Stresses / Shocks

Rapid urbanisation | Economic crisis | Infrastructure failure | Unemployment

Qualities of a resilient city

Robust city | Fexible city | Resourceful city

RESILIENT CAPE TOWN PILLARS

PILLAR 1: People **Compassionate,** holistically healthy city

PILLAR 2: Place & Space **Connected,** climate adaptive city

PILLAR 3: Economy **Capable,** job creating city

PILLAR 4: Disaster readiness **Collectively,** shock-ready city

PILLAR 5: Governance **Collaborative,** forward-looking city

Brick recovery: Building economic resilience through understanding waste streams in Cape Town, South Africa.

Purpose

In Cape Town's Resilience Strategy, Goal 3.1.4 highlights:

"Improved knowledge about waste streams will result in a common understanding of economic and environmental risks, particularly under conditions of climate change and rapid urbanisation. This knowledge is the basis of realising the opportunities of the circular economy, particularly for the creation of new jobs."

This case study explores how research conducted by the City of Cape Town's (CCT) Solid Waste Management Department contributes to increased knowledge of the city's waste streams, thereby building economic resilience in the city. The team is conducting surveys focussed on assisting contractors at drop-off sites to maximise the value of builders' rubble, with a particular focus on the recovery of bricks, blocks and pavers, delivered to the sites and to divert more material from landfill.

This case study highlights results from a contractor's survey conducted in June 2019, and draws on the builders' rubble waste diversion insights of GreenCape's waste economy team.

Brick recovery has the potential to build economic resilience in the CCT at the small and micro enterprise level enabled by city drop-off sites, where material is delivered by residents and small businesses at no charge. The economic value of the material derived from brick recovery also saves costs further down the value chain. There is potential for low-skilled formal and informal job creation in the process, which in turn then supports low income housing construction and refurbishment.

This case study is part of a series highlighting how Cape Town is building resilience in order to: SURVIVE | ADAPT | THRIVE

Cape Town's Resilience Strategy is a commitment to ensure that the City thrives in the future regardless of what shocks and stresses it faces. Resilient Cape Town offers a roadmap for a 21st Century metropolis to enable the city to become more resilient to growing physical, social and economic challenges. It envisions Cape Town as a **compassionate, connected**, and **capable** city where Capetonians **collaborate** across households, communities and institutions, to build **collective** responses to the current and future social, environmental and economic challenges.

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KEY INSIGHTS

- ✓ The availability of accurate data on material aggregated at city drop-off sites enables service providers and companies to do due diligence on the economic viability of recovered bricks, and other similar items such as blocks and pavers.
- ✓ Developing a circular economy business case for builders' rubble in general, and bricks in particular, can help to mitigate the risk of running out of landfill airspace and reduce the need for virgin materials.
- ✓ The refining of data leads to a better understanding of the full range of opportunities available in the recovery, re-use and recycling of waste.

In addition, it embeds circular economy principles in how businesses and the city view waste material. The awareness of the potential in brick recovery and available markets still needs to be developed, and the CCT has implemented an ongoing knowledge gathering process to this end.

The case study discusses:

- Emerging **economic opportunities** in the **brick recovery** processes;
- Challenges to the business case for brick recovery;
- Steps towards embedding **circular economy principles** into municipal waste management planning;
- How a **system stress** can be turned into an **opportunity for enterprise development;**

It is written for:

- **Cities and regions** in developing economies seeking to implement market-driven **circular economy principles** when thinking through **waste management challenges**, particularly the issue of landfill airspace;
- **Cities and regions** in developing economies focused on building **economic resilience** through **enterprise development and job creation;**
- **Recycling contractors** interested in exploring the **economic viability** of recovering bricks from landfill.

Background

Landfills nearing capacity are a major infrastructure challenge for cities that face the stress of rapid urbanisation. The risk of running out of landfill space does not only have service delivery implications that could lead to civil unrest, but also major cost implications for municipalities that are already under financial strain.

Most of the Western Cape is experiencing a landfill airspace crisis. Of the 25 municipalities, 22 have less than five years of landfill airspace left. This is expected to continue in the medium term. Shocks like these provide opportunities for municipalities to diversify their waste management models.

Drop-off sites are located across the city as part of the Solid Waste Department's policy to make sites accepting recoverable and recyclable materials available to residents. Recyclable and recoverable materials accepted at drop-off sites include builders' rubble, garden waste, electronic waste and household waste packaging.

Contractors are appointed by the city to manage the drop-off sites, and to maximise the value of materials received by sorting and re-selling the material to local buyers.

From July 2018 to June 2019, around 5 800 tonnes of material was taken from drop-off sites across the city to landfills, which excludes garden waste and the recyclable material sold by city contractors. As building and demolition waste is heavy material, the bulk of this tonnage was unsorted building and demolition waste. Further recovery of material at drop-offs, in this case bricks, blocks and pavers, to create income opportunities and to fulfil a need in low income and residential construction, builds economic and infrastructural resilience in the CCT.

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What is resilience?

In human terms, resilience refers to "the ability of an individual to recover from setbacks, adapt well to change and to keep going even when facing difficult circumstances".

Chronic stresses weaken the fabric of a city on a day-to-day or cyclical basis, for example, high unemployment, inadequate public transport systems, endemic violence, food insecurity and substance abuse. Acute shocks are sudden sharp events that threaten a city, for example, drought, fires, floods, diseases outbreaks and infrastructure failure.

Building resilience to shocks and stresses matters because disruptions or disasters of any sort, whether regional or distinctly local in scope, short or long in time scale, can be costly to those they impact. They can result in the loss of livelihoods, they can severely impact citizens' mental health, they can result in injuries and death, and they can drive apart communities.

A resilient Cape Town is a compassionate, connected, and capable city, where Capetonians collaborate across households, communities and institutions, to build collective responses to the current and future social, environmental and economic challenges. Embedding a circular economy view and extracting the economic value of builder's rubble in general, and bricks in particular, can help to mitigate the risk of running out of landfill airspace, whilst also creating opportunities for local economic development.

PILLAR 3
Cape Town is a capable, job creating city

VISION
Capetonians turn the challenges of resource constraints and rapid technological change into new opportunities.

GOAL 3.1 Foster green economic growth	**GOAL 3.2** Enable enterprise development in the informal economy	**GOAL 3.3** Connect the workforce with a changing economy	**GOAL 3.4** Collaborate with businesses to achieve a resilient local economy

ACTION: 3.1.4
Undertake a waste economy study to understand the opportunities of the circular economy.

DESIRED OUTCOME:
Improved knowledge about waste streams will result in a common understanding of economic and environmental risks, particularly under conditions of climate change and rapid urbanisation. This knowledge is the basis of realising the opportunities of the circular economy, particularly for the creation of new jobs.

WHAT IS THE GREEN ECONOMY?

The working definition for the green economy as it relates to Cape Town is: "expanded economic opportunities created through the provision of goods and services and the use of production processes that are more resource efficient, enhance environmental resilience, optimise the use of natural assets and promote social inclusivity."

Towards a solution:

In order to gain insight into the potential value in construction material recovery, including bricks blocks and pavers, the Waste Minimisation team at CCT's Solid Waste Management Department conducted an initial survey to determine the current recovery practices at 13 drop-off facilities where it had been confirmed that brick recovery was taking place. The survey engaged the key waste recovery/management contractors who were operating at those specific city drop-off facilities, and the survey was successfully completed by the contractors operating 7 of these 13 sites.

Results from the study indicated that there were up to 920 bricks recovered on average from 6 of the 7 reported sites on a weekly basis, and that ~3 020 bricks were sold from the six facilities during the survey month (June 2019). Additionally, these sites reported the sale of blocks (195), pavers (649) and tiles (6) in that month.

A recommendation emerging from the survey suggested that sites with the largest material quantities and access to markets be selected, in order to investigate the opportunity further, specifically in the context of the total number of bricks, blocks, pavers etc. being dropped off at the sites.

According to the survey, the challenges for the business case of brick recovery, were found to be sufficient volumes of accessible quality material, the cost of labour to recover and clean bricks for re-use (relative to the value of recovered bricks), and the availability of the staff to recover the material. The theft of bricks was also noted as a threat to the business case, which demonstrates the recognised value of recovered bricks locally.

Gathering the information required to further develop the business case for brick recovery will help to build economic resilience in Cape Town, in three ways:

1. **Using a systemic stress to explore circular economy public-private partnership solutions**

   Most of the Western Cape province is experiencing a landfill airspace crisis. Of the 25 municipalities, 22 have less than five years left of airspace. This is expected to continue in the medium term. Stresses like these provide opportunities for municipalities to explore partnerships with private sector in order to mitigate service delivery failure.

   Developing a business case for diversion in general, and in this case for the re-use of the construction materials bricks, blocks and pavers (from builders' rubble) is a key step towards developing economically viable solutions for landfill airspace challenges in the CCT.

2. **Embedding market-driven circular economy principles in business operations and the City management processes.**

   As highlighted in the CCT's Resilience Strategy: "A multitude of different waste streams are produced in the city-region, which place pressure on diminishing landfill space. Improved knowledge about waste streams will enable the CCT to more readily make decisions in liaison with societal partners and neighbouring municipalities about minimising waste production, ensuring recycling services are widely available, ensuring large-scale composting of garden and organic waste is in place, optimising waste diversion, and maximising beneficiation within the economy."

3. **Providing accurate information for companies to be able to do data-driven due diligence on the economic opportunities available in the construction material recovery from builders' rubble.**

   The results of the initial survey conducted by the CCT indicated that there is a potential business case for brick recovery, but that it is largely dependent on the volumes of accessible quality material and a local market in materials for low income residential construction. By making this information available to their contractors and small enterprises, the CCT could assist in the development of data-driven business plans to ensure sustainable business growth.

For more information and support contact GreenCape's waste sector desk: info@greencape.co.za
or call (021) 811 0250. Additional resources are available from: www.greencape.co.za

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