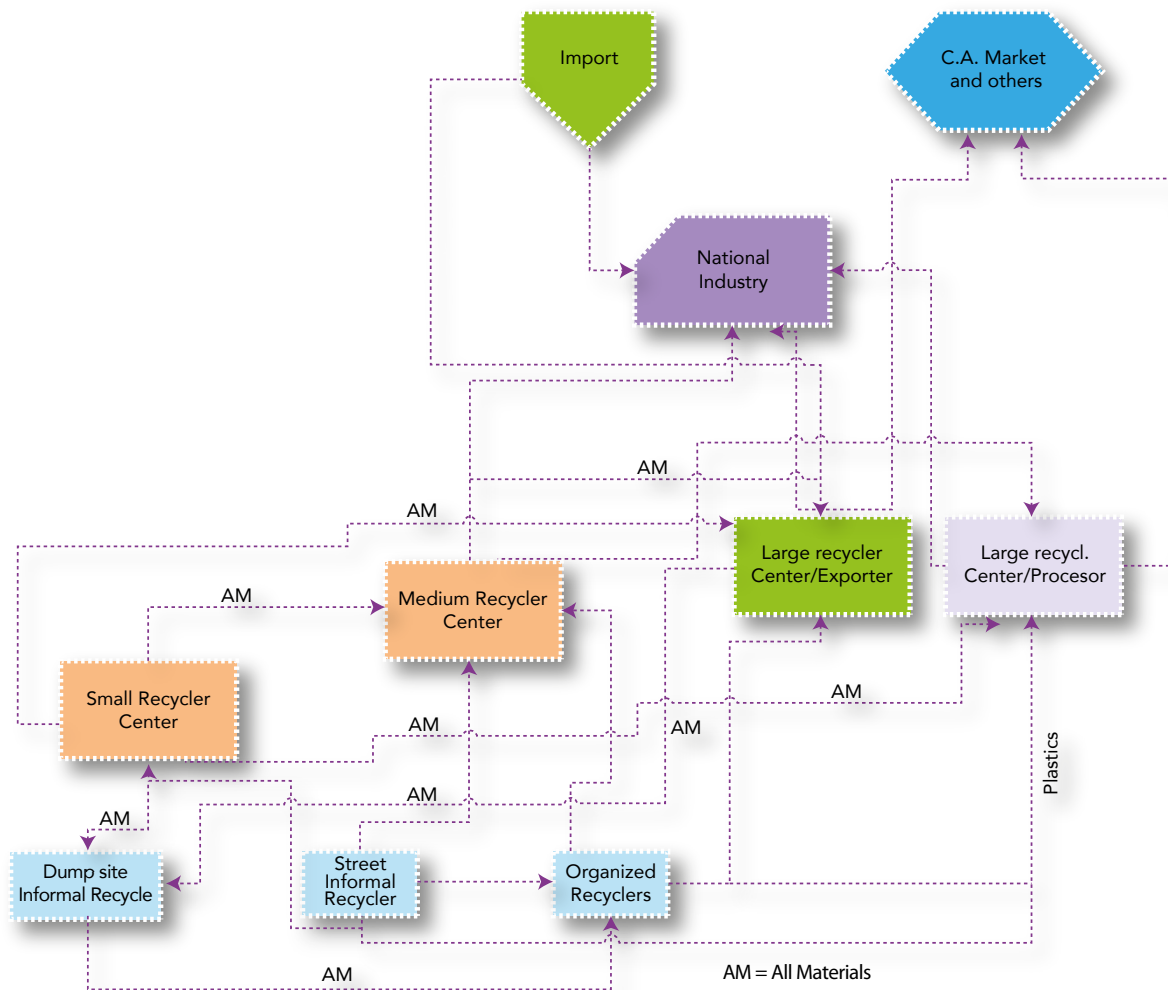
As long as there is no acknowledgement of the inequality of the current situation, it is not surprising that there are no concrete actions to change this, for example to promote women to be involved in non-traditional activities or roles. There is a perception that a more equitable situation would be beneficial and would make better use of the contributions and experiences of women working in the sector. Hence it is fundamental that the organization of the sector include the development of women's work and leadership capabilities in the different levels of the national movements and organizations.

### 3.3 Material Flows

This section describes material flows both in terms of volumes traded between different countries in the region as well as flows to and from the rest of the world. It also looks at prices obtained at different points in the value chain and identifies seasonal changes in the end user price.

The recycling value chain consists of material flows between the diverse actors who commercialise the material in both national and international markets. Figure 3 presents a schematic of material flows (paper, cardboard, plastics and non-ferrous metals) between the different links in the value chain.

*Figure 3 Diagram Showing Materials Flows Between Stakeholders in Central America (2014)*



Source: Developed by the authors

At the base of the value chain materials are recovered in three ways:

- extraction at the *dumpsite performed by dumpsite informal recyclers*,
- extraction from the street and by searching through set-outs and accumulated litter by *street informal recyclers*, and
- extraction by *organized*<sup>21</sup> recyclers working in co-operatives who get their materials from municipal and/or private separate collection routes and work outside the dumpsite.

From this point on, there are a number of commercialization routes from small, medium-sized or large recycling centers to pre-processors. The stakeholders at the highest levels of the chain direct materials either towards domestic end-user industries or they dispatch segregated materials to end-user industries in the rest of Central America or other international material markets.

In the region, the links at the base of the value chain and the small and medium-sized recycling centers usually handle a variety of materials. Only at the level of certain large junk recycling centers or pre-processors is it possible to speak of a specialization in a specific material for example non-ferrous metals. The study also identified companies that undertake the pre-processing of plastic and whose product (flakes or pellets) is either exported or used in national industries. Paper, cardboard, non-ferrous metals and plastics industries receive material from national recycling centres as well as importing material from other countries in the region and in some cases from other parts of the world.

Regional import and export data was analysed to understand material flows to and from each country in the study. Information from the following official sources were accessed: the Central Banks of El Salvador and Panamá; the Centre for Export Procedures, Cetrex in Nicaragua; and the Department of Customs in Costa Rica. In the case of Costa Rica, only preliminary import figures were available. This information was used in the study since it was the only information available.

In the case of Guatemala, information was sought from the Central Bank of Guatemala<sup>22</sup> website, which shows macro-economic statistics based on aggregated values (or the sum of all the exports and imports of the selected materials in monetary value as well as tonnage. Due to this structure, it was not possible to disaggregate the quantities related to secondary materials. The same problem arose in the case of Honduras.

This section reveals the severe limitations in available official information. A key reason for this is that the registration system for national accounts tends to aggregate data, in standard macro categories which do not distinguish or disaggregate information pertaining to secondary materials (or used goods in general). The lack of official data may result in an underestimation of both tonnes commercialized as well as value of the activity (CIF<sup>23</sup> or FOB<sup>24</sup> value). The collected information refers to tariff items related to “waste paper, cardboard, plastics and ferrous and non-ferrous metals”. Detailed information has been placed in **Annex 5**.

21 El Salvador is a special situation where the members of co-operatives are buying materials from non-organized informal recyclers for a very low price.

22 Source: <http://www.banguat.gob.gt/estaeco/comercio/indice.asp>. Consulted on 16/01/2015.

23 Value **CIF**, Cost, Insurance and Freight refers to the cost at the destination port as agreed and in use for trade in goods, where transportation is by boat, sea or inland waterways.

24 **FOB**, **Free on board**, refers to the price of sale of goods and materials destined for export to other countries, at their point of transfer from production stage to transport. The financial values are exclusive of costs of insurance, customs duties, exchange rates, and transport itself.

### 3.3.1. Paper and Cardboard

#### Exportación

For El Salvador, Costa Rica and Panamá, information on global and sub-regional exports are available. For Nicaragua, data on the quantities and the FOB value of paper and cardboard are available without any clear indication of the destination of the material. As mentioned in the previous section, information for Guatemala and Honduras is not available in disaggregated form.

Table 9 presents the available global and sub-regional export statistics according to the FOB value for paper and cardboard registered by El Salvador, Nicaragua, Costa Rica and Panamá for the period 2013 to 2014.

*Table 9 Summary of total exports per country for waste paper and cardboard in FOB value in dollars and tonnes globally and in Central America (2013-2014).*

Country	Global 2013 (tonnes)	Global Value FOB* 2013 (US\$)	Sub-Region 2013 (tonnes)	Sub-Region Value FOB 2013, (US\$)	Global 2014 (tonnes)	Global Value FOB 2014 (US\$)	Sub-Region 2014 (tonne)	Sub-Region Value FOB 2014 (US\$)
El Salvador	47.352	7.670.446	17.505	2.810.790	44.874	6.786.452	7.207	984.639
Nicaragua	22.299	4.235.052	nd	nd	30.028	6.064.718	nd	nd
Costa Rica	42.087	7.369.132	1.848	429.902	89.524	5.994.984	963	201.588
Panamá	23.897	2.007.850	1.845	405.509	nd	nd	nd	nd
Total	135.635	21.282.480	21.198	3.646.201	164.426	18.846.154	8.170	1.186.227

Source: Developed by the Authors using data from Central Bank, Cetrex and Department of Customs.

In terms of monetary value, China, South Korea and Taiwan are the largest receivers of exported paper and cardboard from El Salvador, receiving 39% in 2013 and 51% in 2014. In the same period, 24% and 34% respectively was exported to South America (Colombia, Ecuador, Peru and Chile) and 37% and 15% respectively to other Central American countries.

In 2013, value of paper and cardboard exports from Costa Rica were distributed between South America (49%) and Asia (34%). In 2014, these figures were 47% for South America and 39% for Asia. The remainder was distributed in smaller amounts between Europe, North America and the Caribbean. Costa Rican paper and cardboard exports to Central America represent less than 5% of the total reported with most of this material going to Panamá. This is most likely due to the presence of the Istmeña paper mill which uses secondary fibers to produce personal care items for the domestic market.

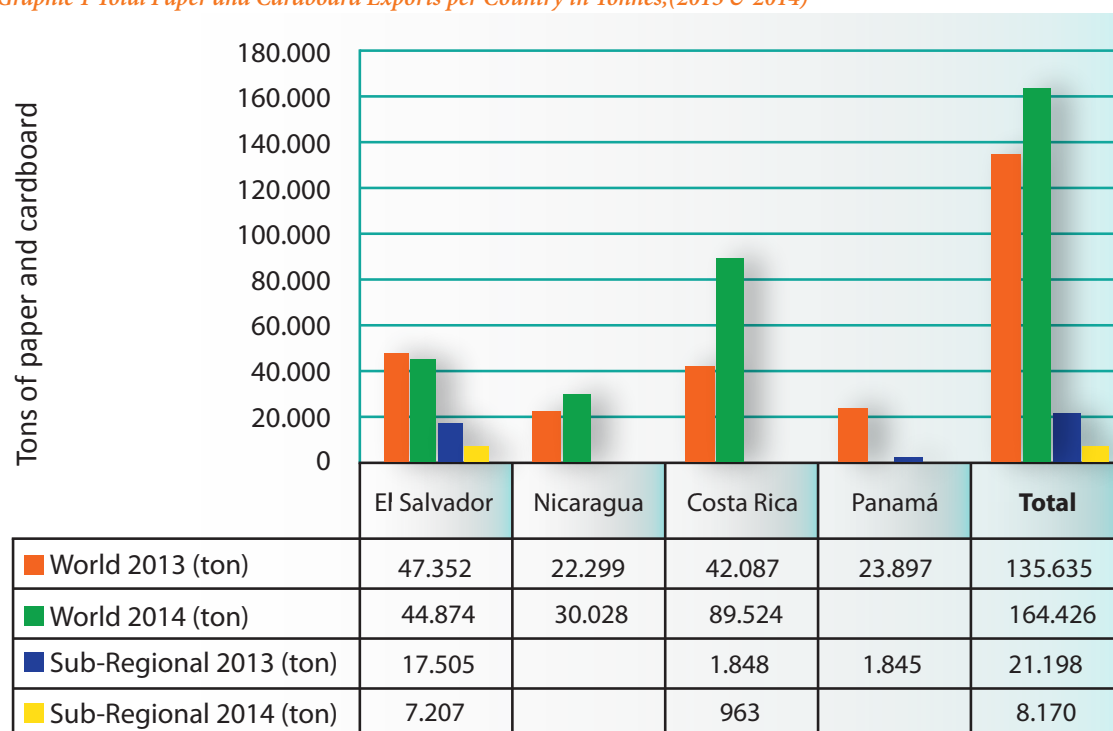
Nicaragua increased the value of its paper and cardboard exports by 43% between 2013 and 2014, but there is no disaggregated information available on the destinations of these exports.

The information available for Panamá is from 2013 (January to June) and is only preliminary data. In the Panamanian case, 70% of the exports were to South America (52% to Ecuador, 16% to Chile and 2% to Colombia), 20% to Central America (19% to El Salvador, and 1% to Costa Rica). The remaining 10% was distributed between various countries in Asia. Graphic 1 shows the behavior of paper and cardboard exports for 2013 and 2014<sup>25</sup>.

<sup>25</sup> As already mentioned in relation to the process flow diagrams, the aggregated nature of information for Guatemala and Honduras makes it impossible to compare them to the other countries in Central America, nor to identify quantities of secondary materials.



Graphic 1 Total Paper and Cardboard Exports per Country in Tonnes, (2013 & 2014)



Source: Developed by the Authors using data from Central Bank, Cetrex and Department of Customs

## Imports

The information is summarized in Table 10. There is only partial information available in terms of countries and years. There is FOB value information for imports to Costa Rica and Panamá for 2013 and CIF value information for imports to El Salvador for 2013-2014. This information suggests that El Salvador is receiving the highest volume of paper and cardboard in the region. The Ministry of Environment in El Salvador (MARN) reports the presence of 32 importers of “waste paper and cardboard” including in first place Kimberly Clark<sup>26</sup>; in second place Alas Doradas S.A and in third place Plycem Construsistemas El Salvador S.A. In the period 2013-2014, 55-56% of paper and cardboard imports to El Salvador originated in North America and the Caribbean and the remaining 44-45% from other countries in Central America.

Table 10 Summary of total exports per country for waste paper and cardboard in FOB value in dollars and tonnes globally and in Central America (2013-2014)

Country	Global 2013 (tonnes)	Global FOB Value 2013 (US\$)	Sub-Region 2013 (tonnes)	Sub-Region FOB Value 2013 (US\$)	Global 2014, (tonnes)	Global FOB Value 2014 (US\$)	Sub-Region 2014 (tonnes)	Sub-Region FOB Value 2014 (US\$)
El Salvador <sup>27</sup>	153.868	49.329.137	72.980	22.065.088	142.864	46.644.834	67.818	22.287.977
Costa Rica	nd	nd	7.979	1.100.768	nd	nd	nd	nd
Panamá	11.014	2.815.124	8.000	1.648.974	nd	nd	nd	nd
Total	164.882	52.144.261	88.959	24.814.830	142.864	46.644.834	67.818	22.287.977

Source: Developed by the Authors using data from Central Bank, Cetrex and Department of Customs.

26 Kimberly Clark is present in all the countries of the región, with the principal objective to accumulate and transport paper and cardboard to El Salvador.

26 In the case of El Salvador the values are based on CIF.

Costa Rica and Panamá also received paper and cardboard imports albeit on a smaller scale from North America and the Caribbean and Central America. In terms of imports from Central America these three countries receive between 40% and 80% of waste paper and cardboard from Guatemala.

## Conclusions

Despite the gaps in the export and import data for paper and cardboard in the region, it is possible to conclude that sub-regional trade represents around 5% of exports and that the majority of material goes to Asia or South America.

El Salvador, Panama and Costa Rica have important import flows of paper and cardboard attributable to the sourcing needs of paper product companies Kimberly Clark (El Salvador) and Istmeña (Panamá) and the recycling enterprise Empaques Santa Ana in Costa Rica.

### 3.3.2. Plastics

#### Exports

Global and sub-regional export information is available for El Salvador, Costa Rica and Panamá. In the case of Nicaragua, there is quantities and FOB value for plastic exports but no information on where the material is sent. There is no information for Guatemala and Honduras. Available information is presented in detail in Annex 5 and summarised in this section. Table 11 shows the export statistics according to the FOB28 value of “plastic waste” registered for the years 2013 and 2014 for El Salvador, Nicaragua, and Costa Rica and for 2013 for Panamá.

*Table 11 Summary of total global exports of plastic waste by country based on FOB value in dollars and tonnes (2013-2014)*

Country	Global 2013 (tonnes)	Global FOB Value 2013 (US\$)	Sub-Region 2013 (tonnes)	Sub-Region FOB Value 2013 (US\$)	Global 2014, (tonnes)	Global FOB Value 2014, (US\$)	Sub-Region 2014 (tonnes)	Sub-Region FOB Value 2014 (US\$)
El Salvador	14.338	10.261.849	5.317	4.330.508	12.360	7.200.036	6.188	3.239.317
Nicaragua	9.962	4.220.141	nd	nd	12.758	5.418.338	nd	nd
Costa Rica	4.876	2.328.518	166	71.712	5.562	2.328.694	40	13.757
Panamá*	3.008	539.151	1.324	247.941	nd	nd	nd	nd
<b>Total</b>	<b>32.184</b>	<b>17.349.659</b>	<b>6.807</b>	<b>4.650.161</b>	<b>30.707</b>	<b>14.947.068</b>	<b>6.228</b>	<b>3.253.074</b>

\*Panamá data is preliminary and only available for 2013, downloaded on the 8th of September 2015 from <http://www.contraloria.gob.pa/inec/comercioexterior/>

Source, Developed by the authors based on data from the Central Bank, CETREX and Customs Department

In 2013, El Salvador exported 43% of its plastic waste to Central American countries: Honduras (94%), Nicaragua (4%), and Guatemala (2%). 26% of plastic waste exports went to South America, 21% to North America and the Caribbean and 11% to Asia. In 2014, 45% of this material went to Central America: Honduras (92%), Nicaragua (3%), Costa Rica (3%) and Guatemala (2%). 35% of plastic waste exports went to South America, 11% to Asian countries and 10% to North America and the Caribbean.

In 2013, 66% of plastic waste exports from Costa Rica went to Asian countries principally Hong Kong (33%)

28 FOB, Free on board, refers to the price of sale of goods and materials destined for export to other countries, at their point of transfer from production stage to transport. The financial values are exclusive of costs of insurance, customs duties, exchange rates, and transport itself.

and China (31%) followed by 20% to North America and the Caribbean (United States (17%) and Canada (3%)), 7% to Australia and 4% to Europe (Georgia) and only 3% to Central America (Guatemala (2.5%) and Nicaragua (0.5%). In 2014, plastic waste exports to Asian countries increased to 89% of the total, 8% went to Australia and the remaining 3% to North America and the Caribbean and Central America.

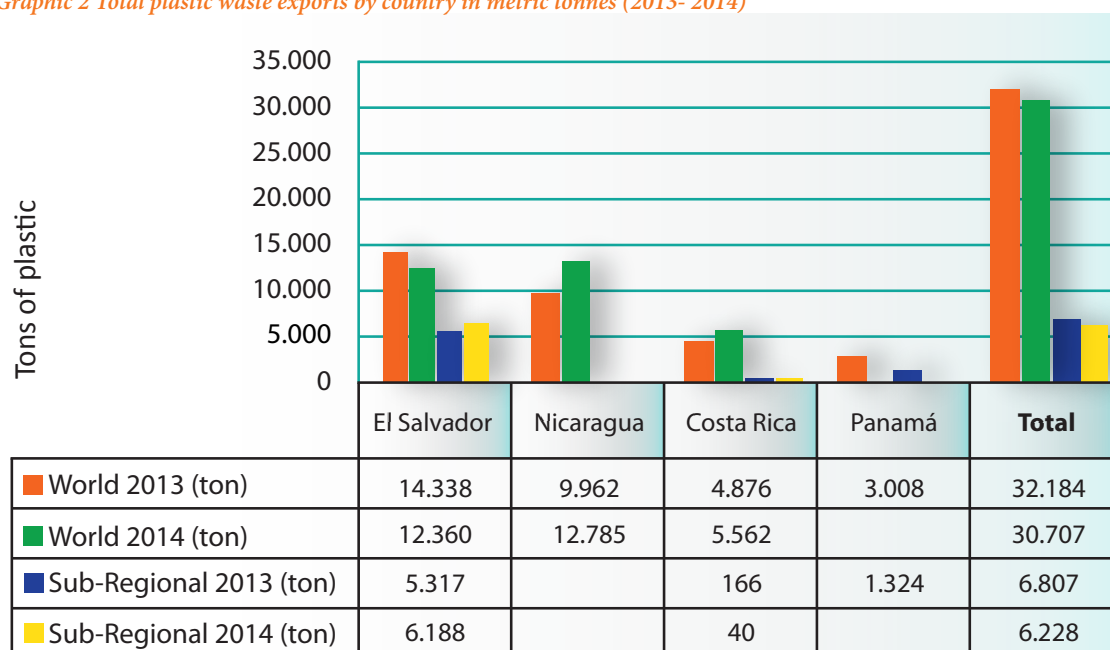
In 2013, the value of plastic waste exports from Panamá rose to US\$ 539,151 for a total of 3,008 metric tonnes. 46% of these exports went to Central American countries principally Costa Rica (28%), Honduras (17%) and Guatemala (1%). 25% of these exports went to Asia (Hong Kong (13%) and China (12%)), 20% to the United States, 8% to South America and 1% Europe (Israel).

Since information on waste exports and imports and details of national recycling industry capacity in Honduras is unavailable, we cannot analyse with certainty what is happening in this country. Nevertheless, based upon the information obtained for El Salvador and Panamá, we can infer that Honduras serves as a regional accumulation point for this material. Both the Grupo Vanguardia in San Pedro Sula and the INVEMA company are involved in this activity but precise information on their annual throughput is not available. In contrast Costa Rica principally exports to the Asian and not the sub-regional market.

El Salvador and Nicaragua report exports between two and four times higher (in terms of weight) than their neighbours Costa Rica and Panamá in the two years covered by the research. In this period there is a 30% decrease in the FOB value of global plastic waste exports coming from El Salvador, while those of Costa Rica remained almost the same and those from Nicaragua show a 28% increase.

Graphic 2 shows the global and sub-regional behavior of plastic waste exports from El Salvador, Costa Rica, Nicaragua and Panamá in 2013 and 2014.

*Graphic 2 Total plastic waste exports by country in metric tonnes (2013- 2014)*



Source: Developed by the Authors using data from Central Bank, Cetrex and Department of Customs

## Imports

The information obtained in the study is presented in detail in **Annex 5** and summarized in Table 12. The information is partial in terms of countries and years. There are FOB values for imports to Costa Rica and Panamá for 2013 and CIF values for imports to El Salvador for 2013 and 2014.

*Table 12 Summary of total global exports of plastic waste by country based on FOB value in dollars and tonnes (2013-2014)*

Country	Global 2013 (tonnes)	Global FOB Value 2013 (US\$)	Sub-Region 2013 (tonnes)	Sub-Region FOB Value 2013 (US\$)	Global 2014, (tonnes)	Global FOB Value 2014 (US\$)	Sub-Region 2014 (tonnes)	Sub-Region FOB Value 2014 (US\$)
El Salvador <sup>29</sup>	4.728	3.228.688	2.242	1.325.620	4.259	3.669.317	1.475	1.178.398
Costa Rica	4.478	1.463.749	2.988	807.961	nd	nd	nd	nd
Panamá	76	39.957	60	33.113	nd	nd	nd	nd
Total	9.282	4.732.394	5.290	2.166.694	4.259	3.669.317	1.475	1.178.398

Source: Developed by the authors based on data from the Central Bank, CETREX and Customs Department

El Salvador imported 4,782 tonnes of plastic waste in 2013 with a CIF value of US\$3,228,688. 58% of this value comes from imports from North America and the Caribbean (49% from the USA and 7% from the Dominican Republic) and 41% from Central America (17% from Costa Rica, 10% each from Nicaragua and Guatemala and 4% from Honduras). Similarly in 2014, El Salvador imported 4,259 tonnes of plastic waste with a CIF value of US\$3,669,317. In this case, 67% of this value comes from imports from North America and the Caribbean and 32% from Central America.

For the year 2013, the available statistics indicate that Costa Rica imported plastic waste with a FOB value of US\$ 1,463,749 for 4,478 metric tonnes. Global trade is responsible for 45% of these imports in terms of FOB value (US\$ 655,788) and 33% in terms of weight (1,480 metric tonnes), but the data does not allow the identification of the origin of these material flows. On the other hand, the figures for Central American imports correspond to 55% of the total in terms of FOB value (US\$ 807,961) and 2,998 metric tonnes which corresponds to 67% of the total weight. The data indicates that 16% of the total value corresponds to Panamá, 15% to Honduras, 11% to Costa Rica<sup>30</sup>, 10% to Nicaragua and 3% to Guatemala.

In the case of Panamá, the imports of plastic waste in 2013 had a CIF value of US\$ 39,957 for 76 metric tonnes. Imports from outside of the region had a CIF value of US 6,844 (17%) and 16 metric tonnes (21%). These imports came from the USA. The corresponding imports from Central America have a CIF value of US\$ 33,113 (83%) and 60 metric tonnes (79%) respectively. These imports come from Costa Rica.

<sup>29</sup> In the case of El Salvador the values are based on CIF.

<sup>30</sup> From the data base which was created for this study by the Costa Rica Customs Authority, it was not possible to determine precisely, the number of tonnes sourced from the free trade zone, as percent of the total "imports" of waste plastic. Neither were any of the enterprises interviewed for the study associated with the free trade regime, and so the interviews could not offer anything additional to the data base in terms of the free trade zones.

## Conclusions

Despite the gaps in the export and import data for plastic waste in the region, it is possible to conclude that the sub-regional market represents about 25% of total plastic waste exports from the individual countries. The remaining 75% goes to Asia, South America, North America and the Caribbean.

The data also suggest that Honduras is the primary importer of waste plastics. Various companies such as INVEMA that handles a range of recyclable materials including plastic and the Grupo Vanguardia which produces and recycles plastics are located in the country.

### 3.3.3. Ferrous and Non-Ferrous Metals

#### Exports

Table 13 shows the export statistics according to FOB values for ferrous and non-ferrous metal waste for El Salvador, Nicaragua, and Costa Rica for the period 2013 to 2014 and for Panamá for 2013.

98% of iron and steel waste (ferrous metal) exported from El Salvador went to Asian countries in the two years studied. The rest is distributed between South and Central America and Europe. Exports increased by 3% between 2013 and 2014.

In the case of non-ferrous metals illustrated by flows of aluminum, the information shows that the majority of the material (64% in 2013 and 52% in 2014) was exported to North America and the Caribbean. Other important markets included Asia (24% in 2013 and 16% in 2014) and South America, (10% in 2013 and 18% in 2014). The Central American market was responsible for only 2% of the FOB value in 2013 rising to 13% in 2014 with most exports going to Honduras.

*Table 13 Summary of the total exports of ferrous and non-ferrous scrap by FOB value in dollars and metric tonnes for Central America and the World (2013-2014)*

Country	Global 2013 (tonnes)	Global FOB Value 2013 (US\$)	Sub-Region 2013 (tonnes)	Sub-Region FOB Value 2013 (US\$)	Global 2014, (tonnes)	Global FOB Value 2014 (US\$)	Sub-Region 2014 (tonnes)	Sub-Region FOB Value 2014 (US\$)
<b>Ferrous</b>								
El Salvador	39.402	11.698.062	69	28.244	44.500	12.094.665	1.402	199.765
Nicaragua <sup>31</sup>	77.274	21.584.538	nd	nd	84.915	22.496.808	nd	nd
Costa Rica	993	17.478.091	0	0	982	338.529	0	0
Panamá	310.574	45.881.106	2.709	181.750	nd	nd	nd	nd
<b>Total</b>	<b>428.243</b>	<b>96.641.797</b>	<b>2.778</b>	<b>209.994</b>	<b>130.397</b>	<b>34.930.002</b>	<b>1.402</b>	<b>199.765</b>
<b>Non-Ferrous, Aluminum</b>								
El Salvador	8.625	17.907.821	223	336.707	16.630	21.779.199	1.019	2.919.113
Costa Rica	9.010	13.088.301	44	14.520	nd	nd	nd	nd
Panamá	16.668	16.665.857	0	0	nd	nd	nd	nd
<b>Total</b>	<b>34.303</b>	<b>47.661.979</b>	<b>267</b>	<b>381.494</b>	<b>16.630</b>	<b>21.779.199</b>	<b>1.019</b>	<b>2.919.113</b>

\*Panama data only available in preliminary form for 2013, according to download on 8 September 2013 from <http://www.contraloria.gob.pa/inec/comercioexterior>

Source: Developed by the Authors bBased on data from Central Bank and Customs Department

31 The category "chatarra" includes both ferrous and non-ferrous scrap.

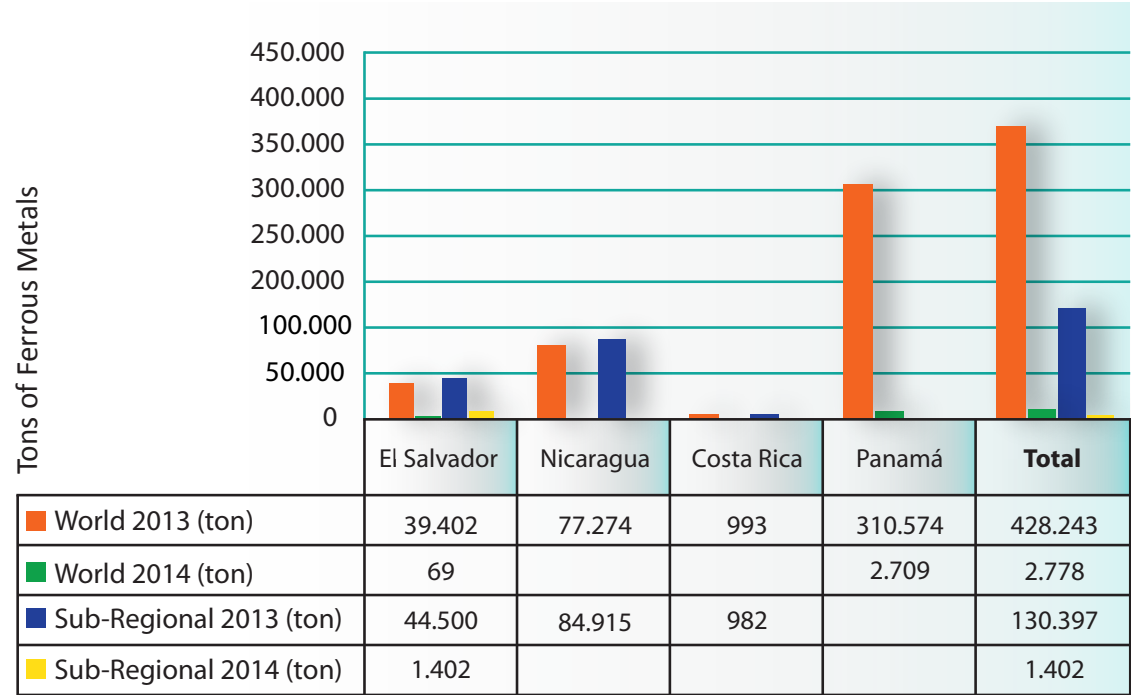
Almost 100% of the iron and steel waste (ferrous metal) exports from Costa Rica went to Asia in 2013. In 2014, these exports were divided between Asia (79%), and North America (United States) (21%). In the case of non-ferrous metal waste (aluminium), 11% of exports in 2013 went to Guatemala and the remaining 89% were exported outside Central America. 2014 data is unavailable.

Nicaragua experienced an increase of 4% in the value of scrap metal exports in 2013 and 2014 although it is not possible to report the destination of this material.

In Panamá the available information on ferrous scrap exports reveals a FOB value of US\$ 45,881,106 for 310,799 metric tonnes. 91% of these exports went to Asian countries, 7% to South America, 1% to North America and the Caribbean and less than 1% to Central America and Europe. 100% of the ferrous scrap exports went to Guatemala with a FOB value of US\$ 181.750 for 2,709 metric tonnes. Non-ferrous metals (aluminium) exports had a value of US\$ 16,665,857 for 16,668 metric tonnes. 59% of this total was shipped to Asia, 33% to North America and the Caribbean, 7% to South America and 1% to Europe. No exports to Central America are reported.

Graphic 3 shows the behavior of ferrous metal exports from El Salvador, Nicaragua, Costa Rica and Panamá for the years 2013 and 2014, graphic 4 shows the same information for non-ferrous metals. In both cases Panamá leads the exports from the region, followed by Nicaragua.

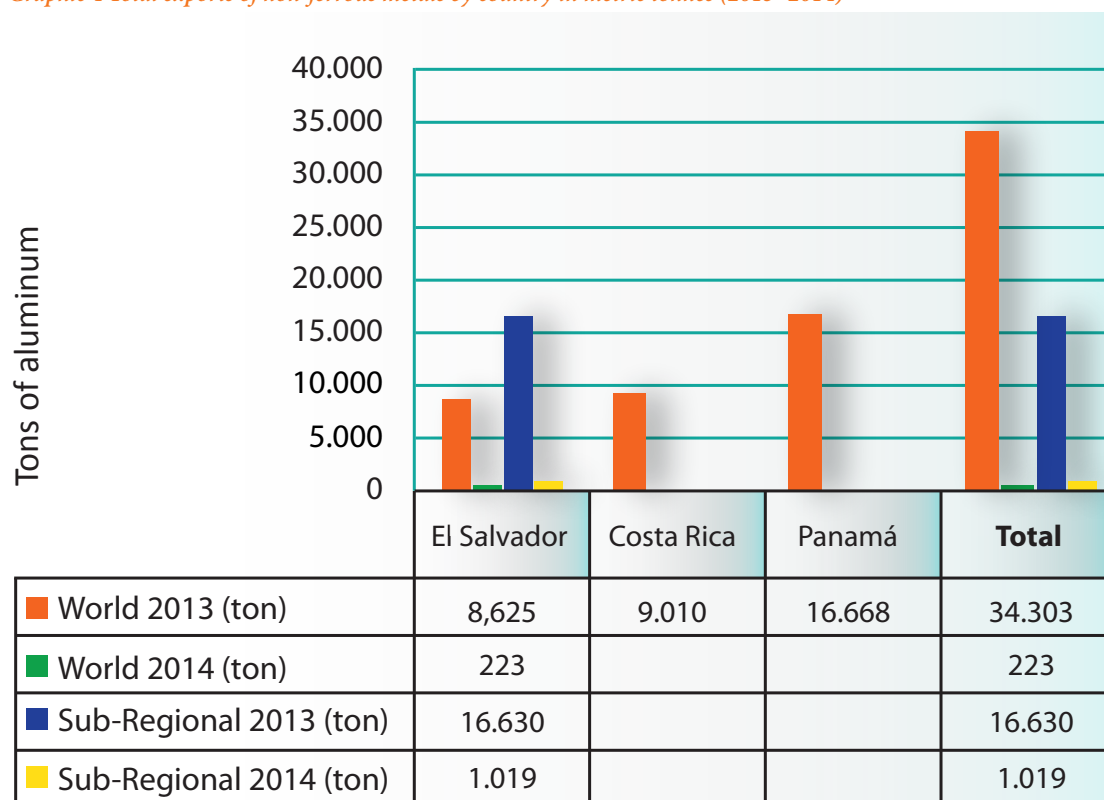
Graphic 3 Total exports of ferrous metals by country in metric tonnes (2013 -2014)



Source: Developed by the Authors based on data from the Central Bank, CETREX and Customs Department.



Graphic 4 Total exports of non-ferrous metals by country in metric tonnes (2013 -2014)



Source: Developed by the Authors based on data from the Central Bank, CETREX and Customs Department.

### Imports

Table 14 presents the import information according to FOB value for ferrous and non-ferrous waste registered in El Salvador and Costa Rica for the years 2013 and 2014 and by CIF value for the same materials in Panamá for 2013. In the case of Nicaragua the information presented on the web page of the Central Bank of Nicaragua was aggregated to such a level that it was not possible to identify the imports of ferrous and non-ferrous metal waste<sup>32</sup>.

En el caso de El Salvador, la información que se obtuvo fue el valor CIF para las importaciones de metales ferrosos y no ferrosos para los años 2013 y 2014. De un total valor de importaciones de metales ferrosos de US\$928.434 en 2013, alrededor del 90% fueron importados de Centroamérica y el otro 10% dividido de Norte América y el Caribe y de Europa (5% cada uno). En el 2014, el valor de las importaciones se redujo a US\$359.474 apenas 39% del valor en el 2013. 81% fue importado desde Centroamérica, 13% de Norte América y el Caribe y 6% de Europa. Las importaciones desde Centroamérica vinieron principalmente de Guatemala y Honduras. El Salvador reporta importaciones de metales no ferrosos (aluminio) con un valor total de US\$1.791 en 2013 y US\$19.137 en 2014. Las importaciones provienen de Centroamérica (88% en 2013 y 94% en 2014) y Norte América y el Caribe (12% en 2013 y 6% en 2014).

32 Based on consultation of [http://www.bcn.gob.ni/estadisticas/sector\\_externo/comercio\\_exterior/importaciones/index.php](http://www.bcn.gob.ni/estadisticas/sector_externo/comercio_exterior/importaciones/index.php) on 15 January 2015.

*Table 14 Summary of total global imports by country for ferrous and non-ferrous metal waste according to FOB value in dollars and tonnes (2013-2014)*

Country	Global 2013 (tonnes)	Global FOB Value 2013 (US\$)	Sub-Region 2013 (tonnes)	Sub- Region FOB Value 2013 (US\$)	Global 2014 (tonnes)	Global FOB Value 2014 (US\$)	Sub-Region 2014 (tonnes)	Sub-Region FOB Value 2014 (US\$)
<b>Ferrous</b>								
El Salvador <sup>33</sup>	6.962	928.434	6.405	829.207	2.735	359.474	2.405	289.677
Costa Rica	nd	nd	0.75	375	nd	nd	nd	nd
Panamá	253	160.363	1	375	nd	nd	nd	nd
<b>Total</b>	<b>7.215</b>	<b>1.088.797</b>	<b>6.407</b>	<b>829.957</b>	<b>2.735</b>	<b>359.474</b>	<b>2.405</b>	<b>289.677</b>
<b>Non-Ferrous (Aluminum)</b>								
El Salvador	8.22	1.791	7.89	1.570	14.26	19.137	13.37	18.065
Costa Rica	0	nd	62.3	13.585	nd	nd	nd	nd
Panamá*	10.17	10.395	0	0	nd	nd	nd	nd
<b>Total</b>	<b>18.39</b>	<b>12.186</b>	<b>70.19</b>	<b>15.155</b>	<b>14.26</b>	<b>19.137</b>	<b>13.37</b>	<b>18.065</b>

\*Panama data only available in preliminary form for 2013, according to download on 8 September 2013 from <http://www.contraloria.gob.pa/inec/comercioexterior/>

Source: Developed by the Authors based upon data from the Central Bank and Customs Department

In the case of El Salvador, the CIF value information was obtained for ferrous and non-ferrous metal imports in 2013 and 2014. The total CIF value for ferrous metal imports was US\$ 928,434 in 2013, with around 90% coming from Central America and the other 10% equally divided between North America and the Caribbean and Europe. In 2014, the value of the imports fell to US\$359.474, barely 39% of the value in 2013. 81% of these imports came from Central America, 13% from North America and the Caribbean and 6% from Europe. The Central American imports came principally from Guatemala and Honduras. El Salvador reports non-ferrous metal (aluminium) imports of US\$1.791 in 2013 and US\$19.137 in 2014. These imports come mainly from Central America (88% in 2013 and 94% in 2014) and North America and the Caribbean (12% in 2013 and 6% in 2014).

For Costa Rica, the statistics for ferrous and non-ferrous metals are quite limited. Imports from Guatemala were valued at US\$375 for ferrous metals and US\$ 13,585 for non-ferrous metals in 2013. This corresponds to 0,75 tonnes and 62.3 tonnes of material respectively.

For Panamá, imports of ferrous metals had a CIF value of de US\$ 160.363 for 253 metric tonnes in 2013. Approximately 74% was imported from North America and the Caribbean, 23% from Europe and less than one percent from Central America specifically Costa Rica.

## Conclusions

From the information obtained it can be concluded that nearly 100% of ferrous metals exported from Central America ends up in Asia. Ferrous metal flows in the region go to Guatemala where the company SIDEQUA has its industrial park. In the case of non-ferrous metals (aluminium) around 60% is exported to North America followed by Asia and South America. Panama appears to be the principal accumulation point for metal exports from the region.

<sup>33</sup> El Salvador information is presented as CIF value.

### 3.3.5. Prices by Material and Type of Actor

One of the characteristics of recycling chains is that the level or link in the chain determines the prices for materials. Tables 16 to 20 present the information obtained via interview on the prices obtained for the materials studied at each link in the chain. It should be noted that the column corresponding to cooperatives shows the price that they sell the material, whereas the remaining columns (recycling centers and recycling companies) corresponds to the purchase price.

Table 15, relating to paper, shows that on average for all countries, the price paid to the cooperatives is slightly higher than the one offered by small recycling centers. Medium-sized recycling centers pay more, but it is interesting to note that the lowest prices paid are reported by large recycling centers and the recycling companies themselves.

These reported contrast with the international price for paper for December 2014 which were: white paper \$ 0.27 /kg and colored paper \$ 0.11 /kg<sup>34</sup>.

*Table 15 Prices for buying and selling paper in US\$ per kg by country and actor (2014)*

Material	Country	Average price US\$/kg				
		Cooperatives	Small Recycling Centers	Medium-sized Recycling Centers	Large Recycling Centers/Processors	Recycling Enterprises
Paper	Guatemala	0.11	0.13	0.20	nd	nd
	El Salvador	0.23	0.13	nd	nd	nd
	Nicaragua	0.15	0.11	0.15	nd	nd
	Costa Rica	0.08	0.13	nd	nd	nd
	Panamá	0.11	nd	nd	0.07	0.07

Source: Developed by the authors

Table 16 shows the same pattern of pricing for cardboard, with co-operatives receiving better prices for the materials than that paid by small recycling centers. In this case there is a price increment as the buyer gets larger, so that large recycling centers pay more than medium-sized and these pay more than small ones. The only data for a recycling industry was from one in Costa Rica whose prices is similar to the average price by medium sized recycling centers.

The international price for cardboard in December 2014 was \$ 0.12 kg<sup>35</sup>. With the exception of the price offered by large recycling centers in El Salvador, the presented information is in line with the international price. This is possibly a seasonal difference whereby the Kimberley Clark mill in El Salvador needed to assure a supply of fiber during the Christmas holidays a period when various supply chain actors close down for one or two months.

34 Information provided by Ecological Services of Costa Rica

35 Information provided by Ecological Services of Costa Rica

Table 16 Prices for buying and selling cardboard in US\$ per kg by country and actor (2014)

Type of Material	Country	Average Price in US\$/kg				
		Cooperatives	Small Recycling Centers	Medium-sized Recycling Centers	Large Recycling Centers/Processors	Recycling Enterprises
Cardboard	Guatemala	0.07	0.07	0.15	nd	nd
	El Salvador	0.11	nd	nd	0.48	nd
	Honduras	0.04	nd	nd	nd	nd
	Nicaragua	0.11	0.07	0.09	0.11	nd
	Costa Rica	0.06	0.09	nd	nd	0.11
	Panamá	0.09	nd	nd	nd	nd

Source: Developed by the authors

For PET, Table 17 shows a similar pattern in that the average price paid to representatives from cooperatives is higher than that reported by small recycling centers for the purchase of this material. Purchase prices then rise in the medium-sized and large recycling centers but are still less than the prices offered by processor companies. It was not possible to obtain prices for the recycling industry.

Table 17 Prices for buying and selling PET Plastic in US\$ per kg by country and actor (2014)

Type of Material	Country	Average Price in US\$/kg					
		Cooperatives	Small Recycling Centers	Medium-sized Recycling Centers	Large Recycling Centers/Processors	Processors/Exporters	Recycling Enterprises
Plastic PET	Guatemala	0.24	0.15	0.24	nd	nd	nd
	El Salvador	0.48	0.31	nd	1.1	0.46	nd
	Honduras	nd	nd	nd	nd	nd	nd
	Nicaragua	0.53	0.33	1.30	nd	0.55	nd
	Costa Rica	0.19	0.22	nd	0.22	nd	nd
	Panamá	0.13	nd	0.26	nd	nd	nd

Source: Developed by the authors

The international price in December 2014 for clear PET (flaked, unwashed, with labels and tops) was US \$4.50/kilo and for coloured PET (flaked, unwashed with labels and tops) was US\$3.80/kilo<sup>36</sup>.

In Table 18, for non-ferrous metals there is a fairly confusing picture and the data does not show a clear pattern. The average price obtained by representatives of cooperatives is lower than that paid by small recycling centers but above that paid by medium-sized and large recycling centers. The price offered by the two recycling companies is on average the highest in the chain: even higher than the international price for non-ferrous metals in December 2014 which was \$ 0.12 /kg<sup>37</sup>.

36 Information provided by Ecological Services of Costa Rica

37 Information supplied by the Company Ecological Services of Costa Rica

Table 18 Prices for buying and selling non-ferrous metals in US\$ per kg by country and actor (2014)

Type of Material	Country	Average Price in US\$/kg				
		Cooperatives	Small Recycling Centers	Medium-sized Recycling Centers	Large Recycling Centers/ Processors	Recycling Enterprises
Non-ferrous	Guatemala	nd	0.09	0.18	nd	nd
	El Salvador	0.23	0.13	nd	0.03	0.25
	Honduras	nd	nd	nd	nd	nd
	Nicaragua	nd	0.18	0.13	0.15	nd
	Costa Rica	nd	0.88	nd	nd	0.29
	Panamá	0.11	nd	nd	nd	nd

Source: Elaborated by the Authors

Table 19 shows that the markets for aluminum differ dramatically between the countries, and that there are no clear patterns. At a time when the international price was US\$ 1.11/kg,<sup>38</sup> (December 2014), all of the co-operatives were being well paid for this material and in Nicaragua they received in excess of the international price which was also the case for the large recycling centers and processors. The pattern of a better price being obtained by representatives of cooperatives than the purchase price of small collection centers is repeated here. Aluminium remains one of the most valuable materials in the recycling market.

Table 19 Prices for buying and selling aluminum in US\$ per kg by country and actor (2014)

Type of Material	Country	Average Price in US\$/kg			
		Cooperatives	Small Recycling Centers	Medium-sized Recycling Centers	Large Recycling Centers/ Processors
Aluminum	Guatemala	nd	0.64	1.21	nd
	El Salvador	1.44	0.13	nd	0.26
	Honduras	nd	nd	nd	nd
	Nicaragua	1.32	1.08	nd	1.65
	Costa Rica	0.70	0.13	nd	nd
	Panamá	0.66	nd	nd	nd

Source: Elaborated by the Authors

38 Information supplied by the Company Ecological Services of Costa Rica

## Conclusions

In terms of prices and their variations in the chain links and between countries, it is important to point out that the study has identified a general tendency whereby cooperatives obtain higher prices for their materials than the ones offered by the small recycling centers. A possible explanation for this is that, by being organized they are able to access buyers higher in the chain who offer them better prices.

### 3.3.6. Price Fluctuations

Pricing within the entire market responds to diverse factors associated with the forces exerted by supply and demand. As part of this process, institutional aspects (such as trust, transaction costs, etc.) also influence trade. Taking into account this dynamic, price divergence is an expected behavior in any productive activity.

Considering the answers of the interviewed stakeholders, in particular the representatives of the cooperatives and smaller recycling centers, the study concludes that these actors do not understand the market forces that they are dealing with and have little capacity to predict or play into developments in the global marketplace. For example, there appears to be no understanding of seasonality nor ability to strategically respond to periods of shut-down of end-user industries. Nor is there any understanding for the dynamics of pricing.



Photo image 6. Woman head of household in San Salvador selling aluminum UBC to a small junk shop in her neighborhood.

For example, in the case of paper and cardboard there is no agreement as to the periods of higher or lower prices, some people say that the increase is at the end of the year, but others say it can occur at any time. There is agreement as to what affects the demand for material. For plastic, there is also no unifying criteria on the period of variation of prices, which can be at any time of the year and its causes, where interviewees mentioned international demand, transport costs and electricity tariffs.

In all of the countries studied, including those where no statistical data was available, those interviewed asserted that the international oil price has a strong influence on pricing fluctuations for all the materials (cardboard, paper, non-ferrous metals and plastic) in the region.



Firstly, since the main markets are overseas, transport costs represent a major component of the cost structure along the whole recycling chain. Hence, fluctuations in fossil fuel prices on the international market have a direct impact on prices paid for recyclables at the national level.

Secondly, the Asian markets also exercise a strong influence on domestic prices for all the materials studied. The familiar figure of the Asian materials broker appears periodically (for example, when certain mills are empty, or during events such as the Olympic Games in Beijing, or the construction of a large infrastructure project) to offer prices that are higher than the market average in each Central American country. The results of this overpricing are quite dramatic, as brokers buy up co-operative and recycling center stock and disrupt the supply chains for national recycling enterprises. Aluminum is the most sought after material although in Costa Rica there are also similar cases reported in relation to paper and cardboard.

Central American countries and stakeholders in the regional recycling value chain are too small in terms of volumes to influence the forces of supply and demand that create scarcities or overabundance of materials, and that have a corresponding influence on prices.

It is important to understand that this situation has both immediate impacts in the short-term as well as secondary effects that play out over weeks and months following the period in which the initial changes in prices are registered. This is especially true in relation to negative impacts related to decreases in prices, which can further weaken the already vulnerable lower links in the value chains, damaging their competitiveness, and in the worst case drive them out of the market.

In both **El Salvador** and **Panamá**, there is a seasonal increase in the price of paper in December each year, which is reported to be associated with an increased demand for paper products e.g. Christmas wrapping paper and also due to a reduction in the availability of good quality waste paper and cardboard during the rainy season, when much of the material collected cannot be recycled because it is too wet to meet the specifications of the recycling industries. In **Nicaragua** there are seasonal effects reported for all four materials. During December and at Eastertime, medium-sized recycling centers collect greater volumes of materials in order to respond to the seasonal increase in demand of exporting companies.

In **Panamá** there is a particular phenomenon affecting the price of PET. This material has only recently begun to be collected by large recycling centers and to date the price paid is low compared to international prices. Stakeholders associate these prices with its newness to the market. It appears that key stakeholders require time to adjust their operations to be able to include a new material and still continue to meet the demands of the marketplace for their existing inventory.

In terms of non-ferrous metals, the most common observation is that the prices decrease as the year closes and the most commonly heard explanation is that this variation is tied to the existence or absence of demand from the Asian market. In the specific cases of Guatemala and Nicaragua there is a decrease in demand for non-ferrous metals at the end of the year, which is associated with seasonal shut-downs in purchasing mills in the USA. Other factors that affect prices include the exchange rate of the dollar and the yen, and political situations in Europe.

### 3.4. Entry Conditions for Market Participation

This section introduces the reader to the issues of conditions of sale for materials, and the role of transaction costs in recycling markets. The conditions and specifications for materials originate with end user industries who require the materials to produce their products to be presented in a certain physical form that fits the storage and intake systems in their factories. Specifications refer to the physical nature of the materials, and include the ways they are prepared and measurable characteristics like moisture content or the presence of foreign or contaminating materials, such as percent by weight of paper labels in a load of PET flakes or the presence of pebbles or glass shards in a bale of cardboard.

Conditions of sale or market participation refer to economic or institutional factors rather than physical characteristics. The most important condition of sale is a minimum quantity demand, but it is equally typical to require suppliers to wait three months or more to receive payment for material shipments or to accept much lower prices for the material in exchange for delivery of smaller quantities or for payment in cash.

These conditions are deeply rooted in the business culture of the recycling industry, and in some sense they protect buyers from excess risk in a highly risky and volatile marketplace. But they often impose hardship and barriers on the sellers, and prevent them from entering the market or working in ways that are comfortable for them. Compliance with these conditions is necessary for all interested parties who wish to become suppliers to purchasers at the upper ends of the supply chain. The three main topics covered below are material specifications, facilities and services offered by buyers to their suppliers and the mechanisms in use to communicate changes in prices or other aspects of conditions of sale.

#### 3.4.1. Material Delivery Specifications

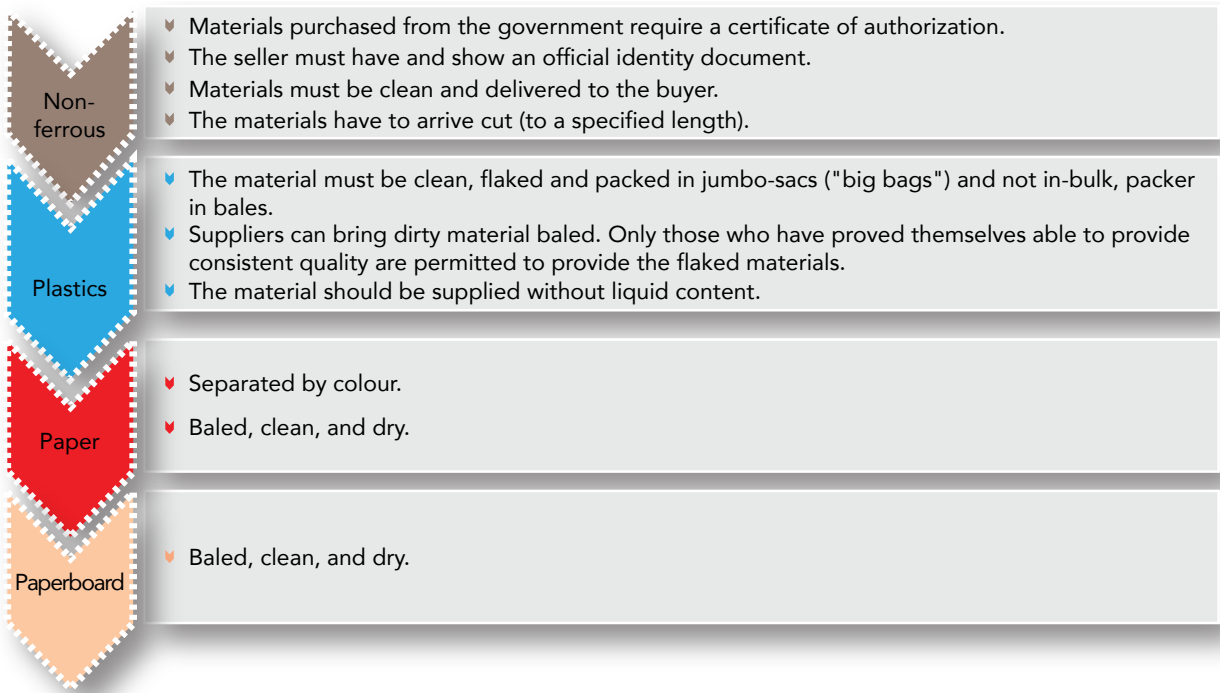
The way in which materials are delivered vary depending upon buyer requirements. The price paid will also rise and fall depending upon the quality of the materials supplied. The specifications become stricter as the materials move up the value chain towards the end-users. Figure 4 shows the general specifications that have been established by end-user industries and processors by material.

Table 20 shows the detailed requirements established in each country, for material delivery according to recycling and processing enterprises and large recycling centers. The field work did not produce clear lower or upper quantity limits by weight, although these certainly exist in practice.

Minimum volume requirements have to do primarily with two factors, transaction costs (related to stricter specifications for purity and materials preparation) and receiving technology, both associated with a higher level of industrialization that is found in the upper levels of the value chains. A third factor is that since they have investors, boards, accountants, and tax inspectors looking at their financial documents, actors in the upper levels of the chain also have to ensure a certain level of traceability and due diligence in their supply chains. Due to these factors, larger buyers have limited flexibility to do business with recyclers and other small suppliers at the base of the chain and they are seldom willing to make the investments that would make small-scale trading feasible. Smaller suppliers are more flexible, and may engage in other economic activities when prices decline past the point of profitability.

The links at the base of the chain face strong limitations in meeting these conditions, such as their limited storage space which restricts their ability to accumulate larger volumes, and the availability of transport and processing equipment such as balers, to prepare the materials. This situation is made worse given that some buyers are located at a distance from the urban centers where the majority of informal recyclers work and the informal recyclers would have to meet the high costs (especially as it pertains to transport) associated with any transaction undertaken with these companies.

Figure 4 Required Specifications for different material types ( 2014)



Source: interviews performed during the research.

Table 20 Requirements for material reception for sale for actors at the end of the value by country and material, 2014

Country	Material	Recycling Enterprise	Processors/ Exporters	Large junk Shops
<b>Guatemala</b>	Non-ferrous	Refuses to purchase stolen billboards; or materials coming from government institutions without a certificate of authorization		
<b>Honduras</b>	Paper	Baled	None	Clean and dry
	Cardboardn	Baled	None	Clean and dry
	Plastic	None	None	None
	Non-ferrous	None	None	None
<b>El Salvador</b>	Paper	Separated by color		None
	Plastic	Accepted flaked, clean, in jumbo sacks but not in bulk, or in bales with a specific density of between 600 kg and one tonne	None	None
	Non-ferrous	Supplier must have personal identification; payment is made by cheque which requires the seller to prove their identity; they have to respect all rules, inspection, registration, weighing, x-ray screening, unloading		None
<b>Nicaragua</b>	Paper			Clean
	Cardboardn			Free of grease or oil. A higher prices is paid for baled material
	Plastic	Clean material, packed in 50 lb. bags or in a specific size	By volume of PET, gallon containers separated from other types	PET which has been emptied of liquids
	Non-ferrous			Clean, free of other materials. Must present documents. Must be cut to a specific measurement
<b>Costa Rica</b>	Paper	Baled	None	Clean and dry
	Cardboardn	Clean and dry	None	Clean and dry
	Plastic	Accept dirty from all suppliers, and flaked only from those who have proved their reliability	None	None
	Non-ferrous	Must be clean and brought to the company by the supplier	None	None
<b>Panamá</b>	Paper	Clean and dry and separated by color	None	Clean and dry
	Cardboardn	Clean and dry	None	Clean and dry
	Plastic	None	None	Clean
	Non-ferrous	None	None	None

Source: Elaborated by the Authors

### 3.4.2. Facilities for Suppliers

Table 21 presents a summary of the facilities and support offered by large recycling centers and processors to their suppliers. These benefits are a way of ensuring supplier loyalty and do not affect the prices paid. For most types of materials, the benefits are related to the payment scheme and refer to: (a) cash payment at the time of sale of the material; (b) advance payment systems and (c) pre-purchase loan agreements which are cancelled at the time of delivery. Other key elements include weighing systems where both parties can see the results, transportation to pick up the material from the supplier and the provision of equipment and supplies to be used in the suppliers' place of business.

The availability of these types of benefits are strongly related to the duration of the commercial

Table 21 Summary of benefits provided to suppliers according to material supplied (2014)

<b>PAPER AND CARDBOARD</b> Pre-payment of inventory Cash payment Purchase fob the supplier Transport to large generators Longer-term price agreements	
	<b>PLASTICS</b> Cash payment Longer-term price agreements Advance payment system Pre-payment credit to be paid in materials Equipment – machinery (balers) and supplies (sacks) Flexible quality standards Training Market information
<b>NON-FERROUS METALS</b> Cash payment Weighing in plain sight Loans Gradual changes in prices paid Transport	

Source: Elaborated by the Authors



Photo image 7. Large Recycling Center in Guatemala

relationship and the existence of mutual trust between buyer and supplier. The perception that the supplier is “known” increases trust and maintains the beneficial relationship over time. This situation creates barriers to the entry of new suppliers who have to build a relationship of trust prior to obtaining these benefits.

For plastics, support mechanisms include payment in cash, weighing in the presence of the supplier, and the attitude that “one may have to take a loss now and then, to be able to pay well over the longer term”. Other benefits include pre-payment of inventory for up to 70% of its value at the time of weighing, transport offered

FOB at the seller's place of business, and loans which can be paid off by the supplier with the materials.

To the extent that it does not affect their production process or damage their machines, some PET processors pay a low kilo price for contaminated material which meets volume requirements. Buyers have agreements to share information with some suppliers such as municipalities or construction companies. As was already mentioned, trust is critical. For example, new suppliers are not permitted to supply flaked PET because of a history of bad experiences where mixed and/or contaminated materials were milled, and damaged the machines<sup>39</sup>.

39 Once materials have been milled or flaked, it is no longer possible to remove contaminating elements, as these are now completely dispersed throughout the load.



Benefits offered to suppliers of non-ferrous metals include payment in cash, and assuring fair transactions by calibrating the scales because “we are not going to cheat them with the weights.” Also if the prices go down, the buyers create a buffer for the suppliers by informing them, keeping the price stable and then lowering it gradually.

Paper traders also use the instruments of payment in cash and pre-payment loans against inventory. Additionally, and as an added value to suppliers and their communities, the buyers may organize visits, presentations, and other forms of environmental education with the goal of raising the recovery rate for the desired materials.

In **Honduras**, suppliers can exchange recyclable materials for personal products.

For all of the materials covered in this study, there are some recycling centers who are busy every day buying materials, storing them in their centers, and also collecting them from the street. The existence of “price wars” is evidence of the pressure on prices, which in turn stimulate the entry of new “non-trustworthy” suppliers who may cut corners on the quality, quantity, and time of deliveries.



Photo image 8. Plastic processor in Nicaragua

In all the countries studied many of these examples highlight the fact that the benefits offered (especially those that are not extended to all suppliers) are based on **trust** and the **length of the business relationship** between supplier and buyer both of which are linked to **loyalty**. This seems to be a central element in these economic relations, and also a source of complexity when mixed in with issues of who offers the highest price to whom.

Photo image 9. Owners of a medium-sized recycling center in Nicaragua



A number of those interviewed indicated that they had invested in their suppliers, especially in the informal sector, either through capacity building or the donation of equipment and subsequently, these suppliers started to sell materials to other buyers for better prices, that is to say “they go to the competition.”

### 3.4.3. Communication

Channels of communication between stakeholders represent a fundamental element for building and maintaining value chains. Suppliers use the phone to talk to nearby buyers and identify both level of demand and prices being paid. Some companies put up signs at the entrance to their business to announce changes (mostly in price). These type of changes are seldom announced in advance.



There are also some differences in how communications work in the different countries. For example, in the case of one end-user industry in Guatemala the buyer has a personal relationship with the suppliers and this raises the level of trust. In El Salvador, small recycling centers and recyclers at the base of the chain agree that *“there is not always telephone communication, some buyers do it but the end-user industry never has”*. One representative of a medium-sized recycling center mentioned they organize quarterly meetings to discuss and resolve any problems they have with the buyer.

The recycling enterprises in their roles as buyers agree that in their experience, there is a great deal of communication by telephone but that it is often also necessary for suppliers to provide samples before they can determine price and conditions. This is especially true for plastics, where there are between 2,000 and 3,000 types and forms of material.

In Nicaragua, a representative one medium-sized recycling center explained that they always know when to expect a drop in the price, because the companies call them one week in advance to let the know to empty their inventories before the price falls. And they, in turn, pass the information down the chain to their own suppliers.

In conclusion there is no uniformity in the communication mechanisms used between buyers and sellers to channel information on prices and conditions of sale and this information often does not reach the base of the chain. However, it can be said that the process of specifying what will be bought, its price and conditions, generally reflect the reality that buyers have more power to influence the transactions than their suppliers.

Personal contact is important at the base of the chain, but communication becomes more formal at the upper end of the chain (written communication, quarterly coordination meetings, training in meeting material specifications and minimum volume requirements).

### 3.4.4. Agreements without contracts

The research shows that most trade between suppliers and buyers occurs without the signing of written contracts instead being based on verbal agreements. None of the parties interviewed could see any advantage in establishing formal, exclusive or long-term trading business relationships.

The stakeholders interviewed in **Guatemala** and **El Salvador** made no mention and any written contracts. In **Honduras** one large recycling center reported verbal agreements with its suppliers. These suppliers have to show identity documents and register with the company to receive payment for their materials. Nevertheless, these suppliers are not required to sell exclusively to this recycling center.

In **Nicaragua**, large recycling enterprises do not sign contracts with their suppliers because *“there is no loyalty, so even if there were a contract, they would sell to whomever offers the highest price.”* Another entrepreneur said *“we have tried to introduce contractual relationships but it does not work”*. In another company it was stated that they prefer “verbal agreements with the suppliers that we trust, and with whom we have a long history of doing business.” Another reason given for the absence of contracts with their buyers was that it is not convenient to have a fixed price contract in a market where prices are volatile. Only one processing company has a contract with their suppliers which acts as a guarantee to be able to recover, in material supplied, the advance of several thousand dollars paid to suppliers to pre-finance their inventory.

Larger recycling enterprises in **Costa Rica** have verbal agreements with their suppliers. Loyalty and negotiable prices are the commercial strategies implemented by these actors. Also the recyclers at the base of the chain and the small recycling centers have verbal agreements with their suppliers.

In **Panama** paper and cardboard end-users make umbrella purchase agreements with their suppliers which cover a variety of recycling centers. These recycling centres buy from “known” suppliers with whom they have verbal agreements.

### 3.5. Strengths, Weaknesses, Opportunities and Threats of the Recycling Sector in Central America

The SWOT analysis presented below, was constructed based on the information provided by interviewees and provides a summary of the strengths (S) and weaknesses (W) presented by the recycling sector in the region. It also shows the opportunities (O) that this context provides to develop a value chain for recycling in Central America and the threats (T) that the context presents which limit the possibility of taking advantage of these opportunities.



## STRENGTHS

- Progress in the organizing of informal recyclers in recycling cooperatives and formation of national recyclers' movements
- The emergence of trade associations and other collectives in the recycling sector (industry and recycling centers) which promote innovation and access to new markets.
- The existence of formal recycling enterprises which have the required operating permits.
- Industry access to innovative technology and the potential to adopt the latest technology in their operations.
- Collaboration between informal recyclers and the public or private sector to increase legal access to materials.
- The existence of markets for all materials in the value chain within the region.
- The value of the materials is sufficient to finance their export to markets in North America, South America and Asia
- The wide availability of ports
- The long history of support to informal recyclers and small recycling centers in terms of capacity development and equipment supply.
- The fact that verbal agreements work.

## OPPORTUNITIES

- The existence of approved integrated solid waste management (ISWM) legislation or ISWM legislation in stages of approval.
- Municipal experiences, in the implementation of separate collection schemes, as well as recycling -focused environmental education campaigns.
- Opportunities for international cooperation financing to support programmes for recyclers at the base of the chain and other activities to stimulate recycling.
- Support available from some municipal governments and private sector companies for informal recyclers seeking to formalize their activities
- Development of capacity development programs, such as the "technical" course offered by the National Institute for learning of Costa Rica aimed at professionals working in the recycling sector.
- Financing opportunities for formal recycling sector.
- The creation and maintenance of a national and regional (with cross referencing) register of recycler organizations and enterprises in the value chain, as well as information on materials flows in recycling, which would increase the possibilities to analyze recycling performance at regional level and formulate actions to strengthen the sector.

## WEAKNESSES

### Institutional weakness of informal recyclers and small players at the base of the value chain

- There is limited scope to the efforts to promote inclusive recycling amongst the actors involved in this activity. The calls to motivate their participation have largely failed to demonstrate the expected positive results and hence create the conviction, among informal recyclers, that formalization via collective organizations is an attractive alternative to individual activity.
- The institutional weakness of the national movements and their failure to be recognized and heard by governments, companies and cooperatives.
- The lack of consolidation and of existing initiatives to organize recyclers at the base of the chain, in terms of improving performance, upgrading the technical level of their working practices and developing commercialization and negotiation skills.
- A lack of resources in the lower links of the chain to invest in infrastructure, transport and equipment that would allow them to "scale" the recycling chain and access better buyers with better prices.

## THREATS AND BARRIERS

### In the Public Sector

- Ministries and municipal governments in the region have limited resources to stimulate (and finance) recycling-related initiatives.
- There are few approved regulatory frameworks for ISWM in the region. Where legislation exists there is a lack of enforcement and compliance is weak.
- The incentives for recycling that do appear in national legislation are not implemented in practice.
- In the countries where there is a commitment to increased recycling, the vision does not always recognize or seek to include informal recyclers.
- A regulatory framework controlling recycling center operation is often absent. Where there are regulations provision has not been made for gradual implementation and compliance.
- There are no multi-sector platforms for dialogue and co-ordination between various links in the value chain and public institutions .
- National governments have yet to prioritize the creation of national inventories of recycling industries or censuses of informal recyclers and there are no national information systems on recycling, this limits problem analysis and the possibility to formulate actions to strengthen the sector.

## OPPORTUNITIES

- The existence of national recycler movements creates the opportunity to harmonize operations and create systems for data management and information exchange on the material markets in the region.
- The national recycler movements also create the potential for a coordinated support to inclusive policies and social security networks at national and municipal level that would lead to improved working and living conditions for informal recyclers.
- The effects of the entry of new actors (such as brokers) into the marketplace creates competition for materials at national level (which is both an opportunity and a threat, as competition can also contribute to a price improvement).

## WEAKNESSES

### **Institutional weakness of end-use industry**

- The relative paucity of end-user industries in Central America.
- The lack of stable connections, based on trust with recyclers at the base of the chain which would allow them to develop medium to long term commercial relations as suppliers of recycled materials.

## THREATS AND BARRIERS

- In some cases, formal recycling industries complain that government authorities show “favoritism” towards the informal sector in terms of the enforcement of laws and regulations, taxation regimes etc.
- The existence of parallel systems where municipal waste collectors) “cherry-pick” the waste set-outs competing with informal recyclers for materials.

### **In the private sector and civil society**

- The vulnerability of the activity when faced with changes in the international market, as well as the introduction of new actors (such as brokers) into the marketplace which increase competition for materials at national level (both an opportunity and a threat).
- Pressure from industry and some governments, to promote a shift to “energy recovery” from waste.
- Social insecurity and violence in the region especially associated with gangs in Guatemala, Honduras and El Salvador.

## I IV. CONCLUSIONS AND RECOMENDATIONS

### 4.1. Conclusions

The Central American recycling sector is not based on inclusive value chains rather it is characterized by multi-dimensional, but fundamentally traditional (and autonomous), relations between the various links and levels in the chain. The relations between the different links are characterized by the following conditions:

#### Legal Dimension

The public institutions in the Central American region are moving gradually towards the adoption of laws and regulations for integrated solid waste management (ISWM) moving from traditional models of collection and final disposal towards systems that promote recyclable material recovery and valorization. However, the pace of change varies from one country to another. Measures to recognize and promote the integration of informal recyclers into ISWM systems in Central America are, with few exceptions, absent in this new legislation. Moreover, implementation of existing ISWM legislation is weak in all countries, especially of those parts related to incentivizing recycling and providing support to the informal sector.

#### Organizational Dimension

The main actors in the different links of the recycling value are from bottom to top: individual informal recyclers; recycler co-operatives and associations; small recycling centers; medium-sized recycling centers; large recycling centers / processors; exporters / processors; and end-user industries.

In the period since 2008, there have been considerable efforts to support informal recyclers to organize themselves into National Movements. Despite investments and external support, these efforts have had limited success and has led to the formalization of only two organizations in Nicaragua in 2012, and more recently, in Panamá in 2015. Alongside these efforts, other actors in the chain have supported initiatives to create organizations that promote recycling, such as ASORENIC in Nicaragua, which brings together large recycling centers and exporters and the Costa Rican Recycling Alliance which bring together the national government, private consumer goods companies and large recycling processors and end users. These alliances form an initial base for future multi-sectorial co-ordination for the promotion of inclusive recycling in the region.

At local level, few examples of institutional co-operation between links in the chain were identified. On the contrary, the prevalent attitude is distrust. Buyers in the upper part of the value chain distrust those at the bottom citing their lack of loyalty. This creates reluctance to invest in their operations since even the beneficiaries who have received equipment or training will sell their materials to whomever is paying the highest price, rather than sticking with those who have made the investment. On the other hand, suppliers at the bottom of the chain distrust their buyers, whom they accuse of not paying fair prices, or of cheating at the scales. The relationships seem best at the level of the medium-sized and large recycling centers and processors; where a number of long-term well-functioning commercial relationships were identified and where there a fluid and permanent communication exists between the parties which facilitates business.

The value chain stakeholders see little advantage to formalizing their recycler organizations and small recycling centers. The lower part of the value chain is characterized by a strong individualist culture where each person survives independently. Arguments offered (by allies and NGOs) in support of creating collective organizations have not yet proved sufficiently attractive to motivate significant numbers of actors at the base of the chain to invest in horizontal linkages. This attitude also inhibits the productivity of co-operatives and associations, even when these have been formed, which in turn creates a kind of vicious circle that reduces the incentive to organize, as organizations are not effective.

It appears that external investment to accompany these new collectives and provide technical assistance in their first years of operations could help them achieve a critical mass which will make big difference to them over the longer term. The reason to do this is clear: these collectives likely provide the best chance to break the cycle of exclusion and deepening poverty and the disempowerment of the lower levels of the value chain, which are aggravated by geographical distance between some of the organizations and the industrial centers where their markets are located. Corporate Social Responsibility (CSR), could contribute to making improvements and support organizations at the base of the value chain, but, to date, the relevant companies have shown little interest in the sector.

In terms of gender equality, there are challenges associated with the participation of women in each link in the chain principally related to leadership to: access to leadership opportunities; participation in decision-making; and access to some types of jobs and by extension the wage associated with these jobs.

## Market Dimension

At national level, the research succeeded in mapping the movement of materials from the base of the chain to its final link, the end-user industries. The region is characterized by limitations in the collecting, analysis and publication of official information on import and export data for recyclable materials, as well as lack of harmonization in the handling of official information in the different countries. This situation has made it difficult to make a reliable comparison of the market in these countries. The limited development of end-user recycling industries in the region, as well as the export of the majority of materials to the Asian market were the main tendencies observed in the analysis of available data.

Recycler organizations and small recycling centres face a number of obstacles including a lack of infrastructure, financing, equipment and transport which they have yet to overcome and which reduce their competitiveness as actors in the recycling chain. They do not normally have the tools to understand their own business models, as it relates to cost structure and nor do they have market knowledge. Price information, even when it is publically available and published in global sources, does not flow through the whole chain, so that recyclers at the base of the chain do not have independent verification of what their buyers tell them about prices in the international marketplace.

In Central America, as in the rest of the world, the buyers set the specifications and conditions of sale for recyclable materials. These include minimum quantities and transport requirements, which determine which size and type of recycling center can directly supply the recycling industries.



Written contracts are not used for doing business in Central America and there is little interest at any level of the value chain in establishing them.

Tackling these challenges and limitations can be seen as an opportunity to bring about positive change especially as it relates to a move toward the creation of more inclusive value chains. The development of a value chain is always a complex process, but in the case of recycling it is further complicated by the large number of links that make up the productive chain, as well as the large number of people who participate in the activity within the informal economy. Moreover, changes are possible they only require that individual or groups of stakeholders step forward to lead this change.

When these changes are planned, stakeholders must take into account the risk factors in the process amongst them it is important to highlight: competition for material in the international market, which has a direct affect on prices in national markets; violence and insecurity which affects the activity especially in Guatemala, El Salvador and Honduras; and the threat to the recycling activity presented by the promotion of alternative technologies that offer superficially attractive solutions (but in practice are extremely costly) to local governments for ISWM, such as waste-to-energy technologies.

## 4.2. Recomendations

The development of an inclusive value chain for recycling in Central America requires the implementation of targeted institutional and business sector initiatives that influence the economic transactions between different links in the chain and benefit the development of its weakest links. These actions will be aimed at strengthening the chain in such a way as to create more equitable relationships between its different links

Table 22 presents a series of priority actions proposed for both public and private sector in the region. For each intervention, suggestions as to the stakeholders involved and the roles that they could play in the process. The priority actions are grouped into regulatory and policy aspects; incentives and financing; information systems; education, training and capacity development; strengthening of the national movements and formalization of informal recyclers at the base of the value chain.

Table 22 Priority actions according to key stakeholders.

Priority Actions	Key Stakeholders					
	Regulatory Body & National Ministries	Industries, Large Processors and Recycling Centers, Trade Associations	National Recyclers' Movements	Municipal Governments	Academia/ NGOs	Development Cooperation Donors
	Regulatory and Policy Aspects					
Develop and implement a legal and regulatory framework for ISWM.	X	X	X	X	X	
Develop a regulatory framework for the operation of recycling centers designed for gradual application and enforcement.	X	X	X	X		
Influence the development of policies and regulations through: <ul style="list-style-type: none"> <li>■ Participation in co-ordination and planning spaces, and</li> <li>■ Promoting the participation of all levels of the chain in these spaces</li> </ul>		X	X			
Create permanent stakeholder platforms to coordinate multi-actor and multi-sector discussion and action.	X	X	X	X		
Design and implement control mechanisms to eliminate the practice of cherry-picking of set-outs undertaken by municipal waste workers.	X					
Design and implement a strategy to confront the violence that characterizes the sector in Guatemala, El Salvador and Honduras.	X					
Incentives and financing						
Put into practice the incentives currently established by law.	X	X				
Make dedicated credit lines available to the sector for: <ul style="list-style-type: none"> <li>■ investment in appropriate infrastructure for recycling centers,</li> <li>■ transport facilities,,</li> <li>■ basic equipment to allow smaller value chain players to meet quality and quantity standards and increase their competitiveness.</li> </ul> Introduce innovative financing models or guarantee funds.	X					

Priority Actions	Key Stakeholders					Development Cooperation Donors
	Regulatory Body & National Ministries	Industries, Large Processors and Recycling Centers, Trade Associations	National Recyclers' Movements	Municipal Governments	Academia/ NGOs	
Data and information systems						
Develop national inventories of recycling enterprises, informal recyclers at the base of the chain, and recycling statistics.	X	X	X	X	X	
Harmonize the information systems for customs agencies and the industry and economy ministries so that disaggregated information of recyclable flows can be compared and combined at regional level.	X					
Develop national disaggregated statistics agency to maintain disaggregated statistics by tonne and by material recycled.	X <sup>39</sup>					
Education, training, and capacity development						
Educate household and business generators in source separation to ensure that higher volumes of cleaner materials are channeled through recyclers organizations to the value chains... Educate the public as to the socio-economic value of the activities of the recyclers at the base of the chain.	X	X	X	X	X	
Contribute to strengthening the capacities of key stakeholders in the value chain, either directly or through alliances with civil society and academia.		X			X	
Develop and strengthen capacities and explore innovative business models for improving incomes and living conditions for the lowest levels of the value chain.					X	X
Design and implement a program that facilitates government to government (G2G) horizontal exchange to disseminate best practice, including advances in legislation.		X			X	
Strengthening of national recycler movements and formalization of recyclers at the base of the value chain						
Integrate the informal recyclers at the base of the value chain into national and municipal recycling initiatives including: <ul style="list-style-type: none"><li>investment in infrastructure and equipment,</li><li>agreements for separate collection and recycling center operations.</li></ul>	X	X	X	X		X

<sup>39</sup> A key stakeholder in addition to the regulatory bodies is the Central American System of Integration SICA, or CASI in English.

Priority Actions	Key Stakeholders					
	Regulatory Body & National Ministries	Industries, Large Processors and Recycling Centers, Trade Associations	National Recyclers' Movements	Municipal Governments	Academia/ NGOs	Development Cooperation Donors
Work with the International Labor Organization (ILO) to develop a unique occupational classification for recyclers (informal and formalized) that is included in the national registers of official occupations.	X		X			X
Create facilities to formalize and strengthen the enterprises at the base of the chain, through the following activities: <ul style="list-style-type: none"> <li>gradual equipping of enterprises in the form of a stimulus for advances in operating practices,</li> <li>peer to peer exchanges <sup>360° 40</sup>,</li> <li>development of win-win strategies to increase the sharing of information between end-user industries at the top of the supply chain and the links at the bottom</li> </ul>		X	X			
Design and implement efficient communication and information channels that contribute to building trust between links of the value chains.		X	X			X
Strengthen corporate social responsibility programmes of recycling industries, focusing on the role of informal recyclers in the functioning of the value chain.		X				
Support the institutional reinforcement of national recycler movements in Central America.					X	X
Provide technical assistance to and supervision of the cooperatives and associations from the moment of their formation and for several years thereafter, to ensure the development of the skills and abilities needed to work effectively in a collective.					X	X
Design and implement actions and programs for the development of value chain with a gender focus, which promotes equality in participation, income and decision-making.					X	X

<sup>40</sup> These study visits involve peer exchanges where roles are traded, for example, when the manager of a recycling industry visits and/or spends a day working in a small recycling center or cooperative, or viceversa.

## Roles of key stakeholders in the implementation of these activities

### a . **Regulatory bodies and other public sector institutions**

- Lead the development and implementation of legislation with a focus on integrated solid waste management (ISWM) and the integration of informal recyclers.
- Coordinate, with other public institutions, the implementation of public policies that contribute to improving the conditions of the recycling sector in general and in particular the working and living conditions of informal recyclers.
- Facilitate the creation of permanent stakeholder platforms for dialogue with and between all the actors in the recycling chain.
- Coordinate the development of national inventories of enterprises, informal and formalized recyclers and recycling statistics.
- Require the national statistics agency to maintain disaggregated recycling statistics by tonne and by material.
- Coordinate with other governments in the region to develop harmonized information systems on the flow of recyclables within the Department of Customs and the Ministry of Industry and Economy with the purpose of comparing and combining information at regional level.
- Promote the education of household and business generators in source separation to ensure that higher volumes of cleaner materials are channeled through recyclers organizations to the value chains.
- Coordinate with the Ministry of Labour and the International Labour Organization (ILO), to develop a unique occupational classification for recyclers (informal and formalized) that is included in the national registers of official occupations.

### b. **Recycling Industry, Large Recycling Centers and Recycling (Trade) Associations**

- Promote and participate in the creation of spaces for advocacy in the development and implementation of laws and public policies that benefit the sector.
- Encourage the participation of all other links in the chain in the spaces of coordination and advocacy.
- Contribute to the formalization and capacity building of the links at the base of the chain.
- Analyze and propose, together with national movements, the possible mechanisms for the development of relations of trust between all the links of the chain.

### c. **National Recyclers' Movements**

- Lead processes to organize informal recyclers in cooperatives and/or associations.
- Participate in spaces for advocacy for the development and implementation of regulations and public policies that benefit the sector.
- Promote sector participation in capacity building processes.
- Analyze and propose, together with industry, possible mechanisms for the development of relations of trust between all the links of the chain.
- Promote with national governments and with the support of the International Labour Organisation (ILO) to develop a unique occupational classification for recyclers (informal and formalized) that is included in the national registers of official occupations.

**d. Municipal Governments**

- Design and implement control mechanisms to eliminate the practice of cherry-picking of set-outs undertaken by municipal waste workers
- Integration of organized informal recyclers into municipal recycling systems.
- Investment in infrastructure and equipment.
- Agreements for the implementation of selective collection and recycling centers.
- Promote education of waste generators for source separation of materials so that they arrive clean and in larger quantities to the chain.

**e. Academia/NGOs**

- Support the capacity building processes and the development of innovative business models for all links of the chain and in particular for the base links.
- Support the development of national information systems for the sector and the activity of recycling in general.

**f. Development Co-operation Organizations**

- Support institutional strengthening of national recycler organizations.
- Support technical assistance and supervision of the cooperatives and associations that are formed.
- Support exchanges between governments to disseminate best practices in the strengthening of the recycling chain.
- Support the implementation of actions for the formation of value chains with a gender focus.
- Support actions of the Ministries of Labor and the International Labor Organization, ILO, to develop a unique occupational classification for recyclers (informal and formalized) that is included in the national registers of official occupations.



## I. V. ANNEXES

### Annex 1. Mapping of the Enterprises

#### GUATEMALA

N°	ENTERPRISE	MATERIALS	WEBSITE
1	Amigo de la naturaleza	Notebooks, books, magazines, newspapers, office paper	no
2	Clasificadora Centroamericana	Newspaper, mixed, plain, telephone books, white printed, cardboard, aluminium cans.	no
3	Comisión del Plástico de Agexport	Exporters Group	<a href="http://www.export.com.gt">www.export.com.gt</a> <a href="http://www.plastico.com">www.plastico.com</a>
4	Coprove	Paper except cardboard and phone guides, plastic, scrap metal, cans	<a href="http://www.reciclajecoprove.com">www.reciclajecoprove.com</a>
5	Desechos Industriales de Papel (DISPEL)	Paper. Do not buy cardboard	
6	Diso, S.A.	Buy all type of paper, not corrugated, aluminium, drink cans.	<a href="http://www.recicladoradiso.com">www.recicladoradiso.com</a>
7	Distribuidora Sánchez	Every type of aluminium, including painted frames, paper.	no
8	Fumente	Plastic bags	no
9	Gremial de recicladores		<a href="http://www.industriaguatemala.com/gremial-recicladores">www.industriaguatemala.com/gremial-recicladores</a>
10	Inkru	Plastics, HDPE and LDPE, PP, PVC, Paper, copper, aluminium, plastic boxes and bottles, iron and steel.	no
11	Mega Reciclaje 2000	Copper, bronze, aluminium, iron and steel.	no
12	Metalenvases	Receive all types of cardboard.	<a href="http://www.metalenvases.com">www.metalenvases.com</a>

N°	ENTERPRISE	MATERIALS	WEBSITE
13	Puerto Fierro	Ferrous and non ferrous metals, smelting	no
14	Recicla, S.A.	Receive paper in donation Clean plastic	www.recicla.com.gt
15	Recicladora de Metales Trébol	Non-ferrous metals, copper, bronze, tin, aluminium, export to the USA	no
16	Recicladora San José	Copper, tin, mixed aluminium, tin, bronze, tins, paper, plastic, PET solid aluminium	www.recicladorasanjose.com
17	Recicladados de C.A.	PP of high and low density, injection moulding and extrusion, *PP, only injection, PET / Polycarbonates	
18	Recicladados de Centroamérica. Cervecería centroamericana S.A	PET	www.recicla.com.gt
19	Reciclaje San Francisco	Boxes, large bags, paper, copper, aluminium, plastic drink boxes, tin and iron	no
20	Recipa	All recyclable materials, aluminium from 5 qq will provide transport, paper and cardboard, All ferrous and non-ferrous metals	www.recipa.net
21	Representaciones S&D	Receive all types of dry paper and cardboard	no
22	Sepaca	Receive all types of dry paper, not cardboard	no
23	Serviplast Ecoplast, S.A.	Plastics post-industrial and post-consumption , Plastics, PE, PP, PET and PVC	www.ecoplast.com
24	Simons Reciclaje	All types of plastic except drinks bottles pet, * Paper	no

## HONDURAS

N°	ENTERPRISE	MATERIALS	WEBSITE
1	Fernández Industrial	Paper, cardboard and flexible plastic	
2	KIMBERLY CLARK (SCOTT PAPER CO.)	Papel in bales. Do not buy bulk paper	<a href="http://www.kcprofessional.com.sv">www.kcprofessional.com.sv</a>
3	PLYCEM de Honduras	Paper	<a href="http://www.plycem.com">www.plycem.com</a>
4	Bodega El Esfuerzo	Pure white paper, white printed paper, newspapers, folders, magazines, cardboard and tins.	<a href="http://www.recicladoraelesfuerzo.com/empresa">www.recicladoraelesfuerzo.com/empresa</a>
5	Astro Cartón	Corrugated cardboard	<a href="http://www.astrocarton.com">www.astrocarton.com</a>
6	RECICLADORES DE HONDURAS S. DE R.L. O RECIGROUP S. DE R.L.	Plastics, metals	<a href="http://www.recigroup.com/index2.html">www.recigroup.com/index2.html</a>
7	RECIPLAST S.A.	Plastics	<a href="http://www.recigroup.com/index4.html">www.recigroup.com/index4.html</a>
8	Inversiones materiales (INVEMA)	Plastics	
9	Comercial Rueda Morales (CORUMO)	Plastics, ferrous metals and non ferrous metals	
10	CENOSA	Plastics, ferrous metals and non ferrous metals	
11	Recicladora Dubón (DUREPLAST)	Plastics	
12	RECIMETAL S.A.	Ferrous and non-ferrous productos, as well as services to cut all types of metal.	<a href="http://www.recigroup.com/index3.html">www.recigroup.com/index3.html</a>
13	Inversiones materiales (INVEMA)	Ferrous and non-ferrous products	
14	FUNYMAQ	Ferrous and non-ferrous products	<a href="http://www.funymaq.hn">www.funymaq.hn</a>
15	GRUPO EYC RECIPLAST	Ferrous and non-ferrous products	<a href="http://www.recycleinme.com/rim-fhandal79/home.aspx">www.recycleinme.com/rim-fhandal79/home.aspx</a>
16	RECICLA S.A.	Plastics, cardboard	<a href="http://www.recigroup.com/index5.html">www.recigroup.com/index5.html</a>

## EL SALVADOR

N°	ENTERPRISE	MATERIALS	WEBSITE
1	Alas Doradas	Paper	<a href="http://www.alas-doradas.com">www.alas-doradas.com</a>
2	AVANGARD	Plastics and others	<a href="http://www.guialocal.com.sv/avangard-industries-s-a-de-c-v.html">www.guialocal.com.sv/avangard-industries-s-a-de-c-v.html</a>
3	CORINCA	Steel, aluminum and import of dangerous substances	
4	CHONSA PLÁSTICOS INDUSTRIAL	Plastic	
5	ECOAMIGOS del Plastic/ASIPLASTIC	Plastics and others	<a href="http://www.ecoamigosdelplastico.org">www.ecoamigosdelplastico.org</a>
6	IBERPLASTIC	Plastics, used oils	<a href="http://www.iberplastic.com">http://www.iberplastic.com</a>
7	HISPALIA S.A. de C.V.	Paper and cardboard	
8	INDRESA, Industrias del Reciclaje Salvadoreña	Aluminium, steel and otherss	
9	Central de Reciclaje "Marceya"	Buy and sell all types of recyclable material	<a href="http://www.marceya.com">www.marceya.com</a>
10	CONAVE (ex. REPACESA)	Paper	
11	INVEMA/ZARTEX	Cardboard, plásticos, tins and electronic equipment	<a href="http://www.invema.com.sv/home.html">www.invema.com.sv/home.html</a>
12	IRCA- Agencia MOYSI-RAMIZ	Buy and sell all types of recyclable material	
13	Kimberly Clark	Paper and cardboard	<a href="http://www.kcc.com">www.kcc.com</a>
14	Matricería Industrial ROXY	Plastic Recycling	<a href="http://www.matriceriaroxy.com">www.matriceriaroxy.com</a>
15	PROCOMES	All types	<a href="http://www.procomes.org">www.procomes.org</a>
16	Plastics EL PANDA, S.A. de C.V.	Plastic	<a href="http://www.plasticoselpanda.com">www.plasticoselpanda.com</a>
17	RECIPLAST	Plastics and others	<a href="http://www.reciplast.org.sv">www.reciplast.org.sv</a>
18	SALVAPLASTIC	Plastic	<a href="http://www.salvaplastic.com.sv">www.salvaplastic.com.sv</a>
19	Rabo Recycling S.A. de C.V.	Plastic Pet and Derivatives	<a href="http://www.rabocorp.com/#!location/c2v4">www.rabocorp.com/#!location/c2v4</a>
20	GARBAL S.A. de C.V.	PVC Flexible in any form, bags, hoses, inflatables, etc.	<a href="http://www.garbal.com">www.garbal.com</a>
21	RECIMAFE	Aluminium, cans, copper, bronze and steel	<a href="http://www.recimafe.com">www.recimafe.com</a>
22	Recicladora La Centroamericana	Tin, aluminium bronze, copper plástic and steel	
23	Recuperadora de Cartón T&M S.A. de C.V.	Tin, aluminium bronze, copper plástic and steel	
24	INSOEX		

## NICARAGUA

N°	ENTERPRISE	MATERIALS	WEBSITE
1	RECICLAJE DASA	Solid iron and cans, aluminium, copper, bronze, paper and cardboard	<a href="https://www.es-es.facebook.com/pages/RECICLAJE-DASA/164004747000023?sk=info">www.es-es.facebook.com/pages/RECICLAJE-DASA/164004747000023?sk=info</a> <a href="http://www.recicladajedasa.com">www.recicladajedasa.com</a>
2	ECO FIBRAS	Metals, glass, paper, plásticos, rubber, collection service, organics institutional	<a href="http://www.renisa.com.ni">www.renisa.com.ni</a>
3	DELI & CHEN Y Cía. Ltd.	Metals	
4	EMPRESA EXPORTADORA DE MATERIALES RECICLABLES S.A. — EMPEXMAR	Iron, copper, bronze, aluminium, radiators and batteries	
5	LUIS & REDDY, S.A.	Metals	
6	MARBER METALES	Metals, recyclables of aluminium cans in briquettes, aluminium packs, recyclables of copper, bronze and others	
7	RECICLAJE NACIONAL DE NICARAGUA, S.A.	Metals	
8	SOBRANTE FERROSO S.A. – SOFESA	Ferrous and non-ferrous metals	
9	MULTINICSA (Barlovento de Nicaragua)	PET, PE for injection and PP	
10	PLASTICOS DE NICARAGUA, S.A. — PLASTINIC	Plastics	<a href="http://www.plastinic.com">www.plastinic.com</a>
11	RECICLAJES INDUSTRIALES DE NICARAGUA, S.A. — RECINSA	PET ,HDPE , PP amongst others	<a href="http://www.recinsa.com.ni">www.recinsa.com.ni</a>
12	EMPRESA ENVASADORA S.A. — ENVASA	Hard plastic containers and gallons	
13	EMPAQUES SANTO DOMINGO	Corrugated cardboard and paperboard	<a href="http://www.esdnic.com">www.esdnic.com</a>
14	INDUSTRIAS CASTRO	Rubber Soles of shoes	
15	Asociación de Recicladores de Nicaragua- ASORENIC		
16	RECICLAJE GALILEA	Paper, cardboard, solid plástico and bags, copper, bronze, aluminium, steel, ferrous scrap, computer and battery waste.	
17	3R VARGAS	Cardboard, plastics, metals	
18	ACEITES RECICLADOS MARINA LOPEZ	Waste oils, oily water, used oils and industrial sludge	
19	DISTRIBUIDORA CENTRAL S.A.	Ferrous HMS 1, 80% - HMS 2, 20%. HMS1, 100% Non Ferrous Aluminium, Copper and Bronze.	<a href="http://www.scrapdicensa.com">www.scrapdicensa.com</a>
20	ECOFIBRAS DE NICARAGUA, S.A.	Cardboard, Paper, plásticos	
21	RESINAS, S.A	Plastic	<a href="http://www.eppnicaragua.com">www.eppnicaragua.com</a>
22	LESS ENERGY SYSTEM (LES)	PET-HDPE	
23	Acopio Mendoza		
24	Exportaciones e Importaciones GOLD METALS, S.A	Metals	

## COSTA RICA

N°	ENTERPRISE	MATERIALS	WEBSITE
<b>Paper and cardboard</b>			
1	Empaques Santa Ana, División Molino	Cardboard, paper, card.	www.grupocomecacr.com
2	KIMBERLY-CLARK COSTA RICA, LTDA.	Newspaper, cardboard, tetra pak, plástico, glass, aluminium, tin plate, printer cartridges and electrónicos.	www.kcprofessional.hn
<b>Plastic</b>			
3	Coca-Cola FEMSA Costa Rica	Collection and recycling of plastic packaging, PET and HDPE. The collected material is transported to the Coca-Cola FEMSA plant to produce clothes, packing materials and other articles.	www.femsa.com
4	Florida Ice and Farm Co.	Aluminium cans, PET, plastic containers HDPE plastic containers PA	www.florida.co.cr
5	Golden Plastic S.A.		
6	Empaques Universal		
7	Ekoroof Products S.A.		
8	Gente Reciclando		
9	Barriplast S.A.		
10	Fibras de Centroamérica S.A. (FIDECAR)		
11	Rexco Internacional de Centroamérica S.A.		
12	Reciclados Plásticos de Costa Rica S.A. (REPLACORI)		
13	Recyco S.A.		
14	Plastimex Palmares S.A.		
15	GLC Recycling Plast S.A.		
16	Productos Técnicos para Centroamérica y el Caribe S.A. (PRODUCOL)		www.producol.net
17	Importaciones Industriales MASACA S.A.		
18	Recyplast S.A.		
19	Escazú Recicla	Paper, newspaper, cardboard, tetrapak, plástico, glass and aluminium.	
20	Recicladora El Molino	Paper, newspaper, cardboard, tetrapak, plástico, glass and aluminium.	
21	Recicladora Capri	Paper, newspaper, cardboard, tetrapak, plástico, glass and aluminium.	
<b>Non-ferrous Metals</b>			
22	Moldeado and Fundición Saborío (MOFUSA, S.A.)	Ferrous and no ferrous	www.mofusa.com



## PANAMÁ

N°	ENTERPRISE	MATERIALS	WEBSITE
1	KIMBERLY-CLARK CENTRAL AMERICAN HOLDINGS, S.A.	Paper, newspaper, cardboard, tetrapak, plástico, glass, aluminium, tin, printer cartridges and electrónicos	<a href="http://www.kcprofessional.hn/sostenibilidad">www.kcprofessional.hn/sostenibilidad</a>
2	RECIMETAL PANAMA	Paper, cardboard, plástico, metals.	<a href="http://www.recimetal-sa.com">www.recimetal-sa.com</a>
3	Hansel Distribución	Paper, plastic, cardboard	
4	Inversiones Canto, S.A.	Paper and metals	
5	Papelera Istmeña, S.A.	Paper	
6	Reciclaje D.J.	Paper and plastic	
7	Global Plastic	Plastic	
8	Recimax	Plastic, cardboard	
9	Recimetales	Plastic, cardboard	
10	Servirrecicladados Nacionales S.A.	Paper	
11	Moldeados Panameños S.A.	Paper	
12	Procesos de reciclaje	Paper, cardboard, plastic	
13	Aceros Caribe	Non ferrous metals	
14	Compra y Reciclaje Batea	Non ferrous metals	
15	China Metal Corp., S.A.	Metal no ferroso	
16	LESA Logística, Equipos, Soluciones de América, In	Metal no ferroso	

## Annex 2. Database of Representatives of the Recyclers' Movements and Regulatory Bodies

### Representatives of the Recyclers' Movements

COUNTRY	NAME
Panamá	Yenny González Vega
Panamá	Juan Gaona Machado
El Salvador	América del Carmen Sarmiento
Costa Rica	Sujejlin Ordoñez Quezada
Costa Rica	Miguel Antonio Suarez Rivas
Honduras	Hilda Oliva Beltrán
Honduras	Armando Lainez Z.
Nicaragua	David Narváez
Nicaragua	Urania Rivas
Guatemala	Edgard Yol Gereda

### Representatives of the Regulatory Bodies

COUNTRY	INSTITUTION	RESPONSIBILITY
Guatemala	Ministerio de Ambiente y Recursos Naturales	Unidad para el manejo de los residuos y desechos sólidos
El Salvador	Ministerio de Medio Ambiente y Recursos Naturales	Dirección general de Saneamiento Ambiental
Honduras	Secretaría de Recursos Naturales y Ambiente	Dirección General de Gestión Ambiental/Gestión Integral de Residuos Sólidos
Nicaragua	Ministerio del Ambiente y los Recursos Naturales	Dirección Calidad Ambiental: Seguridad Química y Desechos Sólidos
Costa Rica	Ministerio de Salud	Dirección de Protección al Ambiente Humano
Panamá	Ministerio de Salud	Departamento de Saneamiento Ambiental/Sección de residuos no peligrosos

### Annex 3. Invitations and Summary of Country Visits by Country

#### GUATEMALA

N°	STAKEHOLDER	NAME	INSTITUTION	RESPONSIBILITY
1	Regulatory Body	Jorge Grande Carballo	MARN	Coordinador Unidad de MIRS
2	National Recycler Movement	Edgar Yol	RED LACRE	Presidente
3	Recycling Center	Ángel Toledo	Ecología Total S.A	Gerente
4		Rafael Duarte	S.N	Propietario
5		Reyna Paz Romines	S.N	Propietaria
6		Julio Caal	S.N	Propietario
7		Margarito Sican	S.N	Propietario
8		Gustavo Gómez	Gallo más gallo	Seguridad Industrial
9		Isabel Gaitán	Centro de acopio de papel	Encargada de Bodega
10		Pedro Antonio Chajon Álvarez	S.N	Propietario
11		Milton Neftalí Gutiérrez	Coprove	Propietario
12	Recycling Center	Joel Lima	CMC	Encargado proceso documental de los embarques
13	Recycler Industry	Rolando Ruiz	SIDEGUA	Gerente de metálicos

## HONDURAS

N°	STAKEHOLDER	NAME	INSTITUTION	RESPONSIBILITY
1	Regulatory Body	Marvin Martínez	Sec. de Energía, Recursos Naturales, Ambiente y Minas	Coordinador del Departamento de Desechos Sólidos
2	National Recycler Movement	Armindo Laínez	Movimiento Nacional de Recicladores	Presidente
3	Association/Cooperative	Ángel Toledo	Ecología Total S.A	Gerente
4	Centro de Recycling	Waleska Lainez	Bodega El Esfuerzo	Administradora
5		José Fernández García	Fernández Industrial	Propietario, Administrador, Gerente
6		José Emilio López	Kimberly Clark	Sr. Buyer&Fiber

## EL SALVADOR

N°	STAKEHOLDER	NAME	INSTITUTION	RESPONSIBILITY
1	Regulatory Body	Katia Canjura, Manlia Romero	MARN	Especialista manejo de desechos sólidos Directora de Saneamiento Ambiental
2	National Recycler Movement	América Sarmiento		Representante de la Red Salvadoreña de Recicladores
3	Cooperative/ Association	Josué David Aguirre	Cooperativa de Recicladores de Mejicanos -CORESME	Presidente
4	Recycling Industry	Gerardo Pascual. Plásticos	Salvaplastic.	Gerente de compras y manejo de área de reciclado
5		Edward García. Papel	Kimberly Clark	Jefe de compra de reciclado
6		Carlos Francisco Alvarado Ferrosos	Corinca	Gerente General
7	Recycling Centers	Joaquín Antonio Ayales	Sin nombre	Propietario
8		Joaquín Barrera	Chatarrera Los Gemelos	Propietario
9		José Neftalí Mancilla Reyes	Los Manguitos	Propietario
10		Amanda Durán	Recicladora Emmanuel	Propietaria
11		Mónica Ghiorzi	Invema	Gerente de logística
12		Sara Navarro Alvarado	Reciclajes S.A	Administradora
13	Pre-trasformation	Yesenia Rivera	Rabo Reciclyn	Secretaria administrativa

## NICARAGUA

N°	STAKEHOLDER	NAME	INSTITUTION	RESPONSIBILITY
1	Regulatory Body	María Gabriela Abarca	MARENA, Ministerio de Ambiente and Recursos Naturales	Especialista ambiental
2	National Recycler Movement	David Narváez	RED NICA	Presidente
3	Cooperatives	Josefa Mendoza y Guadalupe Espinoza	Cooperativa Nueva Vida Limpia	Presidenta y secretaria
4		Roberto Silva	Cooperativa Centroamérica Limpia	Presidente
5	Recycling Center	Jenny Flores	Reciclaje Galilea	Propietaria
6		Dora Acuña	Reciclaje DASA	Gerente administrativo
7		Gustavo Pocasangre	Empaques Santo Domingo	Gerente de planta
8		Carlos Marín	Marber Metales	Gerente General
9		Nora Marín	Acopio Mendoza/ FONARE	Encargada Relaciones Públicas/Asistente
10		Heidy Mendoza	Galilea 2	Encargada
11		Ricardo y Zamayra Morales	Acopio El Shaday	Gerentes propietarios
12	Municipal Company	Mauricio Díaz	EMTRIDES (Empresa municipal para el tratamiento integral de desechos sólidos)	Gerente General
13	Pre-treatment	Issa Salaméh	MULTINICSA (Multiservicios de Nicaragua S.A)	Gerente General
14		Eduardo Romero	LessEnergySystem- LES	Gerente de compras
15	Recycler Industry	Emilio Daboub	Plásticos Modernos	Gerente General
16	Trade Association	Reina Rodríguez	ASORENIC (Asociación de recicladores de Nicaragua)	Presidenta

## COSTA RICA

N°	STAKEHOLDER	NAME	INSTITUTION	RESPONSIBILITY
1	Regulatory Body	Eugenio Androvetto	Ministerio de Salud	Director de Ambiente Humano
2	National Movement of Recyclers	Seidy Franco Ruiz	Asociación de Recicladores de Base de Liberia (ARELI)	Presidenta
3		Sujejlin Ordoñez Quezada	Movimiento Nacional de Recicladores	Presidenta
4	Association/ Cooperatives	Aitor Llodio	Alianza para el Reciclaje	Director Ejecutivo ALIARSE
5	Recycling Center	Marlene Chacón Cubillo	Alianza para el Reciclaje	Secretaria
6		Marlene Arias	Recicladora El Molino	Administradora
7		Norma Campos	Recicladora Capri	Propietaria
8		Luis Guillermo Valerio	Florida Bebidas	Ingeniero de Proyectos Ambientales/Energía
9	Recycling Industry	Elizabeth Saborío	Moldeado y Fundición Saborío (MOFUSA, S.A.)	Administradora
10		Jaime López	Productos Térmicos para Centroamérica y el Caribe (PRODUCOL, S.A.)	Propietario
11		Guillermo Moya	Empaques Santa Ana	Encargado Compra de Fibra
12	Other Actors	Luis Eduardo Suaza	SAJPLAST, S.A.	Gerente de Producción

## PANAMÁ

N°	STAKEHOLDER	NAME	INSTITUTION	RESPONSIBILITY
1	National Recycler Movement	Yenny González Vega	Movt. Nacional de Recicladores	Presidenta
2	Recycling Center	Rosario Arana	Recimetales	Gerente General
3		Juan Carlos Mejia	Global Green	Director de Marketing
4		Vitelio Cadenas Wong	Kimberly Clark	Sr. Buyer&Fiber
5	Pre-treatment	Evaristo Sánchez	Red Ecológica	Presidente
6	Recycler Industry	Javier Miró	Papelera Istmeña	Gerente General
7	Other Actors	Marisol Landau	Fundación FAS Panamá	Presidenta y Voluntaria
8		Vielka de Pérez	Urbalia Panamá	Resp. de la Galera Cerro Patacón

## Annex 4. Import and Export Data for Latin America

### EL SALVADOR Paper and Cardboard

*El Salvador, Global Paper and Cardboard Exports in FOB value and tonnes, 2013-2014*

REGIÓN	2013 FOB VALUE US\$	2013 TONNES	2013 %	2014 FOB VALUE US\$	2014 TONNES	2014 %
Asia	2.969.287	18.449	39%	3.456.014	22.574	51%
South America	1.867.003	11.247	24%	2.293.084	14.787	34%
North America and the Caribbean	23.366	150	1%	34.703	208	1%
Central America	2.810.790	17.505	15%	984.639	7.207	15%
Europe	-	-	0%	18.010	97	0%
<b>TOTAL</b>	<b>7.670.446</b>	<b>47.352</b>	<b>100%</b>	<b>6.786.451</b>	<b>44.874</b>	<b>15%</b>

Source: Banco Central de Reserva de El Salvador. <http://www.bcr.gob.sv/bcrsite/?cat=1012&lang=es>

*El Salvador, Central American Paper and Cardboard Exports in FOB value and tonnes , 2013-2014*

COUNTRY	2013 FOB VALUE US\$	2013 TONNES	2013 %	2014 FOB VALUE US\$	2014 TONNES	2014 %
Guatemala	781.244	4.159	28%	285.251	2.215	29%
Honduras	59.951	155	2%	8.826	77	1%
Nicaragua	0	0	0%	0	0	0%
Costa Rica	694.998	5.456	25%	553.574	4.195	56%
Panamá	1.274.597	7.735	45%	136.990	719	14%
<b>TOTAL</b>	<b>2.810.790</b>	<b>17.505</b>	<b>100%</b>	<b>984.639</b>	<b>7.207</b>	<b>100%</b>

Source: Banco Central de Reserva de El Salvador. <http://www.bcr.gob.sv/bcrsite/?cat=1012&lang=es>

*El Salvador, Global Paper and Cardboard Imports in CIF value and tonnes, 2013-2014*

REGION	2013 CIF VALUE US\$	2013 TONNES	2013 %	2014 CIF VALUE US\$	2014 TONNES	2014 %
Asia	22.496	143	0.05%	6.620	40	0.01%
South America	23.951	176	0.05%	25.339	133	0.05%
North America and the Caribbean	27.207.264	80.447	55.15%	26.206.688	74.553	56.18%
Central America	22.065.088	72.980	44.73%	20.287.976	67.818	43.49%
Europe	5.373	40	0.01%	20.287.976	319	0.25%
Others	4.965.77	83.30	0.01%	0.00	0.00	0.00%
<b>TOTAL</b>	<b>49.329.137</b>	<b>153.868</b>	<b>100%</b>	<b>46.644.834</b>	<b>142.864</b>	<b>100%</b>

Source: Banco Central de Reserva de El Salvador. <http://www.bcr.gob.sv/bcrsite/?cat=1012&lang=es>



*El Salvador, Global Paper and Cardboard Imports in CIF value and tonnes, 2013-2014*

COUNTRY	2013 CIF VALUE US\$	2013 TONNES	2013 %	2014 CIF VALUE US\$	2014 TONNES	2014 %
Guatemala	8.370.429	27.882	38%	8.070.574	26.220	40%
Honduras	3.274.058	10.205	15%	3.127.460	9.838	15%
Nicaragua	2.822.790	8.980	13%	2.674.472	8.524	13%
Costa Rica	6.737.464	23.472	31%	5.629.453	20.909	28%
Panamá	860.347	2.440	4%	786.018	2.328	4%
<b>TOTAL</b>	<b>22.065.088</b>	<b>72.980</b>	<b>100%</b>	<b>20.287.977</b>	<b>67.818</b>	<b>100%</b>

Source: Banco Central de Reserva de El Salvador. <http://www.bcr.gob.sv/bcrsite/?cat=1012&lang=es>

## Plastics

*El Salvador, Global Plastic Exports in FOB value and tonnes, 2013-2014*

COUNTRY	2013 FOB VALUE US\$	2013 TONNES	2013 %	2014 FOB VALUE US\$	2014 TONNES	2014 %
Asia	1.125.803	2.524	11.0%	753.716	26.220	10.5%
South America	2.673.123	3.366	26.0%	2.520.113	3.369	35.0%
North América and the Caribbean	2.132.416	3.130	20.8%	682.096	1.062	9.5%
Central America	4.330.508	5.317	42.2%	3.239.317	6.188	28%
Europe	-	-	0.0%	4.793	8	0.1%
<b>TOTAL</b>	<b>10.261.849</b>	<b>14.338</b>	<b>100%</b>	<b>7.200.036</b>	<b>12.360</b>	<b>100%</b>

Source: Banco Central de Reserva de El Salvador. <http://www.bcr.gob.sv/bcrsite/?cat=1012&lang=es>

*El Salvador, Central American Plastic Exports in FOB value and tonnes, 2013-2014*

COUNTRY	2013 FOB VALUE US\$	2013 TONNES	2013 %	2014 FOB VALUE US\$	2014 TONNES	2014 %
Guatemala	63.299	1.431	1.5%	49.511	1.632	2%
Honduras	4.067.852	3.672	93.9%	2.991.342	4.282	92%
Nicaragua	178.343	181	20.8%	682.096	1.062	9.5%
Costa Rica	21.013	34	0.5%	110.961	194	3%
Panamá	0	0	0.0%	0	0	0.0%
<b>TOTAL</b>	<b>4.330.508</b>	<b>5.317</b>	<b>100%</b>	<b>3.239.317</b>	<b>6.188</b>	<b>100%</b>

Source: Banco Central de Reserva de El Salvador. <http://www.bcr.gob.sv/bcrsite/?cat=1012&lang=es>

*El Salvador, Central American Plastic Imports in CIF value and tonnes, 2013-2014*

REGION	2013 CIF VALUE US\$	2013 TONNES	2013 %	2014 CIF VALUE US\$	2014 TONNES	2014 %
China (Continental)	6.245	18	0.2%	2.954	8	0.1%
Pakistán	5.000	0	0.2%	-	-	0.0%
Taiwán	49	0	0.0%	8.901	40	0.2%
Asia	11.294	18	0.3%	11.855	49	0.3%
Chile	-	-	0.0%	17.706	19	0.5%
Ecuador	13.401	20	0.4%	8.510	12	0.2%
South America	13.401	20	0.4%	26.216	31	0.7%
USA	1.577.675	2.174	48.9%	1922.957	2.187	52.4%
México	26.738	40	0.8%	16.509	20	0.4%
Puerto Rico	45.882	40	1.4%	207.971	202	5.7%
Dominican Republic	227.558	193	7.0%	198.395	170	5.4%
Trinidad and Tobago	-	-	7.34%	106.885	125	2.9%
North America and the Caribbean	1877.853	2.446	58.2%	2.452.717	2.704	66.8%
Guatemala	316.835	939	9.8%	150.130	248	4.1%
Honduras	116.133	156	3.6%	175.985	181	4.8%
Nicaragua	336.752	546	10.4%	436.084	628	11.9%
Costa Rica	555.900	601	17.2%	416.199	418	11.3%
Central America	1.325.620	2.242	41.1%	1.178.398	1.475	32.1%
Holanda	-	-	0.0%	131	0	0.0%
Europe	-	-	0.0%	131	0	0.0%
Other Countries	520	2	0.0%	-	-	0.0%
<b>TOTAL</b>	<b>3.228.688</b>	<b>4.728</b>	<b>100.00%</b>	<b>3228.688</b>	<b>4.728</b>	<b>100.0%</b>

Source, Banco Central de Reserva de El Salvador. <http://www.bcr.gob.sv/bcrsite/?cat=1012&lang=es>

## Ferrous and Non-Ferrous Metals

*El Salvador, Scrap Metal, Iron and Steel Exports in FOB Values and tonnes, 2013-2014*

REGION/COUNTRY	2013 FOB VALUE US\$	2013 TONNES	2013 %	2014 FOB VALUE US\$	2014 TONNES	2014 %
South Korea	5.191.606	17.856	44.38%	6.077.668	22.307	50.25%
North Korea	-	-	0.00%	27.257	107	0.23%
China (Continental)	16.776	45	0.14%	-	-	0.00%
Taiwán	1.829.636	6.448	15.64%	433.053	1.624	3.58%
India	1.301.754	4.295	11.13%	3.136.684	10.443	25.93%
Pakistán	6.072	22	0.05%	48.483	74	0.40%
Thailand	892.532	2.955	7.63%	52.003	172	0.43%
Vietnam	2.263.168	7.227	19.35%	2088637	6871	17.27%
<b>Asia</b>	<b>11.501.544</b>	<b>38.848</b>	<b>98.32%</b>	<b>11.863.785</b>	<b>41.597</b>	<b>98.09%</b>
Ecuador	120.108	411	1.03%	-	0	0.00%
<b>South America</b>	<b>120.108</b>	<b>411</b>	<b>1.03%</b>	<b>-</b>	<b>-</b>	<b>0.00%</b>
<b>North America and the Caribbean</b>	<b>-</b>	<b>-</b>	<b>0.00%</b>	<b>-</b>	<b>-</b>	<b>0.00%</b>
Guatemala	1.386	2	0.01%	183.965	1.327	1.52%
Honduras	24.948	45	0.21%	15.800	75	0.13%
Nicaragua	1.910	21	0.02%	-	-	0.00%
<b>Central America</b>	<b>28.244</b>	<b>69</b>	<b>0.24%</b>	<b>199.765</b>	<b>1.402</b>	<b>1.65%</b>
Spain	48.166	75	0.41%	31.116	49	0.26%
<b>Europe</b>	<b>48.166</b>	<b>75</b>	<b>0.41%</b>	<b>31.116</b>	<b>49</b>	<b>0.26%</b>
<b>TOTAL</b>	<b>11.698.062</b>	<b>39.402</b>	<b>100.00%</b>	<b>12.094.665</b>	<b>44.500</b>	<b>100.00%</b>

Source: Banco Central de Reserva de El Salvador. <http://www.bcr.gob.sv/bcrsite/?cat=1012&lang=es>

*El Salvador, Global Aluminium Exports in FOB Value and tonnes, 2013-2014*

REGION/COUNTRY	2013 FOB VALUE US\$	2013 TONNES	2013 %	2014 FOB VALUE US\$	2014 TONNES	2014 %
South Korea	2.528.541	1.468	14.12%	2.113.709	1.411	9.71%
China (Continental)	739.772	511	4.13%	450.635	291	2.07%
Corea del Sur	788.709	607	4.40%	626.621	396	2.88%
Malasia	0	0	0.00%	143.193	109	0.66%
India	245.126	172	1.37%	227.602	153	1.05%
Thailand	33.233	21	0.19%	1.950	20	0.01%
<b>Asia</b>	<b>4.335.381</b>	<b>2.779</b>	<b>24.21%</b>	<b>3.563.711</b>	<b>2.380</b>	<b>16.36%</b>
Ecuador	-	0	0.00%	553.767	305	2.54%
Brazil	1.727.916	1.120	9.65%	3279.068	1.822	15.06%
<b>South América</b>	<b>1.727.916</b>	<b>1.120</b>	<b>9.65%</b>	<b>3832.835</b>	<b>2.128</b>	<b>17.60%</b>
Canadá	56.604	18	0.32%	0	0	0.00%
United States	11.360.098	4.443	63.44%	11.419.835	3.934	52.43%
<b>North América and the Caribbean</b>	<b>11.416.702</b>	<b>4.461.14</b>	<b>63.75%</b>	<b>11.419.835</b>	<b>3.934</b>	<b>52.43%</b>
Guatemala	2.323	29	0.01%	4.064	51	0.02%
Honduras	303.812	176	1.70%	2.914.473	911	13.38%
Costa Rica	33	1	0.00%	575	58	0.00%
Panamá	60.539	18	0.34%	-	0	0.00%
<b>Central America</b>	<b>366.707</b>	<b>223</b>	<b>2.05%</b>	<b>2919.113</b>	<b>1.019</b>	<b>13.40%</b>
Spain	37.518	21	0.21%	43.705	44	0.20%
Holand	23.597	20	0.13%	-	0	0.00%
<b>Europe</b>	<b>61.115</b>	<b>42</b>	<b>0.34%</b>	<b>43.705</b>	<b>44</b>	<b>0.20%</b>
<b>TOTAL</b>	<b>17.907.821</b>	<b>8.625</b>	<b>100.00%</b>	<b>21.779.199</b>	<b>16.630</b>	<b>100.00%</b>

76020000 Exports without free zone aluminium

Source: Banco Central de Reserva de El Salvador. <http://www.bcr.gob.sv/bcrsite/?cat=1012&lang=es>

*El Salvador, Ferrous Metal Imports in FOB values and Tonnes, 2013-2014*

REGION	2013 FOB VALUE US\$	2013 TONNES	2013 %	2014 FOB VALUE US\$	2014 TONNES	2014 %
China (Continental)	2.501	2	0.27%	2.462	22	0.68%
Asia	2.501	2	0.27%	2.462	22	0.68%
South America	-	-	0.00%	-	-	0.00%
United States of America	38.966	441	4.20%	44.378	275	12.35%
Mexico	1.803	16	0.19%	899	8	0.25%
Belize	3.043	30	0.33%	-	-	0.00%
North America and the Caribbean	43.812	487	4.72%	45.277	283	12.60%
Guatemala	483.201	4.150	52.04%	178.916	1.573	49.77%
Honduras	340.620	2.237	36.69%	101.321	813	28.19%
Nicaragua	5.386	17	0.58%	9.439	19	2.63%
Central America	829.207	6.405	89.31%	289.677	2.405	80.58%
Germany	27.650	21	2.98%	0	0	0.00%
Italy	22.334	25	2.41%	22.058	24	6.14%
Europe	49.984	42	5.38%	22.058	24	6.14%
Others	2.930	22	0.32%	0	0	-
<b>TOTAL</b>	<b>928.434</b>	<b>6.962</b>	<b>100.00%</b>	<b>359.474</b>	<b>2.735</b>	<b>100.00%</b>

Customs Codes 7204100 a 72045000

Source: Banco Central de Reserva de El Salvador. <http://www.bcr.gob.sv/bcrsite/?cat=1012&lang=es>

*El Salvador, Non-ferrous metal (aluminium) Import in FOB value and tonne, 2013-2014*

REGION/COUNTRY	2013 FOB VALUE US\$	2013 TONNES	2013 %	2014 FOB VALUE US\$	2014 TONNES	2014 %
Asia	-	-	0.00%	-	-	0.00%
South America	-	-	0.00%	-	-	0.00%
United States and America	222	0.33	12.38%	1.072	1	5.60%
North America and the Caribbean	222	0.33	12.38%	1.072	1	5.60%
Guatemala	272	2.27	15.19%	-	-	0.00%
Honduras	-	-	0.00%	46	0	0.24%
Nicaragua	1.297	5.62	72.42%	967	3	5.05%
Costa Rica	-	-	0.00%	17.053	10	89.11%
Central America	1.570	7.89	87.62%	18.065	13	94.40%
Europe	-	-	0.00%	-	-	0.00%
<b>TOTAL</b>	<b>928.434</b>	<b>6.962</b>	<b>100.00%</b>	<b>19.137</b>	<b>14.26</b>	<b>100.00%</b>

Customs Codes 7602000

Source: Banco Central de Reserva de El Salvador. <http://www.bcr.gob.sv/bcrsite/?cat=1012&lang=es>

## COSTA RICA

### Paper and Cardboard

*Costa Rica, Global Paper and Cardboard Exports in FOB value and tonnes, 2013-2014*

REGION	2013 FOB VALUE US\$	2013 TONNES	2013 %	2014 FOB VALUE US\$	2014 TONNES	2014 %
Asia	2.533.625	14.541	34%	2.327.479	13.395	39%
South America	3.636.302	21.290	49%	2.991.342	71.438	47%
North America and the Caribbean	225.444	1.202	3%	46.261	250	1
Central America	429.902	1.848	6%	201.588	963	3%
Europe	543.858	3.206	7%	591.568	3.478	10%
<b>TOTAL</b>	<b>7.369.132</b>	<b>42.087</b>	<b>100%</b>	<b>5.994.894</b>	<b>89.524</b>	<b>100%</b>

Source: Developed by the Authors based on Customs Information

*Costa Rica, Central American Paper and Cardboard Exports in FOB value and in tonnes-2013-2014.*

COUNTRY	2013 FOB VALUE US\$	2013 TONNES	2013 %	2014 FOB VALUE US\$	2014 TONNES	2014 %
Guatemala	2.100	58	0.5%	0	0	0.0%
Honduras	0	0	0.0%	0	0	0.0%
El Salvador	67.222	292	15.6%	0	0	0.0%
Nicaragua	873	3	0.2%	463	3	0.2%
Panamá	359.708	1.495	83.7%	201.125	961	99.8%
<b>TOTAL</b>	<b>429.902</b>	<b>1.848</b>	<b>100%</b>	<b>201.588</b>	<b>963</b>	<b>100%</b>

Source: Developed by the Authors based on Customs Information

*Costa Rica, Central American Paper and Cardboard Imports in values and in tonnes, 2013.*

COUNTRY	2013 FOB VALUE US\$	%	2013 TONNES	%
Guatemala	883.151	80%	6.663	84%
Honduras	-	0%	-	0%
El Salvador	119.004	11%	902	11%
Nicaragua	-	0%	-	0%
Costa Rica	11	0%	2	0%
Panamá	98.602	9%	412	5%
<b>TOTAL</b>	<b>1.100.768</b>	<b>100%</b>	<b>7.979</b>	<b>100%</b>

Source: Developed by the Authors based on Customs Information

## Plastics

*Costa Rica, Global Plastic Exports in FOB values and in tonnes, 2013-2014.*

COUNTRY	2013 FOB VALUE US\$	2013 TONNES	2013 %	2014 FOB VALUE US\$	2014 TONNES	2014 %
Asia	1.532.976	3.862	66%	2.071.748	5.247	89%
Australasia	173.812	129	7%	180.097	153	8%
Sur América	-	-	0%	-	-	0%
North America and the Caribbean	455.518	658	20%	63.363	122	3%
Central America	71.712	166	3%	13.757	40	1%
Europe	94.499	60	4%			0%
<b>TOTAL</b>	<b>2.328.518</b>	<b>4.876</b>	<b>100%</b>	<b>2.328.964</b>	<b>5.562</b>	<b>100%</b>

Source: Developed by the Authors based on Customs Information

*Costa Rica, Central American Plastic Exports in FOB values and in tonnes, 2013-2014.*

COUNTRY	2013 FOB VALUE US\$	2013 TONNES	2013 %	2014 FOB VALUE US\$	2014 TONNES	2014 %
Guatemala	59.358	149	83%	13.757	40	100
Honduras	100	0	0.0%			0%
El Salvador	0	0	0%	0	0	0%
Nicaragua	12.254	17	17%			0%
Panamá	0	0	0%			0%
<b>TOTAL</b>	<b>71.712</b>	<b>166</b>	<b>100%</b>	<b>13.757</b>	<b>40</b>	<b>100%</b>

Source: Developed by the Authors based on Customs Information

*Costa Rica, Total Plastic Imports in FOB value and in tonnes-2013<sup>41</sup>.*

COUNTRY	2013 FOB VALUE US\$	2013 %	2013 TONNES	2013 %
Costa Rica	156.559	11%	612	14%
Guatemala	43.720	3%	556	12%
Honduras	221.393	15%	358	8%
El Salvador	9.458	1%	28	1%
Nicaragua	147.290	10%	380	8%
Panamá	229.541	16%	1.064	24%
<b>TOTAL</b>	<b>807.961</b>	<b>55%</b>	<b>2.998</b>	<b>67%</b>
<b>GLOBAL TOTAL</b>	<b>1.463.749</b>	<b>100%</b>	<b>4.478</b>	<b>100%</b>

Source: Developed by the Authors based on Customs Information

41 The data for 2014 was not available at the time of writing.



## Metals

*Costa Rica, Global Ferrous Metal (Iron and Steel) Exports in FOB value In tonnes, 2013-2014.*

REGION	2013 FOB VALUE US\$	2013 TONNES	2013 %	2014 FOB VALUE US\$	2014 TONNES	2014 %
Taiwán	17.458.091	893	99.89%	225.330	740	66.56%
Vietnam	-	-	0.00%	41.065	147	12.13%
Asia	17.458.091	893	99.89%	266.395	887	78.69%
South America	-	-	0.00%	-	-	0.00%
United States of America	20.000	100	0.11%	72.134	95	21.31%
North America and the Caribbean	20.000	20.000	0.11%	72.134	95	21.31%
Central America	-	-	0.00%	-	7.207	0.00%
Europe	-	-	0.00%	-	97	0.00%
<b>TOTAL</b>	<b>17.478.091</b>	<b>993</b>	<b>100.00%</b>	<b>338.529</b>	<b>982</b>	<b>100.00%</b>

Exports of Iron and Steel Waste, 7204100000

Source: Developed by the Authors based in Customs Information.

## PANAMÁ

### Paper and Cardboard

*Panamá, Global Paper and Cardboard Exports in FOB valores and tonnesl, 2013*

REGION	COUNTRY	2013 FOB VALUE US\$	2013 %	2013 TONNES	2013 %
Asia	China - Taiwán	156.598	7.8%	2.430	10.2%
	South Korea	32.450	1.6%	400	1.7%
	India	4.100	0.2%	63	0.4%
	Pakistán	5.880	0.3%	17.458.091	0.3%
		<b>199.028</b>	<b>9.9%</b>	<b>2.995</b>	<b>12.5%</b>
South America	Chile	318.085	15.8%	5.234	21.9%
	Colombia	39.062	1.9%	646	2.7%
	Ecuador	1.046.166	52.1%	13.177	55.1%
		<b>1.403.313</b>	<b>69.9%</b>	<b>19.058</b>	<b>79.7%</b>
Central America	Costa Rica	24.710	1.2%	414	1.7%
	El Salvador	380.799	19.0%	1.430	6.0%
		<b>405.509</b>	<b>20.2%</b>	<b>1.845</b>	<b>7.7%</b>
<b>TOTAL</b>		<b>2.007.850</b>	<b>100.0%</b>	<b>23.897</b>	<b>100.0%</b>

Source: Elaborated by the Authors based on information from Statistics from External Trade, <http://www.contraloria.gob.pa/inec/comercioexterior>.

*Panamá, Global Paper and Cardboard Imports in FOB values and in tonnes, 2013.*<sup>42</sup>

REGION	COUNTRY	2013 CIF VALUE US\$	2013 %	2013 TONNES	2013 %
Norte América	Estados Unidos	1.043.216	37%	2.701	25%
	Puerto Rico	122.934	4%	313	3%
		1.166.150	41%	3.014	27%
Central America	Guatemala	1.162.810	41%	6.772	61%
	Honduras	71.842	3%	63	2%
	El Salvador	36.605	1%	968	1%
	Costa Rica	377.717	13%	8.000	9%
		1.648.974	59%	2.995	73%
<b>TOTAL</b>		<b>2.815.124</b>	<b>100%</b>	<b>11.014</b>	<b>100%</b>

Source: Developed by the Authors based on information from Statistics of External Trade, <http://www.contraloria.gob.pa/inec/comercioexterior>.

## Plastics

*Panamá, Global Plastic Exports in FOB values and tonnes, 2013.*

REGION	2013 FOB VALUE US\$	2013 TONNES	2013 %
China (Continental)	64.785	593	12.0%
Hong Kong	67.501	520	12.5%
<b>Asia</b>	<b>132.286</b>	<b>1112</b>	<b>24.5%</b>
Brasil	36.300	88	6.7%
Colombia	4.810	43	0.9%
Ecuador	3.200	40	0.6%
<b>Soutn America</b>	<b>44.310</b>	<b>171</b>	<b>8.2%</b>
United States of America	109.112	379	20.2%
<b>North America and the Caribbean</b>	<b>109.112</b>	<b>379</b>	<b>8.2%</b>
Guatemala	3.100	88	0.6%
Honduras	91.247	0	0.0%
El Salvador	0	0	0.0%
Costa Rica	0	8.000	28.5%
<b>Central America</b>	<b>247.941</b>	<b>1.324</b>	<b>46.0%</b>
Israel	5.502	22	1.0%
<b>TOTAL</b>	<b>539.151</b>	<b>3.008</b>	<b>100.0%</b>

Source: Elaborated by the Authors base don information from Statistics of External Trade, <http://www.contraloria.gob.pa/inec/comercioexterior>.

<sup>42</sup> The data for 2014 was not available at the time of writing.

*Panamá, Global Plastic Imports in FOB values and tonnes, 2013.*

REGION	2013 FOB VALUE US\$	2013 TONNES	2013 %
Asia	0	0	0.00%
South America	0	0	0.00%
United States of America	6.844	16.25	17.00%
North America and the Caribbean	6.844	16.25	17.00%
Costa Rica	33.113	60.00	83.00%
Central America	33.113	60.00	83.00%
Europe	0	0	0.00%
<b>TOTAL</b>	<b>39.957</b>	<b>76.25</b>	<b>100.0%</b>

Source: Elaborated by the Authors base don information from Statistics of External Trade, <http://www.contraloria.gob.pa/inec/comercioexterior>.

## Metals

*Panamá, Central American Ferrous Metal Exports in FOB value and tonnes -2013.<sup>43</sup>*

REGION	2013 FOB VALUE US\$	2013 TONNES	2013 %
China (Continental)	401.643	4.012	0.88%
Corea del Sur	12.001.837	68.946	26.16%
Hong Kong	101.518	572	0.22%
Corea del Sur	10.000	250	0.02%
Pakistán	2.000	40	0.00%
Singapur	72.500	255	0.16%
Thailand	8.372.598	59.527	18.25%
Taiwán	18.366.182	137.129	40.03%
Vietnam	2.601.575	22.647	5.67%
<b>Asia</b>	<b>41.929.853</b>	<b>293.378</b>	<b>91.39%</b>
Ecuador	3.367.441	13.629	7.34%
Venezuela	4.150	9	0.01%
<b>South America</b>	<b>3.371.591</b>	<b>13.638</b>	<b>7.35%</b>
Unites States of America	196.860	300	0.43%
México	83.126	147	0.18%
Dominican Republic	1.080	7	0.00%
<b>North America / Caribbean</b>	<b>281.066</b>	<b>453</b>	<b>0.61%</b>
Guatemala	181.750	2.709	0.40%
<b>Central America</b>	<b>181.750</b>	<b>2.709</b>	<b>0.40%</b>
Belgium	25.500	75	0.06%
Spain	45.996	153	0.10%
Estonia	11.500	46	0.03%
Holland	33.850	122	0.07%
<b>Europe</b>	<b>116.846</b>	<b>396</b>	<b>0.25%</b>
<b>TOTAL</b>	<b>45.881.106</b>	<b>310.574</b>	<b>100.00%</b>

Customs Codes –72041000. 72042100. 72042900. 72043000. 72044900

Source: Developed by the Authors based on external commerce statistics, <http://www.contraloria.gob.pa/inec/comercioexterior>.

<sup>43</sup> The data for 2014 was not available at the time of writing.

*Panamá, Central American Non-Ferrous Metals (Aluminium) Exports in FOB values and tonnes -2013.*<sup>44</sup>

REGION	2013 FOB VALUE US\$	2013 TONNES	2013 %
China (Continental)	7.169.687	5.203	43.02%
South Korea	1.717.771	1.873	10.31%
India	37.758	71	0.23%
Japón	11.994	18	0.07%
Malasia	69.900	200	0.42%
Tailandia	85.000	500	0.51%
Taiwán	670.066	1.699	0.04%
<b>Asia</b>	<b>9.762.176</b>	<b>9.564</b>	<b>58.58%</b>
Brazil	939.415	1.515	5.64%
Ecuador	230.647	240	1.38%
<b>Brazil</b>	<b>1.170.062</b>	<b>1.755</b>	<b>7.02%</b>
United States of America	5.449.162	4.807	32.70%
Jamaica	33.000	60	0.20%
México	23.250	97	0.14%
<b>North America and the Caribbean</b>	<b>5.505.412</b>	<b>4.964</b>	<b>33.03%</b>
<b>Central America</b>	<b>-</b>	<b>-</b>	<b>0.00%</b>
Belgium	11.000	20	0.07%
Slovenia	54.984	30	0.33%
Spain	133.240	308	0.80%
Holland	28.983	28	0.17%
<b>Europe</b>	<b>228.207</b>	<b>385</b>	<b>1.37%</b>
<b>TOTAL</b>	<b>16.665.857</b>	<b>16.668</b>	<b>100.00%</b>

Customs Codes – 76020000

Elaborated by the Authors base don information from Statistics of External Trade, <http://www.contraloria.gob.pa/inec/comercioexterior>.

44 The data for 2014 was not available at the time of writing.

*Panamá, Global Ferrous and Non-Ferrous Imports din FOB values and in tonnes, 2013.*

REGION	2013 FOB VALUE US\$	2013 TONNES	2013 %
<b>Ferrous Metals</b>			
China (Continental)	1.695	0.13	1.06%
Japan	1.350	3.50	0.84%
Asia	3.045	3.63	1.90%
South America	-	-	0.00%
United States of America	113.759	204.58	70.94%
Puerto Rico	5.658	23.22	3.53%
North America and the Caribbean	119.417	227.81	74.47%
Costa Rica	375	0.75	0.23%
Central America	375	0.75	0.23%
Spain	37.526	20.49	0.23%
Europe	228.207	20.49	23.40%
<b>TOTAL</b>	<b>160.363</b>	<b>252.67</b>	<b>100.00%</b>
<b>Non-Ferrous Metals</b>			
Asia	0	0	0.00%
South America	0	0	0.00%
United States of America	10.395	10.17	100.00%
North America and the Caribbean	10.395	10.17	100.00%
Central America	0	0	0.00%
Europe	0	0	0.00%
<b>TOTAL</b>	<b>10.395</b>	<b>10.17</b>	<b>100.00%</b>

Customs Codes – 7204100, 72042100, 72042900, 72043000, 72044900 and 76020000

Elaborated by the Authors base don information from Statistics of External Trade, <http://www.contraloria.gob.pa/inec/comercioexterior>.

45 The data for 2014 was not available at the time of writing.

## NICARAGUA

Nicaragua, Authorised Exports January to December 2013 - 2014

PRODUCTS	January to December 2013		January to December 2014		Variation 2013-2014				Precio Promedio, \$/KG	
	Gross Weight, KG	FOB Value, US\$	Gross Weight, KG	FOB Value, US\$	Gross Weight, KG	%	FOB Value, US\$	%	2013	2014
Non-ferrous	77 273.738.57	21.584.537.64	84.914.969.04	22.496.807.74	7.641.230.47	0.10	912.270.10	0.04	0.28	0.26
Plastic Waste	9.961.527.11	4.220.141.29	12.785.253.31	5.418.337.92	2.823.726.20	0.28	1.198.196.63	0.28	0.42	0.42
Paper Waste	22.298.504.40	4.235.051.67	30.028.340.95	6.064.718.32	7.729.836.55	0.35	1.829.666.65	0.43	0.19	0.20
<b>Total</b>	<b>1.841.783.914.93</b>	<b>2.562.935.704.28</b>	<b>2.008.339.362.09</b>	<b>2.746.032.237.58</b>	<b>166.555.447.16</b>	<b>9.04</b>	<b>183.096.533.30</b>	<b>7.14</b>	<b>1.39</b>	<b>1.37</b>

Source: <http://www.cetrex.gob.ni/website/servicios/tproduc14.html>



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