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How to finance the Bo2W approach

Global Circular Economy of Strategic Metals – the Best-of-two-Worlds Approach (Bo2W)

Darmstadt,
04.03.2016

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1. Introduction

With the Best-of-two-worlds project aim to spur economic growth and create jobs in the e-waste sector, this report focusses on developing countries' private sector. Access to financial markets and options to business financing serve as the basic preconditions for such economic growth. Unfortunately, limited financing options pose serious problems for small and medium enterprises (SME) in most developing countries (IFC 2013). In addition to gaining general access to financial markets, the Best-of-two-worlds (Bo2W) approach depends on specific financing solutions to reduce the "financial gap" between collection, dismantling and shipment of e-waste to recycling plants, since SMEs in developing countries often have to pre-finance necessary investments for material acquisition, labour costs, transport costs, etc. The Bo2W's dismantling company partners emphasize that finding appropriate financing solutions is a significant challenge and serious obstacle to applying the Bo2W approach.

Using the Bo2W experience in Ghana, this report reviews the specific financing requirements resulting from the Bo2W approach (see chapter 2). General SME financing options and the situation for SMEs in Ghana are briefly introduced in chapter 3. Chapter 4 explains the reasons for constrained SME access to financing and defines "financial gap". Then, recommendations to solve SME financing obstacles are proposed in chapter 5. Lastly, chapter 6 presents this study's final conclusions.

Readers may note that all descriptions refer to financing situations for formal enterprises. Enterprises that are not formally registered also face problems entering financial markets but are excluded from this report.

2. The Bo2W approach in terms of financial requirements

Local dismantling companies face structural financing problems because of the need to bridge the time between initial investment and returns (see Figure 2-1).

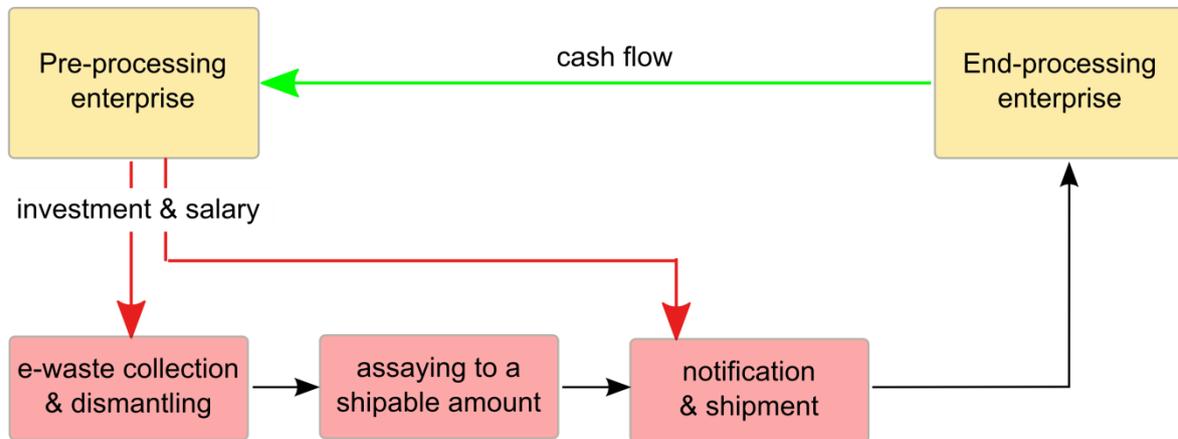
Local dismantling companies first need to invest in infrastructure and salaries for collecting and dismantling e-waste. Investment may also be needed for e-waste purchased from third party actors, such as waste-producing companies, waste collectors, or the informal sector. Economic shipment is only possible once a sufficient amount of dismantled items have been accumulated. The storage times for dismantled e-waste awaiting shipment further postpone returns on investment. In the meantime, local dismantling companies must cover notification and shipment costs.

After an e-waste shipment reaches the designated recycling plant for end-processing, the shipment is tested and analysed to determine the exact value of its waste fraction. Metal content as well as the type and quality of plastic fractions influence a shipment's value. Only after analysing the waste in detail is the local dismantling company paid.

The Bo2W experience shows that the time between pre-financing and transferred net-proceeds from selling the waste can take up to six months. During this time, the local dismantling company shall continue to process e-waste, which requires additional pre-financing. This spiralling process is intrinsic to the business model and consequently demands a line of credit instead of a single project-based loan. The specific amount of funds needed for pre-financing is not easily calculated, since dismantled e-waste fractions like batteries or printed wiring boards have different economic values. However, a typical shipment is estimated to cost between 30 and 100 thousand USD. To

reduce dependence on bank loans, recycling companies should also aim to develop their own equity for future, independent pre-financing.

Figure 2-1: Financing scheme for the Bo2w approach



Source: Oeko-Institute

3. Structure and finance options for Ghanaian private enterprises

3.1. Structure of Ghana’s private financing sector

Like in developed countries, projects also seek to spur economic growth and create jobs by strengthening the private sector in developing countries and emerging economies. Private enterprises’ access to financial markets for business funding is a central prerequisite for job creation (IFC 2013).

Private enterprises are mostly differentiated based on their turnover, financial position or workforce size (PWC 2013). Commonly used categories include ‘micro, small and medium-sized enterprises (MSME)’ as well as ‘large und multinational enterprises’. Unfortunately, there is no universally accepted definition of MSME. Even within Ghana, no consistent definition of MSME is used (Oppong et al. 2014). This report adopts the distinction between micro and SME based on the variable workforce size. An MSME is defined as an enterprise with less than 100 employees (Samjong KPMG & KODIT 2013).

The term “micro enterprises” entails self-employed entrepreneurs with less than five or even no employees. ‘Microfinancing’ covers the financial system providing financial services to micro enterprises, self-employed individuals and other low-income groups. Microfinancing often targets poverty reduction by giving access to banking and related services. The Grameen Bank in Bangladesh is a very famous best-practice example of microfinancing. Their diverse microenterprises include small retail shops, street vending, artisanal manufacture and service provision. In rural areas, micro-entrepreneurs often have small income-generating activities, such as food processing and trade, and some are farmers. These clients usually have informal or no business records, no collateral, and no access to formal credit markets (Microfinance Gateway 2015). Microfinance can offer non-collateral microloans and mutual guarantees for each group.

Financing microenterprises with the goal to fight and prevent poverty is a movement that began in the 1970s, mainly driven through non-governmental organizations. Today, global commercial banks have also started to play an active role in this area.

Data provided by the International Finance Corporation (IFC) report nearly 1.5 million micro, small and middle-sized (MSME) enterprises in Ghana (IFC 2015). Information from (Samjong KPMG & KODIT 2013) allows further subdividing the total number of MSME into: **micro enterprises**, which have a **nearly 55%** share; **small enterprises** with **42%**; and **medium-sized enterprises** holding **3%**. Large enterprises¹ account for only 300 businesses and play only a minor role compared to the relevance of MSME. (Samjong KPMG & KODIT 2013) calculated this split by using statistical data only from the mining, manufacturing and electricity & water sectors. Nevertheless, the result that micro and small enterprises are by far the most common size for enterprises is consistent with other studies (PWC 2013; Oppong et al. 2014; Nkuah et al. 2013; Quaye et al. 2014).

3.2. Finance options for the private sector

MSMEs' financing options range from informal organizations (e.g. local money lenders) to semi-formal suppliers (e.g. NGOs or credit unions) and formal institutions (e.g. private or state owned banks).

Informal organizations primarily lend single amounts to a borrower, who then has to repay the loan with an interest rate. This financial transaction is similar to a credit or loan provided by formal institutions. Other finance products, like checking accounts, overdrafts or credit lines, are mainly provided by formal institutions.

No data is available about the average loan size in Ghana, but (IFC 2014) lists average loan sizes for the entire Sub-Saharan Africa region (see Table 3-1). The information about average loan size is further categorised by the type of providing institution (microfinance or SME finance institution) and by loan size.

Table 3-1: Number and average loan size from different financial institutions in the Sub-Saharan Region

	Provided by microfinance institutions		Provided by SME finance institutions	
	Number of Loans Outstanding	Average Loan Size	Number of Loans Outstanding	Average Loan Size
Micro Loans	1 191 .002	\$467	578 575	\$1 584
Small Loans	61 733	\$3 809	69.523	\$26 378
Medium Loans	1 395	\$137 155	21 593	\$222 728

Source: (IFC 2014), own presentation

¹ Businesses with more than 100 employees and less than 1 million dollars of fixed assets

Table 3-1 shows that microfinance institutions focus on micro loans with a rather small loan amount and many outstanding loans. The average loan that SME finance institutions offer is generally higher than that offered by microfinance institutions. Most remarkable is the category “small loans”, where the average loan size is nearly seven times higher than loans from microfinance institutions. In chapter 2, the funding requirement for a dismantling company operating under the Bo2W approach was determined as between 50 000 and 150 000 USD. Consequently, funding by microfinance institutions would be rather atypical and therefore difficult to obtain.

In 1985, the Ghanaian state established the apex governmental body National Board for Small Scale Industries (NBSSI) in order to promote and develop the Micro and Small Enterprises (MSE) sector in Ghana. NBSSI operates three funding schemes, of which two are presented here:

- *NBSSI Revolving Fund Scheme* aims to make essential raw materials available to Small Scale Industrialists. The loan maximum is currently five hundred Ghana Cedis (GHS500 \cong 125 USD) per enterprise.
- The *MASLOC Scheme* exists since 2007 to stimulate Ghanaian industry. The fund is staffed with 250 000 GHS and has a loan maximum of 10 000 GHS per enterprise (\cong 2 500 USD).

These two examples should not be regarded as comprehensive. The existing governmental funding schemes are financially insufficient to satisfy the financial demand within the Bo2W approach. Critics furthermore state that “SME-related policy financing in Ghana is dependent on the on-lending facilities of the Central Bank and the development programs of international organizations” (Samjong KPMG & KODIT 2013).

3.3. Current situation regarding SME access to finance

This chapter presents the current situation for MSME in Ghana and their access to finance. Building on the research mentioned earlier showing that financing options for micro enterprise are no longer considered because of the small loan amounts, this chapter shall focus only on SMEs and ignore micro enterprises.

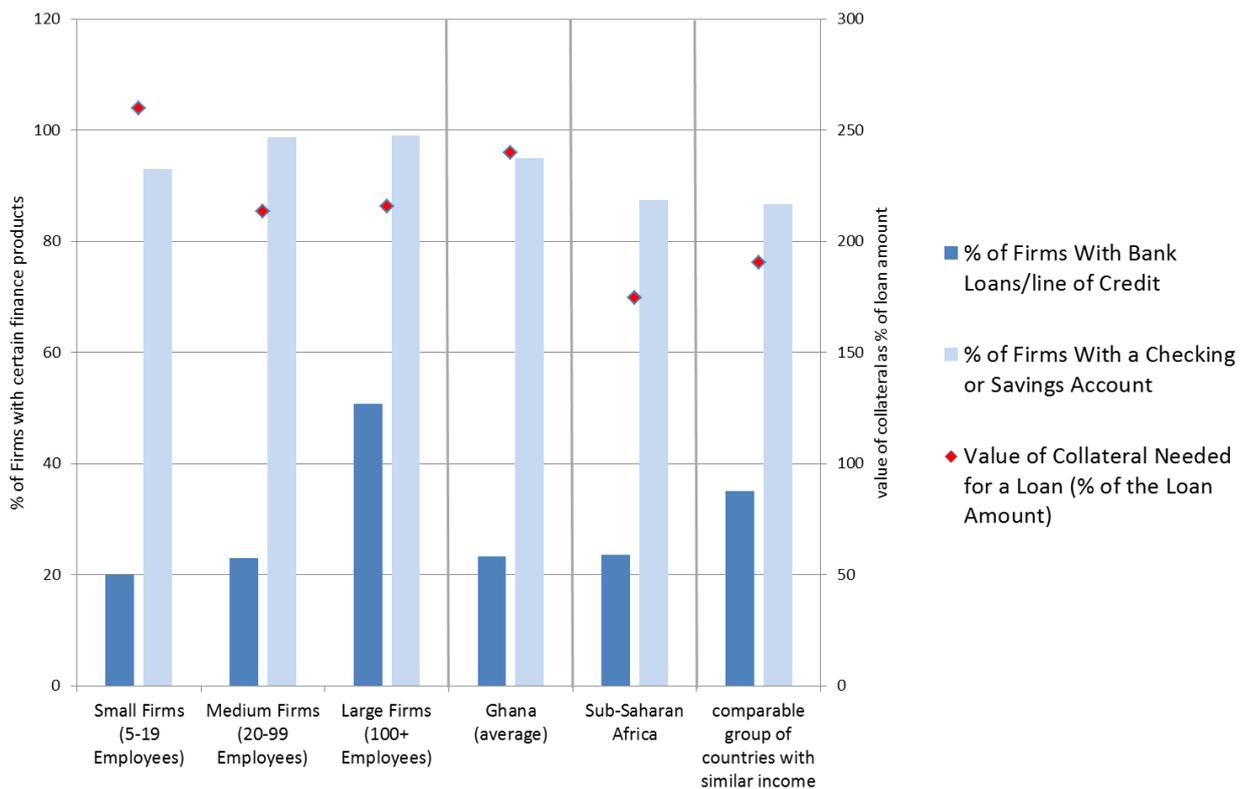
Figure 3-1 displays the access available to average Ghanaian private enterprises, subdivided into small, medium and large enterprises, for certain finance products. These averages are compared with Sub-Saharan Region averages and a comparable group of countries worldwide having similar income levels.

The figure indicates in the bright blue column that most SMEs in Ghana have access to a checking or saving account. Only a slight difference between small, medium and large enterprises can be observed. Ghanaian access to such financial products is indeed higher than the situation in the Sub-Saharan Region and the comparison group.

In contrast to the access to checking accounts, SMEs in Ghana find it more difficult to access bank loans and/or lines of credit (dark blue column); only 20% of small and medium-sized enterprises have access. The situation for large enterprises is better, with around 50% of large enterprises able to acquire bank loans or lines of credit. The Ghanaian average matches the level for the whole Sub-Saharan Region but is still lower than for SMEs in the comparable country group.

Ghana’s average interest rate², nearly 29% in December 2014 (Bank of Ghana 2015), was very high compared to Europe’s, where interest rates are currently much below 10%. However, using the global finance crisis to excuse the discrepancy avoids analysing other significant issues. Interest rate developments over past years show that Ghanaian rates have remained above 25% since at least 2004. With the global crisis’ peak in 2008, Ghana’s interest rates topped at nearly 32% in December 2008.

Figure 3-1: Access to financial services for private enterprises in Ghana



Source: (World Bank & IFC 2013), own presentation

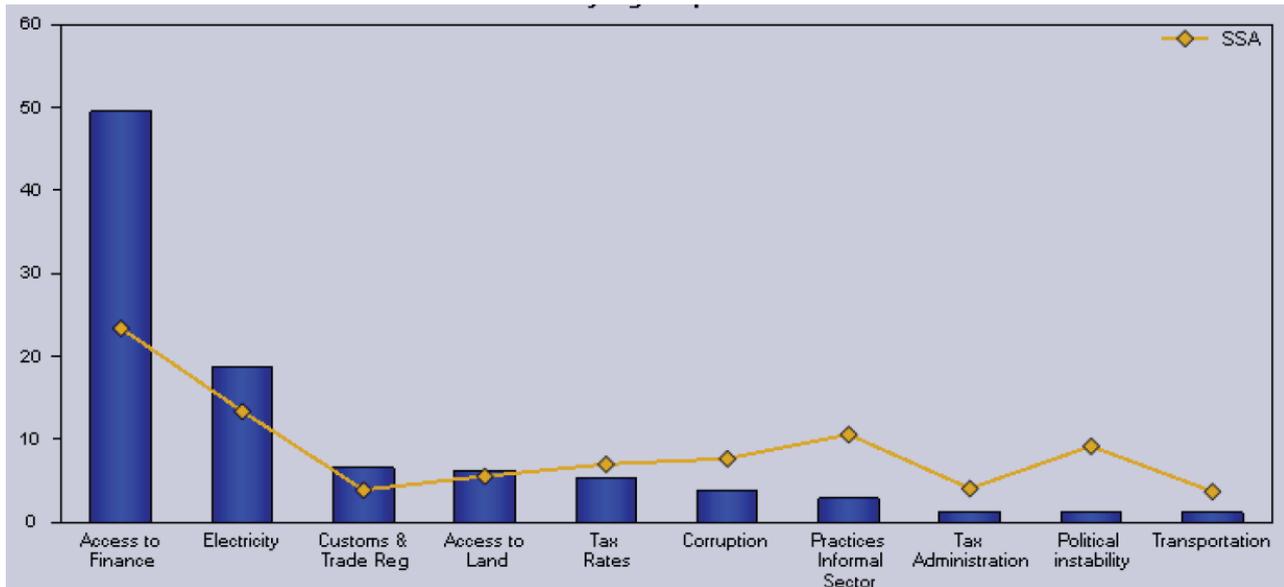
Figure 3-1 also shows the value of collateral needed for a loan (displayed as the percentage of the intended loan amount; red dots). For this category, a contrast is visible between the type of enterprise but also the comparison to the situation outside Ghana. Small enterprises have to guarantee higher collaterals than medium and large enterprises. Comparing the situation in Ghana with other countries, the average collateral in Ghana is higher than in the Sub-Sahara Region as well as the in a group of similar countries.

Loans and lines of credit are also visibly not very common to Ghanaian enterprises, especially not to small enterprises (see Figure 3-1). The question therefore arises of whether enterprises identify the lack of financing options as problem to run their businesses.

² A bank’s interest rate depends on the national base rate. The base rate is defined as the rate at which national reserve banks provide financing to commercial banks. The banks cannot lend below the base rate to their customers. Commercial banks differentiate specific interest rates according to a borrower’s creditworthiness and financing objectives.

The World Bank conducts country-specific business surveys asking representative enterprises from the non-agricultural formal private sector about different factors in their business environments. For the survey in Ghana (see Figure 3-2), with 720 firms, the report clearly shows that the lack of access to financing was nominated as the most prominent obstacle to main business (World Bank & IFC 2013; The World Bank 2015).

Figure 3-2: Percent nomination of main obstacles to business operations selected by enterprises from Ghana and Sub-Saharan Africa (SSA)



Source: (World Bank & IFC 2013)

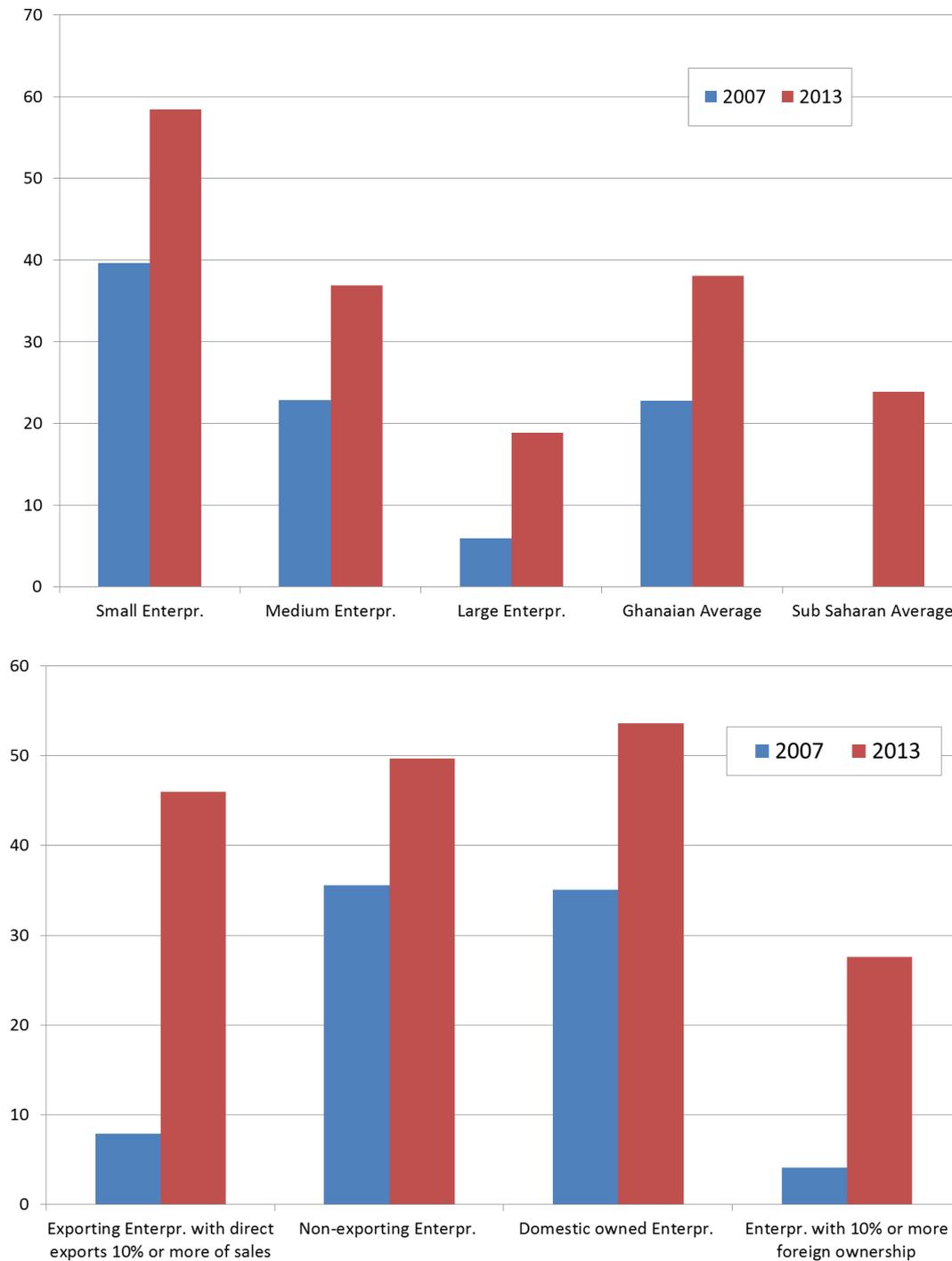
World Bank data indicate the biggest business obstacles depending on firm size and temporal change (2007-2013), as seen in Figure 3-3. The first graph clearly demonstrates that small enterprises – as opposed to large enterprises – have to struggle harder to finance their businesses. This difficulty was already emerging in the previous chapter and will be discussed in more detail in the upcoming chapter.

Changes in access to financing between 2007 and 2013 are especially remarkable. Apparently due to the global financial crisis, access to business finance became significantly more difficult in the private sector. While in 2007 nearly 40% of small enterprises found access to finance as the biggest problem, five years later in 2013 almost 60% of small enterprises struggled to find financing options – as significant increase in difficulty.

The growing lack of access to finance can also be observed for medium and large firms. Comparing Ghana with the surrounding region, 38% of Ghanaian enterprises find access to finance as the biggest problem, while in the Sub Saharan Africa only around 24% of the firms name this as most problematic.

Growing difficulties in business financing not only affects small firms but also enterprises focused on exporting. The second graph in Figure 3-3 displays a sharp increase between 2007 and 2013 in access to finance as a business hindrance for enterprises with at least 10% direct exports of sales to. Problems to finance such businesses rose by nearly six times.

Figure 3-3: Structure of firms naming access to finance as the biggest business obstacle (in percent)



Source: (The World Bank 2015), own presentation

SMEs, especially small and exporting firms, face serious problems to properly finance their business operations. As background information for the solutions proposed in later chapters, the next chapter presents and briefly discusses reasons for SMEs' current difficulties in accessing financial options.

4. Reasons for the financial gap

SMEs face problems in accessing financial options because financial institutions tend to be less focused on co-operating with SMEs. Offering financial products to SMEs in developing countries is cost intensive for financial institutions, as credit default rates are historically high (Hansen et al. 2012). As a consequence, only a few banks in developing countries have explicit policies to taking SME target groups' particular requirements and needs into consideration. The following factors explain why and how costs arise (IFC 2014) (E. Georgieva / Symbiotics Group 2014):

- Banks face **informational asymmetries** with SMEs, as banks are mostly unable to gauge an SME's creditworthiness. Furthermore, banks face higher transaction costs, since collecting financial data on potential customers (SME) is more complex.
- Default rates are high because lending money to an SME is more risky and with **lower revenues** than lending money to large enterprises, multinational corporate groups or state institutions (Hansen et al. 2012).
- High transaction costs combined with low revenues makes finance products for SMEs in developing countries expensive. In consequence, banks ask for **high interest rates and collaterals**. This becomes problematic as most SMEs only possess collaterals in form of moveable assets like machinery or equipment. Most banks **do not accept moveable assets as collateral**.
- Serving SMEs in developing countries requires **local presence** and thus a large branch network. For banks, this is not cost efficient, especially in a developing country where financial markets are less developed. Banking for SMEs in developing countries' more promising markets are still too small to attract more than a few SME-orientated banks.

In summary, it can be noted that access to finance is difficult since SMEs' capital demand is too large to be covered by microfinance schemes. At the same time, financing SMEs is too risky to be attractive for commercial banks. This situation is commonly defined as a "**financial gap**".

5. Bridging the financial gap

Keeping the intention of this report "how to finance the Bo2W approach?" in mind, the following suggestions relate to the specific financial challenges for e-scrap dismantling enterprises. The identified suggestions are allocated to the actors in charge to overcome the financial gap. These are: international actors, governmental bodies, private sector (banks) and private enterprises.

5.1. International actors / IFC

The International Finance Corporation (IFC) is an international financial institution aiming to encourage the private sector in developing and emerging countries. It is therefore a key player in elaborating strategies to overcome financial gaps in e-waste processing. Consequently, many of the given suggestions rely on reports written by the IFC (IFC 2013).

In parallel to collecting data and sharing knowledge, the IFC has launched several activities to better understand the SMEs' lack of access to finance. It as well provides advisory and investing solutions to SMEs in developing countries. For example, members from local IFC offices prepare summaries in cooperation with the applying SME to disclose general information about the company's business activities. These summaries seek to enhance transparency and provide necessary company information for applying for financial products like loans. The IFC itself does not lend money directly to SMEs; however, [applying for IFC support](#) can be a first option in financing the Bo2W approach.

5.2. National Government

In most literature addressing financial gaps, authors regard the national government and other governing bodies as responsible for improving SMEs' business environment and access to finance. Some options that were identified include:

- Increasing the number and volume of governmental SME funds (Samjong KPMG & KODIT 2013) and letting bodies without political affiliations manage governmental funds (Frimpong 2014).
- Providing incentives for the private banking sector to add an active SME finance policy into their operations (Quaye et al. 2014)
- Allowing governments to establish a specific SME bank that aims to solely deal with SMEs' needs (Quaye et al. 2014)
- Supporting capacity building to foster good and reliable SME financial management systems (PWC 2013). The demand to improve the quality of SME management became clear when PWC study authors asked Ghanaian bankers about SMEs' top obstacles to gain access to finance. Unstructured SME governance and management were identified as the most limiting factors. Governmental actors, banks and SMEs themselves can take responsibility for fostering SMEs' management capacities. (Frimpong 2014) pledges to invest more effort into centralizing the disparate SME training programs into one organization. A positive example for such centralisation is the Council for Technical and Vocational Education and Training (COTVET), a national body set up through an Act in Parliament of the Republic of Ghana.
- Developing a functioning tax collection system in the SME sub-economy, as stressed in PWC's interviews with commercial banks in developing countries. Such framework and infrastructure is regarded as an important precondition for commercial banks to set SME financing as strategic business area (PWC 2013).

Collateral registry

In particular, setting up a collateral registry under national authority allows a country's financial infrastructure to be opened by creating the possibility to accept moveable collaterals as a pledge to secure loans or credits. Such a registry serves as a public database where borrowers (small scale enterprises) can list their moveable assets as collateral. Lenders (banks) are supported in evaluating and validating the borrower's creditworthiness. Because the database allows the collateral used for a specific loan to be tracked, misuse from using the same collateral for several loans is prevented.

Ghana Collateral Registry, Africa's first web-based collateral registry, was officially launched in Ghana in May 2013 (www.collateralregistry.gov.gh)³. The Collateral Registry Ghana is a body operated by the Bank of Ghana and established by Parliament under the Borrowers and Lenders Act, 2008 [Act 773] to register charges and collaterals online.

Research has identified clear positive effects in combination with the establishment of a national collateral registry. These effects range from increased access to bank financing (6-7 %) to a decline in interest rates and an extension in loan maturity (IFC 2013; The World Bank 2013). Even though

³ Rwanda also introduced a collateral registry but not as an online tool

the Ghanaian collateral registry itself has yet not been evaluated, it can be assumed that similar effects of strengthening SME financial inclusion will be seen.

5.3. Financial institutions

Financial institutions, primarily commercial banks, are as well expected to improve SMEs' access to finance.

An important precondition to closing the financial gap is setting up explicit policies for SME target groups that consider their particular requirements and needs. Customers need to be supported through sound financial management. Banks could play a leading role in helping SMEs acquire the institutional stature that reduces their risk profiles for banks, allowing firms to do more business with them (PWC 2013). Costs for this support can be recovered through the loan fees.

(Quaye et al. 2014) also sees benefits for banks that support potential SME clients. Banks can gain new customers by first identifying SMEs as potential banking clients. They can signal their willingness to work with SMEs by building long term and sustainable business relations, offering training services in credit management and improving service delivery, such as expediting loan approval. (IFC 2013) recommends that banks develop and share credit analysis tools, including risk scoring models that help commercial banks to evaluate an SME's creditworthiness.

Oeko-Institut conducted a brief screening about the financial institutions operating in Ghana and their exposure to SME financing. The following Table 5-1 displays the name and websites from all commercial banks in Ghana. The study team surveyed each website for announcements of specific SME finance products. As it can be seen, only 50% of the financial institutions emphasize having finance products tailored to SMEs.

Table 5-1: SME-specific product information in financial institutions operating in Ghana

Financial institution operating in Ghana	Website	Specific SME financial products announced on website?
Access Bank Ghana	https://www.ghana.accessbankplc.com/	No
Agricultural Development Bank of Ghana	http://www.agricbank.com/	Yes (link)
Bank of Africa Ghana Limited	http://www.boaghana.com/	No
Bank of Baroda	http://www.bankofbaroda.com/	Yes (link)
Banque Sahélo-Saharienne pour l'Investissement et le Commerce (BSIC)	http://www.bsicbank.com/benin/?-Groupe-BSIC-	No
Barclays Bank of Ghana	http://gh.barclays.com/branch-locations/index.html	No
CAL Bank	http://www.calbank.net/calbank/	Yes (link)
Ecobank Ghana	http://www.ecobank.com/default.aspxv	Yes (link)

Financial institution operating in Ghana	Website	Specific SME financial products announced on website?
	NEWS: http://www.ghana.gov.gh/index.php/media-center/news/353-ecobank-ghana-launches-club-for-small-and-medium-scale-enterprises	
Energy Bank	http://www.energybankghana.com/	No
Fidelity Bank Ghana	http://www.fidelitybank.com.gh/	No
First Atlantic Bank	http://www.firstatlanticbank.com.gh/new_firstatlantic/	No
First Capital Plus Bank	http://www.firstcapitalplus.net/	No
GCB Bank Ltd (Ghana Commercial Bank)	https://www.gccb.com.gh/	Yes (link)
GN Bank Ghana	http://www.gnbankghana.com/	No
Guraranty Trust Bank	http://www.gtbank.com/?view=featured	Yes (link), less information
HFC Bank	https://www.hfcbank.com.gh/Home.aspx	No
International Commercial Bank Ltd., Ghana – First Bank of Nigeria	http://www.firstbanknigeria.com/	Yes (link)
National Investment Bank	http://nibghana.net/	Yes (link)
Prudential Bank Limited	https://www.prudentialbank.com.gh/index.cfm	No
Société Générale Social Security Bank	http://societegenerale.com.gh/Home.aspx	Yes (link)
Stanbic Bank	http://www.stanbic.com.gh/	No
Standard Chartered	https://www.sc.com/gh/	Yes (link)
The Royal Bank Limited	www.theroyalbank.com.gh/	Yes, less information
UniBank	www.unibankghana.com/	yes (link)
United Bank of Africa	https://www.ubagroup.com/	Yes, information in Media Centre
Universal Merchant Bank	http://www.myumbank.com/	Yes (link), less information
UT Bank	http://www.utbankghana.com/	No
Zenith Bank	http://www.zenithbank.com.gh/	No

Source: Oeko-Institut, Screening carried out in May 2015

5.4. Bo2W specific approach (additional)

For the financing scheme in the Bo2W approach (Figure 2-1), one must question why the enterprise running the recycling facility (end-processing) cannot be part of the solution? Portions of funding requirements for the pre-processing company (e.g. notification and shipment cost) could be shouldered by the international end-processing company involved in the Bo2W approach. Once the value for the shipped e-scrap is determined, the recycling company could subtract the pre-paid expenditures from the revenues. The general financial market setting currently seems rather promising: interest rates for European loans are at historical lows. It can be assumed that recycling companies have sufficient access to finance and possess long term relations to financial institutions.

Unfortunately such a configuration will not work as a baseline funding approach because of asymmetric information based on a principle moral hazard situation. Sharing pre-processing financing between stakeholders would increase risks for end-processors who pay for a product (e.g. a container of e-scrap) with an unknown value. Only once the container arrives at the recycling facility and is analysed can the company precisely determine the e-scrap value. Paying for the e-scrap in advance is largely uncommon because the recycling company has a higher risk of partly or even completely forfeiting of the transaction.

Despite the understandable concerns for risks of failure, the general intention to share operational expenses between the dismantling company in the developing country and the recycling company in the developed country follows and supports the Bo2W philosophy. Sharing investment costs when the pre-processing and end-processing companies start their business relation is not deemed appropriate under the Bo2W concept because business partners have not yet built a trusting business relation. However, with continuous long term cooperation and a growing mutual confidence, (partial) cost sharing between pre- and end-processing elements should become possible.

6. Conclusion

This report focuses on the specific funding requirement for local dismantling companies as part of the Bo2W approach. The general Bo2W approach to encourage local dismantling after hightech recycling in designated recycling plants implies a serious time gap between investment and cash flow. Collecting e-waste and then dismantling, storage until collecting a shippable amount, shipment and finally determining the precise value – preconditions for cash flow – can last up to six months. The time gap along with quite high investment costs to set up the entire dismantling process pose serious obstacles for local dismantling companies. In addition, access to finance is a key constraint for SMEs in developing countries. Credit volumes provided by microfinancing institutions are too low to meet the demand within the Bo2W approach. On the other end, the local dismantling companies are by far too small to be an attractive customer for commercial banks focussing on large or multinational corporations. Overall, financial markets' inattentiveness to SMEs is described as "financial gap".

The report reviews the business environment for SMEs in Ghana, showing that a lack of access to finance is identified as the biggest obstacle. Considering recent developments, the situation for SMEs has tightened, especially for exporting SME.

The report offers suggestions to overcoming the financial gap. A promising start for SMEs is that Ghana implemented an online registry for moveable collaterals. Registering here should be the first step for local dismantling enterprises. Furthermore, the International Financing Corporation (IFC) is

named as a starting point to receive advisory for SME financing. Management skills, such as good bookkeeping, are important to verify an SME's financial standing and are therefore a precondition to finding access to finance. We encourage SMEs within the Bo2W approach to identify and participate in training programs provided by national bodies that teach management skills.

Bridging the financial gaps cannot only be a task for the SME itself. Governments and development agencies must continue to provide strong and resolute support to improve the business environment for SMEs while SMEs learn and strengthen themselves within the Bo2W approach.

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