AFRICA COLLECT TEXTILES

Textile Collection for Re-Use and Recycling in Lagos, Nigeria

Context, Constraints, Opportunities

Final Report: Feasibility Study, Phase 1

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List of abbreviations

ACT   Africa Collect Textiles
KII   Key Informant Interview
ISWA   International Solid Waste Association
LAWMA   Lagos Waste Management Authority
NTMA   Nigerian Textile Manufacturers Association
PSP   Private Sector Participant
RCCG   Redeemed Christian Church of God
RVO   Rijksdienst voor Ondernemend Nederland
UNEP   United Nations Environment Programme

Executive summary

For decades, the global textile and fashion industry has followed a linear way of production and consumption that – among other issues – extracts resources and inexpensive labour from some developing countries and ships its *fast fashion* products to rather well off countries, which then often dump unwanted clothes as second-hand items onto other developing countries. "With little regard for societal and environmental consequences worldwide, such a linear model creates a tremendous loss of value, both ecologically and economically, estimated to more than USD 500 billion every year due to underutilisation of clothing and lack of recycling."

For a more sustainable textile economy, the sector has to act urgently to implement newer and 'greener' business models on global and local scale. Key words such as circularity must not only be put onto reports and marketing tools but must actually be implemented all over the world, including Africa. This is the explicit mission and goal of Africa Collect Textiles (ACT), which aims to install collection and recycling models for used textiles in cities across Sub-Saharan Africa.

ACT is successfully running a collection, sorting, and re- / up-cycling system in Nairobi, Kenya. The social enterprise collects unwanted clothes and other textiles and fashion items at churches, shopping malls, universities and schools. Subsequently, the collected items are sorted and then donated or resold or recycled or upcycled. With this experience, ACT has now conducted a feasibility study in Lagos, Nigeria to answer the questions "In what way, if any, could the ACT model be implemented in Lagos to allow for long-term, financial and technical feasibility of a local textile collection and recycling business?" To answer this question a primarily qualitative to experimental feasibility study was conducted in 2019 / 2020 although its fieldwork in February / March 2020 got cut slightly short due to the global COVID-19 pandemic.

Covering socio-cultural, micro-economic, legal and other aspects, the study concludes that an implementation of a textile collection and recycling scheme similar to the one implemented by ACT in Nairobi is feasible in Lagos. However, the final business model for Lagos will need to deviate from the one in Nairobi. Reasons for necessary adjustments are manifold and include aspects such as a) the relative absence of wool and acrylic from clothing worn in Lagos, b) the inability of potential industry partners to recycle broken pieces into new fibres, c) the potential of the *aso ebi* culture as a motor for unwanted but high quality fashion pieces, and d) the potential of a pick-up service (especially during and after COVID-19), among other reasons.

Nevertheless, the socio-economic and ecologic potential for ACT Lagos is clear, and the necessary adjustments of the model for it to cater to local conditions have been identified. Hence, ACT now aspires to roll out a model in Lagos for a) collecting and redistributing used clothing in order to provide low-income communities with decent but affordable outfits and b) building the foundation for a more circular and local Nigerian fashion industry, by preparing large quantities of sorted materials, suitable for repurposing, upcycling and recycling. With such vision, a local service model of ACT has to be prototyped and thoroughly tested in Lagos.

1. Implementation of the study

Worldwide, an estimated 60 billion kilograms of textiles and footwear is lost (burned or landfilled) every year.[1] As of today, low-income countries such as Kenya and Nigeria contribute comparatively little to the world's textile waste[2] but many African countries continue to import more and more (second-hand) clothes and simultaneously invest heavily in local production. Yet, simply increasing textile imports and production, and thus textile waste, comes with pitfalls and concerns if local systems and industries are not ready for it.

On one hand, textile waste collection and textile recycling are virtually non-existent in most countries of the so-called Global South, including Sub-Saharan Africa.[3] On the other hand, experts argue that the future of the African textile and fashion industry desperately needs sustainable, locally embedded, and circular business models for the sector to become actually competitive again in local and international markets.[4]

For more sustainable, global and local textile economies – which, by the way, will also play a crucial role in combating global climate change[5] – the sector has to act urgently to implement newer and 'greener' business models such as *Long Live Fashion*, *Innovative Recycling*, and a *New Textiles Economy*.[6] One of the pieces of the puzzle to create a more sustainable textile and fashion industry in Africa and elsewhere is to support and elevate concepts that champion circularity on local or municipal level; so that the annual 60 billion kilograms of lost textiles and footwear on global level can be reduced. This is the explicit mission and goal of ACT, which aims to install collection and recycling models for used textiles in cities across Sub-Saharan Africa.

Since 2013 ACT has successfully installed, adapted, and expanded a collection, sorting, and re- / up-cycling system in Nairobi, Kenya. By placing collection containers, ACT collects unwanted clothes and other textiles and fashion items in churches, shopping malls, universities and schools in Nairobi. Subsequently, the collected items are sorted and then donated or resold or recycled or upcycled.[7] With this experience, and supported by the Rijksdienst voor Ondernemend Nederland (RVO), ACT has now conducted this feasibility study in Lagos, Nigeria. With plans to transfer and adapt the Nairobi model to other urban agglomerations in Africa, the case of Nigeria – or specifically Lagos – was selected due to four key factors:

- Nigeria and especially its megacity of Lagos are a significantly growing market for fashion and textiles[8] – thus, creating potential demand for locally sourced second-hand clothes or upcycled products and producing more and more textile waste by itself.[9]
- As in many other African countries, (imported) second-hand clothing – called *okrika* or other vernacular terms in Nigeria – is an "inevitable part of Nigerian life"[10] as most Nigerians purchase (imported) second-hand clothing on a regular basis.[11]
- Professional schemes, programs or businesses for any kind of waste recycling are still scarce in Lagos[12] and – as this study has confirmed – professional textile waste collection and recycling schemes are (most likely) non-existent in Lagos.
- Lagos is seen as a test for the ACT model and for its potential futures in African cities other than Nairobi – with its probably 20 million inhabitants,[13] Lagos is "a city that's very anxious" where "everyone is always in a hurry" and where "everyone needs to get ahead of the other."[14]

1) Fletcher 2016

2) Ellen MacArthur Foundation 2017: 19

3) Ibid.: 25

4) Aziz et al 2019: 94-95

5) UNEP & ISWA 2015: 14

6) Accenture & H&M Foundation n.a.; Ellen MacArthur Foundation 2017: 23pp

7) For detailed information on ACT's current operations in Nairobi, go to: http://africacollecttextiles.com

8) Aziz et al 2019: 90pp; Hogarth et al 2015: 58

9) The actual amount of textile waste in Lagos is hard to impossible to estimate. However, based on overall numbers of waste production and rough estimates on the waste composition in Lagos, textiles waste could amount to 100 to 1,000 metric tons each and every day in Lagos State alone. See: Adeniran et al 2017: 3; Balogun-Adeleye et al 2019: 2pp; Dark 2019; Oyelola et al 2017: 146; UNEP & ISWA 2015: 57.

10) Okolo 2017

11) Ahmed 2019; Okolo 2017

12) Ajila 2019: 1430; Ayodele et al 2018: 172; Ibukun 2019; Salau et al 2016: 31

13) Various numbers and estimates on Lagos' population size are available. Yet, given the often questionable reliability of population data for African cities, this report will refrain from giving exact numbers.

14) Quotes by Kunlé Adeyemi in: Michael 2016

- Based on an initial rapid online research, the study team assumed that the textile and garment industry in Lagos is comparable to the one in Nairobi in terms of scope and technical capacities to work with textile waste or recycled textiles.

Overall, the analytical objective of the study is to analyse the potential and constraints for an implementation of the ACT model in the local context. The practical objective is to provide the knowledge base and contacts for the setup of ACT Nigeria with a pre-selected network of partners. And finally, the strategic objective is to inform the later roll-out process in a way that allows for the most efficient prototyping, scale-up and handover to local actors. To achieve those objectives, the research for this study was guided by a main research question, namely:

> **"In what way, if any, could the ACT model be implemented in Lagos, Nigeria to allow for long-term, financial and technical feasibility of a local textile collection and recycling business?"**

This question was further broken down along four dimensions and respective questions:

- **Socio-cultural dimension:** Which cultural norms or existing practices may affect the donation, collection, and re-use of used textiles / clothes?

- **Economic / market dimension:** How, if at all, will the current demand and supply of textile waste and potential up- / recycled products as well as the current actor landscape in Lagos affect the financial and technical feasibility of the ACT model in Lagos?

- **Business / legal dimension:** Which financial, legal, and infrastructural factors need to be considered before setting up ACT Nigeria?

- **Design dimension:** How should all other dimensions as well as additional local factors and capacities influence the final structure of ACT Nigeria, in terms of its organizational, material, technical and visual design?

Given the diversity of topics to cover and data to gather, the research of this study was conducted with a mix of classic (qualitative) tools of inquiry and additional hands-on, experimental and networking activities.[15] The tools and methods used for this study include:

- **Desk / online review** that reviewed and analysed nearly 150 available documents, such as academic journal articles, books, newspaper articles, blog posts, reports, and others.

Image 1 - Study team members (left and right) with principal and staff of Gbara Community Senior Secondary School, one of the locations of the collection experiment

15) A full overview of contacts and interviewees of the Lagos fieldwork can be found in the Appendix.

- **Key informant interviews (KIIs)** with a total of eight (local) experts on topics such waste management and the textile sector; conducted online or in-person in Lagos
- **Pair / triad interviews** with a total of five local experts to encourage deeper discussions around relevant issues
- **Technical conversations** with more than ten contacts in Lagos to discuss technological, logistical, and economical details that might affect the ACT model
- **Partnering conversations** with nearly ten contacts in Lagos to discuss potential synergies along various parts of the ACT model
- **Textile collection experiment** with collection bins that were installed at three key locations for several weeks to gather indicative data on the quantity and quality of textile that could be collected in Lagos (see Image 2)

The study process started in November 2019 with the initial desk review, the development of research tools, and logistical preparations for the field research in Lagos, which was primarily conducted in February 2020 – the textile collection experiment only continued into March 2020. Additional field research and activities in March / April 2020 had initially been planned but the global outbreak of the COVID-19 pandemic and drastic response measures in Lagos[16] brought all further investigations to an immediate halt in late March 2020. Thus, the depth of the study is less than initially planned for, yet its findings remain valid. Further limitations of this study are:

- Availability and reliability of (quantitative) secondary data for Lagos is low.
- The textile collection experiment is of indicative nature only.
- Considering the size of Lagos State with its many millions of inhabitants, it is impossible to identify and consult with all potential (industry) partners.
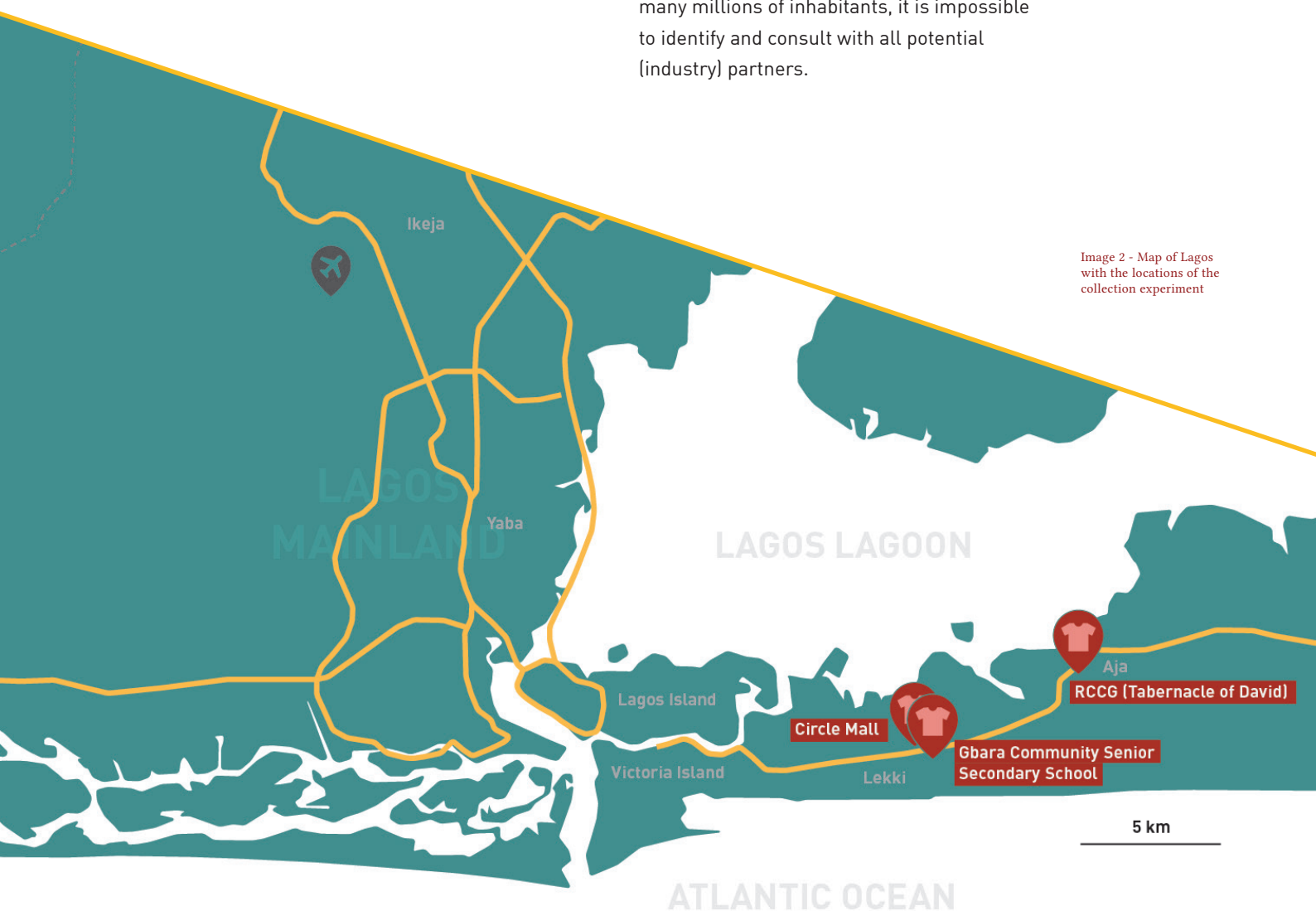
16) Kazeem 2020

Image 2 - Map of Lagos with the locations of the collection experiment

2. Findings of the study

Although the ACT model has proven to be largely successful in Nairobi for several years, the research team assumed that conditions in Lagos will demand for adjustments of the model. To structure the research and its findings for further use and specific conclusions, the study team looked at the various basic parts of the ACT Nairobi model as reference. Those parts are:

- **The actual collection of used textiles and unwanted fabrics / items**
- **The transport, storage, and sorting of collected items**

- **The creation of stable revenue streams**
  - **The resale / reuse of wearable fashion items** of appropriate quality to consumers
  - **The resale of unwearable (ripped) items** for repurpose or recycling
  - **The upcycling and sale of unwearable items**, internally or outsourced

The point of this study is to find out how its findings along the various research questions affect specific or all parts of the model, and thus how the model might need to be adjusted to the Lagos context.

2.1 Contribution to socio-economic issues and socio-cultural considerations

Lagos in context: The potential importance of ACT

As of now, Lagos – Nigeria's economic hub – and its residents are still recovering from the country's 2016 recession that led to a nation-wide increase of unemployment and decreased investment in nearly all sectors.[17] Even before the COVID-19 pandemic in 2020, conversations with experts and locals in Lagos confirmed that the socio-economic situation for many residents remains problematic as income generating activities are hard to get by:[18] Poverty and economic hardship are not only visible in the many informal settlements but also in the everyday encounter with beggars, run-down infrastructures, and so on. Not even considering the expected (global) economic downturn due to the COVID-19 pandemic, "by 2030 the number

of Nigerians living in extreme poverty could increase by more than 30 million."[19] This would leave Nigeria with 25 % of the whole world's extremely poor population; a trend that would clearly affect the country's biggest city too.

Amidst economic hardship, Lagos is battling with many further challenges – one of the major ones being an overwhelmed and inefficient waste management sector.[20] The validity of statistics and numbers on waste and the waste sector in Lagos is questionable;[21] yet, a recent report commissioned by RVO suggests, "the overall waste output of Lagos is a staggering 16,500 tons per day,"[22] of which only up to 40 % is actually being collected in some organized form.[23] Hence, the flaws of the waste system in Lagos become obvious at nearly every corner of the city: Waste in all its forms is threatening to

17) World Bank 2019: 1-2

18) Interviews / conversations with Lagos Urban Development Initiative and African Circular Economy Network (Nigeria) as well as multiple informal conversations

19) World Bank 2019: 2

20) See, for example: Chidiebere et al 2018; Keesman 2020; Nzeadibe 2015.

21) Official absolute numbers on waste generation vary significantly from year to year, and various studies from the past two decades show very different compositions in household waste – all this highlights that specific numbers might not represent the actual situation.

22) Keesman 2020: 10

23) Egbejule 2019; Ugwe 2015

swallow the city despite a) recent initiatives by the municipal government to increase collection and recycling,[24] and b) social enterprises such as *Wecyclers*[25] who build up on the strengths of the informal sector that makes up for most of the recycling activities in Lagos.[26] However, in terms of used textiles, this study finds that as of early 2020 – apart from small-scale and charity-driven initiative – no professional scheme for collection and recycling of textile waste exists in Lagos state.[27] Broken or unwanted clothing, shoes, and fabrics are usually either passed down within the family or donated at church or simply thrown away,[28] with the latter being the eventual fate of all textiles. Accordingly, when drawing from a range of studies and statistics from the past two decades,[29] it can be estimated that the textile waste output in Lagos is somewhere between 100 and 1,000 metric tons every single day.

Keeping the economic and (textile) waste issues of Lagos in mind, it is yet important to flag that the Nigerian textile and fashion industry has little to no choice but to become more sustainable and more resource-efficient in the future. Years of neglect, harsh international competition by cheap imports of new and second-hand clothing, and environmental degradation caused by its harmful practices have left the sector in an arguably bad state, close to its complete demise.[30] Revamping the sector and drawing from dynamic developments – such as *Lagos Fashion Week* with their newly found passion for sustainability[31] – will require innovation such as circular business models and more holistic resource streams. An initiative such as ACT could deliver resources for and from textile recycling and upcycling, thus creating cross-sector collaborations between waste management and the fashion / textile industry.

Since no similar initiatives seem to exist in Lagos, the basic potential of ACT to combat the massive amount of textile waste in the city is clear. In addition, Lagos is always in need for further employment opportunities as the economic situation highlights – ACT would also provide employment for to-be-trained staff in management and logistics. A couple of further benefits and potentials of a Lagos-adjusted ACT model were also identified, such as providing low-budget clothing to poorer Lagosians, supporting local artisans through potential upcycling collaborations, and playing a role in sensitizing the public around sustainable practices and (textile) recycling.[32] In sum, there is little to no doubt that an initiative and business such as ACT could contribute to the socio-economic and ecological development in Lagos – a conclusion echoed by many of the interviewees as well as other experts: "The processing of used textiles [in Lagos] could be good business, could save a lot of resources and create jobs."[33]

Socio-cultural considerations: Constraints or opportunities for ACT

Personal items such as clothing and other textiles are often embedded in complex cultural contexts and diverse individual behaviours. Thus, for a better understanding of constraints and opportunities of a textile collection and recycling scheme such as ACT, it is crucial to engage with socio-cultural questions that can make or break such initiative. In regard to a potential feasibility of ACT in Lagos, the following areas and issues were identified as important constraints or opportunities.

Fashion choices and specific practices: Everyday fashion and *aso ebi*

Repeatedly, interviewees and other contacts highlighted the importance of fashion in local culture and consumerism. Particularly among middle- and upper-class Lagosians, extensive investments in fashion and distinct fashion choices are highly common as it relates to social status or the performance of such.[34] Accordingly, a steady increase in fashion and textile consumption is projected by international experts for Nigeria[35] – especially for a city like Lagos,[36] resulting in future increases of textile

24) Interviews / conversations with Waste Management Society of Nigeria and African Circular Economy Network (Nigeria); Salau et al 2016

25) Savelli n.a.; see also: www.wecyclers.com

26) Chidiebere et al 2018; Ogbonna & Mikailu 2019; Salau et al 2016

27) This has been confirmed by several interviewees and contacts, such as Lagos Urban Development Initiative, Waste Management Society of Nigeria, and Dr. T. C. Nzeadibe.

28) Interviews / conversations with Lagos Urban Development Initiative, RCCG and Dr. P. O. Akponah.

29) See, for example: Adeniran et al 2017; Balogun-Adeleye et al 2019; Dark 2019; Oyelola et al 2017; UNEP & ISWA 2015

30) Interviews / conversations with NTMA; Adebayo 2015; Aminu 2016; Muhammad et al 2019

31) See, for example: www.lagosfashionweek. ng/the-heineken-design-contest-2020

32) Interviews / conversations with Fashion Revolution Nigeria and Lagos Urban Development Initiative

33) Keesman 2020: 21

34) Interviews / conversations with Fashion Revolution Nigeria, Lagos Urban Development Initiative, African Circular Economy Network (Nigeria), and others.

35) Oxford Business Group 2017

36) Aziz et al 2019: 90

consumption and waste which then could be used as a resource by ACT.[37]

The abundance of locally tailored sets of traditional attire and – especially – the distinct Yoruba practice of *aso ebi* provide an opportunity for ACT in Lagos. In short, "*aso ebi* refers to uniformed dress worn by friends and family members during social events in Nigeria."[38] Attendees of events with *aso ebi* (e.g. weddings) are obliged to obtain a specific fabric from the hosts, which is then used to tailor specific outfits or accessories. This results in event-specific garments that are mostly just worn once and then usually stored away in wardrobes, sometimes for decades.[39] The results of the textile collection experiment highlight this potential for ACT (see also page 15): Of all items collected, nearly one out of ten was a traditional set or dress likely to be related to *aso ebi*. In addition, those items were usually of very high quality, making them a highly valuable resource and potential revenue stream.

Second-hand fashion in Lagos: The pros and cons of *okrika*

Second-hand clothing – primarily imported from the West – has a decade-long history in Nigeria, initially shipped through the port of Okrika.[40] Hence, one of the most common vernaculars for second-hand clothing is *okrika*; but today *okrika* in Lagos is mostly coming in from the city's own port and from Benin,[41] both illegally – the import of *okrika* and other fabrics is actually outlawed to protect local industries. Yet, due to rampant corruption this ban is highly ineffective and can even be counterproductive.[42] Thus, imported *okrika* has become an "inevitable part of Nigerian life", meaning that most Nigerians purchase imported second-hand clothing on a regular basis.[43] With some limitations (see below), this results in a general openness of consumers in Lagos towards second-hand clothing. Accordingly – and although Nigerian *okrika* does not play any role on the local market yet – the familiarity with second-hand clothing provides an opportunity for ACT as collected items with appropriate quality could be resold easily.[44]

37) *NB*: Anecdotal experience of the whole research team from Lagos as well as from Nairobi hint to the fact that fashion and fashion consumption appear to be of larger scope and importance in Lagos than in Nairobi. This could be an additional advantage for implementing ACT in Lagos.

38) Nwafor 2011

39) Interviews / conversations with RCCG, Trend Cube, Fashion Revolution Nigeria, and others

40) Abubakar et al 2018; Ahmed 2019

41) Abubakar et al 2018; Brooks 2015; interviews / conversations with NTMA and Trend Cube

42) Brooks 2015; Oyejide et al 2013; Oxford Business Group 2017

43) Okolo 2017; interviews / conversations with NTMA and Trend Cube

44) Conversations with *okrika* traders and sellers in Lagos highlighted repeatedly their interest in obtaining Nigerian *okrika*, as all of them believed that most consumers would not care where the items are from but only quality (and price) would determine buying choices.

Image 3 - Image of a small roadside *okrika* market in Lagos

Despite the abundance of *okrika* in markets and households in Lagos, those items can still be attached to a stigma of poor people's clothing.[45] However, consumer perspectives have shifted in recent years and *okrika* has become more and more a middle-class commodity as well:[46] To a point where *okrika* is now even sold in little boutique shops and small online retailers – sometimes even especially curated for individual consumers.[47] Generally, the perception and consumption of *okrika* in Lagos – and in Nigeria in general – is torn between its still slightly negative image and its popularity among consumers due to its perceived affordability, diversity, and durability.[48] This dichotomy should inform ACT's business model and narrative regarding any items that can be resold on the local market – still wearable items with different levels of quality can be targeted at different consumer groups.

Despite the rather positive general attitudes towards purchasing and wearing second-hand clothing, some other socio-cultural aspects can affect *okrika* business. According to online sources, some Muslim populations might be opposed to *okrika*, as it is not possible for them to determine if disbelievers wore those items.[49] According to various interviews, buyers of Nigeria-sourced *okrika* might be concerned about potential curses or other effects of ritual practices.[50] Nigerian (online) media has repeatedly reported on concerns about potential health hazards that might arise with (imported) *okrika*, such as fungi.[51] Yet, the prevalence of *okrika* in Lagos shows that used textiles are already a valuable and culturally accepted commodity in the city. Still, any initiative that works with such needs to keep the socio-cultural aspects above in mind: Only business models that champion transparency, anonymity, and hygiene throughout the collection and recycling circle will be successful.

Donation and charity culture: Churches and witchcraft

According to various conversations and interviews, Lagos and its residents are accustomed to a very lively culture around donation and charity. Specifically but not only at places of worship, individuals with enough means are donating cash on a very regular basis that is supposed to benefit their congregations and communities. Apart from money, the donation of items – such as furniture and clothing – is common but usually small-scale and only organized informally. The donation of clothes appears to be common in Lagos but seems to lack any kind of professional and coordinated initiative. As long as used clothes, shoes and such are still considered to be of appropriate quality, people pass them down in their families and communities or give them away for charity (e.g. at church).[52] Hence, interviewees directly recommended framing an initiative like ACT primarily as a charitable exercise as people are used to such and would react well to it – framing ACT as a business, on the other hand, would always attract additional financial interests.[53]

A key hesitation that might arise against the donation of clothing and textiles is a widespread belief among Lagosians in the potential effects of rituals or witchcraft or occultic practices, such as curses; a classic feature of urban Africa's widespread "occult modernity."[54] Various experts and contacts told the team that people might be afraid to give away their old clothes because others could then use these for specific practices that might have negative effects on their lives. This appears to be an already existing constraint for clothing donation within families and communities.[55] Any textile collection scheme has to ensure that concerns about the mishandling of personal items are addressed – a high level of anonymity must be guaranteed; collection bins without person-to-person interaction, for example, can be one measure to achieve this.

45) Okolo 2017

46) Ahmed 2019; interviews / conversations with Trend Cube, Lagos Urban Development Initiative, Dr. P. O. Akponah, and others.

47) For example, Trend Cube is one of the many middle-class-focussed okrika businesses in Lagos. With a small physical shop and an online presence via social media, Trend Cube is curating small batches for individual consumers but also selling single items as well as re-packed bales.

48) Abubakar et al 2018; Ajila 2019; interviews / conversations with Trend Cube as well as with okrika sellers and buyers at markets

49) Sana 2019

50) Interviews / conversations with Dr. T. C. Nzeadibe, Dr. P. O. Akponah, RCCG, and others.

51) Ahmed 2019; Akande 2017; Asabor 2018

52) Interviews / conversations with RCCG and Lagos Urban Development Initiative; scouting visits to churches and other potential places for the instalment of collection bin

53) Interviews / conversations with Circle Mall, Lagos Urban Development Initiative, and Dr. P. O. Akponah.

54) Bonhomme 2012

55) Interviews / conversations with Dr T. C. Nzeadibe, African Circular Economy Network (Nigeria), Dr. P. O. Akponah, and others.

Recycling practices and awareness: Few points of reference

Professional recycling – as well as upcycling – of any kind of materials is still rather rare and often highly informal in Lagos.[56] "Separation at source is still in its infancy in Lagos,"[57] so that the majority of recycling activities are further down the chain and left in the hand of few private sector companies and so-called 'scavengers' who collect recyclables in public space and landfills.[58] Despite recent efforts of the municipal government and the Lagos Waste Management Authority (LAWMA) to promote separation at source, the awareness and actual practices of Lagosians regarding professional recycling are very limited.[59] Accordingly, when explaining, narrating, and promoting ACT and its efforts, it is unlikely that people could be incentivized to give away their unwanted textiles due to ethics of recycling or sustainability.

Products and consumables produced from recycled materials do not seem to play an important role in the current consumer's market in Lagos. While some interviewees reported an increase of interest in recycling- and DIY-culture among Lagosians in recent years,[60] the research team found only a few examples of recycled products that were explicitly produced in Lagos and sold there.[61] Conversations with experts and regular inhabitants of Lagos created the impression that any re- / up-cycled products – from textiles or other materials – might not be a significantly interesting consumer product in Lagos.[62] Hence, given the sheer lack of points for reference in this matter, it is hard to impossible to assess if and how re- / up-cycled textile products might be perceived in Lagos.

Box 1: Questions on gender

ACT understands itself as a gender-inclusive social enterprise that is aware of the different socio-economic realities of men, women, and other gender identities in Africa and elsewhere. As a result, on one hand, ACT Nairobi has for example implemented targeted collaborations with craftswomen, such as weavers, for the upcycling schemes. On the other hand, ACT relies heavily on female clothing / textiles as these constitute the main share of collected clothes in Nairobi and, presumably, also in Lagos (see also page 15). Although this study does not address any questions of gender, ACT is determined to support the employment of and collaborations with women in Lagos for its future business model. In this way, ACT will not only address existing gender inequalities in Nigeria and Lagos[63] but it will also build on the long tradition of women as crucial actors of the Nigerian textile and clothing sector.[64]

2.2 Technical feasibility

In order to embed the ACT model into the Lagos context it is crucial to understand the textile and waste management landscape as well as the existing technical capacities. After all, any version of the model would be connected to collection and recycling activities by both, private and public actors.

The collection part of the ACT model: Current actors and potential partners

Companies like *Wecyclers* and *RecyclePoints* have deployed incentivised collection schemes to collect recyclables, such as paper, carton, tins, glass and / or PET from consumers and

56) Interviews / conversations with Waste Management Society of Nigeria, Dr. P. O. Akponah, African Circular Economy Network (Nigeria), and others

57) Keesman 2020: 14

58) Ogbonna & Mikailu 2019: 118

59) Interviews / conversations with Dr. P. O. Akponah, African Circular Economy Network (Nigeria), Lagos Urban Development Initiative, and others

60) Interviews / conversations with Lagos Urban Development Initiative and Fashion Revolution Nigeria

61) One of the few examples is Pearl Recycling, a company that primarily but not only produces small furniture out of old car / truck tires (see: www.designindaba.com/articles/creative-work/pearl-recycling-turning-nigeria%E2%80%99s-discarded-waste-stunning-furniture-and-home).

62) Interviews / conversations with RCCG and Lagos Urban Development Initiative.

63) See, for example: Makama 2013; Mayah et al 2017

64) ITC 2019

waste pickers.[65] Textiles are not included in their operations. The ACT model focuses foremost on wearable items through partnerships, while the rest is used to gradually build a circular economy for textiles. Because of the difference in operation, collaborations with them are currently unlikely, but that can change when individual pick-ups are feasible (see below) and / or textiles become 'recyclable' and more ripped or stained items can be processed by a system that can handle the increasing volumes.

The official municipal authority LAWMA manages Private Sector Participants (PSPs), small to medium enterprises focusing on waste collection and recycling.[66] LAWMA offered ACT to assist ACT in installing collection points.[67] When the relationship is strengthened in a follow-up phase, ACT could become one of the PSPs focusing on textiles.

During the collection experiment (see also page 15) used textiles have been collected in a selected church, shopping mall and school. In order to sensitize the community to donate, the welfare department of the church made announcements during a church service. In addition, to direct people to the mall, an estimate of about a thousand SMS texts were sent out via a bulk SMS system, indicating the exact location of the bin. A phone number was provided for further enquiries. The bulk SMS resulted in a number of pick up requests from individuals that had too many items or could not bring their items to the bin. Therefore, a 'pick-up' service was born and was added as a fourth collection channel. With 950 items collected, the experiment was a success and collecting clothes through donations is considered feasible in Lagos. Among other criteria, costs and effort of sensitizing the communities of collection partners, will influence their selection.

Next to that, in a next phase ACT will explore new ways of collecting and explore if direct pick-ups can be part of the model. The current COVID-19 crisis and the limitation of people's movement may direct ACT to consider this service sooner. Individual pick-ups may also unlock opportunities around incentivizing people as well as collaborations with regular waste collectors.

The potential revenue streams of the ACT model: Options and let-downs

Reselling wearables: *Okrika* bales and market spaces

According to various informal online sources and confirmed by conversations with *okrika* traders at Lagos' Katangowa Market, wholesale prices for (imported) second-hand clothing (in Lagos) can be Naira 50,000 - 160,000 for a bale, which roughly equates to Euro 120.00 - 380.00. Bales can be 55 kilograms with 350 - 450 pieces (Western World) or 100 kilograms (China); bales are usually graded into AA, AB, B, and C quality and may contain mixed or similar clothes (which again has an impact on the price).[68] At Katangowa Market – "the second-hand clothes capital of Lagos,"[69] located in the very North of the city not far anymore from the border with Ogun State – the *okrika* sellers buy bales from the UK, South Korea and China. The Chinese and Korean items have more variety in terms of style, colour, pattern, etc. The 'London bale' items come in bigger sizes, which is more preferable for the Nigerian market. Bales finish in two market days and in the meantime sellers pay for storing (parts of) the bales. Items that do not sell are taken to other markets, outside Lagos.[70]

Recycling textiles: The absence of possibilities

Textile producer Sunflag consumes 80 % of all cotton grown in Nigeria.[71] From its experience, ACT knows that mastering all steps of the process and understanding the origin and quality of the original fibers theoretically enables a future in which recovered fibers can be blended in with virgin fibers. Unfortunately, Sunflag does not recycle fabrics or cut offs from its own production, which would be a first step towards post-consumer recycling and a circular economy for textiles. Based on several discussions with

65) www.wecyclers.com & www.recyclepoints.com

66) Keesman 2020

67) Interview / conversation with LAWMA

68) See, for example: Adetiloye 2018; Ahmed 2019; DailySteer 2018; NaijaQuest 2019; Olaoye-Osinkolu 2016

69) Akande 2017

70) Interview / conversation with market salesmen at Katangowa Market, Lagos.

71) Interview / conversation with Sunflag

Box 2: Questions on school uniforms

Besides applying the ACT model, the study investigated the technical and economic feasibility of a circular model for (school) uniforms, as uniforms have the potential for circular business models due to its standardized materials and colors. In Lagos, there is a government policy that the students source for their own uniforms. Guidelines on pattern and colors are provided, but the school authority has little or no control over what shade of the school uniform, texture or quality of fabric the students use. The school authority therefore allows defaulters.[72] Based on this and the limitation of recycling by the Lagos textile industry, the installation of a circular business model for school uniforms looks currently unfeasible.

large textile producers and users like Globespin and Lucky Fibers, ACT assumes that cotton recycling on an industrial level is not common practice in Lagos.[73] Reason being it is capital intensive to recycle garments, as it requires advanced technology and technical expertise.[74]

Upcycling textiles

In Kenya, specific unwearable textiles collected by ACT are used for producing shoes and carpets. Collected materials can replace fabrics that otherwise would have been newly bought. Specific waste streams can spark new ideas for designs. Craftsmen at the Lagos craft market or working and selling from road side stalls, produce bags, purses, hats, customized souvenir items, often made from or with *ankara* fabrics. *Ankara* commonly known as (...) "African wax prints," "Holland wax," and "Dutch wax", is a 100 % cotton fabric with vibrant patterns. It is usually a colourful cloth and is primarily associated with Africa because of its tribal-like patterns and motifs.[75] *Ankara* cut-offs can be used to produce rugs, which are sold for around Euro 6.00[76] and sandals can go for Euro 7.00.[77]

Brands like enis_craft,[78] Ethnic,[79] Emsley_ng,[80] and Brand_us_shoes[81] are Nigerian (online) craft stores. Some venture into upcycling and revamping of old shoes and bags, using materials such as denim, velvet, leather, *ankara* print, etc. With prices going up to Euro 70.00 for

sandals and Euro 240.00 for a bag, they serve another target group. When upcycling fabrics ACT should focus on the largest, most reliable waste streams. A larger roll out of the program will indicate what materials designers and artisans can expect over time in order to adjust their processes on them. The wide variety of Lagos artisans offer different opportunities for recycling. Design projects with local designers and artisan are crucial to make sure products meet local market demands.

The legal dimension: Erecting ACT in Nigeria

Legally speaking, ACT intends to trade used clothes and materials and, in collaboration with others, upcycle products in Nigeria. Registering a social enterprise (Private Limited Liability Company) in Nigeria will require a minimum of two shareholders. ACT should expect organizing business permits (incl. Federal Inland Revenue Services fees), company registration fees and other requirements. In a case where shareholders are of a foreign nationality, the share capital of the company should be Naira 10 million (roughly Euro 2,500). Foreign shareholders / directors are required to possess certain permits (incl. expatriate quota and a business permit issued by the federal ministry of Interiors). All steps of the setting up process are to be overseen by a Legal advisor.[82]

72) Interview / conversation with Gbara Community School

73) Interviews / conversations with Globespin and Lucky Fiber

74) Interview / conversation with Sunflag

75) Jean 2014

76) Interviews / conversations with Lagos Craftsmen at Lagos Craft Market

77) Interviews / conversations with Lagos Craftsmen at roadside Lekki

78) www.instagram.com/p/B9lgjApnwZL

79) www.ethnik.com.ng

80) www.instagram.com/p/B88hlArlMP1

81) www.instagram.com/p/B-hg8Ayl3NX

82) T.J Solicitors, (February, 2020), Legal Advice in Respect of the incorporation and operation of a Company in Nigeria. pp 1-6. Market

Box 3: Other areas of opportunity, cut-offs and overstock

Other waste and possible income streams that had not been considered before the fieldwork are industrial waste and overstock. Bolts & Stitches employs up to 20 people and produces / prints (promotional) t-shirts and sweaters. This company discards 500 kilograms of textile cut-offs per week, mostly cotton, polyester and blends. It can offer these materials to anyone who has a solution for processing it as it costs them Euro 40 per week to have the waste collected.[83] Using such materials for filling (of toys, furniture, bedding) or processing in non-woven (building) materials, such as paneling or insulation can be another business opportunity that could be explored by ACT or others.

Some unsold fashion imports can sit on shelves forever. Such overstock is sometimes sold through yard sales.[84] ACT could become a solution provider for overstock if an ongoing, sustainable destination for such items is developed, may it be re-wear, upcycling or recycling. Both individual entrepreneurs (e.g. buying new items from the UK, but for some reason not selling them) or larger companies with overstock may be looking for sustainable solutions to clear their storages.

Image 4 - Study team member with craftsmen in Lekki, Lagos

2.3 Economic feasibility

Setting up ACT in Lagos requires installing a management team as well as structures for collecting, sorting, processing and recycling. To cover the operational costs and to become financially sustainable, a minimum yearly amount of textiles should be collected. In Kenya the goal is to monetize an average kilogram (from waste to wearable) into Euro 1.00 or more, whereby some items are donated to charity. The value of a kg (or an item) depends on its quality, the value of the upcycled product and its costs for production. It is assumed that in such case and a yearly collection of a minimum of 50,000 kilograms, ACT can become economically sustainable, whereby transportation, storage and a small staff can be covered. The economic feasibility depends primarily on the volumes and quality of the collected items as well as the demand for wearable items and recycled products.

Box 4: Visual identity and marketing

The visual identity and materials of ACT – such as flyers and the large stickers on the collection bins – were perceived very positively by all contacts in Lagos. The bright and eclectic colour schemes and the depiction of African personas was applauded. Hence, ACT in Lagos would be able to use the same visual appearance as the entity in Nairobi.

In various formal and informal conversations the importance of marketing was raised. Repeatedly, people highlighted that the success of an initiative like ACT would highly depend on marketing and communication efforts. From social media to image videos to celebrity endorsements, contacts in Lagos talked about all kinds of platforms and levels that would be crucial to the success of ACT. The common take-away was that people would only 'buy in' and donate (or collaborate) if they believe that the initiative is big and successful enough.

Potential quantity and quality of unwanted textiles: Core to ACT's feasibility

To get an understanding of what quantity and quality can be collected in Lagos, for four weeks three collection bins were installed in different locations in Lagos (see also Image 2, page 6):

- **Tabernacle of David parish of the Pentecostal Redeemed Christian Church of God (RCCG)**, at the main gate of the church premise
- **Circle Mall shopping centre**, at the entrance to Shoprite supermarket

- **Gbara Community Secondary School**, in front of the principal's office

ACT offered Euro 0.10 per kilogram of collected textiles, to be used for charity purposes only. This incentive was declined by the mall and the school. The Gbara school receives books and stationaries rather than cash, but already appreciated the educational value of the programme.

Results by location

Even though the experiment is only indicative, the results of the collection experiment show

that good quality clothes can be collected in Lagos. Without much sensitization people donated a total of 950 items or more than 600 kilograms, with most of those items being collected at RCCG (55 %). Surprisingly, the spontaneously erected pick-up service provided the second biggest batch of items (24 %, see also Table 1). The relatively low amount of items collected at the mall can be clarified by the shorter time the bin was installed and the challenge of sensitizing visitors. The willingness to mobilize partners' communities is crucial for collecting successfully.

Results by type of items

The most commonly collected items are female clothes of all kinds (63 %), followed by items for children of all ages (21 %). Surprisingly, traditional sets make up nearly 10 % of the collection and are of good quality. They might be the result of *aso ebi* culture and it can be expected that many items were worn only once (see also page 8). Individuals have donated leftover fabrics, which is also not common in Kenya. Materials that are relatively easy to recycle are wool and acrylic, but, as expected, these materials are not common in Nigeria due to the climate and have barely been collected. A variety of brands was donated, but H&M, Zara and Levi's stand out. The perceptions of international fashion brands and how they affect the business model was not part of this study.

Results by quality

One person graded all items, using the following grading system:

1. **Trash**; Dirty, wet, non-removable (oil) stains, mouldy and / or smelly
2. **Recyclable**; Ripped / stained, but not dirty or wet
3. **Wearable, medium quality**
4. **Wearable, good quality**
5. **Wearable, as new**

The quantities and quality (grade 1-5) per collection channel is presented in Table 2. The quality of all items is rather similar across female, male, and children as well as across the collection points. Unisex items and plain fabrics (15 sheets of fabric collected) appear to be of high quality. Most items have been graded with 3. The value per kilogram per grade needs to be verified in a follow up project.

Table 2 - Items collected during the collection experiment by quality and location

Quality level	1	2	3	4	5	TOTAL	Av. Ql.
RCCG	27	89	303	66	38	523	3,0
%	5 %	17 %	58 %	13 %	7 %		
Circle Mall	10	21	25	8	7	71	2,7
%	14 %	30 %	35 %	11 %	10 %		
Gbara school	0	0	101	19	9	129	3,3
%	0 %	0 %	78 %	15 %	7 %		
Pick-up	9	24	148	23	23	227	3,1
%	4 %	11 %	65 %	10 %	10 %		
TOTAL	**46**	**134**	**577**	**116**	**77**	**950**	**3,0**
	5 %	14 %	61 %	12 %	8 %		

Location	Items (total)	Items (%)
RCCG	523	55 %
Circle Mall	71	7 %
Gbara school	129	14 %
Pick-up	227	24 %
TOTAL	**950**	**100 %**

Table 1 - Items collected during the collection experiment by collection location

The expected costs of ACT Nigeria

When designing the final business model, a number of variables need to be considered as listed in Table 3. A first comparison with Kenya shows the costs are similar; Nigerian salaries are expected to be lower, but storage, office space and transportation can be higher. ACT Kenya can only be used as a benchmark. The team has to assume the activities and revenue streams will differ.

However, based on the variables in Table 3, it can be assumed that the cost structure for ACT Nigeria will look similar. For now, the monetisation of an average kilogram of textile waste into Euro 1.00 per kilogram can serve as a threshold for ACT Nigeria as well.

Table 3 - Business model variables (costs) in Lagos and Nairobi

Relevant business model variables	LAGOS (Euro/month)	NAIROBI (Euro/month)
Public organization well-paid job 25-30 y/o	500 - 600	500 - 650
Private company well-paid job 25-30 y/o	1,000 - 1,250	1,300 - 1,500
Minimum wage per month	76	111
Daily rate flex worker	7.50	8.50
Director ACT (30+ y/o)	1,000 - 1,700	1,000 - 2,000
Project coordinator ACT (25+ y/o)	500 - 1,000	500 - 1,000
Courier cost motorbike, 5 kg within 5 km	3.75 - 7.50	2 - 5
Storage cost remote area 12 m²	75 - 150	50 - 100
Storage cost high-end area 12 m²	150 - 300	100 - 200
Office 50 m² + small compound in a remote area	450 - 800	200 - 500
Office 50 m² + small compound in a high-end area	1,000 - 1,500	700 - 1,200
Industrial office space 50 m²	400 - 500	400 - 500
Industrial office space 750 m²	2,500 - 3,000	2,000 - 2,500
Company Registration (self – professional)	1,500 - 3,000	2,000 - 4,000

The expected revenue streams: Scope and mitigation

If locally sourced *okrika* can be sold, a benchmark can be offered by current *okrika* prices. The wholesale price for second hand jeans from Europe / Asia is Euro 2.29 per kilogram. Market stallholders are adding their margin when selling individual items. The selling price of one good pair of jeans (400 grams) is Euro 3.50 - 5.00. When offering large batches (of jeans), ACT's selling price of locally sourced

okrika should be less than Euro 2.29 as it can be (perceived to be) of lower quality. On the other hand, there might be a better match in size and style. To accommodate sellers or newcomers into the *okrika* business and create more and more jobs in a local vintage sector, smaller size bales, to sell in one day, can be offered. It will lower the initial buy-in and avoid storage costs. The supply chain should be adjusted to the Nigerian context and fit peoples' expectations.

Rags for cleaning (machines) are pieces of textiles cut in specific sizes. Globespin buys cleaning rags for Euro 0.62 per kilogram.[85] This is a product that ACT can offer as well by cutting for example jeans in appropriate sizes to be used for cleaning heavy machinery.

The income generated by upcycling materials into bags, pillows, wallets, jewellery, footwear, furniture, etc will be further explored by initiating design projects for sorted materials. Traditional wear can be suitable for upcycling, as many craftsmen already use new *ankara* fabrics. To predict the value of collected fabrics, a comparison is made with new fabrics. The prices of new *ankara* fabrics ranges from Euro 3.50 to Euro 24.00 per 6 yards (5.4 meter).

The quality of the fabric is mostly determined by the weight / thickness of the fabrics.[86] The price per kilogram of new *ankara* fabric can act as a benchmark for recovered material. The calculation in Table 4 shows that the prices per kilogram of new ankara fabrics range between Euro 7.00 and Euro 9.00.

For craftsmen whereby the costs for material defines to a large extent the cost price of the product, using more affordable materials can have an impact on their earnings. Obviously, artisans will be limited by sizes and usable pieces and the availability of specific designs. A higher volume of collected and sorted materials increases their reliability and usability. Nevertheless, it can be expected that materials suitable for upcycling have a value when they can replace newly bought fabrics.

Based on the findings of the study it is expected that the average value of locally sourced textiles can surpass Euro 1.00 and that with an appropriate volume the ACT business model is viable. In a next phase all the elements of the service need to be prototyped and tested to validate this claim.
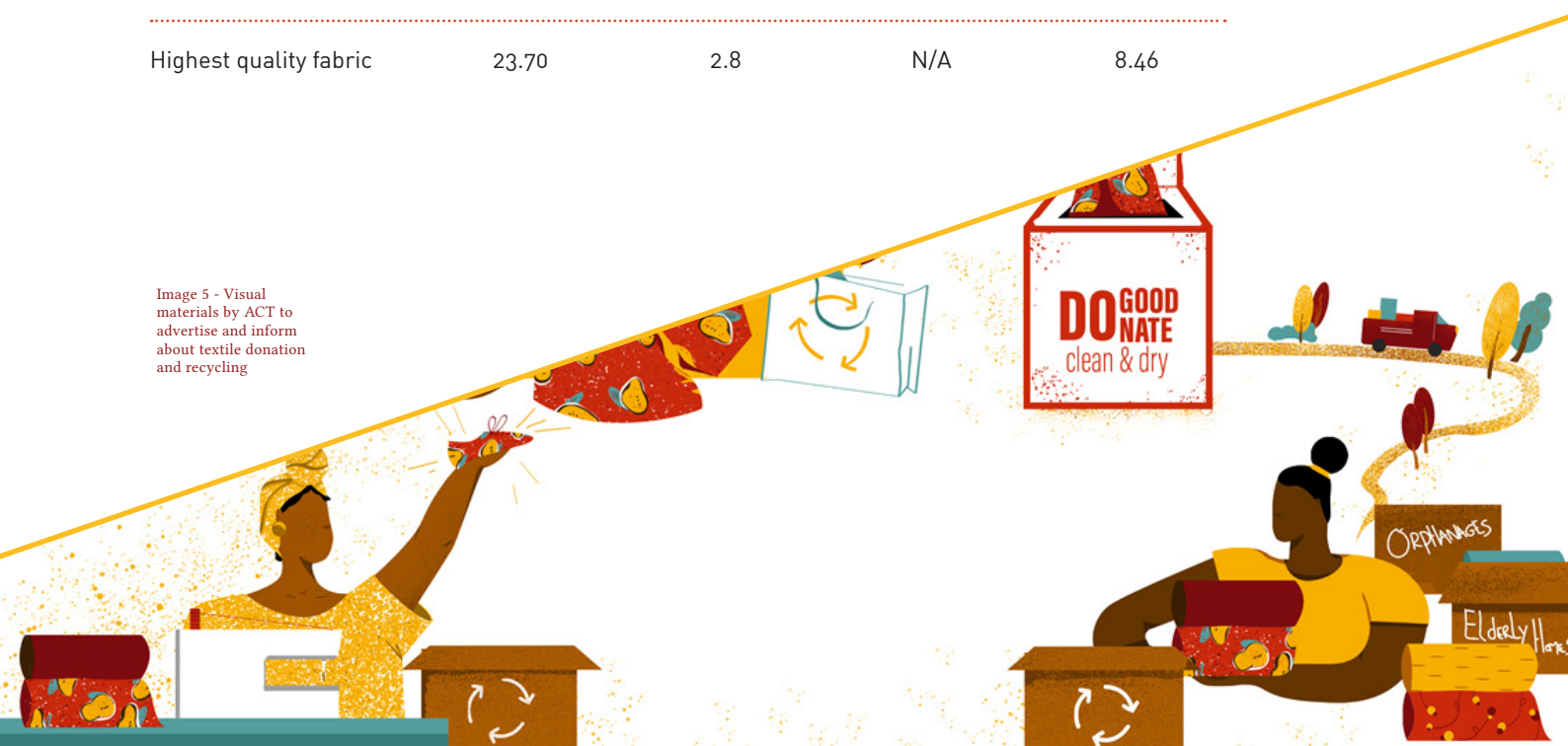
Table 4 - Prices for *ankara* fabrics of different quality by weight

	Price per 6 yards in Euro	Appr. weight per 6 yards in kg	Price per yard (retail) in Euro	Price per kilo in Euro
Lowest quality fabric	3.56	0.5	0.95	7.12
Highest quality fabric	23.70	2.8	N/A	8.46

Image 5 - Visual materials by ACT to advertise and inform about textile donation and recycling

3. Conclusions and follow-up

3.1 Key findings and final verdict

After careful considerations – and despite necessary changes to the model – this study concludes that an implementation of a textile collection and recycling scheme similar to the one implemented by ACT in Nairobi **is feasible** in Lagos. This conclusion is based on in-depth discussion within the research team and external advisors and can be regarded as a highly evidence-based decision that draws its validity from a rigorous study endeavour outlined in this report.

The key opportunities and chances

- The Nigerian textile and fashion industry has little to no choice but to become more sustainable and more resource-efficient in the future – ACT could play a part in this.
- Until now, no professional, city-wide scheme for collection and recycling of textile waste exists in Lagos – despite a daily textile waste production of 100 to 1,000 tons.
- A steady increase in fashion and textile consumption is projected for Nigeria and Lagos.
- Nigerian customers are used to second-hand clothing.
- Imported second-hand clothing is contraband.
- Based on the quality assessment of the items from the collection experiment, it is expected that locally sourced *okrika* can be competitive on the local market.
- Locally tailored sets of traditional attire, especially *aso ebi* garments, provide a unique opportunity for ACT to obtain large amounts of high quality clothes and fabrics.
- Donation of clothes is already common but not professionalized – ACT could provide a model that is professional, transparent, anonymous, and hygienic and which would thus address remaining concerns of Nigerians regarding the donation of clothing.
- Industrial waste, as well as overstock from retailers can offer additional business opportunities.

The key constraints and risks

- The ethical ideals of recycling are unlikely to encourage people on Lagos to donate or hand-over their unwanted clothing / textiles.
- The Nigerian textile industry is currently not prepared to process sorted materials into new fabrics – for ACT to venture into this it requires setting up a showcase whereby used clothes are prepared for spinning. The investment in the required technology and expertise, as well as the payback period for the same, requires a deeper analysis.
- The perception of re- / up-cycled textile products (produced out of post-consumer waste) by Lagosians is unclear to ambiguous.

Considering the points listed here, a textile collection and recycling program is considered feasible in Lagos. Enough opportunities for revenue streams have been identified for creating a sustainable business. In a next phase ACT needs to detail and expand the services in order to validate the intended overall model.

3.2 Implications for the ACT model in Lagos

Despite the general feasibility of implementing a textile collection and recycling scheme in Lagos, the ACT business model for Lagos will need to deviate from the one in Nairobi. Reasons for a necessary adjustment are manifold. One example is the composition of to-be-collected materials: Wool and acrylic form a steady revenue stream in Nairobi – in Lagos these materials constitute only a fraction of the fabric from the collection experiment. Simultaneously, Lagos appears to have an untapped potential of high-quality fabric from traditional wear and locally tailored items that can open up revenue streams, which do not exist as such in Nairobi.

In relation to the parts of the already successful ACT Nairobi model, this study has identified the following implications:

- **The actual collection of used textiles and unwanted fabrics / items** is feasible by installing collection bins within key partners' premises. The opportunity to offer a pick-up service for unwanted clothes or fabrics needs to be explored, designed and validated.

- **The transport, storage, and sorting of collected items** is feasible. Its cost structure is similar to the one in Kenya.

- **The creation of stable revenue streams** via:

  - **The resale and reuse of wearable fashion items** is feasible. However, sales / donation channels, markets, target groups, beneficiaries need to be further tested in the next steps of the roll-out.

  - **The resale of unwearable (ripped) items** is only feasible when repurposed as cleaning rags for it to become a (minor) revenue stream. The resale of unwearable items for the purpose of recycling into new fibres, whether it is cotton, wool, acrylic, etc. is not feasible as yet and its potential revenue stream is currently not an economically viable option within Nigeria.

  - **The upcycling and sale of unwearable items** is feasible, however the value of the materials has to be verified by collaborating with artisans and organising design projects with local designers and brands.

When considering the implications and necessary adjustments above, an economically viable and sustainable ACT model for Lagos can be described as follows:

ACT Lagos rolls out a model for collecting and redistributing used clothing in order to provide low-income communities with decent, but affordable outfits. At the same time, ACT Lagos builds the foundation for a circular fashion industry, by preparing large quantities of sorted materials, suitable for repurposing, upcycling and recycling by Nigerians' creative scene and textile industry. In doing so, ACT Lagos relieves the impact on the environment and creates jobs.

Image 6 - Application of stickers to the collection bins in Lagos
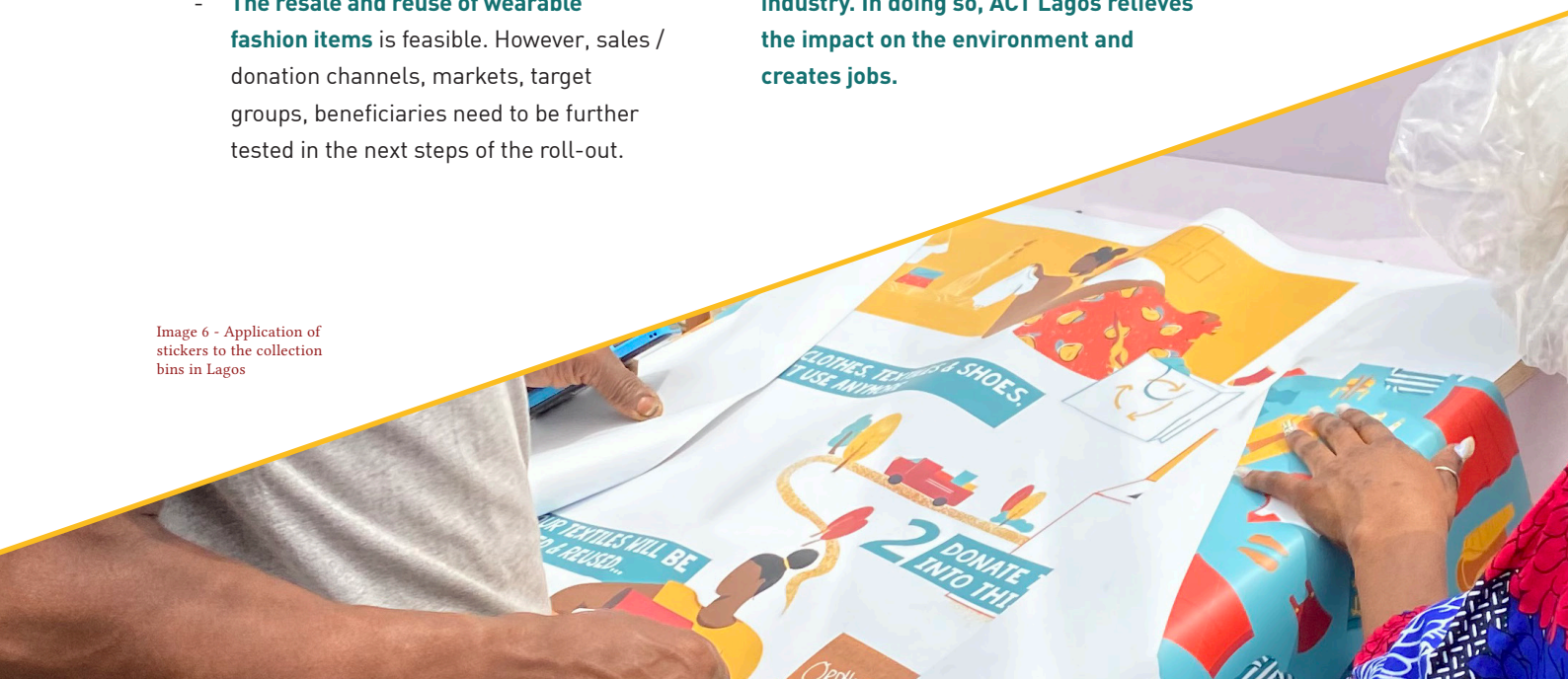
3.3 Next steps and vision

ACT vision

"Waste is a design flaw, the ability to create circularity of all materials eliminates waste and builds a sustainable world."[87]

"A transition towards circular practices requires us to rethink and redesign every part of a garment's life: from increasing the use of less impactful fibres and materials, exploring innovative design and business strategies, building infrastructure for closed loop recycling to creating platforms for collaboration, innovation and knowledge exchange."[88]

Through collecting, sorting, and recycling textiles, ACT aims to influence the design stage of garments, making Design for recycling a common practice. By making the last stage visible, ACT offers brands the information and tools to design solutions for the garments' end of life and to keep them in the loop.

Next steps

In the next phase the service model of ACT should be prototyped in Lagos. A number of key activities for the next phase are listed below:

- Scouting an entrepreneurial team that believes in ACT's mission and runs the organization on a daily basis – enabled and supported by Orange Corners in Lagos

- Placing 20+ collection containers to reach larger volumes and reliable waste streams, and experimenting with new services for collection
- Securing a simple warehouse for storing, sorting and processing textiles
- Providing wearables to vulnerable and under-privileged groups
- Initiating design projects with artisans for upcycling fabrics, prototype designs and test them in the market
- In collaboration with knowledge institutions (e.g. Yabatech University (NG), RemoKey (NL) and Saxion Hogeschool (NL)), setting up a showcase for textile recycling – the set up should turn textile waste into fibres suitable for processing into new fabrics
- Registering ACT Ltd. in Nigeria and becoming part of LAWMA's PSP network

During the upcoming phases, the services are fine-tuned in more detail, whereby the needs and wishes of all stakeholder will be considered. ACT offers affordable second-hand clothing and materials. Over times, after successfully implementing the model, ACT should also expect its own items to come back into the system after use. To become fully circular the model will need to be improved, re-designed and updated constantly in order to process more and more unwearable clothes. The organization should therefore adopt an agile mindset and be open to state of the art technical innovations and expertise from all over the world.

87) Kate Krebs - Director of Industry Affairs • Closed Loop Beverage Fund

88) Circular.fashion

Image 7 - Study team members with staff of Tabernacle of David parish of the RCCG, one of the locations of the collection experiment
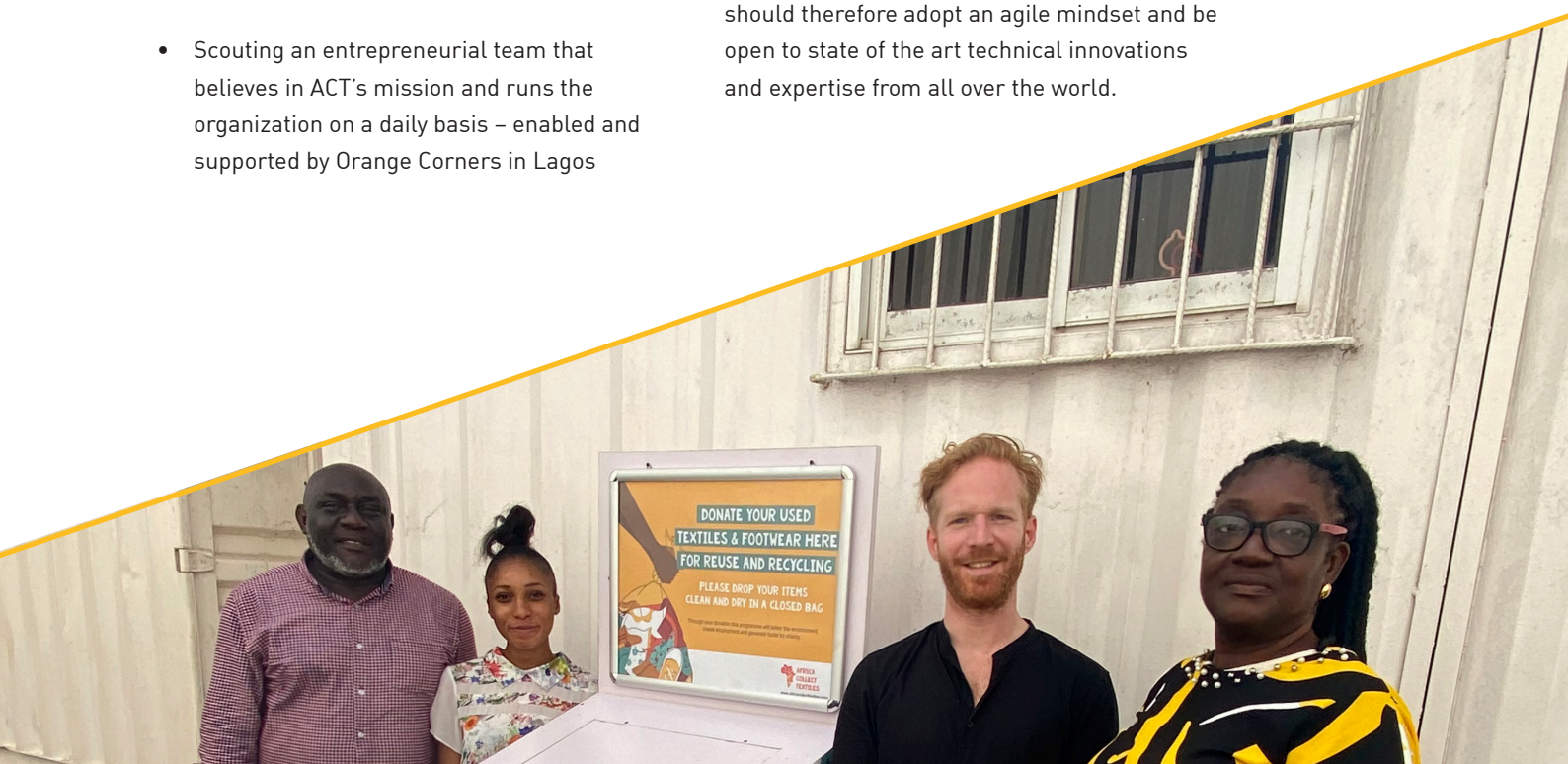
Bibliography

Academic sources and reports

accenture & H&M Foundation (n.a.): Trend Report: Future of Sustainable Fashion. www.accenture. com/t20170410t044051z__w__/us-en/_acnmedia/accenture/conversion-assets/dotcom/documents/ global/pdf/consulting/accenture-hm-global-change-award-report.pdf.

Abubakar, Mohammed; Oluyemi, Joseph Adesoji; Abdulateef, Raji; Emmanuel, Atolagbe; Adejoke, Joseph; Williams, Taiwo Motolani (2018): Imperialism and Loss of Identity in Second Hand Clothes: The Nigerian Okrika Experience. In: Journal of Language, Technology & Entrepreneurship in Africa 9 (1), p 151–172.

Adebayo, Kudus (2015): Tokunbo and Chinco Economies in Nigeria: Rethinking Encounters and Continuities in Local Economic Transformations. In: African East-Asian Affairs, The China Monitor 3 (4), p 80–101.

Adeniran, A. E.; Nubi, A. T.; Adelopo, A. O. (2017): Solid Waste Generation and Characterization in the University of Lagos for a Sustainable Waste Management. In: Waste Management 67, p 3–10.

Ajayi, A. T. (2017): Industrial Advancement and Policies in Nigeria: A Case of the Colonial Textile Scheme of 1945-1950. In: European Journal of Political Science Studies 1 (1), p 38–52.

Ajila, K. O. (2019): Analysis of Post-Consumer Solid Textile Waste Management among Households in Oyo State of Nigeria. In: Journal of Environmental Protection 10 (11), p 1419–1435.

Aminu, Suraju Abiodun (2016): Why Nigerian Textiles Are Not Competitive in African Market? In: Ilorin Journal of Marketing 3 (2), p 133–143.

Ayodele, T. R.; Alao, M. A.; Ogunjuyigbe, A. S. O. (2018): Recyclable Resources from Municipal Solid Waste: Assessment of Its Energy, Economic and Environmental Benefits in Nigeria. In: Resources, Conservation and Recycling 134, p 165–173.

Aziz, Miriam; Salloum, Charbel; Alexandre-Leclair, Laurice (2019): The Fashion Industry in Africa: A Global Vision of the Sector. In: Moreno-Gavara, Carme & Jiménez-Zarco, Ana Isabel: Sustainable Fashion, p 77–97. Cham: Springer International Publishing.#

Balogun-Adeleye, R. M.; Longe, E. O.; Aiyesimoju, K. O. (2019): Environmental Assessment of Municipal Solid Waste (MSW) Disposal Options: A Case Study of Olushosun Landfill, Lagos State. In: IOP Conference Series: Materials Science and Engineering 640.

Bonhomme, Julien (2012): The dangers of anonymity Witchcraft, rumor, and modernity in Africa. In: HAU: Journal of Ethnographic Theory 2 (2), p. 205-233.

Brooks, Andrew (2015): Clothing Poverty: The Hidden World of Fast Fashion and Second-Hand Clothes. London: Zed Books.

Chidiebere, Ogbonna Alban; Abubakar, Mikailu; Shabako, Jiya Gideon (2018): Municipal Solid Waste Management in African Cities: A Case Study of Lagos State, Nigeria. In: Malaysian Journal of Civil Engineering 30 (1), p 1–12.

Ellen MacArthur Foundation (2017): A New Textiles Economy: Redesigning Fashion's Future. www. ellenmacarthurfoundation.org/publications.

Fletcher, Kate (2016): Craft of Use: Post-Growth Fashion. New York: Routledge.

Hogarth, James Ryan; Haywood, Caroline; Whitley, Shelagh (2015): Low-Carbon Development in Sub-Saharan Africa: 20 Cross-Sector Transitions. London: Overseas Development Institute. www.odi. org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9878.pdf.

ITC (International Trade Centre) (2019): SheTrades: Promoting SME Competitiveness in Nigeria. Geneva: International Trade Centre. www.intracen.org/publication/SheTrades-Nigeria.

Keesman, Bert (2020): Scoping Mission Waste and Circular Economy to Lagos, Nigeria - March 2020: An assignment of Holland Circular Hotspot. Rijksdienst voor Ondernemend Nederland (RVO). https://hollandcircularhotspot.nl/wp-content/uploads/2020/03/Nigeria-Scoping-Mission-Waste-and-CE-Report.pdf.

Makama, Godiya Allanana (2013): Patriarchy and Gender Inequality in Nigeria: The Way Forward. In: European Scientific Journal 9 (17), p 115-144.

Mayah, Emmanuel; Mariotti, Chiara; Mere, Evelyn; Odo, Celestine Okwudili (2017): Inequality in Nigeria: Exploring the Drivers. Oxfam International. www-cdn.oxfam.org/s3fs-public/file_attachments/cr-inequality-in-nigeria-170517-en.pdf.

Muhammad, Murtala; Buba, Ramatu; Azman, Muhammad Danial; Ahmed, Abubakar (2019): China's Involvement in the Trans-Saharan Textile Trade and Industry in Nigeria: The Case of Kano. In: Review of African Political Economy, p 1–9.

Nwafor, Okechukwu (2011): The spectacle of aso ebi in Lagos, 1990–2008. In: Postcolonial Studies 14 (1), p 45-62.

Nzeadibe, Thaddeus Chidi (2015): Moving up the Hierarchy: Involving the Informal Sector to Increase Recycling Rates in Nigerian Cities. In: Future Directions of Municipal Solid Waste Management in Africa, p 70–87. Oxford: African Books Collective.

Ogbonna, Alban Chidiebere & Mikailu, Abubakar (2019): The Role of the Informal Sector in Sustainable Municipal Solid Waste Management: A Case Study of Lagos State, Nigeria. In: Annals of Faculty Engineering Hunedoara – International Journal of Engineering 17 (3), p 117–122.

Oyejide, T. Ademola; Bankole, Abiodun S.; Adewuyi, Adeolu O.; Olowookere, Afolabi E. (2013): Study of the Impact of Nigeria's Textile Import Restrictions - Final Report. www.pdfnigeria.org/wp-content/uploads/2016/06/Textile-Study.pdf.

Oyelola, Olukemi; Ajiboshin, Isaac; Okewole, John (2017): Effective Solid Waste Management in the Circular Economy: The Case Study of Lagos State, Nigeria. In: Procedia Environmental Science, Engineering and Management 4 (3), p 143–148.

Oxford Business Group (2017): Development of Local Supply Chain Revitalises Nigeria's Textiles Industry'. Oxford Business Group. https://oxfordbusinessgroup.com/analysis/fabric-society-textiles-look-make-comeback-thanks-abundance-raw-materials.

Salau, Oladipupo; Sen, Lalita; Osho, Samuel; Adejonwo-Osho, Oluwatoyin (2016): Empirical Investigation of Formal and Informal Sectors in Waste Recycling of the Municipal Waste Management System of Developing Countries: The Case Study of Lagos State. In: Journal of Environment and Ecology 7 (2), p 21.

Savelli, Heidi (n.a.): MOOC Case Study: Wecyclers. Global Partnership on Marine Litter. https://ou.edia.nl/assets/courseware/v1/0044670eeae8a353de41ca6af2a9a5ad/asset-v1:OUNL+MLMOOCFR18+2019_1+type@asset+block/MOOC_CaseStudy_Wecyclers.pdf.

UNEP (United Nations Environment Programme) & ISWA (International Solid Waste Association) (2015): Global Waste Management Outlook. www.uncclearn.org/sites/default/files/inventory/unep23092015.pdf.

World Bank (2019): Nigeria Economic Update: Fall 2019 - Jumpstarting Inclusive Growth: Unlocking the Productive Potential of Nigeria's People and Resource Endowments. Washington: World Bank. https://openknowledge.worldbank.org/handle/10986/32795.

Media sources

Adetiloye, Dayo (2018): How To Start Okrika Clothes Business in Nigeria. Dayo Adetiloye Business Hub. https://dayoadetiloye.com/how-to-start-okrika-clothes-business-in-nigeria.

Ahmed, Aminat (2019): The Trend In Akube Business. OsunDefender. www.osundefender.com/magazine-the-trend-in-akube-business.

Akande, Segun (2017): Nigeria's Used Clothes Trade Is Benefiting from a Shrinking Economy. Pulse Nigeria. www.pulse.ng/gist/akube-nigerias-used-clothes-trade-is-benefiting-from-a-shrinking-economy/wbzpxtj.

Asabor, Isaac (2018): Despite Health Implications, Second Hand Clothing Market Booms. Independent. www.independent.ng/despite-health-implications-second-hand-clothing-market-booms.

DailySteer (2018): How Much And Where Can I Buy Bales of Second Hand Clothes. DailySteer. www.dailysteer.com/okrika-bale/how-much-is-a-bale-of-used-clothes-in-nigeria-2018.

Dark, Shayera (2019): The Lagos Entrepreneurs Championing Recycling as a Way of Life. Quartz Africa. https://qz.com/africa/1637931/lagos-entrepreneurs-champion-recycling-as-a-way-of-life.

Egbejule, Eromo (2019): The Women Trying to Solve Lagos' Waste Problem. Al Jazeera. www.aljazeera.com/indepth/features/women-solve-lagos-waste-problem-190417203933618.html.

Ibukun, Yinka (2019): Nigeria Enlists Big Beverage Companies to Fight Plastic Waste. Bloomberg. www.bloomberg.com/news/articles/2019-11-13/nigeria-enlists-big-beverage-companies-to-fight-plastic-waste.

Jean, Nikki Billie (2014): Wax Print: What is Ankara? ... What is Ankara Fabric? All Things Ankara. www.allthingsankara.com/2014/09/wax-print-what-is-ankara-what-is-ankara-fabric.html.

Kazeem, Yomi (2020): Africa's largest city is trying to shut down to beat coronavirus—that's easier said than done. Quartz Africa. https://qz.com/africa/1821361/coronavirus-lagos-nigeria-shuts-schools-ban-public-gatherings.

Michael, Chris (2016): "Lagos Shows How a City Can Recover from a Deep, Deep Pit": Rem Koolhaas. The Guardian, sec. Cities. www.theguardian.com/cities/2016/feb/26/lagos-rem-koolhaas-kunle-adeyemi.

NaijaQuest (2019): How Much Is a Bale of Used Clothes in Nigeria 2019? NaijaQuest. https://naijaquest.com/how-much-is-a-bale-of-used-clothes-in-nigeria.

Okolo, Edwin (2017): Let Them Wear Okrika: Thrifting as an Exercise in Self Actualization. The Native. https://thenativemag.com/communities/let-wear-okrika.

Olaoye-Osinkolu, Dupe (2016): "Okrika" Clothes, Pocket Friendly, Health Challenging? Smart Views. www.smartviewsmagazine.com/features/okrika-clothes-pocket-friendly-health-challenging.

Sana, Marie (2019): Islamic Rulings On Buying And Selling Akube/Okirika Clothes. Hope for Nigeria. www.hopefornigeriaonline.com/islamic-rulings-on-buying-and-selling-akube-okirika-clothes.

Ugwe, Bridget (2015): Meet Bilikiss Adebiyi – Abiola, The Woman Who Gave Recycling In Lagos A New Name. Nigeria's Insights. http://nigeriasinsights.com/en/meet-bilikiss-adebiyi-abiola-the-woman-who-gave-recycling-in-lagos-a-new-name/.

Appendix: List of Key Contacts / Interviewees

Contact	Institution / Company	Location	Role / Function / Expertise
Programme. Manager	**Orange Corners**	Lagos	Start-Up Incubator
Country Coordinator	**Fashion Revolution Nigeria**	Lagos	Fashion & Circular Economy
Marketing manager	**Lucky Fibre**	Lagos	Textile Production
Operational Manager	**Sunflag**	Lagos	Textile Production, Mill
Marketing Manager	**Sunflag**	Lagos	Textile Production, Mill
Pastor, Welfare Dpt.	**RCCG, Tabernacle of David**	Lagos	Collection Point
Staff, Welfare Dpt.	**RCCG, Tabernacle of David**	Lagos	Collection Point
Staff, Welfare Dpt.	**RCCG, Tabernacle of David**	Lagos	Collection Point
Marketing Manager	**Circle Mall**	Lagos	Collection Point
various	**Craftsmen / Craftswomen**	Lagos	Upcycling
Principal	**Gbara Community School**	Lagos	Collection Point
Director of Operations	**Globespin**	Lagos	Textile Production, Mill
Dr T. C. Nzeadibe	**University of Nigeria**	Nsukka	Waste Sector / Industry
Dr P. O. Akponah	**University of Leicester**	Leicester	Waste Sector / Industry
Director	**Lagos Urban Dev. Initiative**	Lagos	Urban Development / Planning
Events Manager	**Lagos Urban Dev. Initiative**	Lagos	Urban Development / Planning
External Consultant	**Lagos Urban Dev. Initiative**	Lagos	Urban Development / Planning
Outreach Manager	**LAWMA**	Lagos	Waste Management
Nigeria Rep.	**Afr. Circular Economy Net.**	Port Harcourt	Circular Economy
Chairman	**Ass. Waste Managers of N.**	Lagos	Waste Sector / Industry
Founder	**Trend Cube**	Lagos	Second-Hand Clothing
Chairman	**Waste Management Soc. N.**	Lagos	Waste Management
Chairman	**NTMA**	Lagos	Textile Industry
various	**Market Salesmen**	Lagos	Second-Hand Clothing
Founder	**REMOKey**	Netherlands	Textile Recycling

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