

5 SWOT Analysis

The following chapter serves as a basic overview of the external and internal drivers for the implementation of PC in Lusaka. In particular, the focus is on considering an introduction of PC with regard to a subsequent introduction of an EPR system.

5.1 Methodology

In the following chapter the SWOT analysis (see Fig. 19:) is not used for a concrete company but for the idea of PC used as bridge concept towards EPR. The strengths and weaknesses of PC in combination with EPR are compared to the local, external opportunities and threats. The goal is to obtain an overview that is as holistic as possible and might serve as basis for a practical approach of a PC project in Lusaka or even as basis for a business model for a PC provider.

Internal factors	external factors	
	OPPORTUNITIES	RISKS
<p>Plastic Credits and their possibilities with regard to EPR in Lusaka</p> <p>STRENGTH</p> <ul style="list-style-type: none"> Detached from complex legal integration Can be legally anchored as a tool in an EPR system Support market for secondary material and therefore circular economy Raise awareness for plastic topic Financing mechanism to fund required waste management aspects and future infrastructure Adaptations to local and geographic specificities Involvement and transfer of responsibility to producer and therefore relief of municipalities Collect local data and infrastructure Visible success through monitored projects (environmental, social, economic) 	<ul style="list-style-type: none"> Political support internationally, nationally and locally First EPR efforts but still under construction and possibility to integrate PC as instrument Strong middle class and emerging, albeit poor, stable country International interest (recycling market) High volume of waste also secures resources for recycling Basic infrastructure for optimization is in place, future-oriented infrastructure is possible Approaches for digital solutions available 	<ul style="list-style-type: none"> Weak involvement of producers so far No clear legal framework except to EPR Highly fragmented system and high non-manageable amount of waste Lack of reliable numbers and transparency (a.o. due to paper-based documentation) Informal sector dependent on waste collecting and sorting, no safe-guarding so far High and increasing costs Bad waste quality due to missing sorting structure No sustainable view of the system No support from politics and lack of policy implementation; no enforcement of laws Non-sufficient awareness in the population
	<ul style="list-style-type: none"> Expanding legal opportunities for easy integration of PC as a tool to meet national and international goals Design of the PC under the premise of later integration into an EPR system (e.g. campaign, App) Raise awareness among the population; communication of impact and value Engage producers under advantage communication for emerging country regarding tourism, recycling topics or other economic aspects Provide incentives for producers also regarding the long-term EPR goal Introduction monitoring process and tools Develop system with local & geographic specificities (e.g. Informal sector integration, Using local App providers) 	<ul style="list-style-type: none"> Engage producers under advantage communication for emerging country regarding recycling topics or other economic aspects Establish strong producer involvement Use fragmented system to run pilot projects with PCs and lay basis for centralized solution (EPR) Continuous data collection for price specification (e.g. Digital solution/App) Develop system with local & geographic specificities (e.g. Informal sector integration, Using local App providers; enhance waste quality) Introduce sustainability factors to be considered in the implementation of PC / Using standard settings Expanding legal opportunities for easy integration of PC as a tool to meet national and international goals Raise awareness among the population; communication of impact and value (e.g. campaign)
<p>WEAKNESS</p> <ul style="list-style-type: none"> Detached from complex legal integration, voluntary Realistic PC price Sale of PC/ No buyer Only low impact due to amount and quality of service Danger of greenwashing / misleading claims Missing quality standard (not sustainable) Missing additionality Compelling structure with EPR 	<ul style="list-style-type: none"> Expanding legal opportunities for easy integration of PC as a tool to meet national and international goals Engage producers under advantage communication for emerging country regarding recycling topics or other economic aspects (e.g. campaigning) Provide incentives for producers also regarding the long-term EPR goal Continuous data collection for price specification (e.g. Digital solution/App) Introduce sustainability factors to be considered in the implementation of PC / Using standard settings Design of the PC under the premise of later integration into an EPR system 	<ul style="list-style-type: none"> Design of the PC under the premise of later integration into an EPR system Engage producers under advantage communication for emerging country regarding recycling topics or other economic aspects Provide incentives for producers also regarding the long-term EPR goal; Establish strong producer involvement Expanding legal opportunities for easy integration of PC as a tool to meet national and international goals Introduction monitoring process and tools Continuous data collection for price specification (e.g. Digital solution/App) Introduce sustainability factors to be considered in the implementation of PC / Using standard settings

Fig. 19: SWOT Analysis (own illustration; see also Annexure 11)

5.2 Opportunities of PC in Lusaka

In order to make the best possible use of local opportunities, it is essential to exploit the strengths and weaknesses of PC (see also chapter 3). PC are initially disconnected from complex legal integration but might be used as a bridging tool for future EPR systems. To ensure this, it is necessary to work together with political stakeholders on simple and meaningful integration. To do so, current legal aspects and future goals must be taken into account (for details see action 2). This implies the consideration of PC as component of a future EPR system (see action 1 and 2). Zambia is considered one of the most politically stable countries with an emerging middle class (cf. GIZ 2020). Various economic sectors show growth including recycling industries. Already now international companies seem to be active in the recycling market. At this point, PC can contribute to the development and strengthening of the market for secondary materials as and also lays the basis for constant revenue stream within an EPR-System (cf. Lee 2020: 11; Nguyen 2022: 42–43) (see action 2). Since the basic infrastructure is already in place, it can be built up gradually, taking into account local and geographical specifics (see action 3). Since certain components of the infrastructure already exist, money from the PC system can be used well and wisely to expand future infrastructure. One of the greatest strengths is the involvement of producers to reduce costs for the public sector and citizens (cf. Prevent Waste Alliance n. d.). Since this, of course, involves costs, it is necessary to convince producers of the usefulness and to create various measures for voluntary participation in the system PC to counteract the weakness of voluntariness. (cf. Johnson 2022: 12–18). Be it through the help of incentives, or e. g., co-design rights in EPR systems (see action 4,5). Nevertheless, the lack of the realistic price as well as uniform quality standards for PCs are a major challenge (cf. Prevent Waste Alliance 2022a: 8). This can lead to various consequences such as greenwashing or low positive impact. The lack of a price for PC is also based on the incomplete data situation regarding the waste flow. Detailed recording would therefore not only lead to greater transparency, but also provide the basis for a cost-covering PC price (see action 9). This data can also create a baseline for further develop-

ments from an EPR system and create visibility of successful projects (cf. Prevent Waste Alliance 2022b: 1). In Lusaka too, there are already digital solutions which can be used to collect data and thus create transparency (cf. Ebusaka 2022; see action 7). The weakness of greenwashing, missing impact or also a poor or unsustainable implementation can be mitigated and possibly even prevented by quality assurance, such as PC standards (see action 10). These standards are not only important for the projects and the implementation of sustainable solutions but also to enhance the life of the residents and the informal sector (cf. Prevent Waste Alliance 2022c: 2). Considering the residents, they also have a high share in the overall waste issue. PC can be used here to create awareness around the handling and value of waste (see action 6).

5.3 Risks of PC in Lusaka

Of course, the introduction of PC also involves risks that need to be considered and avoided. If the involvement of producers is not successful, there will be a lack of support and a lack of financial basis for using PC as a component of EPR system development (cf. Prevent Waste Alliance 2022a: 8; see action 4,5). Here it is also necessary to ensure realistic pricing and benefit argumentation with regard to the producers (action 9). Unless PCs are thought of from the outset as a tool for implementing EPR systems, there are risks which might block the introduction of an EPR system (cf. Prevent Waste Alliance 2022a: 153). One risk may occur due to a low-cost implementation of PC. Producers could invoke PC and refuse a more costly EPR implementation. However, this can be reduced by involving producers at an early stage. The fragmented system in Lusaka could be a problem, as EPR systems are about holistic solutions. Nevertheless, PC projects can become important components of a large solution (see Action 8). The lack of reliable data is a risk but can be minimized through (digital) data collection in PC projects (action 9). The risk associated with the involvement of the informal sector lies particularly in the need to secure people and their income. At the same time, it is necessary to build a reliable system which also serves the aspects of additionality

and fulfil quality standards. To ensure that PCs and the associated financial resources are used sustainably and do not threaten livelihoods, the implementation of sustainable solutions is required (see action 10). Other risks include a lack of awareness among stakeholders (including residents and producers) and a lack of political support, particularly in the area of enforcement of regulations. Building awareness can be achieved through various campaigns (see action 6). The lack of policy support or simply the lack of implementation options can be addressed by bringing together local, national, and international goals. This can lead, for example, to an increase in human resources and also to a stricter pursuit of defined regulations (see action 1). Poor waste quality poses a risk to the recycling market, as recyclable resources cannot be used due to poor quality (see chapter 4). This risk can be minimized by optimizing waste management and implementing an infrastructure adapted to local conditions (see action 3). PC and its systematics can be used to reduce the high costs of waste management in the long term. Digital tools can also be used for this purpose (see action 9).

5.4 Actions Overview

The following actions serve to outline exemplary tasks in the implementation of PC as a bridge concept towards EPR systems. These actions do not claim to be complete and serve as a rough framework for the development of PC projects or even a future business model for a PC provider.

1) Expanding legal opportunities for easy integration of PC as a tool to meet national and international goals:

In Lusaka, there are already initial efforts to implement an EPR system standard (cf. Zambia Environmental Management Agency (ZEMA) 2018; see chapter 2.4). However, this is still in its early stages and will take several years (cf. WCEF 2021; WWF Akademie n. d. a.; see chapter 2.3). The opportunity that PC offers is the immediate implementation taking into account the already formulated local (for example, the increase of the recycling rate to 30 %) as well as the national and international goals (includ-

ing SDG). In the future, these can also represent the clear definition and targets required by EPR Design Principles (EDP1) and thus be understood as a step towards CE and EPR. (LCC 2022: 5–10). It would be desirable if legal foundations and regulations would promote the participation in PC projects or, if possible, temporarily declare it as an obligatory action, e.g., on the local level. This must be in line with the higher legal framework and should involve relevant stakeholders, such as producers, from the very beginning. This means that already during the implementation and planning of PC projects, representatives for a future EPR system are present or, if these persons do not yet exist, the PC providers take over the advisory role with regard to this task. Possible realization options:

- Kickoff Meeting with relevant stakeholders while planning and implementing PC Project (initiated through PC Provider or external advisory role).
- Conducting regular appointments and reports to document PC projects.
- Regular communication regarding legal possibilities and changes (e.g., through LCC).
- Evaluation and documentation to share insights from the projects for further legal adaptations.

2) Design of the PC under the premise of later integration into an EPR system

The focus on national and international goals defined under action 1 is also reflected in the basic design of PC projects. Through the involvement of relevant stakeholders, the flexibility of PC can be exploited and options for the EPR system can be created at the same time. This means both the integration of political developments, economic trends and the definition of long-term goals. Through this anchoring, a risk of collision with future EPR systems can be avoided. Also involved stakeholders on different levels can be addressed and integrated in order to obtain the most comprehensive support possible on all levels. Important aspects here are the implementation of PC projects in compliance with the EPR principles (see 2.3). Co-ordination and collaboration between stakeholders such as

the LCC, ministries, producers, waste collectors, recyclers, residents and the informal sector must be strengthened and should already take place in the PC projects (EDP4, EDP3) (cf. WWF Akademie n. d. b.). One main aspect of these projects, which also goes along with the international goals in Zambia, is to focus on CE (EDP2). In addition to the locally adapted project design (see action 3), PC must then also be communicated as part of a higher-level EPR solution. This communication is directed at the stakeholders, but is particularly relevant with regard to the producers. Through this connection, the linking of future benefits or incentives with the costs incurred today is conceivable. Possible realization options:

- Kickoff Meeting with relevant stakeholders while planning and implementing PC Project (initiated through PC Provider or external advisory role)
- Development of communication campaign to explain link and its possibilities between PC Projects and future EPR
- Documentation and reporting on producers' participation for future EPR actions.

3) Develop system with local & geographic specifics (e. g., informal sector integration, using local digital App providers, enhance waste quality)

The local reference is highly relevant and can be well covered by PC. The understanding of the existing system and its adaptation can lead to the development of a well-tailored system that takes into account the different requirements (EDP 7) (cf. WWF Akademie n. d. b.). In Lusaka, this could concern the integration of the informal sector as well as the cooperation with local providers regarding digital solutions or the development of sorting stations. Possible realization options:

- Setting up and implementing a PC pilot project with all stakeholders and define clear objective to collect and dispose of a certain area (e. g., sub-area of the illegal waste dump Misisi).
- Composition of the appropriate project team, including producers, waste pickers, aggregators, waste collectors, recyclers or the cement plant. In addition, project coordinators (e. g., NGO or LCC

representative), digital tracking App provider like Ebusaka, Zaidi (Tanzania), Unwaste (Mosambique) (cf. Ebusaka 2022; Zaidi Recyclers n.d.; Wastebase n.d.) and third parties to control the results (e.g., LCC representative or external consultants). These structures might be used for future PRO.

- Implementation of the project and subsequent evaluation, also with regard to overriding national and international goals like SDGs or the Zambian Vision (cf. LCC 2022: 5; Republic of Zambia 2006: 1).

The sustainable integration of waste pickers through registration, secured income and social security also deserves special mention. Registration via App would be conceivable, so that it would also be possible to make contact outside the PC project. It is also important to involve the aggregators and other stakeholders in a meaningful way so that these small businesses are protected. This could be achieved, for example, through the paid use of aggregator stands as collection points for PC projects.

4) Engage producers under advantage communication for emerging country regarding, recycling topics or other economic aspects

The initial challenge of PC projects remains the sale of PCs to producers which should guarantee the financial sustainability (EDP5). If it is possible to use PC projects as a bridge concept, new opportunities will also arise in the argumentation of advantages (see action 2). Possible realization options:

- Development of communication campaign to explain link and its possibilities between PC Projects and future EPR (provide potential future benefits for current PC purchases (see action 5).
- Implementation of the campaign at national and international congresses or events.
- Conducting face-to-face marketing within Lusaka (through PC providers and municipality representatives).

5) Provide incentives for producers also regarding the long-term EPR goal

PC projects are voluntary so far. However, if they can be perceived as a pilot phase of EPR projects and thus as part of an overall system, various opportunities for the use of incentives will arise which can also promote cooperation (EDP4). Possible realization options:

- Financial compensation e.g., reduction of taxes or usage of new infrastructure to reduced costs (further possibilities see Tab. 16:).
- Provision of reports and results of the pilot projects with relevant reference to the own business (e.g., waste flow, waste quality).
- Offer of an external consulting service with regard to CE (especially for smaller business).
- Involvement in the determination of future infrastructure improvements.
- Assistance in the preparation of marketing materials about the funded PC projects.

Most of these incentives can be financed by the PC system itself, but some of the external services are additional and must either be added to the PC costs or calculated as part of the introduction of EPR systems.

Tab. 16: Policy instruments under the EPR Umbrella (adapted from Widmer et al. 2005: 436–458; Nnorom and Osibanjo, 2008: 489–501.)

Category	Examples
Regulatory instruments	Take-Back programs (mandatory or voluntary), including the provision of infrastructure; reuse and recycling targets; minimum product standards; prohibitions of certain hazardous materials or products; disposal bans; mandated recovery/recycling obligations
Economic instruments	Product taxes, input/material levies, virgin material taxes, collection fees, disposal fees, deposit-refund schemes, subsidies, tax/subsidy combinations
Information instruments	Environmental reports; information provision to consumers, collectors, recyclers, etc. through education and awareness raising campaigns.

6) *Raise awareness among the population: communication of impact and value (e.g., campaign, App)*

Another task is to educate the public on how to manage waste. The initial focus here should be on raising awareness of sustainable waste management, thus also explaining the need for CE (EDP2). Possible realization options:

- Communication campaigns in schools and kindergartens regarding the value of waste its avoidance and its recycling.
- Communication campaigns via relevant digital media (social networks or also Ebusaka App) including providing incentives (e.g., bonus points for waste sorting in the household).
- Increased use of waste separation in public buildings to make people aware of its usefulness and necessity.

7) *Introduction monitoring process and tools*

It is reasonable that all changes and expansion stages in waste management are monitored (EDP7). This includes PC projects, EPR actions and other initiatives. The key to this is a data-based adaptation of the structures in order to improve the waste management situation as efficiently as possible, but also verifiably. With the help of a valid secure database, important insights may be gained which are for instance beneficial for setting priorities in the expansion of the infrastructure. In addition, data acquisition also serves to monitor and control PC projects and can thus prevent fraud and greenwashing (cf. Liu et al. 2021: 42–51). Possible realization options:

- Use of a central tool for recording waste flow (e.g., Ebusaka App).
- Regular evaluation of data, to develop a baseline for future EPR systems (through external instance).
- Introduction of monitoring processes by neutral parties, e.g., external consultants or local authorities.

8) Use fragmented system to run pilot projects with PCs and lay basis for centralized solution (EPR)

Locally in Lusaka, there are diverse providers, solutions, startups and opportunities to address the waste problem. A centralized solution is not yet possible, but the fragmented system can be used to test small and medium projects and their success. The implementation of pilot projects is promising, as they can gradually contribute to the improvement of the system (see also action 3). Possible realization options:

- Definition of pilot projects including objectives and questions, e. g., implementation of pilot project with introduction of sorting stations to answer the question about the improvement of waste quality.
- Providing results for the further development of waste management structures and possible EPR implementation.

9) Continuous data collection for price specification (e. g., digital solution/App)

Digital data capture as a tool for price calculation is useful and a prerequisite for the implementation of a PC project. Manual data entry is still conceivable, but also susceptible to fraud. A secure digital solution would be useful here. The evaluation of the data should take place regularly (e. g., every three months) and be communicated transparently to all stakeholders. In this way, the results can also be used for future EPR development and realistic pricing. This also promotes transparency and cooperation between all stakeholders and builds trust. Possible realization options:

- Introduction of digital data collection.
- Evaluation and transparency about data and possible price adjustments.

10) Definition of sustainability factors to be considered in the implementation of PC / Using standard setters

There are a number of certification providers. These can be used to ultimately build up the system in a sustainable and traceable manner and thus also pay into the EPR. When implementing PC projects, certain aspects must be taken into account, which are already being pursued by some standard setters such as ValuCred (cf. ValuCred 2022). It is advisable to work together with these standard setters. Possible realization options:

- Building a PC team, taking into account the standard setters that are particularly suited to the country and its goals (e. g., relevance for SDG goals).

5.5 Interim conclusion

This chapter dealt with the SWOT analysis and the resulting actions are showing opportunities for PC as a bridge concept to an EPR system. The basic prerequisites, such as the quantities of waste available, rudimentary expandable waste management as well as national and international targets for CE, are in place in Lusaka.

Since the EPR system is only rudimentary, there is a good possibility that PCs provide relevant data for its concrete future design. In contrast, a future EPR system can include PC as a relevant tool and thus enable the set of actions regarding cooperation with producers, e. g., through long-term incentive actions. Here, however, it is always necessary to find the right balance between the flexibility of PC projects and more rigid EPR systems. This balance can certainly only be tested and limits defined during concrete implementations.

The basic fragmented structure in Lusaka offers the possibility to explore the effects of PC in the form of pilot projects and to collect data for an EPR system. For this purpose, it makes sense to understand the monitoring and its evaluation not only as a documentation tool for the PC projects, but also to examine the data for higher-level goals. Also, the existence of the digital app, can be understood here as an advantage and

opportunity for PC and EPR systems. Clear communication campaigns can also help define and shape a future overall system. In order to actually be able to use this bridging function, it is important, that basic quality standards are met and that, in the best case, rules and specifications for EPR systems can also result from this. If the balancing act between short-term PC projects and medium- and long-term goals can now be mastered, Lusaka could be the first city to use PC as an actual bridging concept.

