

Co-operatives as a development mechanism to support job creation and sustainable waste management in South Africa

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Abstract South Africa, as with most African countries, is facing the reality of limited economic growth, high levels of poverty and increasing unemployment. At the same time, waste generation is growing, especially in urban centres across Africa, posing a great sustainability challenge. However, the waste sector can provide significant opportunities for improving livelihoods, generating jobs and developing enterprises, through the recovery of valuable recyclables. Co-operatives are recognised as a means of formalising the large number of informal waste pickers in developing countries. This paper attempts to identify the challenges facing waste and recycling co-operatives in South Africa. Results suggest that such co-operatives still face numerous challenges relating to infrastructure, operations, and capability. They still operate largely on the fringe of municipal solid waste management, and have not been integrated effectively into such formal collection systems, making it difficult for them to access sufficiently high volumes of recyclables. In addition, some co-operatives are operating as traditional businesses (e.g. following Pty Ltd business models) with the five co-operative

members (minimum required membership for registering a co-operative) taking on management roles and instead employing staff to undertake the collection and sorting of recyclables. This is sometimes done through written contracts, but often it is through verbal contracts or no formal contracts at all. Many co-operatives appear to be opportunistic in their registration, targeting short-term co-operative grants and responding to procurement policies that support co-operative development, rather than aiming for long-term sustainability. With a reported 91.8% failure rate of waste recycling co-operatives in South Africa, and the return of many co-operative members back into the informal sector, this business model is not currently creating sustainable businesses or jobs. The results highlight three criteria which are considered crucial to creating a viable co-operative movement in the solid waste management sector in South Africa; access to materials, access to markets, and business development support.

Keywords Waste · Recycling · Co-operative · Job creation · Small business development · South Africa

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Introduction

According to the most recent official statistics, South Africa generated approximately 108 million tonnes of waste in 2011 (DEA 2012). The majority of this waste (90.7%) was disposed of to landfill sites (often improperly designed and operated) or open dumpsites (RSA 2000; DEAT 2007; DEA 2016a). Less than 10% of all waste generated in South Africa was recycled in 2011. While waste management constitutes a key sustainability challenge in South Africa (DEA 2011; DEA 2016a), there has been considerable improvement in the recycling of

mainline recyclables such as paper and packaging (e.g. plastic, glass, metal) over the past few years. PackagingSA reports an increase in the fractions of paper and packaging waste collected for recycling, from 44.8% in 2009 to 57.1% in 2015 (PackagingSA 2016). This increase comes in spite of minimal municipal kerbside collection programmes and poor household recycling behaviour. In fact, recent research shows that in 2015, only 7.2% of urban households in South Africa regularly recycled most of their recyclable waste (Strydom and Godfrey 2017).

The encouraging paper and packaging recycling rate in South Africa is comparable with many developed countries and is largely due to an active informal waste sector (Godfrey et al. 2016). In fact an estimated 82.2% (weighted average) of the post-consumer paper and packaging waste recycled in South Africa in 2014 is believed to have been collected by informal waste pickers (*ibid*). The South African government estimates that there are between 60,000 and 90,000 informal waste pickers in South Africa working either at kerbside or on landfills (DST 2013; DEA 2016b). However, these numbers may be conservative. Assuming the findings of Linzner and Lange (2013) (i.e. that informal waste pickers account for approximately 0.6% of the urban population) apply for South Africa, then there could be as many as 215,000 informal waste pickers earning a livelihood through the collection and sorting of recyclable waste in South Africa. The visible increase in the number of informal waste pickers has been partly due to the increasing unemployment rate in South Africa, which has forced people to seek a livelihood in the informal sector. The unemployment rate in South Africa currently stands at 27.1%, or 36.3% if the expanded definition¹ of unemployment is used (StatsSA 2016).

South Africa, like many other developing countries in Africa and beyond, is facing the reality of jobless growth, and is under pressure to create new jobs and enterprises (Lowitt 2007). The waste and recycling sector is recognised as a promising area for the growth of small- and medium- enterprises (SMEs) (DEA 2011). The “National Environmental Management: Waste Act” (Act 59 of 2008) has provided the policy framework to move waste management up the hierarchy, away from landfilling and towards waste prevention, reuse and recycling. This creates opportunities for job creation as (a) new projects are implemented in the public and private sector, (b) new markets become available, (c) new business opportunities are recognized, and (d) new innovations (technological and non-technological) are introduced into the waste sector (Treasury 2011; DST 2012). The South African

government expects that there will be a major growth in the number of registered waste “enterprises” (including co-operatives) operating in the country, in response to the National Waste Management Strategy (NWMS) goal of creating 2600 additional SMEs and co-operatives participating in waste service delivery and recycling by 2016 (DEA 2011).

The government of South Africa actively promotes the establishment of co-operatives, as a promising business model that can stimulate job creation and enterprise development in response to growing unemployment and an expanding informal sector across the national economy. South Africa has seen an exponential growth in the number of co-operatives² registered over the past 10 years (the DTI 2010: 7). This drive is supported by an enabling legislative environment and programmes across government (the DTI 2011), including preferential procurement policies for co-operatives. Underpinned by the value of “self-help, self-responsibility, democracy, equality, equity and solidarity”, co-operatives provide a means of formalising the informal sector, while stimulating job creation and strengthening a local recycling economy (ICA 2013a).

There are a number of examples of how co-operatives have been implemented to formalise the informal waste sector, particularly in developing countries (Baillie and Feinblatt 2010; Ezeah et al. 2013; Wilson et al. 2006). Latin America is perhaps the most well-known example, for their adoption of the co-operative model in supporting the inclusion of the informal waste sector into municipal solid waste management systems (Ezeah et al. 2013). As noted by Ezeah et al. (2013:2517), co-operatives “are a powerful means of promoting grassroots development of the informal sector.” However, co-operatives still face numerous challenges as they are fragile and vulnerable to both internal and external factors, which have led to many of them falling into bankruptcy, breakdown and liquidation (ICA 2013b). This fragility comes from (a) legislative uncertainties, (b) undercapitalization, (c) regulatory risks, (d) the need to combine the economic, social and environmental goals into a coherent business plan, (e) poor governance and management systems, (f) entrepreneurial and techno-managerial skills, (g) structural constraints on growth and expansion, (h) poor market access, and (i) low participation of women (*ibid*).

¹ The expanded definition of unemployment includes those people who are not seeking work but are available to work, i.e. discouraged job-seekers.

² Co-operatives are defined as “an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise”. They are also recognised as a means to “create and develop income-generating activities and decent, sustainable employment; reduce poverty, develop human resource capacities and knowledge; strengthen competitiveness and sustainability; increase savings and investment; improve social and economic well-being; and contribute to sustainable human development” (the DTI 2012:7; Pezzini and Ambiorix 2006:4).

This vulnerability is also evident in South Africa. As the Department of Trade and Industry (the dti) notes, “most of the existing and emerging co-operatives remain vulnerable and weak” (the DTI 2011: 8). Evidence suggests that many South African co-operatives fail within the first few months of operation. Very few successful long-term co-operatives are currently in operation, particularly in the waste and recycling sector (the DTI 2012). A review of the status of all co-operatives in South Africa showed that as at 2009, there were 22,619 registered co-operatives, of which only 2398 were economically active (89.4% mortality rate) (the DTI 2012). Waste and recycling co-operatives were noted by the DTI to have an even higher mortality rate (91.8%), which was the fourth highest co-operative mortality rate amongst the 18 reviewed sectors (the DTI 2011). The long-term sustainability and viability of co-operatives are, therefore, a key issue in ensuring that co-operatives can deliver the expected employment and economic growth to the South African economy.

The most recent government data on co-operatives suggests that there are 85 registered waste and recycling co-operatives, of which only seven were thought to be economically active in 2009 (the DTI 2012). However, there is no information available on the contribution that these co-operatives make to the diversion of waste from landfills, as there is no national database of waste and recycling co-operatives and no reporting by co-operatives on tonnages collected for recycling.

The above suggests that while waste management remains an important sustainability challenge in South Africa (and pretty much across Africa), it can also provide an opportunity for creating jobs and income for poor segments of society. From this starting point, the aim of this research (conducted between April 2014 and December 2015) was, therefore, to build an evidence base of the uptake, success and failure of waste co-operatives, and to use it to support future co-operative implementation.

This paper attempts to understand the potential that co-operatives have (a) to extend the recovery of recyclable material from municipal solid waste, (b) stimulate job creation and enterprise development, and (c) ultimately grow the South African waste and recycling sector. The research was structured around six research questions that support the above aims and objectives, and are the key focus of the “Results and discussion” section:

1. What models of waste co-operative are currently being implemented within communities and local municipalities?
2. What can be learnt from these case studies of co-operative successes and failures?
3. What recommendations can be made for successful implementation of future waste co-operatives?

4. What is the employment creation potential in these waste co-operatives?
5. Where are the opportunities for significant growth in the number of co-operatives in the waste sector?
6. While the opportunity provided by co-operatives exists, has the concept been taken up within the waste sector?

Methodology

Participant selection

The research follows a case study research strategy, adopting a mixed-methods research design that combines both quantitative and qualitative data collection and analysis (Newman et al. 2003; Yin 2003; Teddlie and Tashakkori 2009). In the absence of a national database on waste and recycling co-operatives, a database of suspected co-operatives was established for this research. Both private and public organisations were consulted and requested to provide the names and contact details of waste co-operatives that they were working with, or were aware of.

A database of 215 entities was compiled based on the information provided by private and public organisations. The database was then refined and verified through follow-up telephone calls to each recorded entity. The purpose of these preliminary telephone interviews was (a) to verify whether each entity was in fact a co-operative, (b) was active in the waste and recycling sector, and (c) to gather additional preliminary information that would be used to decide on a sample of co-operatives for further research. Eight questions were posed during the telephone interviews to screen the database. From the original 215 entities, 64 were registered and reportedly legally constituted co-operatives (or had submitted applications for registration), and were willing to participate in the study. The remaining 151 entities were either not co-operatives (52), were unreachable via the contact details (68), or were unaware of any waste and recycling co-operative (31).

Given that the project budget did not allow for in-depth interviews with all 64 co-operatives, a further sampling process was performed. The data obtained from the telephone interviews were used to select co-operatives for further study. A purposeful sampling approach (Maxwell 2005) was adopted, to ensure representation of co-operatives against the following four sampling criteria:

- geographic location
- size of the co-operative (i.e. number of people)
- age of the co-operative (i.e. number of years operating)
- co-operative activities (i.e. place in the waste value chain)

Co-operatives were chosen primarily to ensure representation in terms of location (i.e. include as many of the provinces as possible), followed by the size (falling into three different co-operative size categories) and age of the co-operative. Additional selection criteria included deliberately selecting co-operatives that were considering changing from the co-operative business model to other business models (e.g. Pty Ltd). Based on these sampling criteria, 30 waste co-operatives were selected for site-visits and in-depth interviews (Table 1; Fig. 1).

As a means of adding to the information provided by the co-operatives, 18 key stakeholders from organisations currently working with co-operatives were consulted. These included local, provincial and national government departments (8), non-governmental organisations (4),

development and funding agencies (3), and waste and recycling organisations and businesses (3).

Data collection and analysis

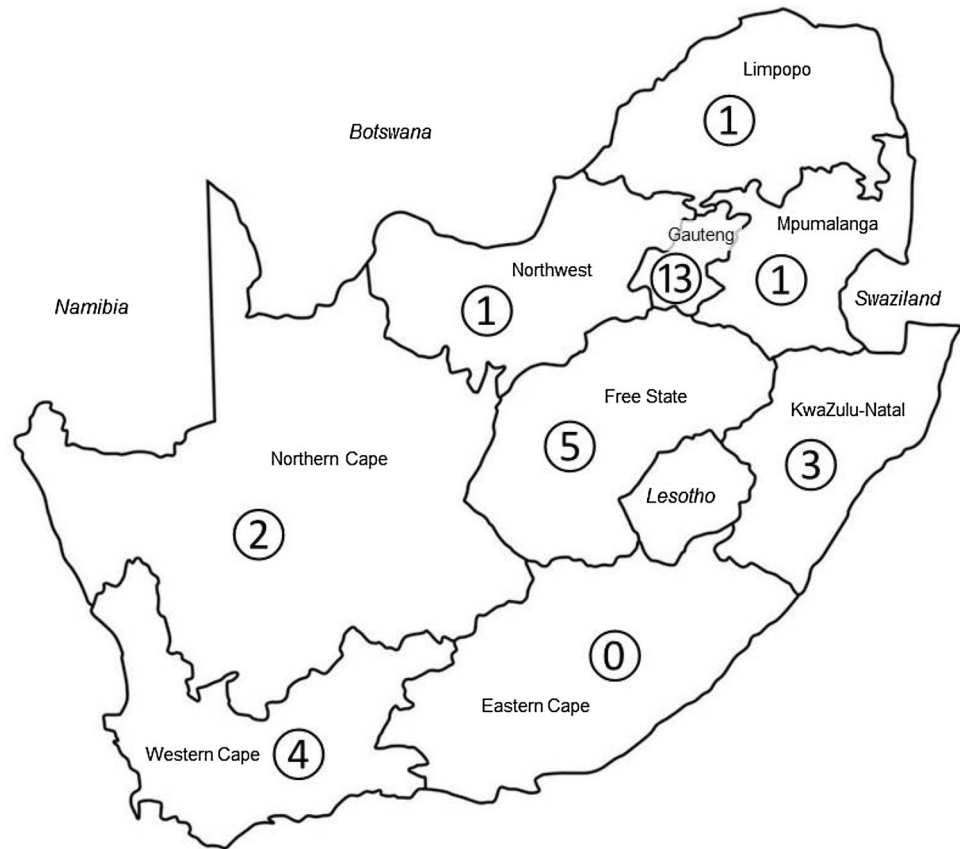
Data were collected through semi-structured interviews with co-operative members and key stakeholders, using an interview guide (questionnaire) (Whitley 2002). A draft interview guide was prepared based on the research questions and issues that emerged from a literature review (Godfrey et al. 2015). Separate interview guides were prepared for the co-operative and stakeholder interviews. The interview guide was piloted with two co-operatives and two stakeholders before being finalised. This was

Table 1 Cooperatives selected for interviews

Municipality	Province	Co-operative size		Co-operative age (years)
		Members	Staff	
Maluti-a-Phofung LM	Free State	25	6	5
Mangaung LM	Free State	87	0	6
Matjhabeng LM	Free State	5	0	3
Metsimaholo LM	Free State	10	1	3
Ngwathe LM	Free State	80	0	<1
City of Johannesburg MM	Gauteng	5	15	1
City of Johannesburg MM	Gauteng	5	6	2
Ekurhuleni MM	Gauteng	5	8	1
Ekurhuleni MM	Gauteng	5	8	4
Ekurhuleni MM	Gauteng	18	0	3
City of Johannesburg MM	Gauteng	10	1	7
City of Johannesburg MM	Gauteng	5	12	1
City of Johannesburg MM	Gauteng	10	35	3
City of Johannesburg MM	Gauteng	6	20	2
City of Johannesburg MM	Gauteng	7	71	4
Ekurhuleni MM	Gauteng	8	20	6
Randfontein LM	Gauteng	6	100	2
Ekurhuleni MM	Gauteng	25	0	1
Msunduzi LM	KwaZulu-Natal	5	7	5
Msunduzi LM	KwaZulu-Natal	10	10	6
Msunduzi LM	KwaZulu-Natal	7	2	3
Thabazimbi LM	Limpopo	3	0	1
Emakhazeni LM	Mpumalanga	5	10	3
Khara Hais LM	Northern Cape	5	4	3
Siyathemba LM	Northern Cape	5	0	1
Mahikeng LM	Northwest	5	78	2
Cederberg LM	Western Cape	5	2	2
City of Cape Town MM	Western Cape	5	10	13
City of Cape Town MM	Western Cape	8	2	6
Theewaterskloof LM	Western Cape	5	2	5

* Data for certain parameters presented in the paper were collected from the 64 co-operatives interviewed telephonically, and certain from the 30 co-operatives interviewed through face-to-face meetings

Fig. 1 Geographical distribution of selected co-operatives



necessary to ensure that the questions were clear, logical, relevant, and that the time required for the interview could be kept to approximately 1 h. The co-operative interview guide included 13 questions addressing five themes, while the stakeholder interview guide included 17 questions addressing six themes (Godfrey et al. 2015).

The 30 co-operatives and 18 stakeholders were contacted to schedule face-to-face 1-h interviews at a time and location convenient to them. This was usually at their work premises, which included meeting at a co-operative member's household if sorting and recovery of recyclables were taking place from home. All interviews were conducted during the period July–December 2014.

Once the interviews were completed, each interviewer populated an electronic version of the interview guide, capturing all co-operative and stakeholder responses. This document was later used to populate a spreadsheet that contained all interview data. The completed interview guides (one per interview) were then reviewed for completeness by the lead interviewer. In those cases where the interviews were recorded, recordings were replayed to verify the captured data.

The consolidated spreadsheet containing all interview data was used as the basis for analysing the quantitative and qualitative information obtained from the 48

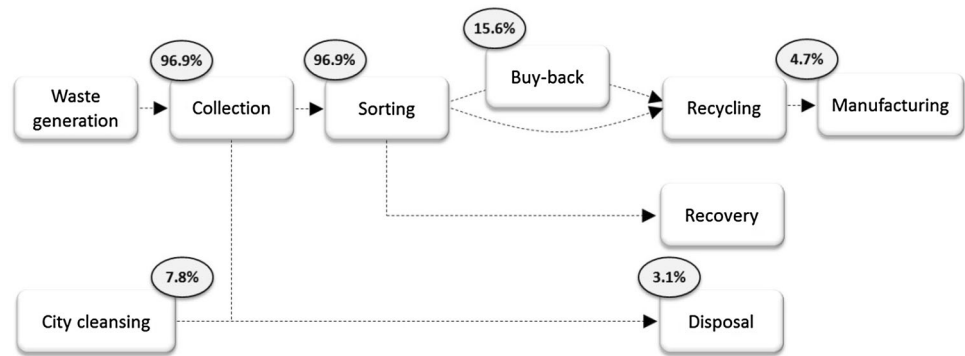
interviews. Each column in the spreadsheet was reserved for a unique question in the interview guide. The responses under each question were analysed using a content analysis approach (Zhang and Wildemuth 2005). The captured information for each question was coded under headings or phrases which were seen to emerge out of the data. These codes were further aggregated into higher level headings or themes. The frequencies with which particular themes or ideas were mentioned by the co-operative were also noted. Emerging themes from the co-operative interviews were evaluated against the issues arising from the stakeholder interviews to arrive at an integrated set of high level themes.

Results and discussion

Models of waste co-operatives in South Africa

The results showed that the majority of co-operatives interviewed were involved in the collection (96.9%) and sorting (96.9%) of recyclables (Fig. 2). This is an area recognised by government as providing good opportunities for formal job creation or informal income opportunities. These two areas (i.e. collection and sorting) typically have

Fig. 2 Co-operative activity along the waste value chain



low barriers to entry (i.e. require low skills and low investment by the co-operative). However, given the constitutional responsibilities of local government, these activities typically require some kind of relationship between the co-operative and the municipality. This is particularly relevant if the co-operative wants to drive up the volume of collected recyclables. Some co-operatives had extended their services further up the value chain into higher order activities such as buy-back of recyclables (15.6%), and into value-added opportunities in recycling (e.g. reprocessing) and manufacturing (4.7%). A few co-operatives (7.8%) were involved in city cleansing (e.g. street cleaning, litter collection, illegal dumping clearing) with support from the municipality.

There are very few examples, where interviewed co-operatives had been formally contracted by municipalities, thereby integrating them into the municipal waste management system. While the integration of the informal sector and small businesses such as co-operatives, into the municipal waste management system, was shown to be necessary from this research, it remains a significant challenge for municipalities (Godfrey et al. 2015). This is typically the result of the limitations placed on municipalities by local government legislation, such as the Municipal Finance Management Act (Act 53 of 2006) and Municipal Systems Act (Act 32 of 2000) and amendments.

Most of the co-operatives involved in the collection and sorting of recyclables collected all the mainline recyclables (i.e. plastic, paper, glass, tins) without any preference for any one material type. Some co-operatives indicated that they collected scrap metal. No co-operatives reported collecting waste electrical and electronic equipment (WEEE), bulky waste streams (e.g. white goods, furniture), waste tyres, or construction and demolition waste, although opportunities for enterprise development in these waste streams do exist. The opportunities that this provides for small businesses are discussed later in this paper.

There was no apparent correlation between the tonnages of recyclables recovered and, (a) the number of co-operative members and employees (i.e. available capacity within

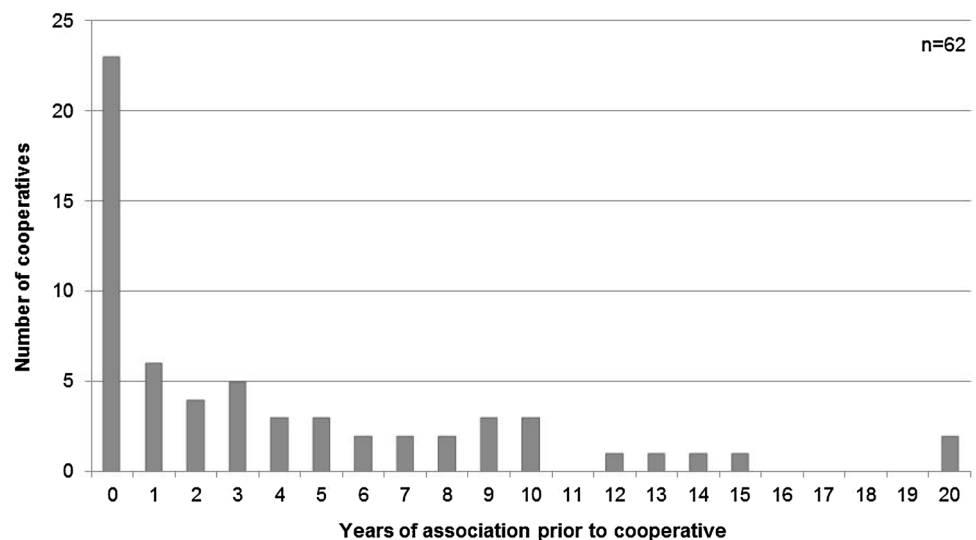
the co-operative), and (b) the age of the co-operative or the period of association of members (i.e. experience within the co-operative). Approximately, 46.8% of the co-operatives had seen their members associated³ one year or less prior to the registration of the co-operative (i.e. began their association with the start of the co-operative), 38.7% had associated for 2–9 years, and 14.5% had associated for more than 10 years before registering as a co-operative (Fig. 3). This suggests that nearly half of the interviewed co-operatives were established with members ('partners') who had no previous working relationship or association.

In these cases, registration may have been in response to an external opportunity or pressure, rather than a natural progression of community members who had already been working together, coming together to improve their working situation through a common need. One might argue that this "forced membership" goes against the definition and principles of a co-operative, in being an "autonomous association of persons united voluntarily to meet their common economic, social or cultural needs" (Pezzini and Ambiorix 2006: 4). Co-operative members highlighted that where this "forced membership" had occurred, members had often returned to individual picking on landfills or at kerbside. The point often raised is that there were no clear benefits (especially financial) of working together as a co-operative, as opposed to working as an individual informal picker (Godfrey et al. 2015).

In terms of number of members, the largest co-operative had 270 members. However, most waste co-operatives (37.5%) had the minimum of five members legally required to register a co-operative. It was suggested by stakeholders that members may purposefully restrict the co-operative to the minimum of five members in an attempt to minimise conflict within the co-operative. As a means of increasing the workforce without increasing the co-operative member base, co-operatives employ workers either through formal written agreements, verbal agreements, or in some

³ How long they had known other members in the co-operative, before starting up the co-operative.

Fig. 3 Period of association before registering as a co-operative



instances, through no agreements at all. From the 64 co-operatives interviewed by telephone (see Participant Selection), 29.5% had no employees, with the members undertaking all of the co-operative activities. The majority (62.3%), however, had between 1 and 40 employees, and 8.2% had more than 40 employees. The largest number of employees in a single co-operative was 130.

The findings suggest that there are three types of waste and recycling co-operatives in South Africa (Fig. 4):

- high membership–low employee co-operatives (along *x*-axis)
- low membership–high employee co-operatives (along *y*-axis)
- low membership–low employee co-operatives

Many waste and recycling co-operatives in South Africa seem to be operating with more of a traditional (Pty Ltd) business model, with the minimum number of five members all playing a “management role” and employing people to do the work. This may be the result of opportunistic registrations in response to government procurement policies intended to support co-operatives, but which in fact favour co-operatives over other business models. This “fronting” as a co-operative goes against the definition of a co-operative, as being a “jointly-owned and democratically-controlled enterprise” for the benefit of all members (Pezzini and Ambiorix 2006: 4).

Stakeholders were concerned that with the strong government drive to register co-operatives, members were being “forced” through a very top-down approach to establish co-operatives with other members who very often had no previous work association. Based on the findings of this research, this forced registration is likely to increase the failure rates of co-operatives (see section on association of members). It also appears that opportunistic registrations

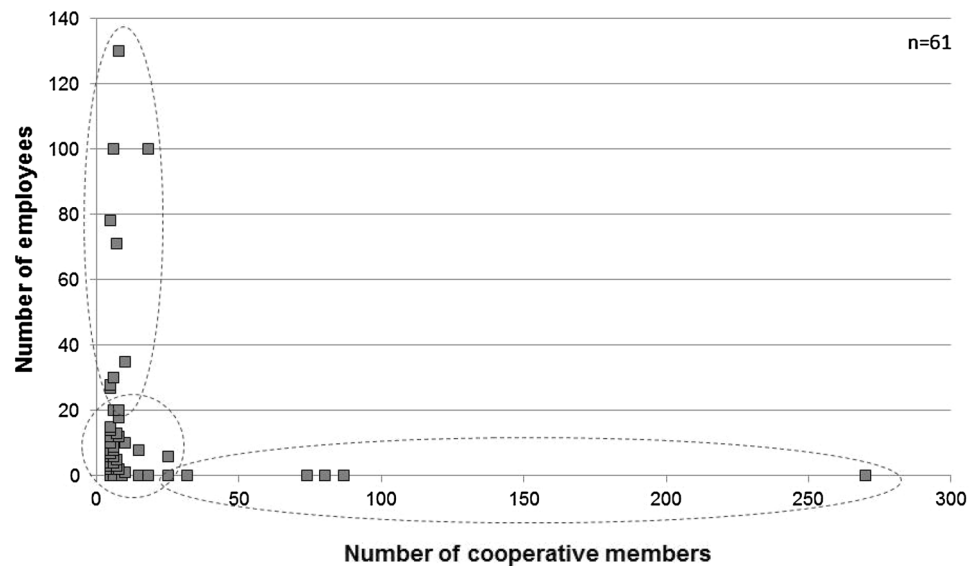
to access government funding (either by the co-operative or by specific members) often left the remaining members in financial debt. Incentivising co-operatives over other business models (e.g. through preferential procurement, financial support) may also result in co-operatives taking on a more traditional business structure, where the five co-operative members become the management team, employing staff to do the actual work of the co-operative. This, combined with the high mortality rate of co-operatives (see above), has resulted in private sector stakeholders being nervous to invest in co-operatives as this investment could be ‘wasted’ when the co-operative stops operating (Godfrey et al. 2015).

Co-operative challenges and successes

Co-operative members reported a number of challenges and obstacles that clustered around a number of themes, including: (a) infrastructure, (b) operational or technical issues (e.g. markets for goods/services, networks with municipalities), (c) knowledge/skills (training), (d) administrative, (e) governance, and (f) financial. Each of these themes has a number of associated sub-themes. The extent to which various challenges were raised by co-operatives during the interviews is depicted graphically in Fig. 5.

However, there are many issues and nuances embedded within each of these themes so the interested reader is encouraged to read the full research report (Godfrey et al. 2015). For example, the lack of “infrastructure”, whether it be access to transport, equipment, or premises at which to sort and store recyclables, was found to be constraining the growth of co-operatives, since volume of collected waste is key to their growth. The limited access to transport for collecting and selling recyclables was the most frequently cited challenge to co-operatives. As a result, co-operatives

Fig. 4 Relationship between co-operative membership and number of employees



were forced to move recyclables on foot, borrow a family car, or hire vehicles at considerable cost. This was particularly problematic for co-operatives in more rural areas as recyclers were unwilling to travel long distances to collect recyclables.

The lack of “training” was another significant challenge for co-operatives. Training was considered necessary to upskill members and to improve the efficiency of co-operatives. In many instances, co-operative members have very low skills and educational levels (often less than a Grade 12), and no prior experience in managing a business. The main areas of training requested, included:

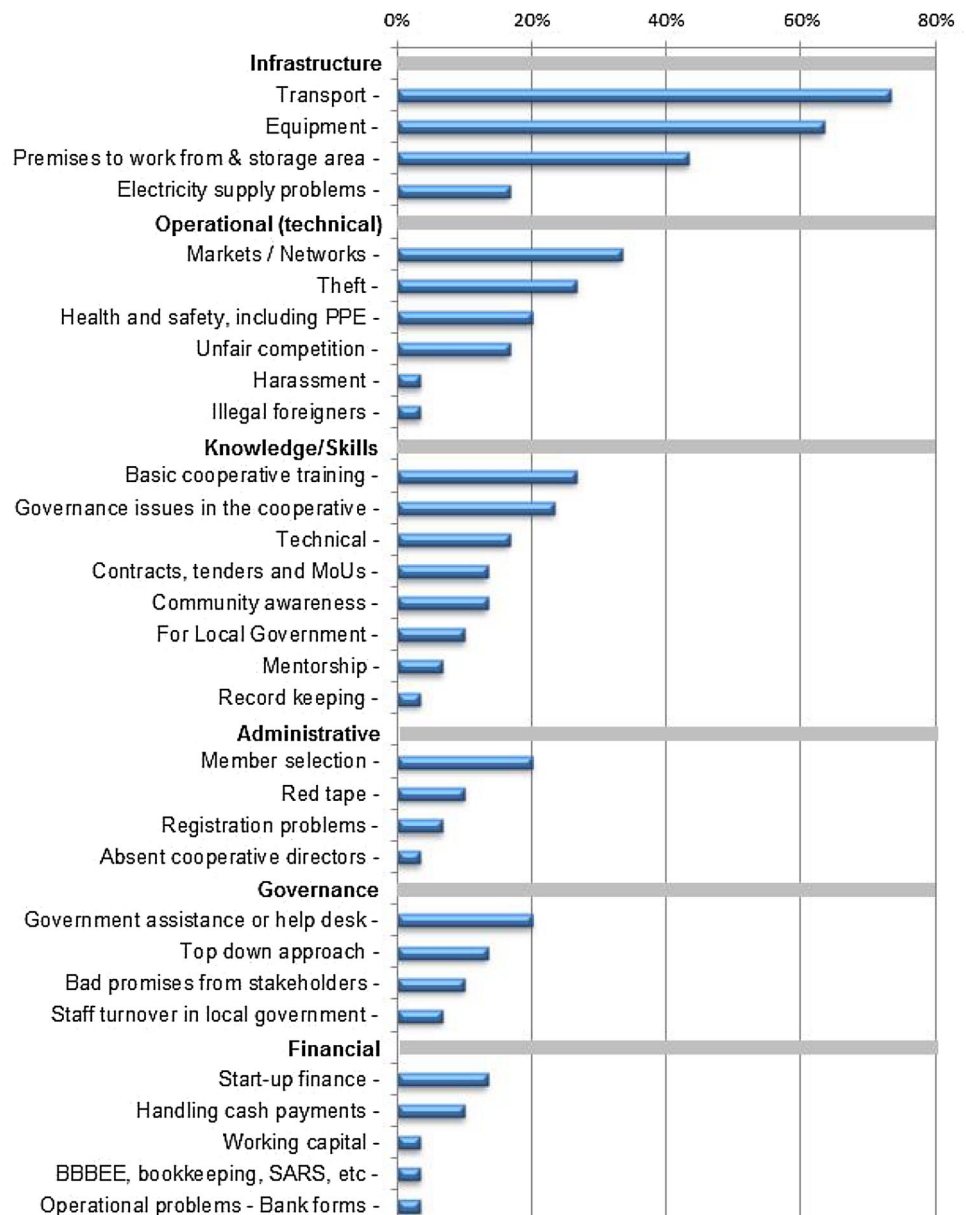
- basic business management skills, including record keeping, tenders and contracts, financial management;
- operational aspects of waste management, such as markets, prices, sorting, separation, and waste types;
- governance issues such as relationship management (both within the co-operative as well as with other stakeholders), decision-making, member selection, and conflict resolution.

However, stakeholders in the sector confirmed that while various material organisations conduct extensive training, skills remain a problem. This is possibly due to the very low starting skill base of co-operative members, and that the offered training (while considered necessary by co-operatives and stakeholders) is insufficient in developing co-operatives in the long term. Given the limited, to no, previous business experience of co-operative members and the current high mortality rates of co-operatives (mentioned above), there is a need for more “hand-holding”, mentoring or incubation programmes. Through incubation, co-operatives may be partnered with development organisations to directly support them over an

extended period of time in the business and technical management aspects of the co-operative. The incubation of small businesses (including co-operatives) in the waste recycling sector, often funded through corporate social responsibility funding or donor funding, has shown very positive results in the volume/quality of collected recyclables and as an extent the financial returns for co-operative members (Edge Growth 2015). However, these incubation projects have come at considerable cost to the private sector and it has been questioned whether this type of incubation for all small recycling businesses across South Africa is sustainable. It must also be noted that as with the registration of co-operatives, mentoring has also sometimes led to the exploitation of co-operatives by individuals (Godfrey et al. 2015).

Funding opportunities for co-operatives also need to be strengthened, whether this be through government grants, contracts with municipalities, or financial and non-financial support from stakeholders. Part of this is possible by simply raising awareness of the availability of existing grants and funding for co-operatives. However, the private sector noted that they were reluctant to provide direct financial support to co-operatives, having learnt the hard way about the exploitation and abuse of such support by opportunistic members. As a result, private sector support is typically provided through equipment and consumables, or by supporting co-operatives in finding or applying for funding (including contracting with municipalities). A local municipality commented that there was a need for “checks and balances to ensure that people are not just looking for money” or abusing funding opportunities. Stakeholders indicated that there is a need for greater monitoring of co-operatives, especially those being supported through public funds. This can ensure that funding will not be abused, as

Fig. 5 Challenges experienced by interviewed co-operatives (number of times mentioned)



well as to “gather information on the success or failure of these initiatives to inform future plans”.

Besides monitoring the business operations (e.g. financial systems), it was also felt that co-operatives should be monitored in terms of their effectiveness (i.e. rating the areas that are cleaned by co-operatives for cleanliness), efficiency of sorting and separation activities, and tonnages of waste diverted from landfill sites. Stakeholders, particularly from the private sector, warned against providing things for free to co-operatives, as it creates dependencies and a culture of relying on handouts, which undermines the sustainability of co-operatives. According to a municipality, there needs to “be a strategy to wean co-operatives off

of this”, and away from “relying on hand outs” as “this leads to failure when the funding is removed”.

Despite the numerous challenges raised by co-operatives (Fig. 5), it was also encouraging to hear their success stories. Several waste and recycling co-operatives have achieved excellent results and are making a positive contribution to the waste sector. The success stories shared by the co-operatives provide some insight into how co-operatives have overcome these challenges. Some success examples include (a) increasing the collection of recyclables, (b) winning contracts from municipalities, (c) receiving recognition and awards from government and material organisations, (d) being selected for training,

(e) working with the youth, (f) creating jobs for community members, and (g) acquiring land for their operations.

These success stories reconfirm the main themes that emerged on the challenges, such as the lack of transport, equipment and premises (Fig. 5). However, they also highlighted two new themes revolving around individual and organisational traits. What was evident was that all of the issues that emerged from the success stories contained an element of pride in the work that the co-operative was doing. This could be broken down into a sense of personal achievement, pride in their community (community building), and pride from improved skills. An important factor in motivating co-operatives and employees is the recognition for the work that the co-operative is doing and the impact that they are having on municipal solid waste management and diversion of recyclables from landfill. “Individual attributes” such as passion, pride, determination, patience, endurance, and hard work, and “co-operative attributes” such as member selection, leadership, and vision were highlighted as important factors in the success of a co-operative. Stakeholders also indicated that knowing the value chain, the market, the price of recyclables, and networking opportunities were important for setting up future co-operatives.

Recommendations for waste co-operatives

In an effort to capture what waste co-operatives had learnt during their operation, respondents were also asked to share their advice for people thinking about starting waste and recycling co-operatives. This included the identification of major pitfalls. Some of the themes that emerged include individual personality traits, co-operative traits, operational/technical knowledge and skills, financial management, and infrastructure (Fig. 6). Surprisingly, given the emphasis on infrastructure, operations and knowledge/skills as the main challenges experienced by co-operatives (Fig. 5), most of the advice to those thinking of starting their own co-operatives focussed on the “softer” issues or the human side of the business such as the individual personality and co-operative traits (discussed above). The full list of themes that emerged out of the challenges, success stories and recommendations for future co-operatives is summarised graphically in Fig. 6 (see also Godfrey et al. 2015).

Employment and income generation potential

The initial telephone interviews with the 64 waste and recycling co-operatives indicate that these co-operatives have provided at least 1905 direct and indirect jobs, or “income opportunities”. This includes both co-operative members and formal/informal “employees” of the co-operative. This equates to an average of 30 income

opportunities per co-operative. The high failure rate experienced by waste and recycling co-operatives in South Africa (91.8%) (the DTI 2012), therefore, has the potential to not only impact the members, but also a large number of direct and indirect jobs created by the co-operative.

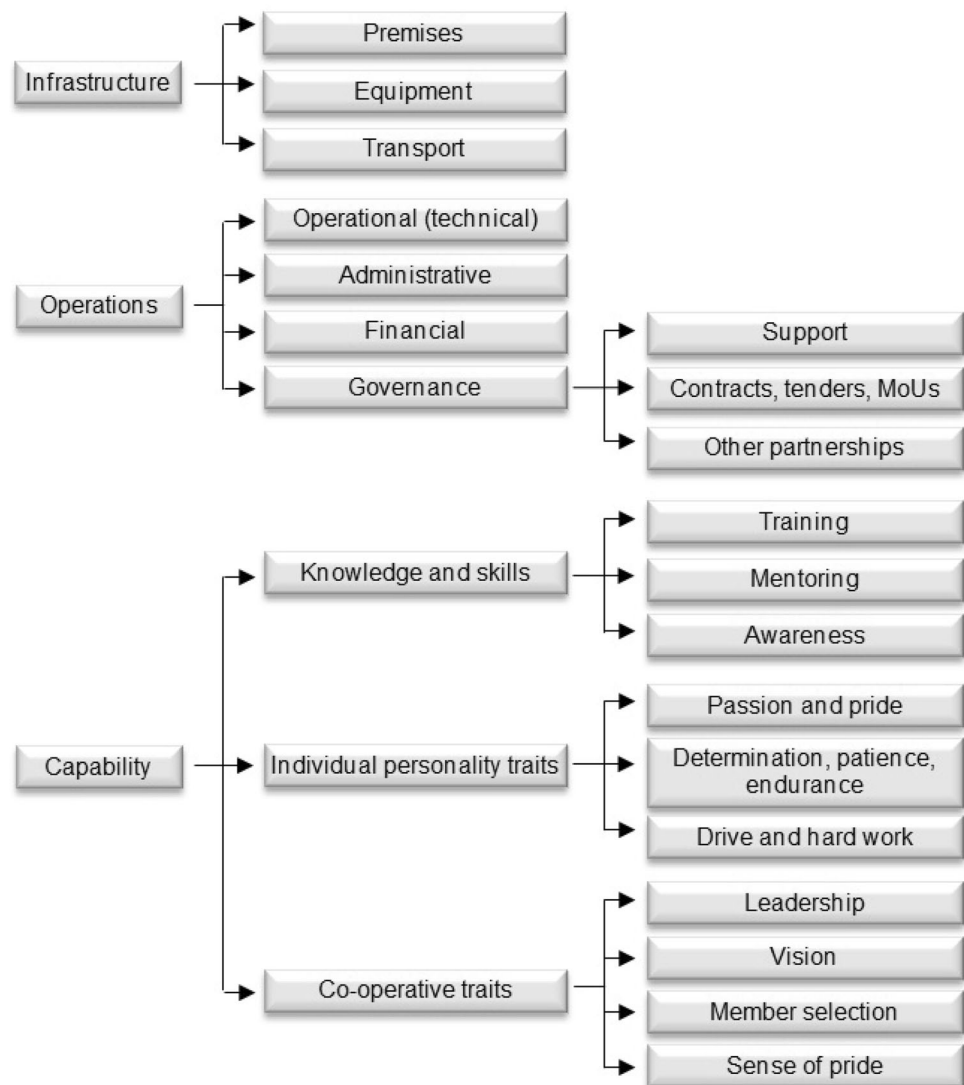
Since only 57.1% of recyclables such as paper, plastic, glass, and tins are currently collected for recycling in South Africa (PackagingSA, 2016), and little to no organic and construction and demolition waste, there remains a lot of material in the municipal waste stream to be collected, sorted and recycled. This can equate to the generation of additional job opportunities (i.e. new players) or to the increased collection of material by existing role-players. Both of these can contribute significantly to increasing income opportunities in the waste sector. As noted by stakeholders, if job creation is to succeed in the waste sector, there is an urgent need for a policy statement by government that sees municipalities addressing separation at source, and guidance on how to integrate SMMEs into these strategies. However, there were mixed opinions by stakeholders as to whether co-operatives are the best business model to create employment in the South African waste sector. Some stakeholders suggested the lower risk solution of instead contracting the formal waste sector to undertake kerbside collection programmes. Those stakeholders who advocated the co-operative model as a means of creating jobs in the waste sector noted that this would be possible only if co-operatives were well constituted, started for the right reasons, and had dedicated and determined members.

Co-operative members were generally very reluctant to talk about their earnings. Of the co-operatives that responded to this question ($n = 12$), the majority (75%) earned less than ZAR3000 ($\pm\text{€}176$) per member/employee per month. However, there is a possibility that non-respondents were earning more than this, so non-participation may skew results towards lower earnings than is actually the case. It is worth mentioning that there were co-operative members that had other sources of income (in addition to the income earned through participation in the co-operative), typically outside of the waste and recycling sector, to be able to sustain themselves.

Opportunities for significant growth

The majority of the interviewed co-operatives were active in the collection and sorting of recyclables. However, these co-operatives identified a number of areas where they considered there to be future growth opportunities. These included (a) co-operative expansion and growth, (b) improvement of operational efficiencies within the co-operative, and (c) diversification into areas outside of the waste sector.

Fig. 6 Main themes emerging for challenges, success stories and recommendations for future co-operatives



The main reported opportunities for “co-operative expansion or growth” included

- benefiting from municipal separation at source strategies;
- expanding from collection and sorting to higher value-addition opportunities in recycling and manufacturing (i.e. moving up the value chain, Fig. 1);
- expanding geographic collection areas to service new areas;
- collecting new types of recyclables currently not collected;
- negotiating new agreements for access to new markets;
- operating buy-back centres or material recovery facilities (MRFs).

As noted by co-operatives and stakeholders, an area that provides the most immediate opportunities for co-operative growth is in source separation of post-consumer municipal

solid waste. This is currently un- or under-served in all municipalities in South Africa, especially as waste collection falls under the constitutional responsibility of local and metropolitan municipalities. There was a general feeling amongst the interviewed co-operatives that relatively small interventions by local municipalities could have a big impact on the growth and sustainability of co-operatives. For example, local governments could contribute to significant employment generation in the waste sector through mandating waste separation at source. However, municipalities should have a plan as to how they will effectively integrate the informal sector, SMEs (including co-operatives), and larger waste and recycling companies, into the municipal waste management system in a way that will divert waste away from landfill, extend municipal waste services, and create opportunities. According to co-operatives and stakeholders, any such approach must be about creating sustainable jobs rather than simply registering co-operatives.

Currently under-collected recyclables which can provide further opportunities for co-operatives include waste tyres, waste electrical and electronic equipment (WEEE), organic waste, and construction and demolition waste. However, stakeholders in the recycling sector cautioned co-operatives against moving into downstream reprocessing, particular if co-operative members do not have the appropriate technical skills. Poor quality processed recyclate may not find a market due to uncertainties in its quality and possible contamination (and associated risks) of the recyclate (e.g. plastic extrusion where PET could be contaminated with other plastics such as PVC).

Opportunities for “improving operational efficiencies” in co-operatives could manifest by acquiring appropriate equipment to increase the collection and processing of waste such as improving the quantity and quality of recyclate harvested through provision of basic infrastructure.

The opportunities for future growth identified in this section must be considered in light of South Africa’s policy environment. In particular, through the planned roll-out of Extended Producer Responsibility (EPR) that articulates three new Industry Waste Management Plans for paper and packaging, electronic waste, and lighting (Government Gazette, 40270). These Plans are expected to shape separation at source in South African municipalities and the integration of the informal sector into the South African waste economy, including appropriate and sustainable business models such as co-operatives. At present, the design of this integration remains unclear but the Department of Science and Technology and the Department of Environmental Affairs have contracted further research to help inform this integration process.

Extent of co-operative uptake in the waste sector

The majority of interviewed stakeholders (private and public) indicated that there is an uptake of co-operatives in the South African waste sector. However, there were concerns that this was simply a government drive to fast-track job creation using co-operatives as the preferred business model, without regard for their long-term sustainability. The result of this approach might have been the high mortality rates of waste and recycling co-operatives evident in the sector. Stakeholders from the private sector indicated that there were significant opportunities to increase efficiencies in quality and quantity through training and mentorship exercises.

The evidence presented in this paper shows that creating sustainable waste and recycling co-operatives requires long-term commitment and investment by external stakeholders (public and private). This support is not necessarily only financial, but can also entail investment in terms of time and support. Fast-tracking the registration of waste

and recycling co-operatives without this support will only exacerbate the existing high mortality rates of co-operatives (see Introduction).

Conclusions

Waste and recycling co-operatives in South Africa are characterised by a high mortality rate and a high membership turnover. This is surprising given the low barriers to entry, the low skills required in the waste and recycling sector, and the large volumes of available recyclables. A strong drive, and investment, is currently being made by the South African Government to establish co-operatives as a development mechanism. This is in an effort to alleviate the current high levels of unemployment and a slowing economy, as well as to extend waste services to un- or under-serviced communities. However, stakeholders argue that these efforts are in vain, given that with a 91.8% mortality rate, the vast majority of registered waste and recycling co-operatives were no longer operating.

This paper explored six specific research questions related to waste co-operatives, with the aim of building an evidence base of the uptake, success and failure of waste co-operatives in South Africa, as well as to use this knowledge to support future co-operative implementation. It is hoped that this knowledge will also benefit other developing countries in Africa who may be facing similar sustainability challenges with respect to the large levels of waste generation, and the low integration or formalisation of the informal waste sector.

The results have provided interesting insights into current waste and recycling co-operative practices in South Africa. Most notable is the opportunistic registration of several co-operatives (often influenced by supposed mentors) to gain access to available financial support and procurement policies. The results have also shown a strong top-down approach led by government to the registration of co-operatives as a means of formalising the informal waste sector and fast-tracking enterprise development and job creation. However, without the necessary support systems, many of these co-operative members return to informal waste picking, often leaving one or two co-operative members saddled with significant financial responsibilities and debts.

In-depth discussions with co-operatives and stakeholders have highlighted three main themes influencing co-operatives in South Africa; (a) their need for “infrastructure”, (b) their challenges in “operations”, and the importance of “capability” of co-operative members, including knowledge and skills. However, while training is necessary, it is insufficient on its own to sustain waste and recycling co-operatives. Closer hand-holding, mentorship

and incubation is necessary to develop the business and technical skills needed to run co-operatives as sustainable businesses, capable of not only creating jobs and enhancing livelihoods, but also making an impact in the diversion of recyclable waste from landfills. The research has highlighted three criteria which are considered crucial to sustaining and growing waste and recycling co-operatives in South Africa: (a) access to materials, (b) access to markets, and (c) business development support.

The implications of this research need to be considered within the context of South Africa's approach to small business development in the waste and recycling sector. While this research has highlighted the current constraints that co-operatives face (and has made recommendations on how to address these constraints), the South African waste and recycling sector must consider whether co-operatives are the only, or the most appropriate, business model for integrating the informal sector and/or creating new small businesses, as required by national policy such as the National Waste Management Strategy (see Introduction). If co-operatives are to be promoted, significant support mechanisms (e.g. financial, operational) will have to be put in place to ensure the long-term sustainability and financial viability of these small businesses.

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