Consolidated Report of the Pilot Testing on the

Guidance Principles for the Sustainable Management of Secondary Metals

ISO IWA 19:2017

Ghana, South Africa, Peru, Colombia

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Notes to the reader

The Roundtable on Sustainable Recycling Industries (SRI Roundtable) addresses sustainability criteria in secondary resources management in developing countries and emerging economies. The SRI Roundtable convened an International Workshop Agreement (IWA) process to jointly develop with key and affected stakeholders the Guidance Principles for secondary metals, ISO IWA 19:2017. This activity was directed by the Swiss Association for Standardization (SNV) on behalf of the International Standards Organization (ISO) and supervised by the Secretariat of the SRI Roundtable, which is hosted by the World Resources Forum (WRF).

The SRI Roundtable is an initiative of the Sustainable Recycling Industries (SRI) programme (www.sustainable-recycling.org), which has built on the success of implementing e-waste recycling systems with various emerging economies and developing countries for more than ten years. This programme is funded by the Swiss State Secretariat of Economic Affairs (SECO) and is implemented by the Swiss Federal Laboratories for Materials Science and Technology (Empa), the WRF and ecoinvent.

Target audience

This document was written for economic operators involved in the pilot testing, national and local governments, intergovernmental associations, financial institutions and development organizations, standardization/certification initiatives, civil society organizations and educational organisations as well as other interested parties.

Acknowledgements

This report was developed by the SRI Roundtable Secretariat with the support of the WRF, ecoinvent, EMPA and Swiss SECO. The authors of this report wish to thank the entire SRI Roundtable Secretariat for guidance received whenever required throughout the pilot testing phase in 2017, which is captured in this report.

Schweizerische Eidgenossenschaft
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Eidgenössisches Volkswirtschaftsdepartement EVD
Staatssekretariat für Wirtschaft SECO

ecoinvent Centre

Empa
Materials Science and Technology

WORLD RESOURCES FORUM

Content

Acronyms

CSO	Civil Society Organizations
CSR	Corporate Social Responsibility
DC	Developing Countries
EO	Economic operator
EEE	Electrical and Electronic Equipment
Empa	Swiss Federal Laboratories for Materials Science and Technology
EPR	Extended Producer Responsibility
ISO	International Standardization Organization
IWA	International Workshop Agreement
ISO IWA 19	ISO IWA 19:2019 Guidance principles for the sustainable management of secondary metals
LDC	Less Developed Country
IEO	International economic operator
OBA	Official Business Activities
PPE	Personal Protective Equipment
SA	Subsistence Activities
SECO	Swiss State Secretariat of Economic Affairs
SNV	Swiss Associating for Standardisation
SRI	Sustainable Recycling Industries
UBA	Unofficial Business Activities
UN	United Nations
UNU	United Nations University
WEEE	Waste Electrical and Electronic Equipment
WRF	World Resources Forum

Executive summary

A pilot testing for the ISO IWA 19: 2017 *Guidance Principles for the Sustainable Management of Secondary Metals* (henceforth ISO IWA 19) was conducted by Sustainable Recycling Industries (SRI) partners on a small scale. The pilot testing involved economic operators (EOs or henceforth simply 'operators') engaged in official business activities (OBA[1]), unofficial business activities (UBA[2]) and subsistence activities (SA[3]) in Colombia, Ghana, Peru and South Africa and through an international economic operator. The aim of the pilot testing initiative was to assess the feasibility of implementing the ISO IWA 19 for each of the diverse EOs engaged in different activities. Results will be used to inform and serve as input in the revision of the ISO IWA 19 in 2020 according to the ISO review and improvement process. Main results are presented alongside the questions that guided the pilot testing.

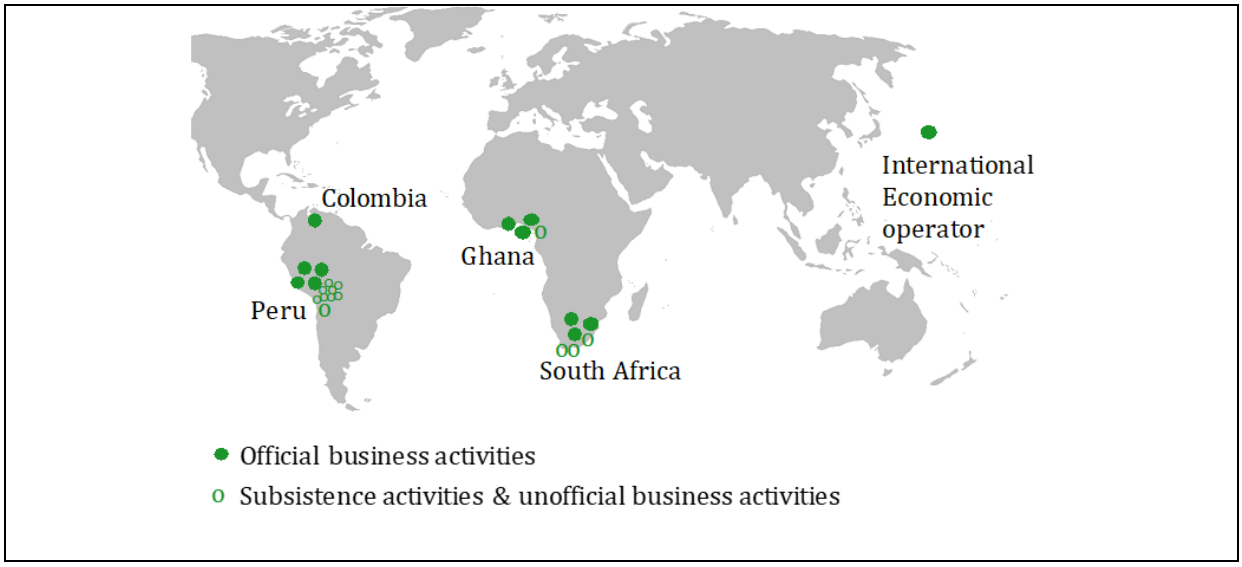

Fig. 1: Participating economic operators in the ISO IWA 19 pilot testing

Findings

Representativeness of the sample. Due to the relatively high number of EOs engaged in OBA participating in the pilot testing (10 in total: four in Peru, two in South Africa, two in Ghana, one in Colombia and one international economic operator), this is considered a representative

[1] According to ISO IWA 19 definition 3.25, OBA are economic activities that are conducted by EO (3.9) constituted as legal entities and are therefore subject to government regulation, taxation and observation.

[2] According to ISO IWA 19 definition 3.40, UBA are activities that are conducted by EO (3.9) not constituted as legal entities, with income above the living wage (3.22) as well as the minimum tax threshold, that purposely desire to bypass national and/or local laws and regulations.

[3] According to ISO IWA 19 definition 3.37, SA are activities that can be found in both the formal and informal sectors (3.20) and are conducted by EO (3.9) (mostly individuals and families) who earn a wage that is barely sufficient to support or maintain themselves and is below the minimum tax threshold required per national laws and regulations to pay taxes.

sample. Subsequently, the findings in this report can apply to other EOs engaged OBA in these countries and other developing regions (e.g., in Latin America and Africa).

Results concerning EOs engaged in SA and UBA in this pilot testing are country-specific, hence, non-generalizable for developing countries as their sample was very heterogeneous (one large association in Ghana, eight individuals in Peru and five informal groups of collectors and processors or large associations in South Africa). The EOs participating in SA/UBA from South Africa and Ghana can be considered representative of their countries and recommendations can serve as input for future national programs.

EO activities from Peru and Ghana were analysed across the local supply chain, from informal collector to formal recycling (including the aggregation, mechanical treatment and refining). In case of Ghana, the metallurgical processing was done abroad.

Legal supporting framework in Colombia, Peru, Ghana and South Africa. Countries with companies participating in the pilot testing (Colombia, Peru, Ghana and South Africa) rely on legal frameworks and normative requirements that support responsible waste recycling. However, except for Colombia, they lack Extended Producer Responsibility (EPR)[4] programs which would allow for a more successful implementation of sustainable recycling along the value chain. Overall, there is weak enforcement of national frameworks and requirements to promote sustainable recycling, which is even weaker outside of capital cities of these countries. The informal sector is, in general, not properly addressed in national nor local regulations and is a regulatory gap requiring urgent action.

Existence of minimum requirements or criteria for informal EO to become formal. In Colombia, Peru, Ghana and South Africa, similar to other emerging economies, there is no official minimum criteria to qualify as formal activities (OBA). For SA, a clearer definition of minimum requirements to be considered formal would support their inclusion in the value chains.

Assessment of levels of 'understanding[5]', 'completeness[6]' and 'acceptability[7]' of the ISO

[4] Extended Producer Responsibility (EPR) is an approach under which producers are given a significant responsibility – financial and/or physical – for the treatment or disposal of post-consumer products (www.oecd.org/env/tools-evaluation/extendedproducerresponsibility.htm).

[5] 'Understanding' is related to the capacity of readers to comprehend the ideas, terms used, messages and guidance in the ISO IWA 19. Readers with some experience with management systems, recycling practices and English fluency, in general, show higher levels of understanding. This also correlates with the level of formal education.

[6] 'Completeness' reflects EO's perception regarding whether the content and guidance provided in the ISO IWA 19 were sufficient for beginning the implementation. If an EO considers that content-wise, the ISO IWA 19 is complete, then the level of understanding will also be high. However, the EO may fully understand what the messages and guidance are, but consider them non-complete and insufficient to start the implementation. the need to decouple the 'completeness' criteria from the 'understanding' criteria became clear.

[7] 'Acceptability' is linked to the relevance the EO perceives the ISO IWA 19 has to their activity. The more relevant or critical an aspect, objective or Principle is to the activities of an EO, the higher the acceptability.

IWA 19, and 'readiness[8]' to implement it.

These four criteria ('completeness', 'understanding', 'acceptability' and 'readiness') were used in assessing each economic operator. Specific findings are included in countries' reports which are not publicly available due to confidentiality concerns. In this report, results were aggregated, resulting in a combined score for all the pilot testers (see Figure 3). A summary of the results and discussion is provided in the following bullets, with more details available in the next chapter.

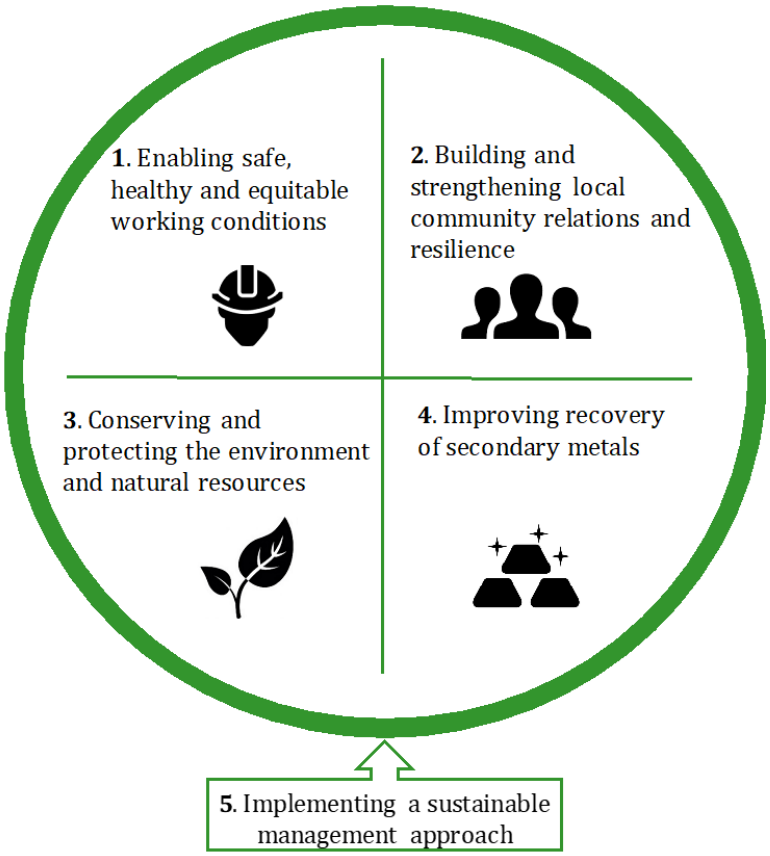

Fig. 2: Five Principles for the Sustainable Management of Secondary Metals

i. **Completeness of areas covered in the ISO IWA 19.** Principle 1 on working conditions and Principle 3 on environmental protection cover concerns relevant to EO engaged in recycling in the various testing localities. However, Principle 4 on improving material recovery, Principle 5 on the management system approach, and traceability requirements (not a Principle) are perceived as sparse in content and require additional tailored guidance. Moreover, Principle 2 on community relations was perceived as oversized and less relevant

[8] 'Readiness' refers to the actual capacity (including technical capacity and the availability of required infrastructure) of the EO to implement the recommendations provided in the ISO IWA 19.

to all actors engaged in recycling, and was even suggested to be minimized or merged with other Principles, such as 1.

ii. **Level of understanding of the ISO IWA 19 among the different EO.** Content-wise, almost all OBA had a full and clear understanding of all sustainability requirements. Some had only very general understanding on the traceability part which is plausible as this is an emerging field. A different scenario was observed in the cases of SA and UBA (or SA/UBA). They could comprehend only three out of five Principles, namely on working environment (Principle 1) and environmental protection (Principle 3) linked to material recovery (Principle 4).

iii. **Acceptability of the Guidance Principles.** In the eyes of OBA, the ISO IWA 19 is highly acceptable except for the part on community relations (Principle 2) which was not viewed as very useful. This high acceptance of most Principles by OBA is possibly because many of them have management systems in place or their implementation in progress. Acceptance by SA/UBA was much lower, mainly because they neither count on resources nor on skills and capacities to implement the ISO IWA 19 requirements. Even the Principle 1 on working conditions improvements, which benefits the EO themselves, seemed to them challenging to meet.

iv. **Readiness to start implementation vs real action.** Most EOs engaged in OBA considered themselves ready to begin implementing the ISO IWA 19 pending upper top management decisions. However, it is worth noting that 'readiness' indicated the capability to immediately commence with implementations, which differs from being ready, but not yet taking action (inaction in this case).

Figure 3a. Readiness in OBA economic operators based on high levels of understanding and acceptability

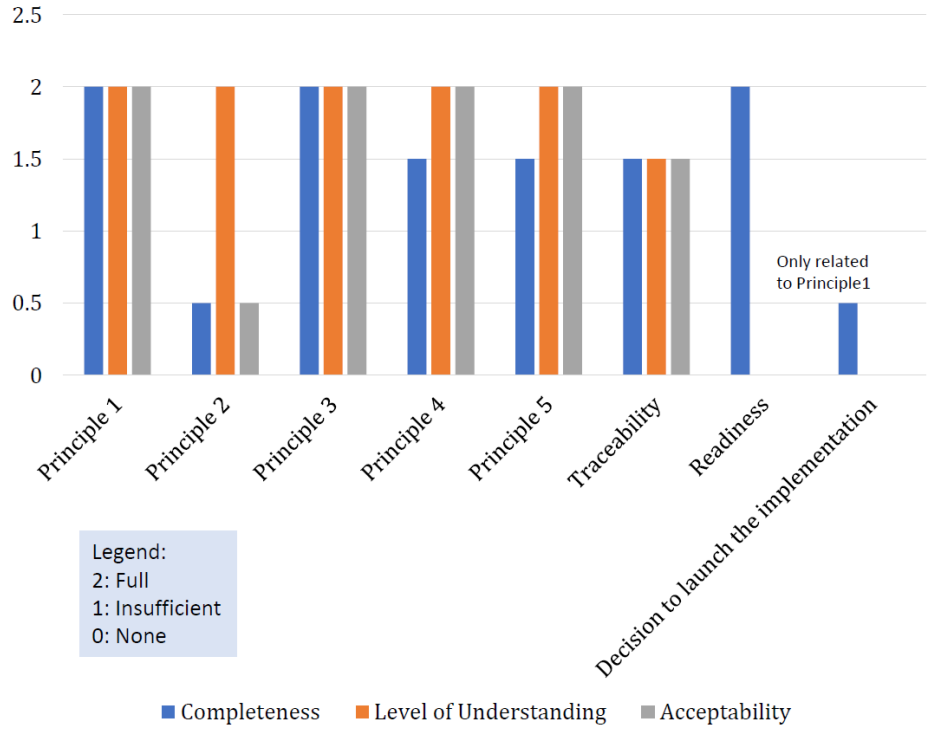

Figure 3b. Readiness in SA/UBA economic operators with low levels of understanding and acceptability

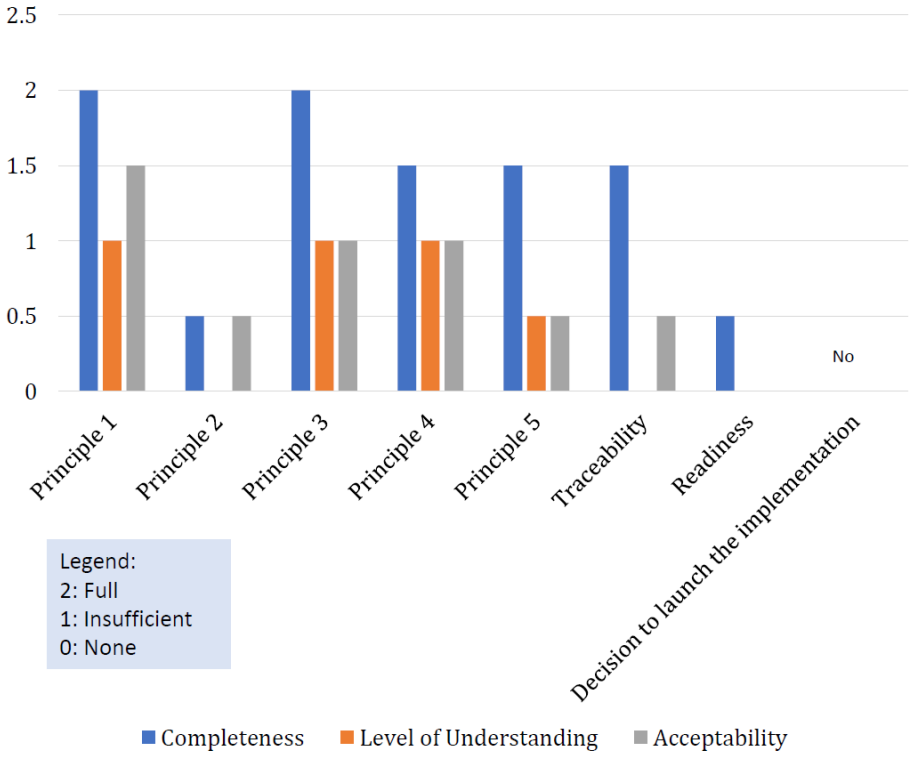

Fig. 3: Readiness and decision to implement as compared to levels of understanding and acceptability

v. **In spite of the high levels of understanding,** acceptability and readiness (see Figure 3), top managers of the OBA concerned do not decide to implement the ISO IWA 19 as they do not clearly see the benefits and/or are concerned about the level of financial and human resources needed. Participating EOs engaged in SA/UBA did not consider themselves ready due to their much lower levels of understanding, acceptability and lack of resources. They are simply not ready. To trigger action, two short-term steps were identified:
   - Intergovernmental and international organizations, industrial associations and/or government officials should develop and disseminate communications on the business case[9] to OBA top managements.
   - Provide EOs engaged in SA/UBA support with awareness raising, basic training and personal protective equipment (PPE). Potential entities that could provide such support include OBA sector, government, civil society organizations (CSO) and any other organisation with the capacity and willingness to support and improve on the status quo for SA/UBA operators.

Willingness of EOs engaged in OBA to support EOs in SA. OBA EOs expressed their willingness to support improving the conditions of UBA/SA (related to Principle 1), but mainly for those they already subcontract to or collaborate with. OBA EOs also highlighted that their support would depend on the availability of financial resources and staff time. Support from OBA EOs concerning improvement on other areas such as on depollution[10] practices (linked to Principles 3 and 4), formalization processes (Principle 5), restoration of damages (Principle 3), and traceability, among other improvements, varied in strength across the principles.

Feasibility of steps and timelines proposed. Timelines proposed for OBA EOs were seen as feasible and reasonable for most of the Principles presented and the suggested steps and milestones were generally perceived to be quite helpful by the majority of interviewed companies. For EOs engaged in SA/UBA, proposed periods for implementation seemed tight, especially if they intended to pursue formalisation of their activities which is very dependent on local contexts and existing legal frameworks. For EOs engaged in SA/UBA, an extension of two to three years of the implementation timeline for any aspect of the ISO IWA 19 principles was suggested.

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[9] In this context, a business case is a compelling explanation and rationale of why the implementation of the ISO IWA 19 is not only necessary but beneficial, why OBA should invest in it, and what action decision-makers must take

[10] In this context, depollution means the removal of hazardous materials and particles from wastes undergoing the recycling process

Coverage of supporting mechanisms. EOs expressed that, overall, the supporting mechanisms proposed were comprehensive and useful. Local and central government offices, trade unions and CSO were seen as key stakeholders to support and promote the implementation, especially for SA. There was agreement that extended producer responsibility (EPR) programs anchored in regulation could be very impactful in promoting of the implementation of the ISO IWA 19.

Recommendations to improve the ISO IWA 19 version

Adjustments below need to be considered by the ISO IWA 19 members in a 2020 revision:

- Revision of the scope by (a) including the value chains of materials, and not just stakeholders' value chains, (b) incorporating re-users upstream, and (c) clarifying the role of middle men.
- Minimum requirements are needed for SA EOs (associations or individuals dedicated to recycling) to be considered formal. Clarification is required on whether partial compliance with regulations is synonymous with informality.
- Revision of Principle 2 on community relations as this was not considered critical (minimization or even merging with Principle 1).
- Elaboration on criteria related to material quality in Principle 4.
- Extending the implementation timeline for all Principles (mostly relevant for Principles 1 and 3) for SA EOs.
- Identify case-by-case and consider additional stakeholders such as local organizations (e.g. Chance for Children in Ghana aiming to prevent child labour) and from the financial sector (e.g. micro-credit lending organizations).

It was also recommended to develop one or more **supplementary technical documents** to provide guidance on the following:

- Setting priorities for implementing the ISO IWA 19, including the traceability scheme
- Remediation linked to Principle 3
- How to improve materials recovery in terms of quality, quantity and efficiencies (Principle 4)
- Handling hazardous materials linked to Principle 4
- Supporting the informal sector (objective 5.3)
- Prevention of corruption and money laundering (objective 5.5)

Recommendations to increase the ISO IWA 19 implementation

The following measures with potentially meaningful impact have been identified:

- **Create and strengthen a "level playing field" for all EOs**: This is fundamental to reach sustainable and robust growth of inclusive recycling activities. Supportive and accountable *central governments* in each country play a key role in this process.
  - Measures may include, e.g., the development of national EPR programs and enforcement of laws and regulations, especially regulations pertaining to waste electrical and electronic equipment (WEEE), but also regulations for any other metal containing waste streams (e.g., packaging, construction and demolition waste). This includes the introduction and enforcement of sanctions and fines when an EO applies worst practices, as well as incentives for EOs for implementing good practices. Incentives may include subsidies, so EOs can invest in further applying good practices or even aspiring to internationally best practice where available.
  - Measures required from *governments* also may include an improved control on sales tax dispensation to avoid fraud, mismanagement and defrauding practices such as money laundering. Also required is support with the formalization of businesses, e.g., simplifying the processing of operating licenses and nationwide communication and awareness raising about the positive contribution of recycling to satisfy growing global resource demand for metals and other critical materials.
- **Develop targeted communication for EOs engaged in OBA and SA/UBA that include the immediate and long-term benefits of implementing the ISO IWA 19**: *Governments, CSO, industrial associations and international cooperation* should further the development of targeted communications for EOs engaged in OBA and SA/UBA. Clear messages with the business case[10] for implementing the ISO IWA 19 should be actively shared with the OBA sector. For SA/UBA EO, an alternative reader-friendly ISO IWA 19 version with visuals is recommended, rather than a text-based version, to enable both illiterate and foreign EOs to grasp the concepts behind the principles.
- **Increase the accessibility of technical and financial resources**: There is an urgent need to allocate more technical and financial resources to help build value chains that include representation from the poorest EO - the subsistence activity (SA) sector. In line with their policies and mandates (and since they have access to international cooperation programmes and earmarked funding for purposes related to sustainable production), *governments, industrial associations, agencies of international cooperation, international organizations and intergovernmental organizations* are called on to articulate and join efforts to enhance the availability of seed-funding and resources needed specifically for the SA sector concerned.
- **Short-term steps and support to facilitate the implementation of the ISO IWA 19:**

For catalysing action towards the implementation of the ISO IWA 19, the following steps are recommended:

• Communication of the business case (specifically on benefits and financial feasibility) for the ISO IWA 19 to top managements in OBA. This could be jointly supported by international organizations and local CSO.

• SA/UBA operators are highly recommended to begin with Principle 1 as it is the best understood and most critical for them. Over time, Principles 3 and 4 should be phased in to allow operators in these sectors to move away from worst practices, and to protect the environment. Simultaneously, EOs engaged in SA/UBA should be provided with awareness raising opportunities, basic training and PPE by OBA operators, government, CSO and any other organisation with the relevant capacity.

- **Long-term steps and support for a sustained, hence, successful implementation**:

  • Utilizing a public-private partnership approach, the development of capacity building programs in primary educational and vocational settings targeting the recycling sector should be developed. This type of intervention would ideally be initiated by central or local governments.

  • OBA operators should adhere to existing or develop new responsible metals sourcing programs to acknowledge EO compliance with the ISO IWA 19.

  • Even if national EPR programs do not yet exist, large international OBA organizations should promote and implement their corporate EPR initiatives in these countries.

  • It is recommended that OBA operators and their suppliers exchange work experiences, finance models and existing contacts of end users of recyclable materials.

Synopsis

1 Introduction

As the disposable income of households in the developed world grows and rates of urbanization increases (with a corresponding change in preferences and lifestyles), the current boom of electronic products consumption is set to continue. The management of end-of-life products continues to present a challenge for municipal authorities and governments all over the world. This includes end-of-life vehicles, metal in packaging waste, metal in construction and demolition waste, e-waste, etc. According to United Nations (UN) estimates, 44.7 million tonnes of e-waste are generated worldwide annually, accounting for about 5% of all municipal solid waste. Even though the ongoing digital revolution has positively impacted the quality of life of much of the world's population, the revolution also created economic activities that require further circular economy[11] management.

The growing challenge of sustainably managing secondary metal recovery, an activity that is undertaken primarily by the informal sector in most developing nations (with over 90% in countries such as India), has resulted in major environmental pollution, negative health impacts on actors in the sector and low-quality recovered products and/or metal fractions which reduces reuse/recycling potential and value. The sector, however, offers great opportunities for reducing youth unemployment and producing positive benefits for tackling a growing "waste" concern while boosting economic growth across the world.

The ISO IWA *Guidance Principles for the Sustainable Management of Secondary Metals* were published in April 2017 under the Sustainable Recycling Industries (SRI) Programme.

The ISO IWA 19 aims to guide economic operators of the secondary metals value chains, including those engaged in the informal sector, in the efficient and credible implementation of improved recycling practices, particularly in emerging and developing economies.

ISO IWA 19 provides a global framework for the sustainable management of secondary metals. This framework includes sustainability and traceability requirements for metals recovered, which are based on five Principles and 17 Objectives.

The ISO IWA 19 can contribute towards improving the practices used by of economic operators. EO can achieve this through the implementation of the ISO IWA 19 principles in their business

[11] Also known as 'circularity', circular economy is an economic system aimed at minimising waste and making the most of resources.

processes to enhance sustainability, traceability and ultimately, profitability, whilst promoting positive environmental stewardship. Its implementation could also promote the formalization of the largely informal nature of the majority of actors in the secondary metal recovery industry.

2 Scope and methodology of the pilot testing

A pilot testing for the ISO IWA 19 was developed on a small scale involving economic operators (EO) engaged in official business activities (OBA[1]), unofficial business activities (UBA[2]) and subsistence activities (SA[3]) in four countries (Colombia, Ghana, Peru and South Africa) and through an international economic operator.

The pilot testing was carried out by partners of Sustainable Recycling Industries (SRI) at each location of the countries involved. The results of the pilot testing will serve as feedback to be considered in the revision of the ISO IWA 19 in 2020 according to the ISO review and improvement process.

The following guiding questions helped to assess the relevance and feasibility of implementing the ISO IWA 19 among the participating EOs:

- Are the Guidance Principles **complete**[4] in terms of the sustainability (see five Principles in Figure 2 and details in Chapter 6 of the ISO IWA 19) and traceability requirements[12] (see details in Chapter 7 of the ISO IWA 19) and are they **reasonable**?
- What is the **level of understanding**[5] for each type of EO (OBA, SA and UBA)?
- Are the **steps** and **timeframe** comprehensive and **acceptable**[6] for an effective and efficient implementation by the concerned economic operators?
- At which stage of **readiness**[7] are the EOs?
- How **motivated** are the EOs to start the implementation?
- Are the OBA willing to lend **support** throughout their value chain?
- What are potential **bottlenecks** and barriers to implementation in the formal and informal sectors?
- Are the **supporting mechanisms** suggested for the concerned parties the right ones?

The pilot testing covered the following:

- Sphere of application
- Sustainability requirements (to help uncover worst practices)
- Traceability requirements

[12] Related to requirements on traceability policy and procedures, responsibilities, product documentation and records for traceability, and product claims

- The presence of compliance assurance systems
- Implementation criteria

Several specifically tailored questions had to be asked and were provided as a questionnaire to the test groups. Supplementary interviews were also conducted in person or via teleconferencing. The questions covered several different aspects, with the aim of testing the feasibility of implementation for each of the diverse EO. This report covers the consolidated findings for each EO that participated in the pilot testing.

3 Findings

The main results are presented alongside the questions that guided the pilot testing.

What can be said about legal framework in Colombia, Peru, Ghana and South Africa?

According to *The Global eWaste Monitor 2017*, emerging countries in Africa, Asia and Latin America have less advanced regulations and legal enforcement than North America and Europe. Also, the role, including the size and impact, of the informal sector is much more relevant in Africa and Latin America, but is not always properly addressed in national programs.

All countries with companies participating in the pilot testing (Colombia, Peru, Ghana and South Africa) rely on legal frameworks and regulations that support responsible waste recycling. However, except for Colombia, they lack Extended Producer Responsibility programs which would allow a more participatory approach towards implementation of sustainable recycling along the value chain. Overall, there is weak enforcement of national frameworks, which is even weaker in non-capital cities of these countries.

The informal sector, in general, is not properly considered in national or local regulations which has been identified as a gap that needs urgent action.

Were the participating EOs representative of their sectors in their country?

Results suggest that, in general, economic operators engaged in OBA from Africa and Latin America share more similarities than EO engaged in SA. SA operators from Ghana and South Africa differ quite substantially from Peruvian SA operators primarily due to differences in the overall socioeconomic and national contexts. Specific results explaining these differences are described below and in Annex 1 of this report.

- **OBA:**

Due to the relatively high number of OBA participating in the pilot testing (10 in total: four in Peru, two in South Africa, two in Ghana, one in Colombia and one international economic operator), this is considered a representative sample. It can be said that the 10 OBA that

participated in the pilot testing represent the voice of their sector in their countries. Subsequently, findings in this report can apply to other OBA in these countries and other developing regions (e.g., in Latin America and Africa).

- **SA/UBA:**

The case of SA and UBA operators engaged in this pilot testing is different as their sample was diverse (one large association in Ghana, eight individuals in Peru and three informal groups of collectors in South Africa). Hence, non-generalizable results for the emerging countries were produced and the results should be assessed country by country.

Participating UBA operators from Ghana and South Africa were chosen due to their representativeness of their sectors in these countries, for example, GASDA in Ghana and the Waste Pickers Association in South Africa. Hence, recommendations from the pilot testing can serve as input for future programs in these countries.

As for the eight individuals from Peru engaged in SA, this number is insignificant compared to the thousands of individuals active in SA in this country. Possibly because of the support provided by local CSO (e.g., Ciudades Saludables in Peru), the eight individuals engaged in SA had a genuine interest in and concern for the ISO IWA 19 topics and could be considered SA operators frontrunners in sustainable recycling in the country.

Due to the large number of well-known OBA operators participating in the pilot testing, where some of the participating OBA operators are considered voices of their sector, the pilot testing based on a representative sample of OBA operators. Therefore, findings described in this report can apply to other OBA operators in the same countries and other developing regions (e.g., in Latin America and Africa). The case of SA operators engaged in this pilot testing is different and their sample was not representative. Hence, non-generalizable results for the emerging economies were produced and they should be assessed country-by-country. Ghanaian and South African participating UBA/SA operators are considered representative EO in their respective countries.

Are there criteria or minimum compliance requirements for informal EOs to become formal EOs in Colombia, Peru, Ghana and South Africa?

In Colombia, Peru, Ghana and South Africa, and in many emerging economies, there is no official minimum criteria for activities to qualify as formal activities (OBA). In practice, the minimum condition or criteria of 'having a tax register and paying taxes' is used in order to assess whether an EO should be considered formal. This delineation is commonly accepted even if the economic operator concerned (OBA) fails to comply with other national laws such as environmental and labour regulations.

For example, an association of collectors partially complying with the laws (e.g. by respecting the collection times and working in authorized areas) but without a tax register is automatically

classified and stigmatized as 'informal activity or UBA operator'. This situation negatively affects this type of EOs as they see their work not recognized and are exposed to mistreatment by the local authorities and purchasers of their materials. While these EOs succeed in selling their products to small OBA operators which supply bigger ones, they are paid lower prices.

In Colombia, Peru, Ghana and South Africa, and in many emerging economies, there is no official minimum criteria to qualify as formal activities (OBA). A clearer definition with minimum requirements for SA operators (associations or individuals dedicated to recycling) to be considered formal EOs will support their inclusion in the value chains.

Are all relevant sustainability and traceability topics covered in the ISO IWA 19? What was missing?

OBA and SA/UBA operators commonly shared the perception that Principle 2 seemed to require the most revising and some suggested to even delete this Principle or merge it with Principle 1.

Specific recommendations on how to improve the ISO IWA 19 document are listed in the 'Recommendations' section. General responses differentiate between OBA and SA/UBA are as follows:

- **OBA:**

From their perspective, OBA operators perceive the ISO IWA 19 to be mostly complete and valuable as pertains to Principle 1 (on working conditions) and Principle 3 (on environmental protection), while Principle 4 (on product quality) and Principle 5 (on supporting the informal sector (objective 5.3) and prevention of corruption and money laundering (objective 5.5)), and traceability require minor revisions or additions.

- **SA/UBA:**

The SA/UBA operators perceive the ISO IWA 19 to be mostly complete for Principles 1, 3 and 4. The traceability aspects were, in general, not well understood nor fully covered during the interviews with SA/UBA operators.

Principle 1 on working conditions and Principle 3 on environmental protection cover concerns relevant to EO engaged in recycling. However, Principles 4 and 5 and the traceability requirements are lacking in content and requiring additional tailored guidance. Moreover, Principle 2 was perceived as less relevant to all actors engaged in recycling and suggestions were given for it to be shortened or combined with other Principles.

What is the level of understanding of the ISO IWA 19 among the different EO?

- **OBA:**

The international economic operator (IEO) and OBA interviewed, with one exception (a small recycler from Peru engaged in OBA), showed an excellent understanding of all Principles

addressing sustainability requirements. The traceability requirements were less evident and only large OBA operators and the IEO demonstrated full comprehension, likely due to their experience with related standards such as R2[13].

While all OBA operators agreed that Principle 2 on community relationships had been clearly articulated in the ISO IWA 19 document, the majority did not see Principle 2 applicable to their contexts and suggested to reduce Principle 2 requirements in a subsequent version.

- **SA/UBA:**

SA and UBA operators confirmed that Principle 1 on occupational safety and health is a priority and viewed as critical and relevant. Thus, Principle 1 is the most widely understood by SA/UBA operators. This contrasts with the results concerning SA/UBA operators' views on other sustainability areas (Principles 2, 3, 4 and 5) and traceability requirements.

SA/UBA operators that participated in the pilot testing have in common their association to, acceptance by, or inclusion in local or central government initiatives[14].

SA/UBA operators that are neither associated with nor included in government initiatives showed general deficiencies in the understanding of the ISO IWA 19 document. A possible reason is the strong correlation between their association with local governments and the EOs socioeconomic, education and literacy levels.

SA/UBA operators associated with or included in government initiatives showed the greatest understanding of Principle 2 (community relations) and Principle 3 (environmental protection). However, they did not fully comprehend the content and purpose of Principles 4 (enhancing recovery) and 5 (management system) as well as traceability requirements.

Content-wise, almost all OBA operators had a full and clear understanding of the sustainability requirements and less understanding of the traceability component which is an emerging area. A different scenario was observed in the case of SA/UBA operators who could best grasp two out of five Principles: the ones on working environment (Principle 1) and environmental protection (Principle 3).

Are the Guidance Principles acceptable?

- **OBA:**

As mentioned before, the OBA operators interviewed are characterized by being the most advanced in their countries and by being compliant with the laws. Almost all have some type of management system implemented (ISO 14001, 9001 and/or 45001) and some are also engaged

[13] Responsible Recycling (R2) standard: https://www.nqa.com/en-ca/certification/standards/responsible-recycling

[14] One of the core motivators for SA operators to join an association is to have a representative voice that, while not (yet) supported by government programmes, is at least a form of acceptance of their sector and the stakeholder it represents.

in voluntary sustainability-related activities. Several, in response to customers' demands, are going further by implementing e-waste management systems that incorporate traceability elements such as R2. This explains the high acceptance and approval levels by OBA operators of the ISO IWA 19 requirements, except for Principle 2 which, as explained earlier, was not viewed as critical.

For OBA operators interviewed, the most common and strongest driver to implement the ISO IWA 19 requirements was reducing the risk of penalization for non-compliance with legislation.

- **SA/UBA:**

A limited understanding of ISO IWA 19 directly influences motivation to implement sustainable recycling measures. This was clearly proven in the case of the SA and UBA operators interviewed because, after explaining the scope and content of the sustainability and traceability requirements in plain language, most EO expressed high motivation to begin the implementation. Apart from improvements related to working conditions and natural environments, other motivators were linked to the increasing pressure from government and other EOs. To this effect, ISO IWA 19 could help SA/UBA operators accelerate and optimize their processes towards compliance with laws and clients' requirements.

- **OBA, SA and UBA:**

High motivation did not necessarily translate into acceptance of the ISO IWA 19 requirements that are perceived as unfeasible due to insufficient resources and/or lack of support.

For awareness raising and communication purposes, and to acceptance of the ISO IWA 19, which is directly linked to improved understanding, international agencies for cooperation, intergovernmental organizations, industrial associations and CSO are strongly advised to develop:

- The business case with clearer immediate and long-term benefits
- A reader-friendly alternative version for SA and UBA with visuals that can be utilized by illiterate individuals or individuals that do not speak the official language(s) of their country

In the eyes of OBA operators, the ISO IWA 19 is highly acceptable except for the recommendations associated with community relations (Principle 2) which were not viewed as useful. This high acceptance by OBA operators may be because they already have related systems in place or are developing them. Acceptance by SA/UBA operators was much lower, primarily because they do not rely on resources nor capacities for implementing the ambitious requirements of the ISO IWA 19. Even the highly beneficial aspects on working conditions improvements (Principle 1) seemed to SA/UBA operators a high bar to meet.

Are the economic operators ready to start implementation?

- **OBA:**

Without exception, the OBA operators interviewed declared themselves ready to implement the ISO IWA 19. Furthermore, they considered themselves halfway towards the implementation of the ISO IWA 19 requirements, excluding areas on improving the recovery of secondary metals and traceability schemes. However, it is worth noting that 'willingness' and 'readiness' express intention which may differ from the action (or inaction) that may result. This is confirmed by OBA operators interviewees who were hesitant to confirm that top management would approve full implementation of the ISO IWA 19 since their companies were already compliant with national and local laws. Hence, the ISO IWA 19 implementation would not be a priority for OBA operators.

- **SA/UBA:**

SA/UBA operators expressed significantly less engagement and availability. Some even doubted if it was possible to implement the ISO IWA 19 in their environment.

Most OBA operators considered themselves ready to kick-off the ISO IWA 19 implementation pending the top management buy-in. Top management buy-in is an issue as it is not clear to them the implementation benefits and resources needed for this effort. Participating SA/UBA operators did not consider themselves ready. For triggering action towards the implementation, two main steps were identified in the short term:

- *Promoters of the ISO IWA 19 should communicate the business case for implementation to top management in OBA.*
- *Support should be provided alongside awareness raising, basic training and PPE to SA/UBA operators by OBA operators, government, CSO and any other organisation with the capacity to do so.*

How willing are OBA operators to support improving SA operators processes?

The willingness of OBA operators to provide support to SA operators varied in strength across the principles. Except for one South African company, they were all willing to help with improving working conditions (Principle 1). Some even considered to support reducing environmental pollution (Principle 3) as well as moving away from worst practices and improving the quality of materials recovered (Principle 4). In general, support offered did not include economic resources. In cases where child labour exists in cases where SA operators are looking to formalize their activities, OBA operators expressed that external support is needed.

It is remarkable that one OBA operator in Ghana was willing to lend the most support. This OBA operator can truly be considered an industry leader, not only for its extremely high mastery of the Guidance Principles, but also because they are reaching out beyond their work and facilities to offer tangible support to those in need. This OBA operator in Ghana understands that looking beyond one's own systemic boundaries is good for business, the environment and the community.

OBA operators expressed their willingness to support improving the conditions of their workers and suppliers also engaged in SA (Principle 1). However, this would be limited by OBA operators' financial resources and staff time availability. Support from OBA operators concerning the improvement in other areas varied in strength across the principles.

Are the steps and timelines proposed reasonable?

- **OBA:**

OBA operators considered the steps suggested in ISO IWA 19 as complete and very useful, especially for monitoring compliance with laws and voluntary requirements linked to management systems. On several occasions, it was mentioned that the step in the ISO IWA 19 could be used as a compliance checklist in verification processes. Regarding the deadlines suggested in the ISO IWA 19, except the OBA operators of Peru agreed with the timeline and considered it reasonable. This is explained by the fact that most OBA operators already have complementary or related management systems implemented or are in the process of implementing such systems, making it easier to complete the implementation of the ISO IWA 19. The reason for the different reaction of Peruvian OBA operators might be due to the less advanced stage of their management system implementation.

- **SA/UBA:**

The situation of the participating SA and OBA operators is very different. They perceived that the deadlines are very short and suggested an extension of two to three more years, making the total seven to eight years to cover formalization of their activities. This is consistent with their reactions to other questions and the hesitation also shared by OBA operators concerning the feasibility of implementing the ISO IWA 19 in SA and UBA contexts. As expressed earlier, reader-friendly versions of the ISO IWA 19 with targeted guidance for SA and UBA operators would be helpful.

Timelines proposed for OBA were perceived by the majority of OBA operators as feasible and reasonable, and the steps very helpful. For SA/UBA, proposed periods for implementation seemed tight, especially if pursuing with the formalisation process, which is very much dependent on local contexts and existing legal frameworks. More elaborated guidance on how to implement ISO IWA 19 in SA/UBA contexts with extended timelines (two to three additional years) was suggested.

What about the coverage of the proposed supporting mechanisms proposed? Any additional supporting mechanisms requested by the EO?

The following additional supporting mechanisms were highlighted or have to be further developed in the ISO IWA 19 for each stakeholder group:

- Governments: enforcement of laws and regulations, especially regarding waste electrical and electronic equipment (WEEE). Moreover, supervision, sanctions and fines, improved tax control (e.g., general sales tax), support with formalization (e.g., simplifying reception of operating licenses), training, awareness raising, promotion, incentives for EO (e.g., subsidies), aid money and disseminating information on these topics
- NGOs: training and awareness raising, especially on good practices, security and formalization, and also on auditing and traceability
- Trade unions: training, facilitation of the implementation
- Industrial associations and companies: training, EPR regulations and sharing of best practices.

Regarding the implementation of traceability-related steps, OBA operators suggest sharing costs amongst the value chain actors. Data about end-users for recyclable materials would be helpful.

- International aid: training, financial and technical support

Participating EO expressed that, overall, the proposed mechanisms were comprehensive and useful. Local and central government offices, trade unions and CSO were identified as key stakeholders that can support and promote the implementation, especially in SA. There was overall agreement that national ***extended producer responsibility (EPR)*** *programs could be very impactful in promoting the implementation of the ISO IWA 19.*

Which obstacles and challenges will the EO likely encounter with the implementation of the ISO IWA 19?

The main critical obstacle identified by OBA operators is the lack of technical capacity within companies to implement the ISO IWA 19, which is accentuated in their suppliers.

Other obstacles, at more strategic levels, were also discussed which suggests a lack of understanding of immediate and long-term benefits of the application of the ISO IWA 19. The obstacles discussed also demonstrated the lack of understanding surrounding financial or material resources required for implementation, and costs that would be incurred. There is also the misconception that implementing the ISO IWA 19 can negatively impact competitiveness. However, it is predicted that implementing the ISO IWA 19 will positively impact competitiveness. Hence, it is crucial to improve communication with decision-makers in the value chain surrounding these concerns.

In summary, there is the will to implement but doubts on 'what for' and 'how cumbersome' this initiative could be. Hence, there is a call for support to clarify misconceptions by OBA operators and strengthen capacities of their suppliers engaged in SA/UBA to facilitate their inclusion.

Specific obstacles or challenges identified by EOs engaged in OBA and SA/UBA to adopt the Guidance Principles can be categorized as follows:

OBA

- Limited resources (financial, time and staff) for an activity that is not viewed as a priority by top management
- Lack of guidance on setting priorities for implementation
- Insufficient enforcement of the regulations
- Regulation gaps by not properly addressing the inclusion of the informal sector
- Uncertainty of economic benefits that is demonstrated in part by fluctuating metal prices

SA / UBA

- Cumbersome formalization process and lack of recognition by and support from the local government during formalization
- Underdeveloped awareness and, hence, a lack of understanding of immediate benefits
- Lack of capacity. Many workers engaged in SA are illiterate and have limited or no access to training and education. In many cases, there are language and cultural barriers
- The ISO IWA 19 is considered a high bar to meet
- Lack of resources for PPE

4 Recommendations

4.1 Recommendations to improve the ISO IWA 19 in the 2020 revision

Adjustments proposed below need to be considered by the ISO IWA 19 members in the 2020 revision of the ISO IWA 19:

- Scope needs to be further elaborated by (a) including possible materials' value chains, and not just stakeholders' value chains, (b) adding re-users as upstream and (c) clarifying the role of middle men.
- Minimum requirements are needed for SA (associations or individuals dedicated to recycling) to be considered formal or OBA. Clarification on whether partial compliance is synonymous with informality in needed.
- Revision (merging with Principle 1, minimization or even deletion) of Principle 2 on community relations as this Principle was not considered critical.
- Adding or enhancing criteria related to improving material quality and quantity in Principle 4
- Timeline extension for the implementation, especially for SA operators.

• Additional stakeholders should be included, such as financial sector representatives and specific local representatives (to be identified on a case-by-case basis).

It was also recommended to develop one or more **supplementary technical documents** that contain additional guidance on:

- Setting priorities for implementing the ISO IWA 19, including the traceability scheme
- Remediation linked to Principle 3
- How to improve recovery (in quality and quantity of materials) and efficiencies related to Principle 4
- Handling hazardous materials linked to Principle 4
- Supporting the informal sector (objective 5.3)
- Prevention of corruption and money laundering (objective 5.5)

4.2 Recommendations for assisting EO to implement the ISO IWA 19

Based on the results previously presented and direct feedback received from participants of the pilot testing, the following measures with potential meaningful impacts have been identified:

- **Create and strengthen a level playing field**: Creating and strengthening a level playing field for all EO is fundamental to achieving sustainable and robust growth of inclusive recycling activities. *Central governments* in each country play a key role in this process, and measures may include, e.g., the development of national extended producer responsibility (EPR) programs and enforcement of laws and regulations, especially as it pertains to waste electrical and electronic equipment (WEEE). Enforcement includes sanctions and fines when EOs apply worst practices as well as incentives for EO such as subsidies. Measures also include improved control of sales tax to avoid money laundering, support with formalization such as simplifying reception of operating licenses and nationwide communication on the positive contribution of recycling. These tasks can also fall under the jurisdiction of local governments.
- **Develop targeted communications for OBA and SA/UBA operators including immediate and long-term benefits of implementing the ISO IWA 19 to increase their acceptability**: *Governments, CSO, industrial associations and international cooperation* organizations should articulate the development of targeted communications. OBA operators should be able to understand the business case and benefits of implementing the ISO IWA 19. In the case of SA/UBA operators, a reader-friendly alternative version with visuals is recommended.
- **Increase the accessibility of technical and financial resources**: There is an urgent need to allocate more technical and financial resources to help value chains with the

poorest EO – the ones engaged in subsistence activities. It is recommended that *governments, industrial associations, agencies of international cooperation, international organizations and intergovernmental organizations* join and/or articulate efforts to enhance the availability of resources needed within the local value chains concerned, since these entities have access to international cooperation programmes and earmarked funding for purposes related to sustainable production,

- **Short-term steps and support to facilitate the implementation of the ISO IWA 19:**
  For triggering action towards the implementation, the following steps are recommended:
  • Communication of the business case to top managements in OBA (see previous recommendation).
  • SA/UBA operators should begin with Principle 1 as it is the best understood and most critical for them. Over time, Principles 3 and 4 would be added to allow SA/UBA operators to move away from worst practices while protecting the environment. Simultaneously, SA/UBA operators should be provided with awareness raising, basic training and PPE by OBA operators, government, CSO and any other organisation with the capacity to do so.
- **Long-term steps and support to ensure a sustained, and hence, successful implementation**:
  • Following a public-private partnership approach, it is recommended to develop capacity building programs in primary educational and vocational settings targeting this sector. This is to be initiated by the central or local government.
  • OBA operators should adhere to existing or develop a new responsible sourcing program.
  • If national EPR programs do not yet exist, OBA operators should adhere to existing voluntary EPR initiatives.
  • It is recommended that OBA operators and their exchange experiences, data about end-users for recyclable materials and, whenever feasible, implementation costs.

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Annex 1: Extended report

1. Introduction

As the incomes of citizens of developing nations grow and as the rates of urbanization increase with a corresponding change in tastes and lifestyles, the boom in consumption of electronic products is set to continue. The management of end-of-life products continues to present a challenge for municipal authorities and governments. According to United Nations (UN) estimates, between 20 to 50 million tonnes of e-waste are generated worldwide annually, accounting for about 5% of all municipal solid waste. Even though the ongoing digital revolution has had a positive significant impact on the quality of life amongst a greater percentage of the world's population, it also presents an economic activity that requires further circular management paradigms.

The growing challenge of sustainably managing secondary metal recovery, an activity that is undertaken mainly by the informal sector in most developing nations (e.g. more than 90% of informal sector involvement in the metal recovery in countries like India), has resulted in considerable environmental pollution, negative health impacts on actors in the sector and low-quality recovered products which reduces its uses and value. The sector however offers great opportunities for reducing youth unemployment, producing positive benefits for tackling a growing "waste" concern whilst boosting economic growth across the developing nations.

The *Guidance Principles for the Sustainable Management of Secondary Metals* by the Sustainable Recycling Industries (SRI) Programme aim to support and promote a basis or guide for compliance by economic operators, thus contributing to a reduction in negative impacts and improving the perception of the secondary metal recovery business around the world and especially for the industry in developing nations.

These Guidance Principles could improve practices of economic operators through the implementation of such principles in their business processes to enhance sustainability, traceability and, ultimately, profitability whilst promoting positive environmental stewardship. Its implementation could also promote the formalization of the largely informal nature of majority of actors in the secondary metal recovery industry.

1.1 Aim and background

In April 2017, the *Guidance Principles for the Sustainable Management of Secondary Metals* were published as an ISO International Workshop Agreement (ISO IWA 19) in the context of the Sustainable Recycling Industries (SRI) program. To promote the ISO IWA 19 implementation and evaluate its feasibility, applicability, suitability, completeness, and acceptance among economic operators (EO), a pilot testing was conducted by SRI in four participating countries (Colombia, Ghana, Peru and South Africa) and one international economic operator (IEO) between June and December 2017. More specifically, the pilot testing aimed to check whether or not an efficient and credible implementation of the sustainability and traceability requirements, and of the steps and timeframe were realistic. It also aimed to analyse possible challenges in the informal sector and if the supporting mechanisms provided viable solutions.

Information was gathered through on-site visits and teleconferencing.

1.2 Defining the scope

The ISO IWA 19 were examined to evaluate their feasibility, applicability, suitability, completeness and acceptance among EO, and to assess their readiness to apply the ISO IWA 19 for sustainable management of secondary metals in real operational environments. The pilot testing in each country is a practicality check with the aim to analyse:

- if the framework based on **five Guidance** P**rinciples** and **17 Objectives** covers the most relevant issues and provides useful guidance to address them
- if the steps and time frame are comprehensive and appropriate for an effective and efficient implementation by the concerned economic operators
- if the proposed traceability scheme to demonstrates that recovered metals comply with the Guidance Principles can be successfully implemented
- identify potential bottlenecks and barriers in the informal sector
- identify and evaluate supporting mechanisms for the concerned parties

It should be noted that the testing:

- was not an exercise to test the compliance level of economic operators with the ISO IWA 19
- was not aiming at checking the maturity of organizations to implement the Guidance Principles
- is a step prior to the actual implementation of the ISO IWA 19
- the EOs tested with these Guidance Principles represented different process points in the secondary metal recovery value chain and are largely complementary

The scope of the pilot testing as mentioned above was clearly communicated to the economic operators within whose operations these principles were tested. This included: (i) processes of the value chains tested; (ii) selection of economic operators; (iii) geographical scope; (iv) requirements of the Guidance Principles tested; (v) stakeholders considered for potential supporting mechanisms.

Each case focused on a different stakeholder (e.g. industry, government, civil society organizations (CSO), etc.) with the aim of showing various perspectives over different parts of its value chain.

1.3 Methodology and field testing

To ensure access to relevant information about the EO, roles, relevance and potential level of contribution to achieve the goals of the pilot testing, desk research was undertaken with a focus on the primary challenges of the secondary metal management sector in each country.

Further background studies on the selected EOs were based on prior business profiling undertaken by SRI on assessment on the selected actors.

One-on-one interviews were conducted with focal persons in the formal sector of EO. The interviews conducted with the informal sector operator were with the leaders, as a group, to accommodate the existing practice in their setup. The interview durations varied from a single visit to multiple visits to accommodate the peculiar operational needs of the EOs and their availability.

Observation of the processes and operations of the EOs were an integral part of the test procedure. Questionnaires and checklists addressing the Guidance Principles were developed for the test case candidates which can be found in Annex 2.

2. Findings

2.1 Legal framework in emerging economies

Sustainable and inclusive recycling is the goal promoted by the ISO IWA 19. However, the legal framework is by no means uniform because it spans two continents and four countries, making a systematic status assessment and implementation a challenge. The countries with the pilot testing EOs (Ghana, South Africa, Peru and Colombia) are subject to diverse legal landscapes and levels of corporate compliance.

2.1.1 Highlights

According to *The Global eWaste Monitor 2017*[15], Africa, the Americas (with SRI's focus on Latin America) and Europe have extremely divergent disposal, recycling and recovery rates, standards, formal vs. informal sectors and best & worst practices. According to a study conducted in 2016 by the United Nations University (UNU), the following scenarios were uncovered:

Africa: Most African countries are currently developing various models of EPR schemes as part of their solution to the e-waste problem.

Latin America: The main challenge with sustainable e-waste management in Latin America is the acceleration of the whole all legislation processes. For the few countries that already have e-waste laws in effect, this is necessary to speed up their implementation.

2.1.2 Ghana

In Ghana, the ISO IWA 19 goals are mostly supported through the ACT 917, Hazardous and Electronic Waste Control and Management Act, ratified in 2016 and the Hazardous, Electronic and other Wastes (Classification), Control and Management Regulations (LI 2250) and Technical Guidelines on Environmentally Sound E-Waste Management in Ghana. These mechanisms promote and enforce strategies for the sustainable management of EEE, WEEE and hazardous waste. This also includes the establishment of a levy and a fund for the management of WEEE.

2.1.3 South Africa

Section 28(1) of the National Environmental Management: The Waste Act of 2008 introduces the Extended Producer Responsibility (EPR) measures by calling for the submission of the Industrial Waste Management Plan to the Department of Environmental Affairs. Ministerial approval

[15] Found on https://www.itu.int/en/ITU-D/Climate-Change/Documents/GEM%202017/GEM%202017-E.pdf

requires needed mechanisms for sustainable management of WEEE and inclusive recycling within the informal sector. Current regulations affecting the scrap and recycled metal trade in South Africa include the Second-Hand Goods Act (2009) and the Pricing Preference System (PPS). These can be considered as both opportunities (better traceability through better data capturing and containment of value fraction within South Africa) as well as challenges (administrative burdens and limited global trade participation) for the sustainable and inclusive recycling goals set up by the ISO IWA 19. The overall legal framework renders the implementation of the ISO IWA 19 as the grading framework of the EOs and measurement of progress possible. However, more would be needed in the direction of Extended Producer Responsibility programs and take-back systems for e-waste and other types of waste containing metals. Also, it needs to be made possible for the EPR newly obligated industry sectors to manage the funds generated through the EPR scheme themselves rather than being forced to subscribe to a government managed tax model.

2.1.4 Peru

In Peru, the ISO IWA 19 goals are partially supported through the Decreto Supremo N° 001-2012-MINAM issued in 2012 (Reglamento Nacional para la Gestión y Manejo de los Residuos Eléctricos y Electrónicos) which promotes and enforces needed mechanisms for the sustainable management of WEEE. This is progress in the right direction, however, more needs to be developed in order to realize inclusive recycling and cover other types of wastes that contain valuable metals. This also includes a national awareness raising program for all citizens (consumers and producers of waste) for proper consumption, and segregation and disposal of waste as well as extended producer responsibility regulations (EPR).

2.1.5 Colombia

In Colombia, the ISO IWA 19 goals are partially supported through the Ley Nº 1672 issued in 2013 (Ley sobre la Gestión Integral de Residuos de Aparatos Eléctricos y Electrónicos) which promotes and enforces needed mechanisms for the sustainable management of WEEE. This is progress in the right direction, however, more needs to be developed in order to realize inclusive recycling (by including the formal sector) and cover other types of wastes that contain valuable metals (e.g. end-of-life vehicles, industrial wastes containing metals, etc.). This also includes a national awareness raising program for all citizens (consumers and producers of waste) for proper consumption, and segregation and disposal of waste.

2.2 Minimum compliance requirements to be considered a "formal" OBA

The level of corporate compliance can vary significantly. Often this is a matter of market pressure and available resources. **Legal compliance** on a global scale is difficult to match between global business partners. However, this can be an economic driver for (smaller) companies that wish to do business with other corporation that adhere to stricter legal guidelines and is the basis for a level playing field.

Voluntary compliance measures (such as ISO IWA 19) can be an incentive to "beat the competition" and strengthen their image with respect to corporate and social responsibility (CSR). This, too, provides many benefits such as gaining and retaining the best possible talents.

However, this type of compliance can come with a downside and is often perceived as "greenwashing" and profit maximization. This requires a great awareness about the challenges of CSR and the capacity to avoid it.

The EOs that were part of the testing phase were highly diverse in terms of size, materials treated, processes covered, technologies used, and engagement or not with micro-recyclers. This heterogeneity sets the scene for the insightful results presented further on in this document.

2.2.1 Highlights

The economic operators assessed in the countries Ghana, South Africa, Peru and Colombia have varying states of legality in operational activities. This is due to the level of development (institutional, economic, social, environmental and political) within the country as well as the need to understand what the minimum requirements for compliance are. This state of development is linked to the (unclear) definition and therefore, status of formal vs. informal operation. There are many questions that still need answering (the list is not exhaustive.):

- Is partial compliance already a qualification criterion for formal operation?
- Can this "label" be determined by self-assessment?
- Who is responsible for assessing the level of formality?
- What consequences can self-declared formal operators await if their "formality" is revoked?

Using Peru as a "model country", we observed in several cases that it was not clear if recyclers registered at their national internal revenue office and were paying taxes but not observing key legal labour and environmental-related requirements to be considered OBA or UBA. This is often the case of small recyclers, who define themselves as OBA.

Therefore, the ISO IWA 19 definition of OBA needs to provide more guidance on what the minimum compliance requirements are for being OBA, henceforth, a formal EO. It would be also be helpful in clarifying whether partial incompliance is a synonym of informality.

2.3 Are the economic operators representative of their country?

The table below summarizes the fact that the pilot testing EOs were categorized as representative of their country or not.

Table 1 – Are the economic operators interviewed representative of their country?

	Ghana	South Africa	Peru	Colombia	IEO
OBA	yes	yes	yes	no*	yes
UBA	yes	yes	no	No data	Not applicable
SA	yes	yes	no	No data	Not applicable

***** Participating EO is *frontrunner* in CSR.

2.3.1 Highlights

Due to the relatively high number of OBA participating in the pilot testing (11 in total: 4 in Peru, 3 in South Africa, 2 in Ghana and 1 in Colombia and 1 international economic operator), this is considered a representative sample. Subsequently, findings in this report can apply to other OBA in these countries and other developing regions (e.g. Latin America and Africa). The case of SA and UBA engaged in this pilot testing is different as their sample was diverse (1 large association in Ghana, 8 individuals in Peru, 3 informal groups of collectors in South Africa), hence, non-generalizable results were produced and they should be assessed case by case. Only two local value chains of informal collector and aggregator – formal mechanical treatment and refinery were analysed. One value chain was analysed in Peru and another one in Ghana.

2.4 Guidance Principles covered for sustainability and traceability

The Guidance Principles cover five main principles with 17 Objectives for assuring sustainability over the value chain of economic operations as well as traceability requirements. Some data gaps are apparent due to either the information was non-existent, or the EOs felt the survey/interview

questions were irrelevant or had no impact on their daily business, henceforth they did not answer these questions. In those cases, the value = zero (0).

The five Guidance Principles and traceability requirements were analysed according to several categories that reflect a transformative process moving from mere comprehension of the ISO IWA 19 to active implementation: Level of understanding, Completeness, Acceptability, motivation and timelines, Readiness to start implementation, OBA providing support for SA and UBA. Also included are the identification of bottlenecks as well as challenges to be mastered.

2.4.1 Highlights

The five Guidance Principles were all covered during the interviews; however, the 17 underlying Objectives could not be fully addressed or evaluated due to certain constraints. Varied levels of comprehension or relevance hampered a complete testing of the Objectives.

A classification shows that we have three categories to summarize the improvements for completeness of the ISO IWA 19 in future revisions.

1. General
    - Provide a reader-friendly alternative for SA and UBA
    - Legislation can be facilitated through the adoption of the ISO IWA 19 as a national ISO document
    - Definitions need better clarification
2. Draw up clear benefits for the economic operators. Create a deeper link to their business case.
3. Improvements to the Guidance Principles were mentioned severalfold:
    - Scope needs to be further investigated
    - Specific amendments to Principles 2, 4 and 5
    - Timeline adjustments
    - Handling hazardous materials
    - How to implement the ISO IWA 19

Note: The phases to monitor, re-evaluate and improve were not discussed as part of this pilot testing.

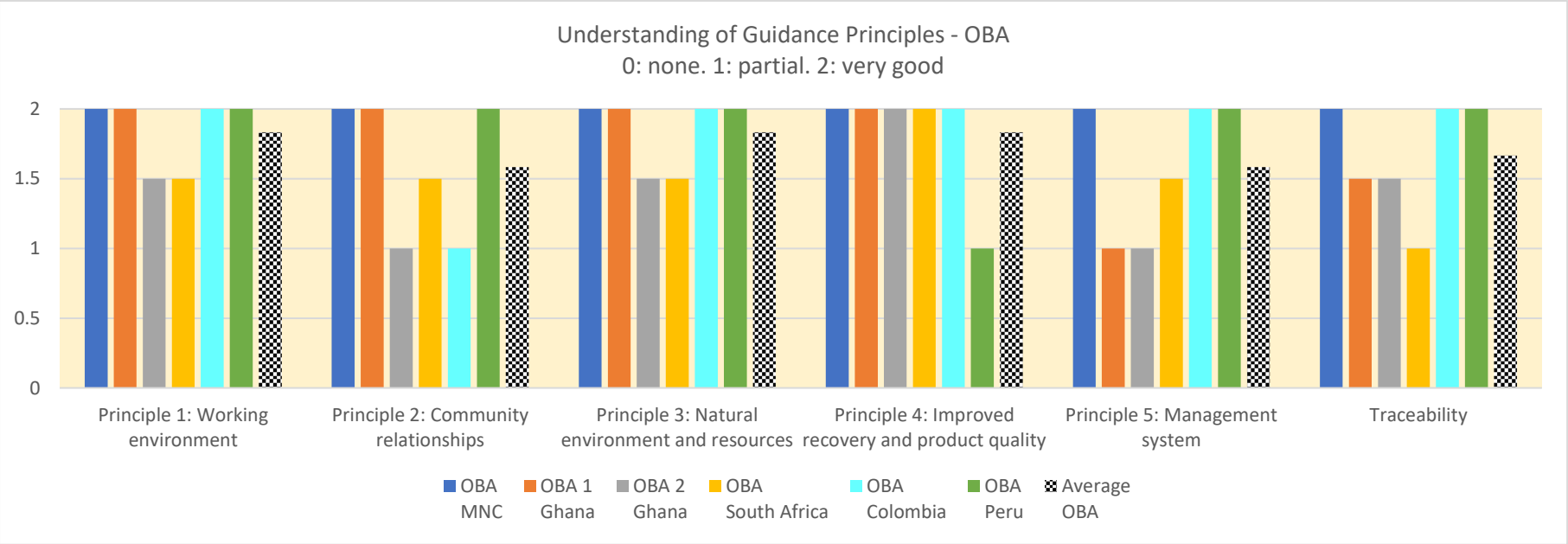
The next sections highlight the overall scores and the averages for OBA and SA/UBA. The tables are separate for ease of reading. The top three scores in each category and by OBA, UBA and SA are highlighted in green.

2.5 Level of understanding

The EOs checked their level of comprehension of the five Principles. Are the concepts easy to grasp? What do the five Principles and 17 Objectives mean for their daily operations? Are they important and relevant? Can they identify knowledge gaps?

2.5.1 Metrics

Note: If no data is available or zero (0) was entered in the field, then the value = 0.



Note: If no data is available or zero (0) was entered in the field, then the value = 0.

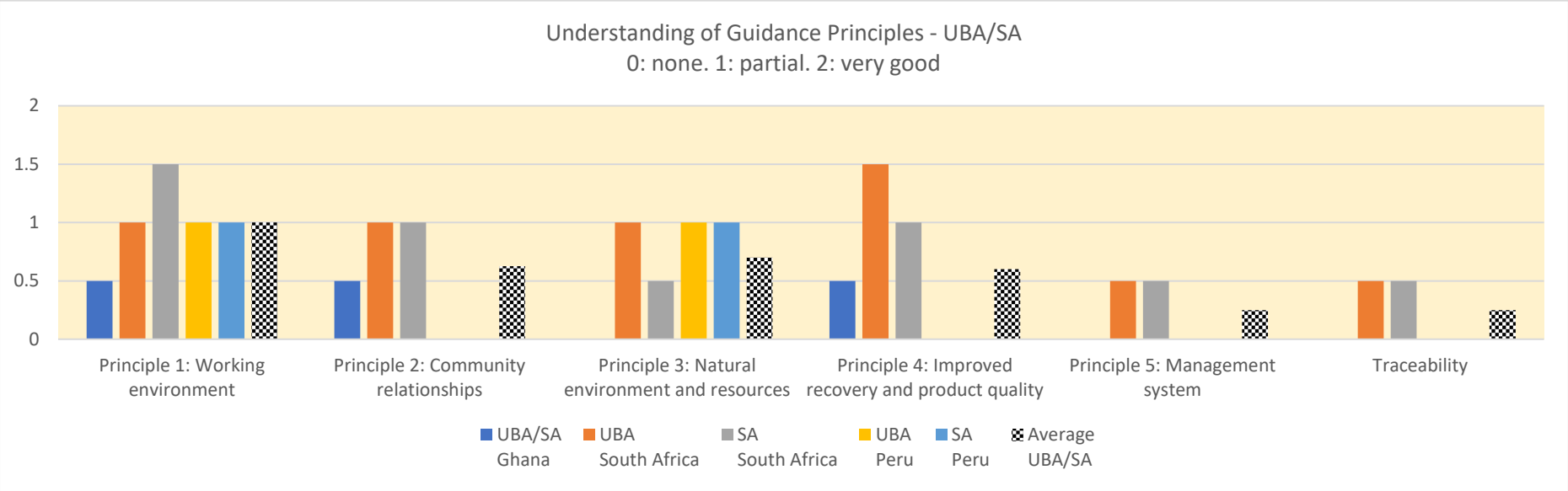
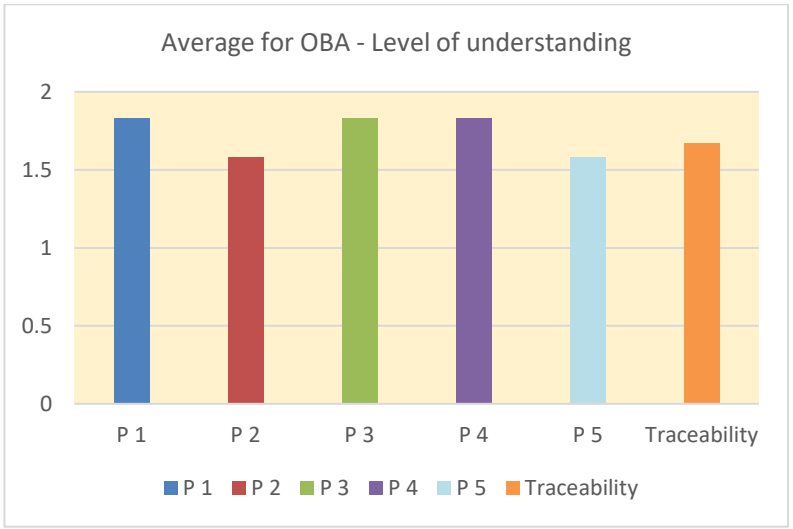
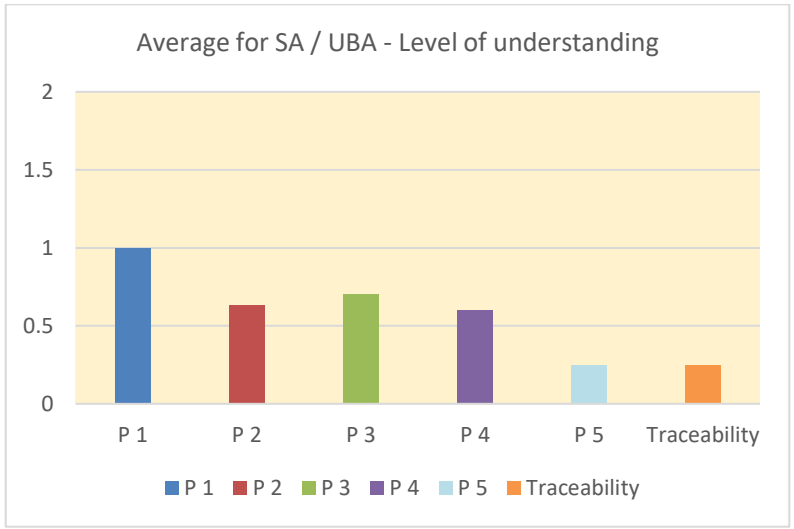


Table 2 – Level of Understanding (average)

Principle	Average OBA	Average UBA/SA
1: Enabling safe, healthy and equitable working conditions	1.83	1.00
2: Building and strengthening local community relations and resilience	1.58	0.63
3: Conserving and protecting the environment and natural resources	1.83	0.70
4: Improving recovery of secondary metals	1.83	0.60
5: Implementing a sustainable management approach	1.58	0.25
Traceability: Guarantee the origin of recovered metals compliance claims in relation to the Guidance Principles are accurate	1.67	0.25





2.5.2 Highlights

The term "understanding" requires several cognitive components: knowledge and comprehension of the subject matter (based on Bloom's Taxonomy[16] model). In this case, we wanted to know if the EOs are aware of and comprehended what the sustainability criteria (Guidance Principles) demand and what their aims are.

The OBA have the greatest level of understanding for Principles 1,3 and 4, whereby Principles 2, 5 and Traceability are nearly at the same level (high to very high).

The SA/UBA have the most extensive understanding of Principles 1, 2 and 3. Principles 4, 5 and Traceability found little or no understanding of either content or relevance.

- The IEO scored the highest in all categories. This OBA is legally compliant and has instituted many voluntary compliance policies as well. Through their highly regulated official business activities, one can assume that they have the highest contact with the topics of the five Principles and Objectives. They are also interested in understanding the impact of their business as well as revealing & eliminating worst practices along the value chain.
- The other OBA are a mix of being truly compliant and possibly only "self-declared" OBA economic operators. This group of operators ranges differently in their level of understanding the topics. Access to trustworthy knowledge (personal health, environmental and economic) in combination with the impact of their business activities is key and precludes comprehension. Literally, some know more than others, and this reflects directly upon the level of understanding identified in the bar graph.
- This is the first level along the taxonomy for less advanced OBA and SA/UBA to buy into the five Guidance Principles by raising the level of understanding. Providing expert knowledge empowers all to create and maintain healthy recycling activities.
- The economic activities of all business along the value chain have an impact on the products going into the process and at the end of the process. Therefore, consumers must also understand how their recycling is being handled further downstream and what it means for the product that they receive that consists of, for example, 30% recycled aluminium.
- At the level of product design, manufacturers can also profit by understanding that the development & construction of products can be harmful to those who must recycle them. In addition, the recyclate needs to be of a suitable quality to enable reuse in further manufacturing processes.

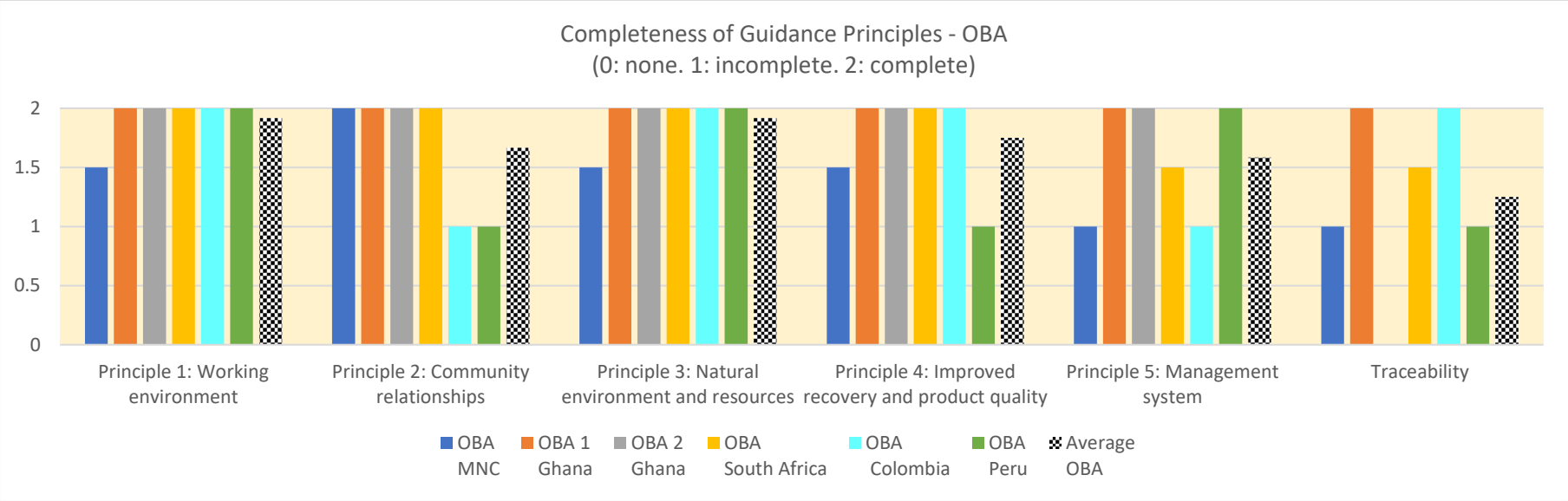
[16] Found on https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/

2.6 Level of completeness

The level of completeness measures the belief in general that this document covers the most important aspects. Do the Principles and 17 Objectives fully support the EOs or is there something missing? Alternatively, do the Principles cover too much?

2.6.1 Metrics

Note: If no data is available or zero (0) was entered in the field, then the value = 0.



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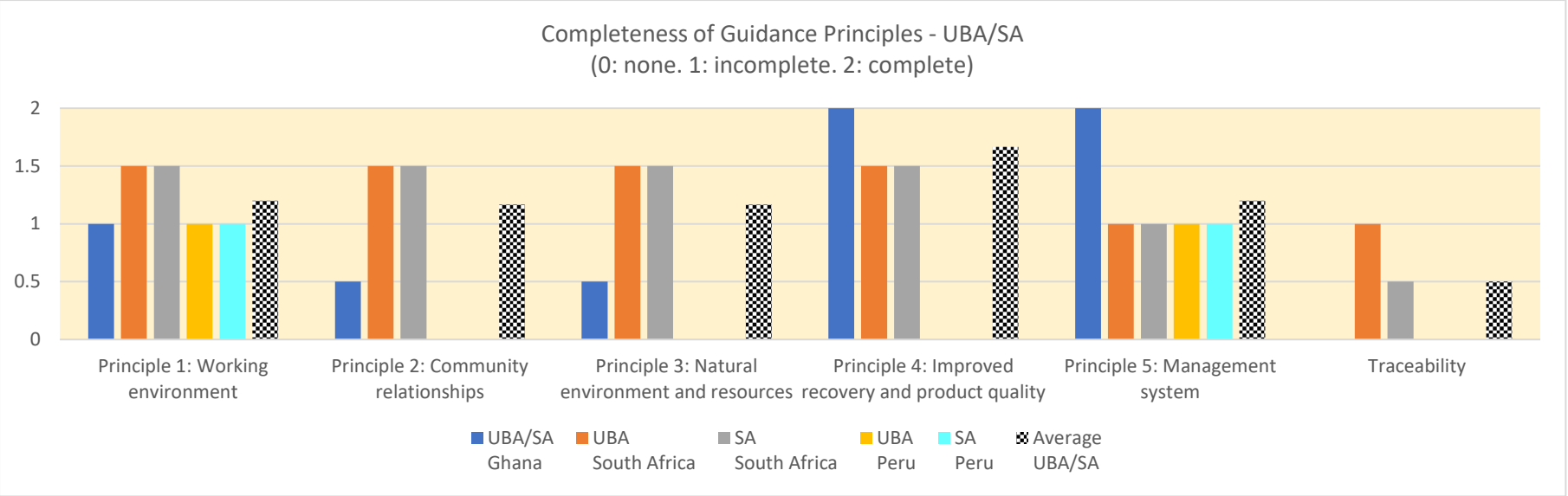
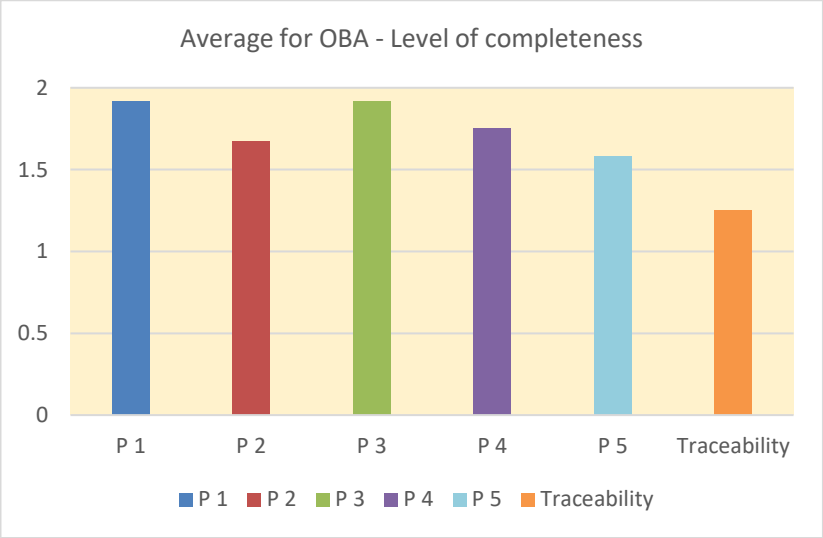
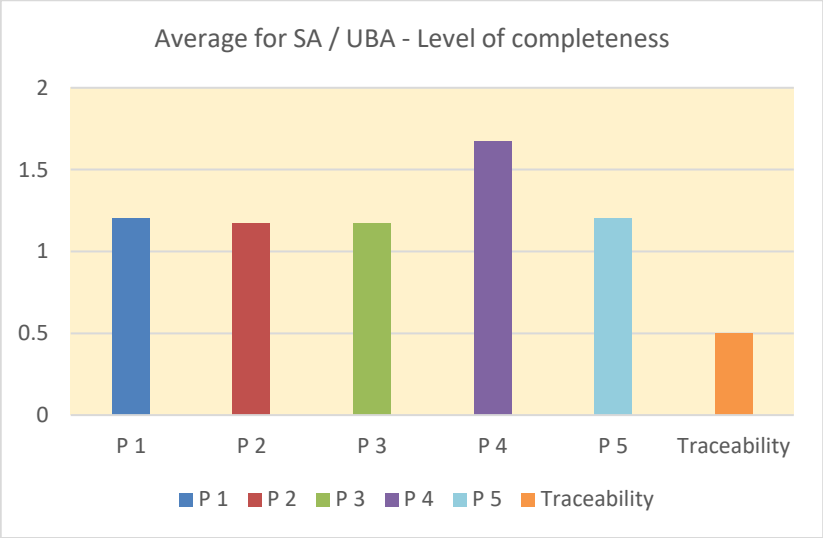

Completeness of Guidance Principles - UBA/SA
(0: none. 1: incomplete. 2: complete)
2
1.5
1
0.5
0
Principle 1: Working environment
Principle 2: Community relationships
Principle 3: Natural environment and resources
Principle 4: Improved recovery and product quality
Principle 5: Management system
Traceability
UBA/SA Ghana
UBA South Africa
SA South Africa
UBA Peru
SA Peru
Average UBA/SA

Table 3 – Level of Completeness (average)

Principle	Average OBA	Average UBA/SA
1: Enabling safe, healthy and equitable working conditions	1.92	1.20
2: Building and strengthening local community relations and resilience	1.67	1.17
3: Conserving and protecting the environment and natural resources	1.92	1.17
4: Improving recovery of secondary metals	1.75	1.67
5: Implementing a sustainable management approach	1.58	1.20
Traceability: Guarantee the origin of recovered metals compliance claims in relation to the Guidance Principles are accurate	1.25	0.50





2.6.2 Highlights

The OBA perceive the Principles to be mostly complete for Principles 1, 3 and 4, whereby Principles 2, 5 and Traceability need minor additions.

The SA/UBA perceive the Principles to be mostly complete for Principles 1, 4 and 5. Principles 2, 3 and Traceability seem to have generated the greatest deficits.

Common themes for improvement were, for example: Revising set definitions and thereby improving an overall understanding of the Principles and Objectives, extending timelines for UBA/SA, establishing personal and business relevance and benefits, adding additional references, including more guidance on many topics.

The following list represents suggestions for improvement across all economic operators (EO) without making a link to any particular one:

Group 1[17]	Suggestions from Peru	Type
1	Showcase clear benefits (also economic ones) targeting SA and Top Managers in OBA.	Benefits
2	Revise the definition of OBA which needs to provide more guidance on what the minimum compliance requirements are for being OBA. It would be also helpful clarifying whether partial incompliance is synonym of informality.	Definition
3	Provide guidance on where to start with the implementation.	How to
4	More references and guidance on: • The integral handling of hazardous residues and non-hazardous components (e.g. in Principles 3, 4 and 5) • What it means to improve the recovery in terms of quality and quantity and how to accomplish that. • The implementation of a traceability scheme	How to
5	Revise Principle 2 which appears not so relevant in the context of recycling activities engaged in OBA located in industrial zones with no neighbouring communities.	Principle 2
6	Revise the timelines by extending them between half a year and two years (as an average) for OBA and between one and three for SA and UBA.	Timeline

Group 2[18]	Suggestion from Colombia	Type
1	Expose clear and tangible benefits, including the economic ones, directed to all the EOs in general.	Benefits

[17] EO from Peru

[18] EO from Colombia

2	Provide a definition of the concept of ¨Community Resilience¨ on Principle 2.	Definition

Group 3[19]	**Suggestions from Ghana**	**Type**
1	Develop the same overall understanding of the Principles for OBA and UBA by demonstrating the interdependent nature of secondary metal recycling industry and sharing best practices	How to
2	Showcase clear benefits (including economic ones) targeting UBA.	Benefits
3	Revise the timelines by Principle and EO. The recommendations were diverse depending on the level of understanding and state of maturity in sustainable business behaviour and technological progress of each EO.	Timelines

Group 4[20]	**Suggestions from South Africa**	**Type**
1	Revise and clarify key statements starting with key terms in Principles 1 and 2 for better understanding of the SA sector.	Definition Version for SA
2	The ISO IWA 19 need to be linked with the outputs envisaged by current and future legislation including funds for compensation (e.g. by linking with Principle 5).	Legislation
3	Add more references and guidance on the improvement on secondary metals recovery efficiencies.	Principle 4
4	A greater focus on materials value chains needs to be considered in the ISO IWA 19 (and not only stakeholder value chains).	Scope
5	Provide more guidance on the role of middle-men in sustainable value chains.	How to Scope
6	Revise e.g. steps and timelines of Principles 1 and 2 for OBA already complying with them. An initial assessment on compliance is recommended. So, if Principle 1 is fully covered and Principle 2 is not relevant to an EO, this should consider addressing more directly the other Principles.	Timelines How to
7	Revise the timelines for SA/UBA and add more references.	Timelines How to

[19] From Ghana

[20] From South Africa

Group 5[21]	Suggestion from the IEO	Type
1	Include the topic of business ethics under Objective 5.5 or a separate entry, creating a new Objective 5.6.	Principle 5
2	To reduce the administrative burden by providing a matrix of Principles and existing policies and standards as a checklist.	How to
3	Include the topic of factory security and liability insurance	Principle 5

The classification shows that we have three categories to summarize the improvements for completeness.

1. General
    a. Provide a reader-friendly alternative for SA and UBA
    b. Legislation can be facilitated through the adoption of the ISO IWA 19 as a national ISO document
    c. Definitions need better clarification
2. Draw up clear benefits for the economic operators. Create a deeper link to their business case.
3. Improvements to the Guidance Principles were mentioned several-fold:
    a. Scope needs to be further investigated
    b. Specific amendments to Principles 2, 4 and 5
    c. Timeline adjustments
    d. Handling hazardous materials
    e. How to implement the ISO IWA 19

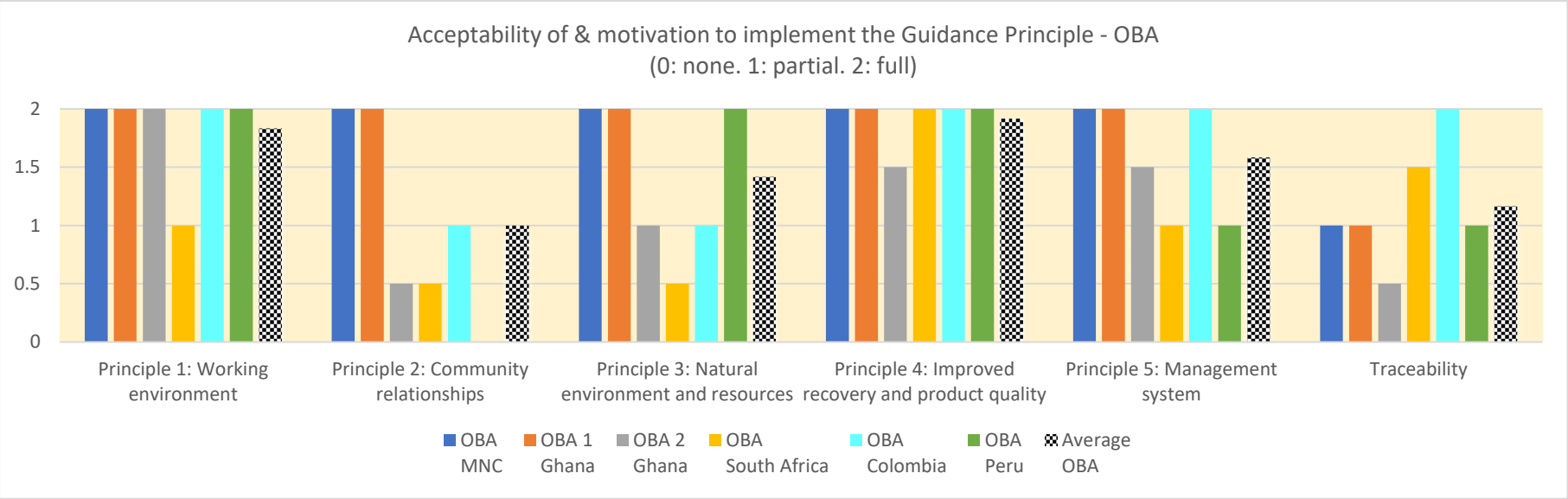
[21] From the international economic operator (IEO)

2.7 Acceptability, motivation and timelines

This part of the pilot testing is important to understand the **potential of implementing** the ISO IWA 19. Do the EOs see the ISO IWA 19 as a useful tool; are there enough drivers for buying into the ISO IWA 19 and are the timelines for implementation feasible?

2.7.1 Metrics

Note: If no data is available or zero (0) was entered in the field, then the value = 0.



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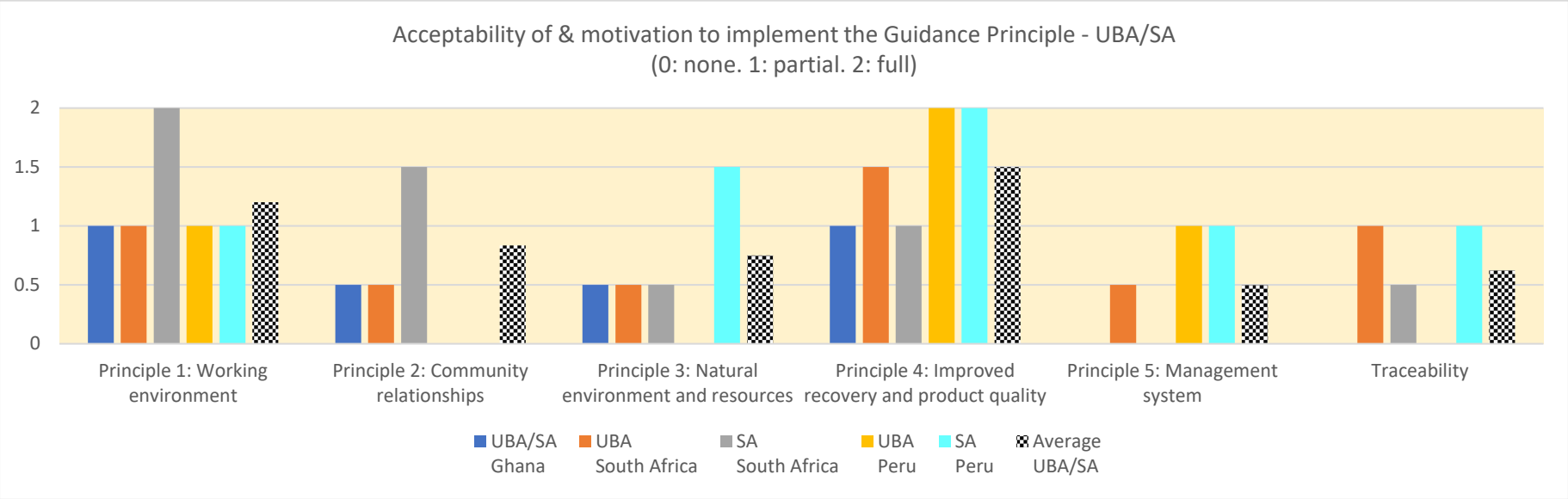
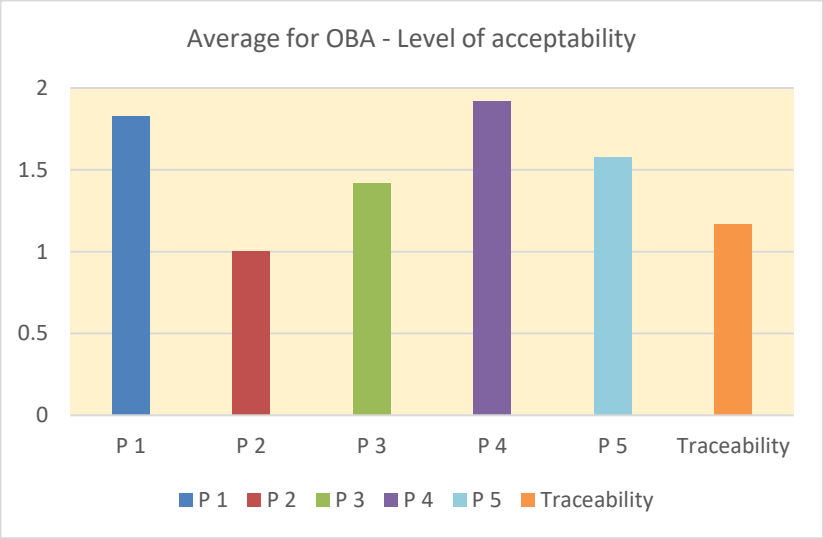
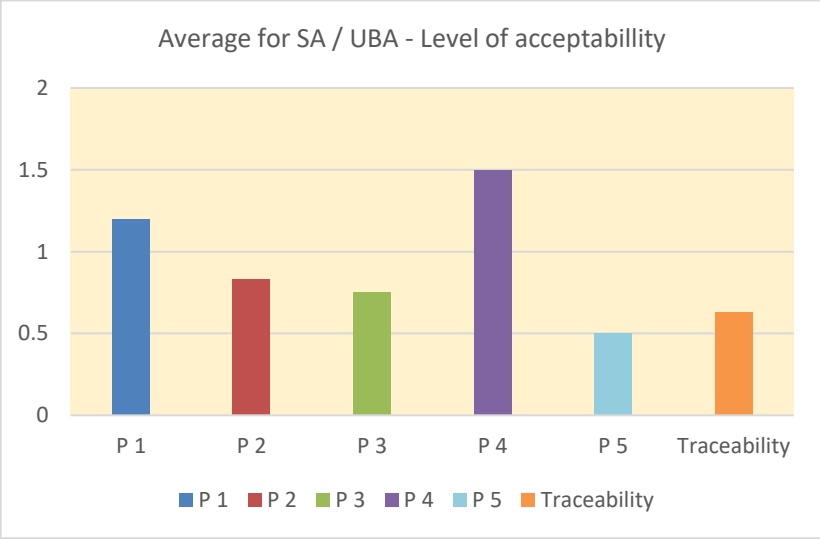


Table 4 – Level of Acceptability, motivation and timelines (average)

Principle	Average OBA	Average UBA/SA
1: Enabling safe, healthy and equitable working conditions	1.83	1.20
2: Building and strengthening local community relations and resilience	1.00	0.83
3: Conserving and protecting the environment and natural resources	1.42	0.75
4: Improving recovery of secondary metals	1.92	1.50
5: Implementing a sustainable management approach	1.58	0.50
Traceability: Guarantee the origin of recovered metals compliance claims in relation to the Guidance Principles are accurate	1.17	0.63





2.7.2 Highlights

This section of the pilot testing was not relevant for the largest EO, since they alluded being fully compliant and engaging in voluntary sustainability-related activities within their dedicated system boundaries.

OBA and UBA/SA found three Principles (1, 3 and 4) that they ranked equally in terms of acceptability, motivation to implement and the timelines (in descending order). They expressed less motivation to implement Principles 2 and 5:

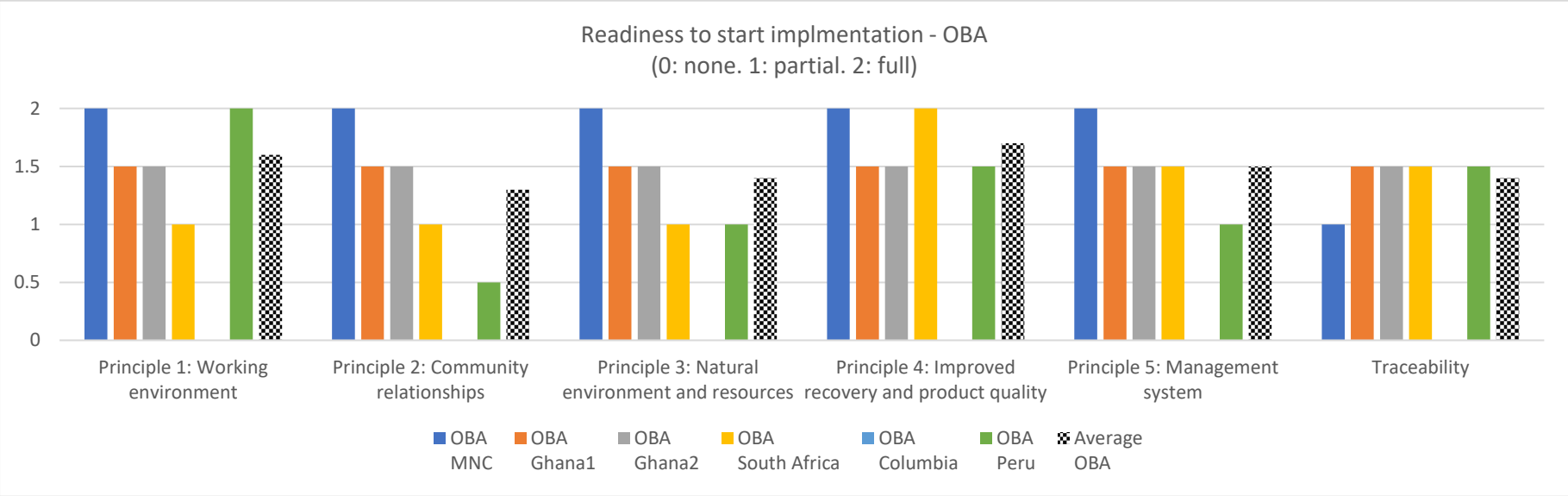
1. Principle 4: Improving recovery of secondary metals
2. Principle 1: Enabling safe, healthy and equitable working conditions
3. Principle 5: Implementing a sustainable management approach (OBA) and Principle 2: Building and strengthening local community relations and resilience (UBA/SA)
4. Principle 3: Conserving and protecting the environment and natural resources
5. Although Principle 2 was ranked fifth for OBA, it still had a higher overall average than the third place ranking by UBA/SA.

2.8 Readiness to start the implementation

With proper and adequate resources, can the EOs begin implementing the five Guidance Principles or have they already started?

2.8.1 Metrics

Note: If no data is available or zero (0) was entered in the field, then the value = 0.



Note: If no data is available or zero (0) was entered in the field, then the value = 0.

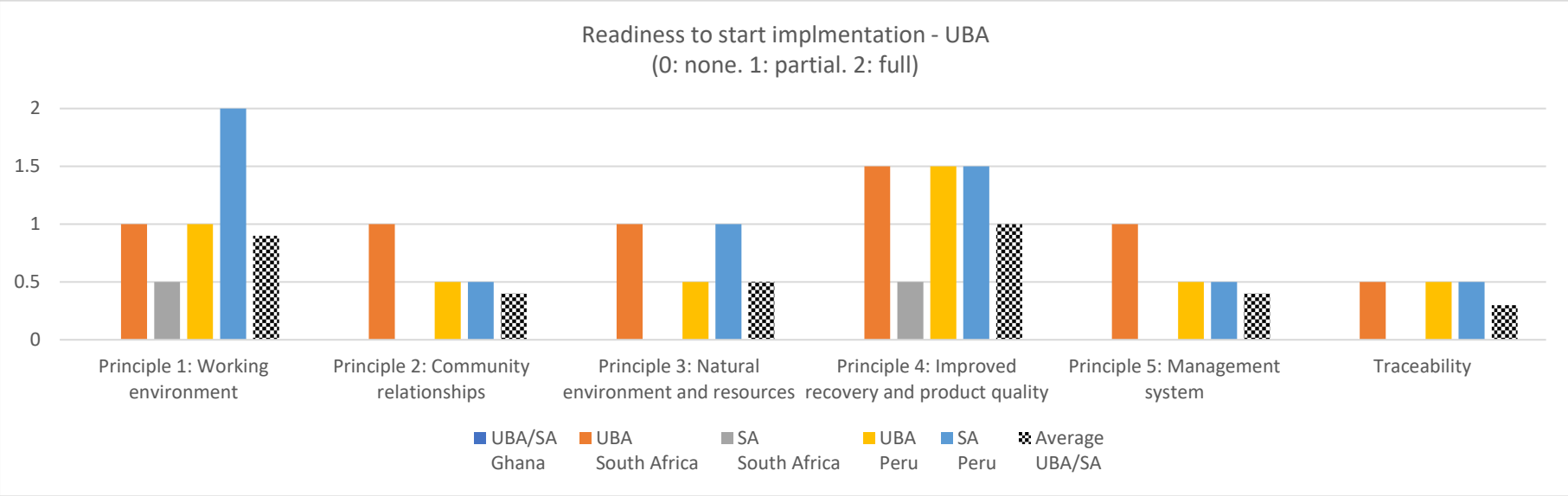
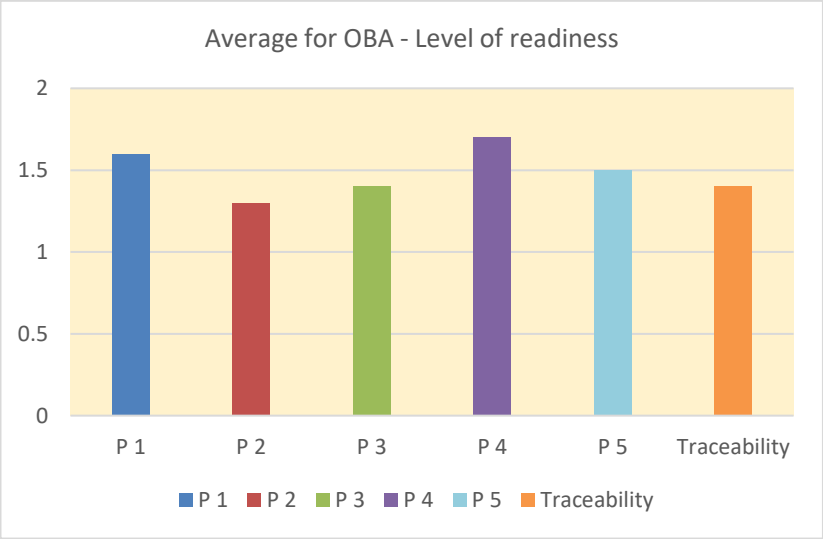
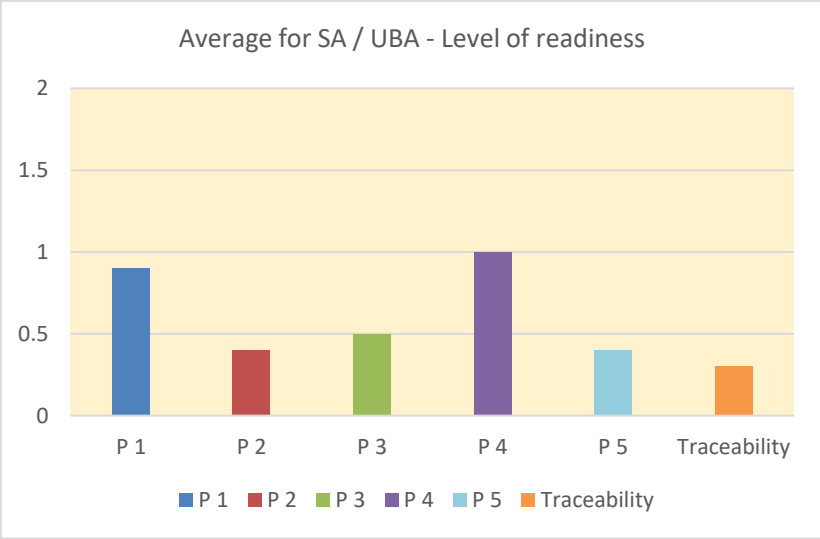


Table 5 – Level of Readiness (average)

Principle	Average OBA	Average UBA/SA
1: Enabling safe, healthy and equitable working conditions	1.60	0.90
2: Building and strengthening local community relations and resilience	1.30	0.40
3: Conserving and protecting the environment and natural resources	1.40	0.50
4: Improving recovery of secondary metals	1.70	1.00
5: Implementing a sustainable management approach	1.50	0.40
Traceability: Guarantee the origin of recovered metals compliance claims in relation to the Guidance Principles are accurate	1.40	0.30





2.8.2 Highlights

The OBA have a mid-to-high level state of readiness to implement the ISO IWA 19 (if not already in progress). However, they would enjoy more guidance in some areas such as improving the recovery of secondary metals, developing traceability schemes, learning about sustainable management approaches, and sharing best practices.

It is, however, very important to discern between readiness and the actual will to implement the ISO IWA 19. The will to implement (or not) can have many reasons:

- Redundancy with other compulsory mechanisms
- No resources (e.g., people, capacity or funding)
- Language of the ISO IWA 19 is not "user friendly" by being to technical or bureaucratic
- Not a priority (for example, safety and security are of greater concern)

This list is not exhaustive.

2.9 Willingness and capacity of OBAs to lend support throughout their value chain

Are the OBA willing to support UBA and SA to improve their practices across the value chain and to what extent?

2.9.1 Metrics

Note: If no data is available or zero (0) was entered in the field, then the value = 0.

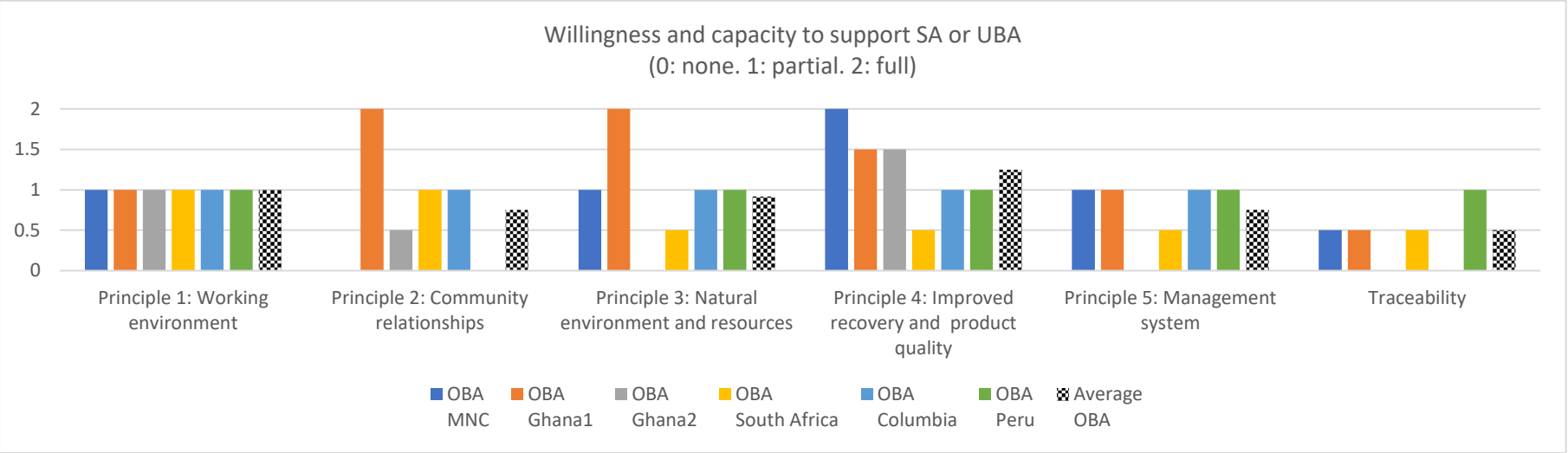
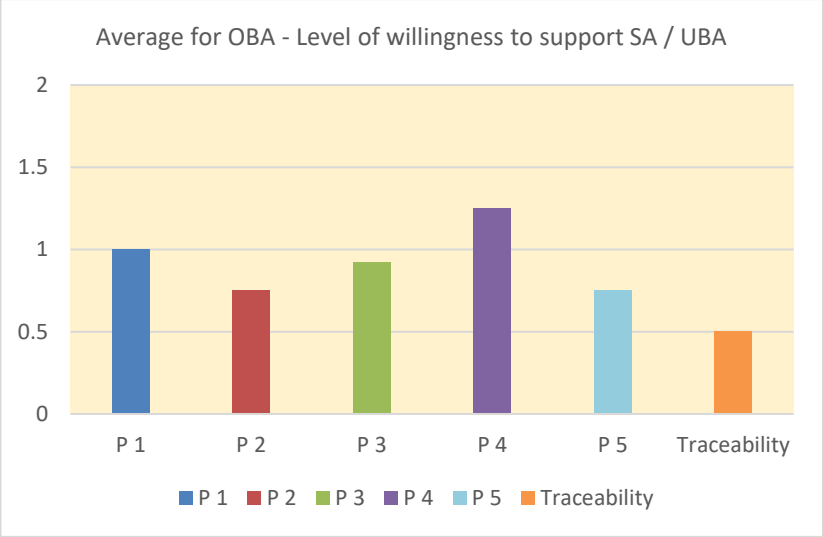


Table 6 – Level of willingness and capacity to support SA/UBA (average)

Principle	Average OBA
1: Enabling safe, healthy and equitable working conditions	1.00
2: Building and strengthening local community relations and resilience	0.75
3: Conserving and protecting the environment and natural resources	0.92
4: Improving recovery of secondary metals	1.25
5: Implementing a sustainable management approach	0.75
Traceability: Guarantee the origin of recovered metals compliance claims in relation to the Guidance Principles are accurate	0.50



2.9.2 Highlights

The willingness for EOs to provide support was scattered overall in strength across the principles. On average, they were willing to help with Principles 1, 3 and 4. It is remarkable that the "OBA 1 Ghana" was willing to lend the most support. This OBA can truly be considered a frontrunner, not only for its extremely high mastery of the Guidance Principles, but because they are reaching out beyond their facilities to offer tangible support to those in need. OBA 1 Ghana understands that looking beyond one's own system boundaries is good for business, the environment and the community.

2.10 Obstacles and challenges hindering implementation

The following potential obstacles and challenges in implementing the Guidance Principles were identified in each of the EOs groups. They were presented to the local consultants and sorted by size or type of economic operator.

2.10.1 Group 1

Group 1	Obstacles and challenges	Type
1	Limited financial resources for such an activity which is not seen as a priority by Top Management	Resources
2	Insufficient enforcement of country regulations/laws and the lack of governmental support	Regulatory
3	High market competition and fluctuating metal prices which put them under pressure to minimize risks and costs	Market competition Metal price
4	Uncertainty about the economic benefits (profitability)	Benefits
5	Lack of time (understaffed)	Timeline
6	Lack of targeted training and guidance on where to start and how to implement the Principles	Education How to
7	Lack of clearer benefits, especially for their suppliers including SA and UBA	Benefits
8	No guidance on how to strengthen their organizational capacity (e.g. how to formalize and how to deal properly with accounting and taxes).	How to

2.10.2 Group 2

Group 2	Obstacles and challenges	Type
1	The voluntary nature of Guidance Principles, resulting in unfair competition between those who implement and those who do not	Enforcement

Group 2	Obstacles and challenges	Type
2	Changing its SA/UBA suppliers' practices (benefits, information, resources)	Culture
3	For Principle 2, there is a risk in the implementation of communication channels with local communities, stakeholders and public (reputation)	Principle 2 Communication Risk management
4	Not enough training on Principle 5, Objective 5.1	Education Principle 5

2.10.3 Group 3

Group 3	Obstacles and challenges	Type
1	For all EO, the different levels of understanding of the potential benefits or impact the Principles could have on their business processes	Perception Benefits
2	The sector is not well regulated and there is the fear that EOs will find workarounds for the requirements if not continuously monitored (reputation)	Regulatory
3	Slow formalization process	Formalization
4	Stricter enforcement of laws and regulations	Regulatory
5	Cultural barriers (change management, global setting, power)	Culture
6	Lack of awareness, education, and capacities to properly handle recycling processes	Education How to
7	Lack of resources to buy PPE	Resources
8	Lack of clear economic benefits	Benefits
9	Low literacy rate of the workers (including different languages and dialects)	Education Culture
10	Tribal tensions and their physical security	Culture

2.10.4 Group 4

Group 4	Obstacles and challenges	Type
1	Heavy restrictions set by national legislation	Legislation
2	Low loyalty of suppliers	Market competition
3	Shrinking profit margin caused by dropping values of e-waste	Metal price
4	Lack of government support	Lobby
5	Weak representation in recycling associations	Lobby

Group 4	Obstacles and challenges	Type
6	Access to land and value waste streams denied by municipalities	Resources Market access
7	No infrastructure or services offered to facilitate recovery activities.	Resources
8	A general lack of respect and inclusiveness of SA/UBA by the community	Culture Lobby
9	Dependency on and exploitation by middle-men (UBA type).	Market access
10	Risk of exposure to toxic materials through malpractices by recyclers	Health & Safety
11	Need for a skills transfer/business development program	Education
12	Decreasing value of WEEE	Metal price
13	No access to new technological advances made in the WEEE sector	Technology access

2.10.5 Group 5

Group 5	Obstacles and challenges	Type
1	Low demand or recognition in the market for compliance with these guidance principles	Market competition
2	Most aspects of the guidance principles are covered by existing policies and certifications of the economic operator	Redundancy
3	Concerned with the reputation as an employer, should they uncover non-compliance or worst practices in their supply chain	Enforcement
4	Factory security and liability insurance for products	Principle 5

Note: EO in this case conducts only official business activities as an importer.

2.10.6 Highlights

During the pilot testing, it became clear that the ISO IWA 19 can be improved by addressing internal and external weaknesses.

The document was viewed as being nearly complete with a few minor exceptions, which can be amended accordingly in the next revision. These are discussed in the section *Level of completeness (see 3.6)*. Additionally, the unclear benefits and lack of resources for the EOs predominate. A set of guidelines for implementation of the Guidance Principles was also requested which guides on where to start and in which order, and on how EOs can set priorities.

External obstacles or challenges were also identified as the greatest hurdles for EOs to adopt the Guidance Principles. These can be categorized as follows:

- **Business Development**: Formalization of UBA/SA not supported or progressing to slow, guidance on setting priorities for EOs
- **Economic**: Profitability could not be demonstrated directly, fluctuating prices of secondary materials, uncertainty of steady material supply
- **Governments**: lack of local, regional or national support
- **Market access**: Low priority, no recognition, redundancy with other compulsory regulations or voluntary standards, competition, disloyal suppliers, no lobby for OBA in recycling associations
- **Perception**: EOs have varying levels of awareness and understanding of their situation, the relevance and impact for their daily activities, their own health and safety as well as the content of the Guidance Principles, difficulty to assess risks
- **Regulatory**: Non-existent or inconsistent regulatory mechanisms, very little monitoring or control in place, restrictions through national legislation
- **Resources**: Lack of financial resources for infrastructure (including land), services, personal protection equipment, business development, new technology as well as staffing
- **Safety**: Continuous personal security of workers, facility surveillance
- **Socio-Cultural**: Different cultures and religions, language barriers, nor respect for UBA/SA and exclusion from community, exploitation
- **Training & Education**: Low literacy rates, little or no vocational training of staff for recycling tasks, no direct support for helping UBA/SA avoid exposure to toxins & worst practices

2.11 Supporting mechanisms for economic operators

The global village makes and recycles a product: Stakeholders outside the secondary metal value chain are strongly encouraged to support economic operators involved in SA, UBA and OBA and facilitate the implementation of the sustainability (see Clause 6) and traceability requirements (see 7.3) through their "supporting mechanisms". These include national and local governments, policymakers, CSOs, research institutes, trade unions, workers' association, industrial and trade associations, sustainability standard organizations and private companies and corporates (ISO IWA 19).

A supporting mechanism is defined as any formal system or method of providing support or assistance.

The implementation of supporting mechanisms is optional, but it is expected to significantly enhance the impact of the ISO IWA 19 and make the implementation by economic operators easier, more consistent and cost-effective.

Table 7 represents the supporting mechanisms specifically listed in the ISO IWA 19, stemming directly from the individual reports.

The classification of supporting mechanisms in Table 7 is based on those listed in the ISO IWA 19.

It must be noted that the supporting mechanisms recorded were not specifically laid out for the individual Objectives, mainly due to the lack of time to address all Objectives. However, we found

common themes. The EOs interviewed requested involvement from a variety of stakeholder groups (list A) as well as specific actions (list B).

A. The following stakeholder groups are asked to provide support, which enriches those identified for each Objective:
    - Civil Society Organisations
    - Financial Institutions
    - Government at all levels, policy makers (national, local)
    - Industrial associations
    - Local authorities
    - Media
    - Private sector
    - Specialists
    - Standards organisations
    - Training and vocational programs
    - Trade unions and workers associations
    - Universities and research institutions
B. Expectations and support from the following stakeholders were expressed by the EOs during the interviews:
    - Data about new end customers for recyclable materials
    - Regarding the implementation of traceability-related steps they suggest sharing costs, either between Siderperu and the supplier or between Siderperu and an organization like an NGO
    - **Governments**: enforcement of laws and regulations, especially regarding WEEE and EPR, supervision, sanctions and fines, improved control of taxes, e. g. general sales tax, support with formalization, e. g. simplifying reception of operating licenses, training, awareness raising, promotion, incentives for EOs, e.g. subsidies, aid money and disseminating information on these topics.
    - **NGOs**: training, awareness raising, especially on good practices, security and formalization, but also on auditing and traceability
    - **Companies**: training, EPR regulations
    - **International aid**: training, financial and technical support

This list is not exhaustive and represents the most frequently mentioned supporting mechanisms.

Above all, it was requested that the governments and CSO take responsibility in lending support, but the stakeholders are also asked to collaborate intensively and in varying constellations. Financial institutions, the Media and Private sector are new additions.

Table 7 – Supporting mechanisms for economic operators in emerging economies according to the findings

	Supporting mechanisms	Africa	LAM	Type
1	Government to provide resources		C	GOV
2	CSO are encouraged to facilitate creating an alliance/association between EO		C	CSO
3	CSO are encouraged to promote cooperation and sharing best practices		C	CSO
4	CSO and SP to provide training to meet the requirements of Principle 5.1		C	CSO, SP
5	GOV and CSO are to promote the benefits of building local community relations		C	GOV, CSO
6	CSO are encouraged to promote the creation of associations among EOs for sharing best practices		C	CSO
7	All stakeholders are encouraged to join alliances to support EOs and each other, especially the government, to create synergy, avoid individual interests and meet the objectives more easily		C	ALL
8	EOs shall make better use of Trade Unions, Worker Associations and Civil Society Organizations, the private sector and industry associations to develop capacity and share experiences	G		TU, WA, CSO, PS, IA
9	Government to act as a monitor, regulator, standard-setter	G		GOV
10	On-site training and the use of private sector consultants as an additional facilitation tool	G		TRA, SP
11	CSO and IA to facilitate knowledge-sharing is also important for developing the capacity of their extended supplier chains	G		CSO, IA
12	Financial institutions to encourage SA and UBA to receive support	G		FI
13	CSO to encourage SA and UBA to use internal support mechanisms	G		CSO
14	CSO and local Administration (LocA) to provide support to SA and UBA for critical security issues, including training	G		CSO, LocA, GOV
15	Encourage peer knowledge sharing to build awareness within their company on health and safety issues, develop the capacity of their wider supplier chains in Principle 1 as it will aid their overall operations	G		ALL
16	National and local governments to enforce regulations proactively	G		GOV

	Supporting mechanisms	Africa	LAM	Type
17	Industry associations encouraged to provide on-site training and using private sector consultants as an additional facilitation tool to provide more tailored-made or client-specific support	G		IA, TRA, SP
18	Government taking a leading role to support the implementation of Principle 1 (legitimacy) in collaborations with Associations like GASDA (Ghana)	G		GOV
19	The "Association" can offer financial support in the implementation of Principle 1	G		WA
20	Government shall implement Principle 2	G		GOV
21	All to provide support for legal assistance, training and capacity building as well other resources for monitoring, verification and financial (in-house budgeting and planning process)	G		GOV, CSO, RI, TU, WA, IA, SO, PS
22	Media to provide coverage of the recycling industry to create awareness	SA		M
23	Universities and research institutes to provide continuing research on optimising secondary metals recovery efficiencies	SA		UNI, RI
24	Government and Parastatals – from national to provincial to local authorities and structures	SA		GOV
25	Industry Associations and private sector to provide access to funding	SA		IA, PS
26	Government to make financial commitment to develop infrastructures	SA		GOV
27	The Swiss Embassy in Pretoria	SA		GOV
28	Central Governments can support creating enabling conditions through: • Awareness and information activities • Facilitation of legal registration of workers in the social security system • Setup of education and income generation programs to compensate families for children who do not work • Support with and, if possible, provision of resources for the identification, mapping and restoration of areas with serious degradation. • Support to economic operators by providing specialized knowledge on the identification and mapping of legally protected		P	GOV

	Supporting mechanisms	Africa	LAM	Type
	or conserved areas and threatened species; also, supervising and evaluating the baseline report. • Support to groups of workers with the creation and management of cooperatives and associations. • Support to local governments in the mid- and long-term planning to improve the organizational structure of the recycling infra-structure and incorporate the informal workers in the value chain. • Search for international financial and technical support to work together these issues at the national level • Establishment of inter-institutional and regional agreements (e.g. with the Ministry of Education) of cooperation • Establishment of incentives such as the exemption of 18% of VAT for micro-recyclers • Promotion and enforcement of the Law for the Promotion of Cleaner and Efficient Production			
29	Local Governments and municipalities can support creating enabling conditions on: • Facilitation of dialogue between economic operators and local communities, as well as surveillance of operations so that the rights of local communities are not violated • Support to the economic operators with the identification and evaluation of cases of social exclusion and help proposing measures and actions to improve their situation • Introduce measures towards the recognition of individual workers and / or families working informally • With support of the central Government, have a mid- and long-term planning to improve the organizational structure of the recycling infrastructure and incorporate the informal workers in the value chain • Establishment of cooperation agreements (e.g. with NGOs and the private sector) • If necessary, facilitating the change of the tricycle by another type of vehicle that involves less physical effort		P	GOV, LocA

	Supporting mechanisms	Africa	LAM	Type
	• Strengthening the recycler's and collector's technical capacity in segregation • Training of producers (houses, families, companies) in the appropriate segregation and collection (inform about collection points) • Share successful experiences			
30	Civil society organizations (or NGOs) can enable EOs through: • Development and implementation of education and income generation programs to compensate families for children who do not work • Support with and, if possible, provision of resources for the identification, mapping and restoration of areas with serious degradation • Support with sources of legal information and legal subscriptions on the web • Support governments with the implementation of anti-corruption policies, campaigns and public and legal complaints of bribery and corruption cases • Search for international support to work with these issues in favour of the most affected • Support with monitoring of compliance with the principles and indicators guide • Establishment of agreements (e.g. with the Ministry of Education) of cooperation to promote education		P	CSO
31	Industrial Associations can enable EOs through: • Development and implementation of the principle of Extended Producer Responsibility as well as Extended Responsible Sourcing, and creation of initiatives of Producer Responsibility Organizations (PRO) • Development of technical standards (e.g. INACAL) • Promotion of innovation projects on secondary metals		P	IA

	Supporting mechanisms	Africa	LAM	Type
	• Application of the Solid Waste Law • Homologation of suppliers • Establishment of cooperation agreements (e.g. with the government and the academy)			

The supporting mechanism reported are very specific to the situation evaluated in each individual country. They were noted as part of observations by the SRI members and consultants managing the pilot testing locally. These supporting mechanisms align with the UN supporting mechanisms for emerging economies (compare to Table 8 below).

Table 8 – UN supporting mechanisms for emerging economies

	Mechanisms[22]
1	International support via global governance mechanisms aimed at addressing the problem of tax havens or secrecy jurisdictions, which are the main source of capital outflows from LDCs and which facilitate a race to the bottom on taxation
2	Dedicated assistance for LDCs seeking to benefit from international tax cooperation, with the aim of closing loopholes and limiting the ability of multi-national enterprises to avoid paying taxes, as laid out in the Addis Ababa Action Agenda
3	Measures to coordinate wages globally, similarly aimed at avoiding a race to the bottom under which LDCs try to attract the cheapest labour-intensive production
4	Dedicated capacity-development assistance for domestic tax revenue mobilization in LDCs
5	Global tax incentives aimed at promoting domestic processing in LDCs
6	A programme of untied cash transfers targeted at LDC populations
7	An LDC sustainable infrastructure fund, with associated maintenance funding
8	Additional resources aimed at technology transfer, such as via the new technology bank for LDCs. This may include the promotion of new, sustainable 'fourth industrial revolution' technologies such as 3D printing, complementary currencies and artificial intelligence
9	Capacity assistance with applications for donor support, something with which the smaller, more capacity-constrained LDCs struggle
10	Dedicated policymaking support specific to LDC clusters
11	Increased support for institutions such as think tanks for south-south and triangular cooperation.
12	Post-graduation capacity development support measures from UN entities, specifically aimed at mitigating the impact of the middle-income trap.

[22] *International support for the least developed countries: A different way?* Found on https://www.un.org/ldcportal/international-support-for-the-least-developed-countries-a-different-way/

2.12 Recommendations from SRI and other contributors

For all emerging economies taking part in the pilot testing we could see progress and a willingness to improve in different degrees. Compliance with the Guidance Principles can speed up the process. In addition, we predict that an integration of the ISO IWA 19 into government policy, management systems and within various organizations or educational systems and engagement mechanisms that impact the people locally and directly should create the quickest and most effective results.

This cannot, however, happen in a vacuum. In a global economy, each country must work according to their current economic, governmental, regulatory, and cultural status and be able to foresee trends and adapt to the market situation in the future.

The following recommendations can help contribute to the success of implementing the Guidance Principles and operating sustainable recycling facilities. The first section focuses on activities in emerging economies (DC), the second list focuses on IEOs.

- **Create and strengthen a level playing field**: Creating and strengthening a level playing field for all EOs is fundamental to reach a sustainable and robust growth of inclusive recycling activities. The central governments in each country plays a key role in this process.
- **Increase the accessibility of technical and financial resources**: There is an urgent need to allocate more technical and financial resources to especially help value chains with poorest EO. In line with their policies and mandates and since they have access to earmarked funding for purposes related to sustainable production, agencies of international cooperation, international organizations, intergovernmental organizations and industrial associations are recommended.
- **Increase the acceptability and potential of success**: OBA (such as big recyclers conducting mechanical and metallurgical processing, EEE producers and industrial associations) have the highest impact capacity to increase the acceptability and potential of a successful implementation of the ISO IWA 19 along value chains. Directly or indirectly, their intervention can especially support the EOs in most need such as small recyclers, SA and UBA.
- **Assist SA and UBA to overcome bottlenecks**: OBA supplying from SA and UBA, the central and local governments in Peru, and civil society organizations are the closest ones to SA and UBA or have the highest capacity to assist them in overcoming their obstacles and bottlenecks and move away from the worst practices and towards a more sustainable and inclusive recycling as per the ISO IWA 19.

2.12.1 Recommendations for emerging economies

Making the commitment to and the willingness on the part of emerging economies to sign agreements on eliminating the worst practices and developing good practice programs, to educate and build capacity of the most vulnerable segments of the population is needed. Women and school-aged children need to become a greater focal point.

The governments (municipal, local, national) of DC can benefit from working together to solve similar problems. Governments and related institutions can also lead by example by providing role models and competent advice. They shall also take on the responsibility to develop and enforce regulations that assist economic operators in doing sustainable business.

Capacity building programs in primary educational and vocational settings to support the skills in this sector are needed, beginning with school-aged children. Individuals in developed nations and less developed nations should gain and maintain leadership, social, economic and environmental skills that allow for empathy, community spirit and awareness for the impact of their work and consumer behaviour. Particularly at the level of elementary school, the program directors must create topics in their curriculum that include e-waste recycling activities and other sustainability themes.

Civil Society Organizations are requested to see the inequity of their citizens (men, women and children) and listen to their woes. CSOs should act as a link, mediator and facilitator between individuals, local and regional governments as well as corporations due to their powerful position in DC.

Above all, it was requested that the stakeholders **collaborate** *intensively and in varying constellations*. Greater collaboration and the abandonment of silo-thinking is required for all stakeholders. This could include partnering with Sustainable Recycling Industries (SRI) to help implement the Guidance Principles and Objectives, provide case studies on the transition from worst practice to best practice, and develop educational programs for the various stakeholders, for example.

2.12.2 Recommendations for International economic operators

International economic operators need to look beyond their partly self-imposed system boundaries and "…consider the impact of rules, practices or mechanisms in the international system which prevent LDCs (less developed countries) from following their chosen sustainable development path."[23] IEOs must be aware of their economic, political and cultural influence in their host countries. Instead of fanning the flames, steps must be taken to improve of the state of tension by being mindful about their local impact and promoting sound business practices, cultural sensitivity and enviro-social responsibility.

2.12.2.1 Specific actions for importers and industry associations

- Companies importing aluminium, copper, iron, lead metals, and scraps with these metals as well as precious metals need to have a clearer picture on who their first and second tier suppliers in their value chains are. It is important to verify that there are no worst practices that harm humans or the environment in their value chains to avoid putting the companies at risk (e.g. child labour).
- Importing companies with sustainability criteria in place that are non-fully-equivalent to the ones proposed in the ISO IWA 19:2017 on Guidance Principles for Sustainable Management of Secondary Metals, are encouraged to assess the possibility to endorse these principles and apply them in their value chains (with useful sets of steps as checklists to check compliance in their own operations). This will allow them moving toward sustainable recycling and prevent child labour and worst practices in their value chain upstream.
- If importing companies have implemented advanced approaches on health and safety, quality and environmental management systems, they might feel ready for the next step which is also requiring also growing levels of compliance in their value chains through a chain-of-custody scheme or Extended Producer Responsibility program. There are examples to be considered, like Apple, which has launched its supplier responsibility program that covers metals supplied.
- Industry associations could consider joining initiatives such as the Sustainable Recycling Industries Programme funded by SECO, the GIZ programme in Ghana and the UNIDO GEF project for Latin America. Through this, governmental organizations can be also engaged

[23] Found on https://www.un.org/ldcportal/international-support-for-the-least-developed-countries-a-different-way/

in a multi-stakeholder based process to tackle this problem. Other organizations could include main companies importing and exporting from a particular country.

- Industry associations should support the development of the business case and potential benefits of implementing sustainable recycling in value chains free from worst practices, if possible, based on findings and learnings from a pilot testing in a representative value chain of economic operators (e.g., from a Latin American country to China via the USA).

2.12.2.2 Support is possible

The following support can be offered to economic operators downstream includes but is not limited to:

a) technical assistance through:

- identification of worst practices in their supply chains and how to move away from them
- prioritization of the most suitable practices in their suppliers engaged in SA, such as collection and physical segregation
- support with compliance verification processes
- development and implementation of a due diligence[24] approach, Chain of Custody or incorporation in an existing one

b) wherever feasible**, resources and financial support** through:

- the inclusion of suppliers, if existing, in their Extended Producer Responsibility (EPR) and/or Extended Responsible Sourcing programmes' activities (e.g. product take-back systems managed by collectors)
- provision of PPE in case of small suppliers lacking resources
- establishment of verification mechanisms

c) training and awareness raising on Occupational Health and Safety (OHS), social and environmental impacts, and good management practices

d) legal assistance related to the enforcement of existing laws and regulations on secondary metals, e.g. take-back schemes and frameworks for EPR

e) improvement of trade conditions and/or access to the market of recovered metals.

[24] Detailed assessment conducted by an economic operator to evaluate a supplier's compliance with the sustainability criteria adhered by the economic operator which could be the ISO IWA 19:2017 Guidance Principles

3. Benefits of adopting the Guidance Principles

Anticipated benefits for economic operators (OBA, UBA/SA) involved in collection, manual and mechanical processing, metallurgical processing, as well as transportation/trade and storage, are:

- Improved reputation
- Improved capacity and skills of workers
- Improved safety at work and health outcomes for workers and their families
- Reduced risk of non-compliance with legal requirements such as the Ghana Act 560 addressing child labour aspects
- Improved access to funding and credit from financial institutions requiring compliance with legal obligations and international recommendations such as the Guidance Principles
- Stronger voice for UBA/SA, respect and better integration into the community

Potential benefits especially for economic operators involved in Official Business Activities (OBA), such as product manufacturers and other purchasers of secondary metals, include:

- Improved reputation by committing to corporate social responsibilities throughout the value chain
- Improved quality of secondary metal resources
- Improved access to secondary metal resources
- Possibility of having longer-term contracts B2B and B2C, who may give preferential treatment to companies providing materials that are compliant with legal obligations and international recommendations such as the Guidance Principles
- Improved and more transparent management systems along the value chain
- By demonstrating commitment to sustainability along their value chains, the risk of reduced reputational risk is reduced.

This list is not exhaustive.

4. Outlook and next steps

The future of recycling for the recovery of secondary metals is economically attractive. According to the OECD (2018), recycling will grow and become more competitive than mining of minerals thanks to technological developments and changes in relative prices of production inputs. This is notorious in 2060 with an estimated growth of 3.7% that year (in year 2030 it will be 1.7%).

4.1 Communicating the learnings of the pilot testing

The publication of the results of the pilot testing will be subject to the established terms of confidentiality. However, it is expected that at least a synthesis report of the main conclusions of the various pilot testing cases will be made publicly available on the SRI website. No specific nor confidential data that may lead to attribute such conclusions to specific individuals or organizations will be contained or made publicly available on the SRI website, if not stated otherwise by the economic operator.

4.2 Revision of the Guidance Principles

According to ISO requirements, three years after the publication of the Guidance Principles the member body which provided the workshop secretariat (i.e. the SNV) will be requested to organize a revision of the document by consulting with interested stakeholders and relevant ISO committee(s). The results of the pilot testing will serve as the basis for such revision and will lead to one of following three recommendations:

- To confirm the validity of a revised version of the Guidance Principles by April 2020.
- To withdraw the Guidance Principles from the ISO system.
- To request ISO to initiate the process of converting the Guidance Principles into an ISO International or Technical Standard.

4.3 Implementation of the ISO IWA 19 in existing value chains

One step further the pilot testing is the direct implementation of the Guidance Principles in existing value chains (i.e. real cases) to check which recommendations and suggested steps are doable and which are not, as well as to observe their direct and indirect impacts on workers, the environment, community and product.

4.4 Making the link to other standardisation initiatives

The members of SRI would like to establish links to other standardisation initiatives. These could include the OECD due diligence on conflict-free mineral in supply chains or EC directives, etc. The purpose of this is to create a better overview of possibilities for EOs to find solutions for their value chains that lead to responsible secondary metal management when designing a product (for recycling) or integrating recyclate in a product. In addition, inter-standard references will broaden the system boundaries and provide transparency for product developers: How can products be designed that include secondary metals (or other recyclate materials) that don't include worst practices? How many standards do I have to read to determine compliancy? These

questions and many more can be answered by establishing coherent documentation indicating common principles.