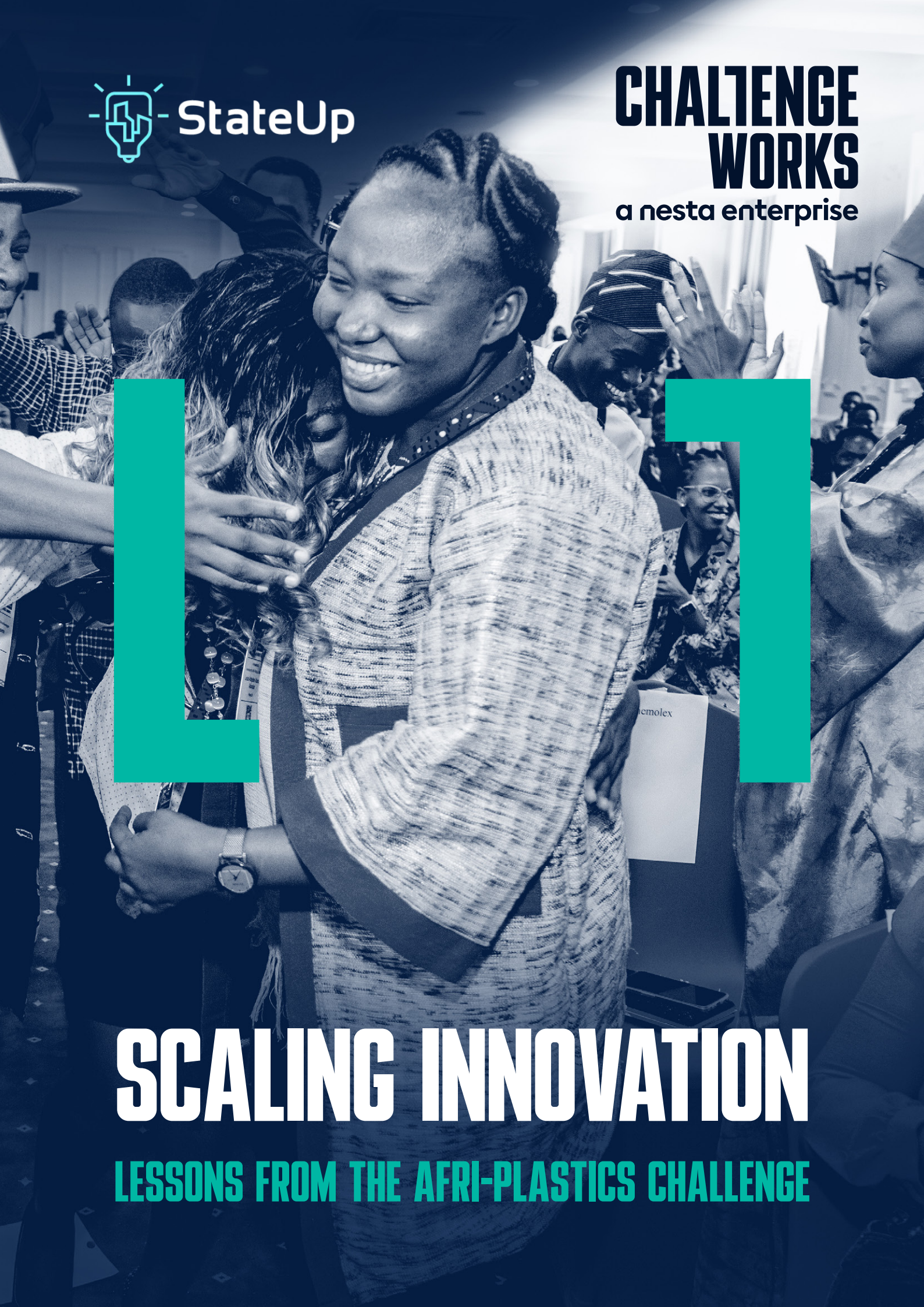
StateUp

CHALLENGE WORKS

a nesta enterprise



# SCALING INNOVATION

## LESSONS FROM THE AFRI-PLASTICS CHALLENGE

# AUTHORS

**Dr. Eszter Czibor** is Head of Research at StateUp, with expertise in innovation policy research and programme evaluations. She holds a PhD in Economics from the University of Amsterdam.

**Teodora Chis** is a Researcher for Challenge Works, with expertise in developing innovation programmes. She holds a MA in Political Science from the Central European University.

**Harvey Logan** is an Associate at StateUp, with a background in climate science and policy. He holds a BA (Hons) in Geography from the University of Cambridge.

## Additional expert contributors include

**StateUp contributors**:
Dr. Stephanie Diepeveen, Dr. Tanya Filer, Sam Harrison and Dr. Saurabh Lall

**Challenge Works contributors**:
Rhys Herriott, Nina Shachkov, Vidal Kumar, Nassin Watson and Jonty Slater

# ACKNOWLEDGEMENTS

Preparing this report would not have been possible without the invaluable contributions of several Afri-Plastics Challenge participants and partners.

We would like to thank the Afri-Plastics Challenge innovators we interviewed for being so generous with their time, and for sharing their experience, learnings and enthusiasm with us.

Our report greatly benefited from the knowledge and expertise of the following Afri-Plastics Challenge judges and delivery partners, who shared their insights with us: Adwoa Coleman, Matthew Haden, Jocelyne Landry Tsonang, Radhia Mtonga, Ida Nganga, Lydia Ezenwa (AfriLabs), Jonty Slater and Daniela Valenzuela (Blue Globe), Lisanna de Bakker (Proportion), Karien Bezuidenhout and Dr Deborah Robertson-Andersson (Sustainable Seas Trust).

We are also grateful to Bright Simons, Founder of mPedigree, a leading Ghanaian social enterprise, for shaping our thinking and introducing us to new viewpoints.

March, 2023

Design: Green-Doe Graphic Design Ltd

# SCALING INNOVATION

## LESSONS FROM THE AFRI-PLASTICS CHALLENGE

# EXECUTIVE SUMMARY

**Challenge prizes harness open innovation and enable the discovery of high-value solutions for a diversity of problems. Over the past few decades this method has gained popularity, and it is essential that we build up a strong evidence base to inform their design. This report sets out to map the barriers to scaling innovation and the opportunities for supporting the scaling process through open competition, providing the basis for developing the future of similar innovation funding models.**

This report builds on lessons from the 'Accelerating Growth' strand of the recently completed Afri-Plastics Challenge, a challenge prize competition funded by the Government of Canada, and designed and delivered by Challenge Works. The Afri-Plastics Challenge sought to scale innovative approaches to plastic waste management across Sub-Saharan Africa, with a focus on empowering women and girls.

We find that challenge prizes can play a unique and catalytic role in social enterprise scaling. By employing a wide array of strategic levers, they directly and indirectly tackle organisational, institutional and infrastructural barriers to scale, supporting a diverse group of innovators to grow their solutions. To unlock their full impact and support system-level transformation, open competitions, like this, should be fully integrated within the broader innovation support ecosystem.


Afri-Plastics Challenge

Global Affairs Canada

Affaires mondiales Canada

# I.
# CONTEXT AND KEY INSIGHTS

**Funders and practitioners in the innovation space increasingly recognise the value of challenge prizes for supporting the scaling stage of innovation – however, there is no consensus on how 'scaling' should be defined, and its success measured. Rather than an attempt at a universally applicable definition, our report offers a context-specific approach to thinking about scaling, tailored to the characteristics, intended routes to impact, and overarching goal of the open challenge prize competition.**

The Afri-Plastics Challenge described the problem of reducing marine plastic waste pollution in Sub-Saharan Africa as a complex technical, economic, social, and environmental challenge. This approach informed our proposed definition of scaling for this project: **Achieving the conditions (organisational form, size, capacity and capabilities, business model, partnerships and networks, capital and finance) that unlock efficiencies and allow sustainable delivery of plastic waste management solutions in a socially and environmentally responsible way**.

Challenge prize competitions can support innovations to scale, provided they identify and address key barriers to scaling. Even though barriers will be different in each context, we can apply a general framework to systematically and comprehensively map them. Applying this framework to the Afri-Plastics Challenge context, we document numerous organisational, institutional and infrastructural barriers faced by organisations in downstream plastic waste management in Sub-Saharan Africa, demonstrating a clear need for supporting the scaling stage.

Scaling prizes often tailor their direct support towards individual organisations or specific innovator teams, but they also tend to embed various strategic levers aimed more broadly at embedding system change, and shifting societal and cultural perspectives. Using the Routes to Scale framework developed by Social Finance[1], we illustrate the variety of levers embedded in scaling prizes through the lens of the Afri-Plastics Challenge.

We identify and evidence more than a dozen distinct strategies to scale, including harnessing collective effort, developing talent, shaping sector practice and unlocking capital. We highlight strategies that promote the empowerment of women and girls. We also identify opportunities to boost challenge prizes' ability to tackle barriers related to institutions and infrastructure through strengthened partnerships with the public sector and large corporations.

Our analysis highlights two key underlying mechanisms that are crucial for scaling prizes to achieve impact. First, the increased visibility and reputation that scaling prize participants enjoy may act as a catalyst for entering new markets and influencing relevant sectoral policies and regulations. Second, due to their ability to attract, grow and reward solutions from a broad and diverse group of innovators, scaling prizes allow unusual suspects often overlooked by other funding mechanisms to prove the merits of their innovations.

Our report concludes with the following recommendations for funders and designers of challenge prizes:

- Embed prizes within a broader innovation ecosystem
- Recognise the value of partnerships with government and private sector as enablers of scale
- Design an explicit strategy to address institutional barriers
- Support innovations that unlock scale

# Methodology

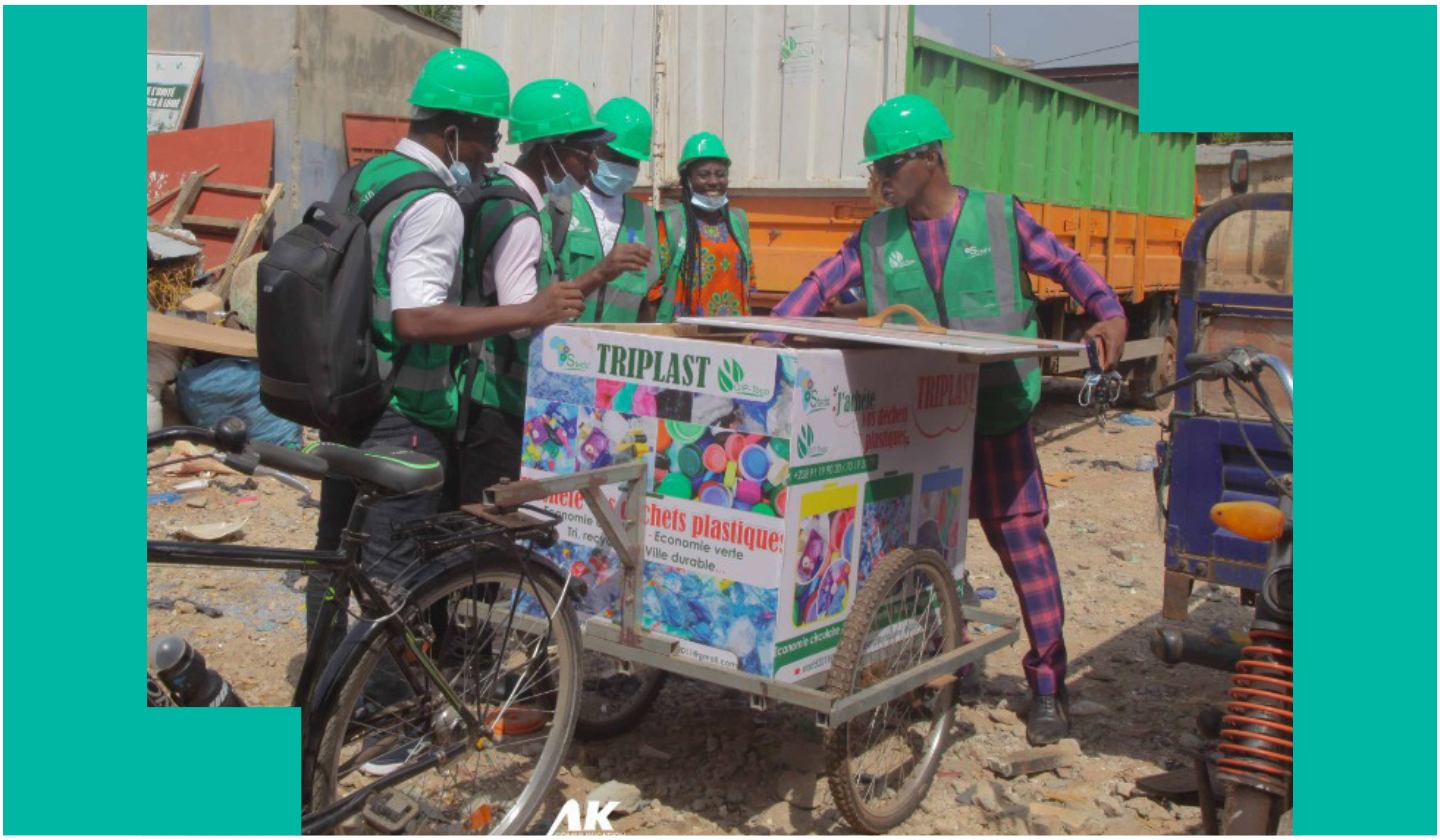
Our report speaks to the design and delivery of **challenge prizes** competitions, which offer a series of incentives, with a final prize given to whoever can first or most effectively meet a defined goal[2]. Also known as inducement prizes[3], they are used to spur innovation by setting a concrete, ambitious target without specifying the path to reach it. Our focus is specifically on scaling prizes: challenge prizes that are designed to scale truly transformative innovations, to achieve a wider societal impact. We build on lessons from the 'Accelerating Growth' strand of the recently completed **Afri-Plastics Challenge**, which sought to scale innovative approaches to plastic waste management across Sub-Saharan Africa, with a focus on empowering women and girls.

Our findings are informed by scanning the relevant academic literature on scaling social enterprises and social impact, and on the role of prizes in innovation support. We also build on practitioners' insights captured in design and evaluation reports of other scaling prizes.

Our results are based on the analysis of data from primary and secondary sources. Our secondary data sources include the Afri-Plastics Challenge research and design documents, judging panel moderation dashboards, and site visit reports. We gathered primary data in an online survey administered to all finalists of the Challenge[4], in a series of interviews with innovators, delivery partners and judges, and through observation of the final judging panel.

We conducted semi-structured interviews with eight Strand 1 innovator teams, three judges (two core judges involved in the assessment of all three strands of the Challenge, and one Strand 1 judge), and five delivery partners (outreach partners; non-financial support partners, market and plastics cluster; gender mainstreaming specialist)[5]. Interviews were conducted online over two weeks in January 2023, and took approximately 30 minutes each.

Our innovator sample consists of one shortlisted team, one semi-finalist team, and six finalist teams; half of the organisations we interviewed are majority women-owned, three out of the eight teams are based in French-speaking countries. Interview transcripts were cleaned, anonymised, and the answers aggregated and annotated. A thematic analysis was carried out to identify key patterns of themes. When possible, we triangulated findings from different data sources.



# The Afri-Plastics Challenge

The Afri-Plastics Challenge is a funded by the Government of Canada; it forms part of the $100-million Marine Litter Mitigation Fund announced by Prime Minister Trudeau at the G7 Leaders' Summit in Charlevoix in June 2018.

The Challenge aimed to reduce marine plastics in Sub-Saharan African countries by developing and scaling innovative solutions to plastic mismanagement. It involved a public competition that has rewarded the best solutions to addressing marine plastic litter in Sub-Saharan Africa in ways that promote gender equality and the empowerment of women and girls.

The Challenge directly distributed CAD$14,500,000 in financial support and CAD$1,000,000+ in nonfinancial (capacity-building) support to innovators participating in target communities, with the goal that the development and scaling of the innovators' solutions will encourage the creation of new, sustainable local enterprises, bringing economic opportunity to these communities and contributing to poverty reduction.

To achieve the greatest possible impact within the agreed timeline, the Challenge was split into three strands, each with a distinct focus area:

### Strand 1

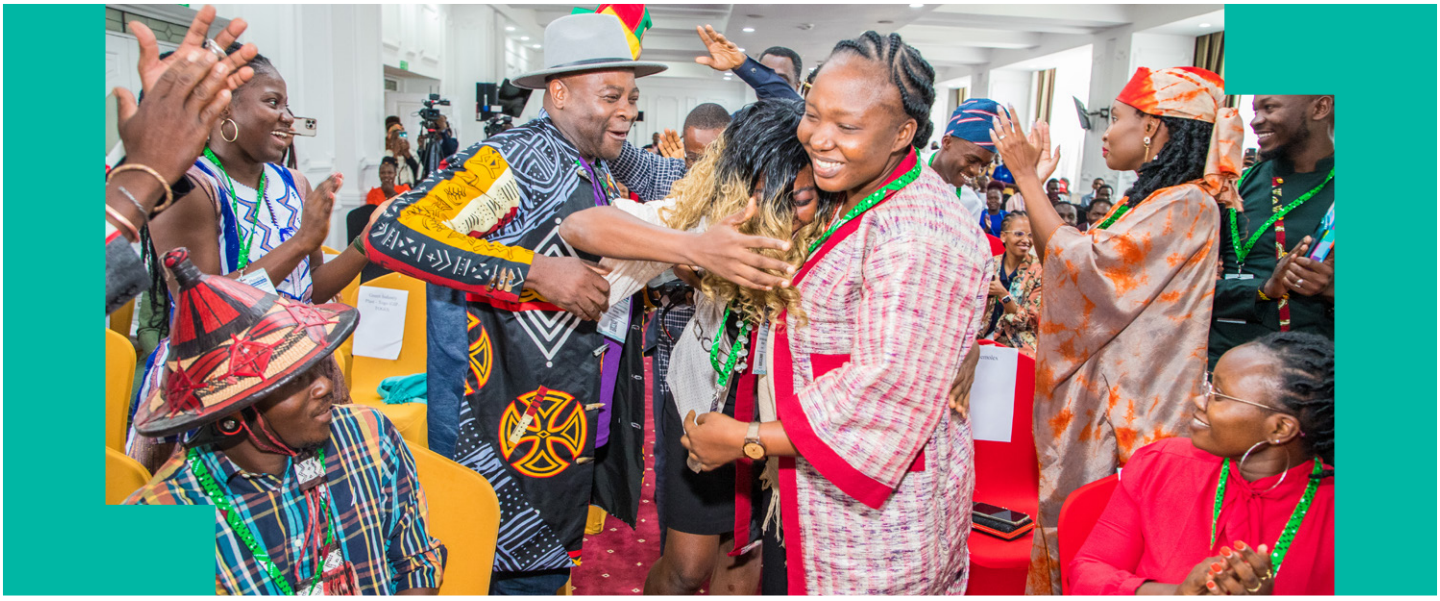

**Accelerating growth**
Scaling Existing Innovations

### Strand 2


**Creating solutions**
Spurring New Innovations

### Strand 3


**Promoting change**
Community Engagement and Awareness Raising



# Strand 1 – Accelerating growth

## Scaling
### Accelerating growth

This report covers Strand 1, which focused on sourcing solutions from small- and medium-sized organisations with an existing proof of concept and the potential to scale nationally or regionally during the Challenge, particularly engaging women and girls[6].

### Strand 1 Challenge Statement

Scale existing solutions that improve plastic waste management in a socially and environmentally responsible way, to reduce the presence of marine plastic litter across Sub-Saharan Africa. By the end of the Challenge successful solutions will have demonstrated an effective, sustainable and replicable model for significantly increasing their collection and processing of plastic waste, as well as the empowerment of women and girls.

Strand 1 of the Afri-Plastics Challenge launched in July 2021. 239 applications were received by the application deadline in September 2021, and 30 innovator teams were invited to the semi-finalist stage. 15 finalists[7] were selected in January 2022; the finalist stage of the Challenge lasted a year, with final submissions due in January 2023. Besides extensive non-financial support in the form of training, mentoring and capacity-building, semi-finalists and finalists also received cash grants (£10,000 for semi-finalists and £100,000 for finalists). In March 2023, the three winners were announced, receiving cash prizes of £1,000,000, £750,000 and £500,000, respectively.

To select the (semi)finalists and winners, the Challenge engaged independent assessors and a panel of five judges, experts deeply embedded in the African innovation ecosystem with extensive knowledge and experience in plastic waste management, the circular economy, and sustainable development[8]. Judges evaluated the proposed solutions according to the five criteria presented in Table 1:

**Table 1: Judging criteria applied in Strand 1 of the Afri-Plastics Challenge**

| Criterion | Explanation | Weight |
|---|---|---|
| **Scale** | Is the solution being replicated in or adapted to other contexts nationally or more widely across Sub-Saharan Africa? Or has it demonstrated the potential to do so? | **25%** |
| **Empowerment of women and girls** | Is the solution contributing directly to the empowerment of women and girls, and how does it plan to continue to do so? | **25%** |
| **Social impact** | Is the solution making a positive and meaningful difference to society? | **20%** |
| **Environmental impact** | Is the solution making a positive impact on the environment, and how does it plan to continue to do so? | **20%** |
| **Capability** | Does the team have the relevant set of skills and experience needed to successfully further their solution beyond the challenge? | **10%** |

# II.
# DEFINING AND MEASURING SCALING

## Characteristics of the scaling problem

Designing strategies to support innovations to scale requires a "quality understanding of the contextual characteristics of the need or problem they are targeting."[9] The 'Accelerating growth' strand of the Afri-Plastics Challenge set out to tackle a well-articulated problem, captured in the Problem Statement below, as defined by Challenge Works during the research and design of the challenge prize:

### Strand 1 Problem Statement

In areas with low formal waste sector coverage, community-based groups, informal waste pickers' associations and non-profit voluntary organisations are the main actors conducting the tasks associated with waste management – this includes collecting, sorting, storing, selling and processing plastic waste. At the moment, these actors have to rely on donor funding and voluntary or low-paid, precarious labour (in particular women) in order to continue their work.

This problem statement reveals the complexity of the scaling problem. It frames the challenge as a technical, economic, social and environmental problem, and seeks holistic solutions across these dimensions. Such an approach is common among innovation prizes, where "education, attention and community building can be as important as the technical solutions themselves."[10]

Deriving from the complexity of the problem, the intended benefits of the innovations materialise at different levels, and result in a broad group of potential beneficiaries. Individuals directly employed or supported by the social enterprises, communities benefiting from cleaner and healthier surroundings, improved gender norms, and products that meet local needs, and nature and the environment – for example in the form of thriving marine ecosystems – all stand to benefit.

Different dimensions of the problem may also come into conflict with each other. In our specific context, this might materialise in potential trade-offs between strengthening and empowering the existing informal system vs. promoting the development of a formal system that may be more efficient but less inclusive and adaptable to local needs; or questions arising from broader environmental impact assessments and end-of-life considerations of the recycled products.

## Defining scaling

In preparing this report, we reviewed various definitions of scaling. While scaling is typically conceptualised in entrepreneurship and business management in terms of persistent, rapid organisational growth[11], the social innovation literature offers more complex definitions with a focus on lasting impact and sustainable delivery. Table 2 presents the definitions that we found to be most applicable to the Afri-Plastics Challenge, and outlines aspects that the literature did not capture well enough in this context.

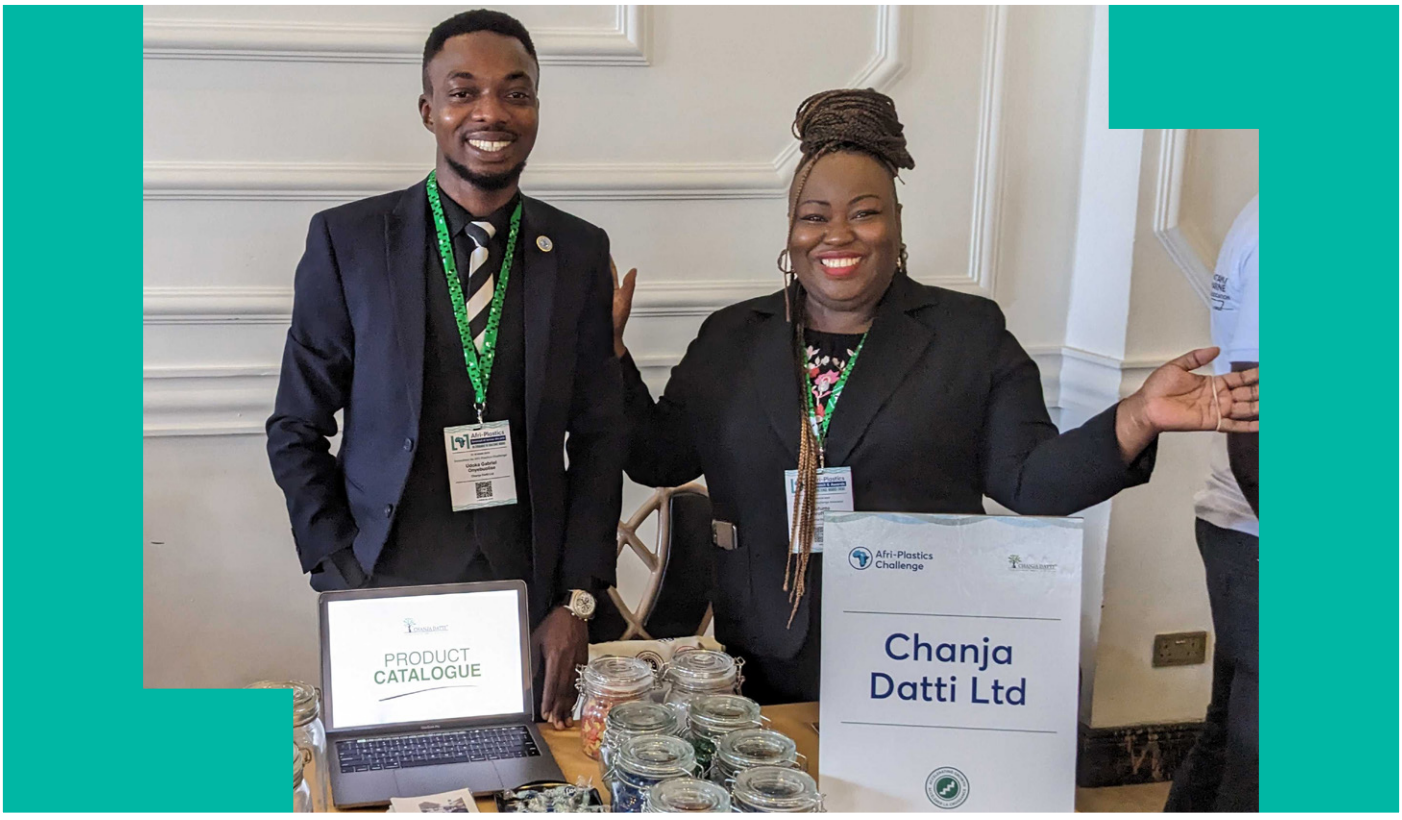
**Table 2: Overview of relevant definitions of 'scale' and 'scaling'**

| Approach | Definition | Missing aspect |
|---|---|---|
| **Scaling social innovations**[12] | "Social innovations can be said to have scaled when their impact grows to match the level of need" | Does not differentiate between responding to a need vs. **tackling root causes** |
| **Impact at scale**[13] | "The lasting change in people's lives and society we see when products, services or practices sustainably expand their reach, when systems embed change or when society and culture shift their perspective." | Focus is too narrow, does not incorporate **nature and the planet** among the beneficiaries |
| **Scaling social enterprises**[14] | "The most effective and efficient way to increase a social enterprise's social impact, based on its operational model, to satisfy the demand for relevant products and/or services."<br>Some social enterprises aspire to reach a greater number of users or beneficiaries, and therefore aspire to **scale widely** their social impact. Others diversify their activities, either to address emerging needs at the local level or tackle the same needs from multiple angles. These social enterprises aspire to **scale deeply** their social impact. | Does not consider **environmental impact**, and sustainability of solution. |

To successfully support scaling, each challenge prize needs a definition of 'scale' at the outset that is tailored to the contextual characteristics, intended routes to impact, and overarching goal of their prize. In the Afri-Plastics Challenge context, these considerations resulted in the following proposed definition of scaling:

## Defining scaling in the Afri-Plastics Challenge context:

Achieving the conditions (organisational form, size, capacity and capabilities, business model, partnerships and networks, capital and finance) that unlock efficiencies and allow sustainable delivery of plastic waste management solutions in a socially and environmentally responsible way.



# Measuring the success of scaling

Challenge prizes are most useful "when the goal is clear but the path to achieving it is not,"[15] as prizes can set a clear direction without having to pre-commit to the approach or the team that is most likely to succeed. This implies that setting a well-defined and specific scaling goal is essential for challenge prizes; however, it can be difficult to set a one-size-fits all target that does not limit participants' ability to pursue their own paths.

In any setting where incentives are tied to the achievement of targets, it is important to consider Goodhart's law, which warns that as soon as indicators are designated as targets, incentives to game them may induce behaviour change such that these indicators "lose most of the information content that qualify them to play such a role."[16] In a challenge prize context, there are additional advantages and disadvantages of target setting to be aware of, summarised in Table 3 below.

**Table 3: Advantages and disadvantages of setting a quantitative scaling target**

| Setting a measurable and verifiable quantitative scaling target in a prize | |
|---|---|
| **Advantages** | **Disdvantages** |
| Allows a more objective assessment<br><br>"Clear, specific and challenging" goals can be more motivating[17]<br><br>Achieving a certain threshold may allow organisations to unlock specific benefits (e.g. economies of scale; eligibility for procurement contract) | There is a danger of overdetermining the solution by setting a target that favours a certain approach<br><br>If the problem is multidimensional, it can be challenging to set the appropriate multitasking incentives:<br>• Danger of focusing on quantitative dimensions of improvement, to the detriment of qualitative ones<br>• Economic goals might be easier to quantify than social/ environmental ones |

Strand 1 of the Afri-Plastics Challenge specified a scaling milestone of at least 250 tonnes of plastic waste collected and/or processed[18] per month by the end of the Challenge. This target was chosen to reflect an operational capacity and organisational size that is likely to unlock economies of scale and enable long-term sustainable operations. As an additional advantage, it also measures the organisations' contribution towards the ultimate prize goal (reducing marine plastic pollution by collecting and/or recycling ocean-bound waste). However, this milestone has a limited ability to incentivise improvements along other meaningful dimensions beyond capacity, including the share of collected plastic actually recycled, ability to work with hard-to-recycle materials, the quality or value added of the final product, or the usefulness of the product for filling local needs.

## Considerations for setting scaling targets in future prizes

In preparation of this report, we reviewed alternatives for scaling prize targets, and identified the following considerations that can valuably guide target selection:

### 1) What to measure?

In addition to targets related to organisational capacity, scaling prizes have focused on indicators related to:

i. **Diffusion of innovation**: Challenge prize competitions focused on increasing the uptake of new innovations often determine targets in terms of the number of users / adopters benefitting from the innovation, as in Nesta's Rapid Recovery Challenge[19]

ii. **Commercial feasibility**: Challenge prize competitions with goals to accelerate commercialization of technologies often set "schedule/cost conditions to accomplish a feat linked to specific user communities or commercial markets"[20]

iii. **Embeddedness and reach**: Challenge prize competitions interested in successful replications of social innovation programmes may include additional measures such as the geographical spread of beneficiaries, or the number and strengths of relevant partnerships established, as in the DAC Prize[21]

### 2) How to measure it?

By rewarding specific achievements, challenge prizes tend to focus on output-based indicators of success, rather than on measures of inputs, activities and processes. To ensure that output-based targets in a competitive setting create the correct incentives for effort provision and allow the identification of entrants who are the most deserving of the final award, it is essential that entrants are sufficiently in control of these outputs, and the role of external factors in determining the outputs is limited.

Additional measurement consideration include the choice between indicators based on:

i. **Absolute value at endpoint**, a measure particularly appropriate in settings where we assume a discontinuity (discrete jump or drop) in the production or profit function at that threshold (e.g. economies of scale are unlocked, or the organisation becomes eligible for a large procurement contract)

ii. **Absolute difference** between start- and endpoints, a measure that helps account for organisation-specific starting points

iii. **Growth rate**, an indicator commonly used in commercial settings to describe scaling ("persistent rapid growth")

### 3) Who to involve in the decision?

i. While there are clear advantages of involving **innovators** themselves in the target setting (as they may have the most context-relevant information), the potential conflict of interest arising from the competitive setting may limit the extent to which this is possible, especially on a solution-specific basis

ii. **Potential investors/funders** need to be consulted to ensure that they perceive prize competition participation as a positive signal regarding the capabilities and ambitions of the participating organisations[22] (while ensuring that social and environmental dimensions remain central)

iii. Indicators created by the **Global Reporting Initiative**, **the Sustainability Accounting Standards Board**, and **B Lab** can be used as inspirations for benchmarking companies' impact on the lives of employees and customers, the communities served, and the environment[23]

# III.
# BARRIERS TO SCALE

**"Prizes are useful in industries that are particularly susceptible to under-production of innovation because private actors lack a viable market, (including) where social value far exceeds private value."[24]**

**J. Kudymowa & B. Tsai**

Supporting the scaling stage of innovation requires a comprehensive analysis of the barriers that limit scaling in the first place. While the specific barriers, their importance, and their relationship to one another will differ from context to context, prize competition designers can benefit from a framework that allows them to systematically map the relevant barriers. Based on a literature review on the barriers to social enterprise growth[25], and the interviews we conducted with Afri-Plastics Challenge prize participants, judges and delivery partners, we suggest using a framework that differentiates between organisational barriers to scale, including limited growth aspirations and lack of access to resources (physical, financial, human and social capital), institutional barriers (formal, informal, markets, and skill level) and infrastructural barriers (specific to plastic waste management).

We illustrate this framework in the context of the Afri-Plastics Challenge. In the design phase, Challenge Works, in collaboration with local partners, undertook extensive research (interviews with local innovators, combined with desk research) into the barriers that limit the ability of organisations providing waste management solutions in Sub-Saharan Africa to sustainably scale their impact. This review has allowed the prize design and delivery team to clearly articulate the need for supporting innovators in order to scale, grounding their Challenge Statement in context-specific evidence and to design the challenge prize to specifically target the constraints they uncovered. We use the outcomes of this research, as well as our data collection, to map the various barriers by categories, and to provide examples of their manifestation in the Challenge's context. Table 4 in the Appendix presents our results.

## Barriers to scale in the Afri-Plastics Challenge context

We document barriers across all the above categories, with unfavourable formal and informal institutional environments and missing infrastructure likely contributing to, and exacerbating the impact of, organisational barriers. Compared to high-income countries, institutional and infrastructural barriers to scaling plastic waste management solutions are substantial. A 2022 report by WWF South Africa points out that in "most African countries, the state or municipalities are responsible for solid-waste management service provision as per policy and legislation. However, municipal solid waste service provision is largely ineffective, disparate and unreliable across African cities."[26] Analysis by McKinsey, a consultancy, highlights the role of system-level constraints: "For these countries, the problem goes beyond plastic-waste pollution. The real issue is that they lack complete waste management systems."[27]

While women-owned businesses face additional barriers to scale (especially with respect to access to finance, business networks and market information[28], [29]), it is also worth noting that many women entrepreneurs do not even reach the stage where they could consider scaling: a lack of inherited wealth, and limited access to land ownership and high-paying occupations, means that they struggle to provide starting capital, while family responsibilities and household chores limit the time they can invest in their business.

# IV.
# STRATEGIES FOR SCALING INNOVATION

## Approaches to scaling: from individuals to ecosystems

The terms 'scale' and 'scaling' are "firmly rooted in an organisational context,"[30] where increasing impact is often approached through the lens of the growth of the organisation. This origin is reflected in the design of Strand 1 of the Afri-Plastics Challenge which invited entries from small- and mid-sized organisations, and measured scaling against a milestone defined in terms of the entities' growing operational capacity.

In the social innovation field, however, the discussion has moved beyond a focus on the growth of specific organisations. In an influential paper, Moore, Riddell and Vocisano argue that transformational change happens at the intersection of scaling out, scaling up, and scaling deep[31]:

- Scaling Out: Impacting greater numbers
  → Replication and dissemination, increasing number of people or communities impacted
- Scaling Up: Impacting law and policy
  → Changing institutions at the level of policy, rules and laws
- Scaling Deep: Impacting cultural roots
  → Changing relationships, cultural values and beliefs, 'hearts and minds'

Social Finance proposes a similar approach in their Building Routes to Scale report[32], recognising three broad and interconnected routes to scale:

- Products, services or practices expanding their reach
- Systems that embed change
- Society and culture shifting their perspectives

The methodology of challenge prizes is well tailored to encompass all three of the above approaches, with prizes' routes to impact extending beyond support for individual innovators and their businesses to developing a thriving innovation ecosystem and unlocking systemic change by raising awareness, shaping markets, identifying best practice and driving policy change[33].

### Strategies using the Routes to Scale framework

- Use new vehicles
- Adapt business model for scale
- Develop talent
- Harness collective effort
- Shape sector practice

In Table 5 in the Appendix we use Social Finance's Routes to Scale framework to identify and illustrate the various different strategic levers embedded in Strand 1 of the Afri-Plastics Challenge either directly or indirectly.

**"Scaling requires the entrepreneur to leave their comfort zone, to get to know a new geography, to make new contacts. It requires passion, a focus on the goals they want to achieve."**

**Jocelyne Tsonang, Judge**

**“The biggest barrier is how governance works, this is true across Africa. We need policies in place to create a favourable, enabling environment for social entrepreneurs.”**

**Radhia Mtonga, Judge**

Table 5 in the Appendix shows that the Afri-Plastics Challenge has employed an impressive range of strategies, spanning various building blocks of lasting impact at scale. We found particularly strong evidence that the Challenge embedded strategies to harness collective effort, develop talent, unlock capital and attract media spotlight. It has also been notably successful in raising participants’ profiles nationally and internationally, increasing their ability to connect with local and national policy makers and thus shape relevant regulations and legislations.

The Challenge supported the empowerment of women and girls through various strategic levers: it provided financial capital and business training to women innovators and social entrepreneurs; it created role models by highlighting the work of many women-owned or -led organisations; it helped improve sector practice by offering gender mainstreaming support and incentivising the creation of meaningful gender equity strategies for participating organisations; and it challenged the status quo by providing a platform for discussion around the importance of empowering women and girls.

Other strategic levers could be further strengthened through strategic partnerships: collaboration with local innovation agencies and business support networks could help with shaping sector practice (e.g. by making training materials and resources available to a broader group of innovators beyond the Challenge) or unlocking additional capital.

The Routes to Scale framework recognises additional strategic levers for transformational change, such as establishing new institutions; using data for transparency and insight; creating feedback loops; and mobilising a shared voice. Even though these levers were less prominent in the Afri-Plastics Challenge, future challenge prizes could consider embedding them in their design. We find the strategy of mobilising and amplifying a shared voice in the prize’s problem space a particularly promising approach to take alongside challenge prizes’ existing focus on network building and attracting media spotlight.

**“We wanted more information on existing solutions for plastic waste management – which technologies are most applicable and appropriate to scale, and how each technology can be integrated into the plastic value chain.”**

**Innovator**

# The role of the public sector and large corporations

**There are promising opportunities to further boost the impact of the Afri-Plastics Challenge through partnerships involving other actors in the ecosystem, including the public sector and large corporations.**

## Tackling institutional barriers

Stronger public sector partnerships are a promising route to developing long-term strategies to tackling market failures. In the words of Bright Simons, Founder of mPedigree, a leading Ghanaian social enterprise: "The public sector needs to be involved for solutions to scale properly, because they often require policy change, they require addressing a market failure. Companies operate with a market failure as part of the canvas. They don't see the reason why they should change it, because they build their business models to circumvent, navigate around the market failure, a strategy not available to social business actors."

In addition, market conditions might limit innovators' ability to deliver on their social or environmental mission. As Jocelyne Tsonang, one of the Afri-Plastics Challenge judges, pointed out, it may not be enough to put pressure on startups to pay fairer wages to women collectors, as the salary they are able to pay depends on the price they receive for their products from large buyers: "The solution requires better contracts and higher prices for their products and more demand for their services." Establishing challenge prize-level partnerships with large industry players looking to honour their corporate social responsibility commitments may provide a more direct route to connecting corporations that are interested in sharing industry know-how, opening up their brands and supply chains[34], and becoming investors[35] in innovative small- and medium-sized organisations.

## Tackling infrastructural barriers

Technological innovations in waste management and treatment (advanced digitalisation using robotics, AI, IoT, cloud computing and data analytics) are being developed and deployed, offering to unlock efficiencies at scale[36]. Advanced technology integration, however, was relatively uncommon among the participants of the Afri-Plastics Challenge, with approximately 20% of finalist solutions using advanced machinery or automation.

This relatively low representation of solutions built on advanced digital technologies is not a shortcoming of the prize: "technology-enabled solutions that are successful in developed economies may not be optimal for emerging economies. Instead, more labour-intensive options may offer better near-term bridging opportunities."[37] The latter solutions are often far more capable of achieving social and environmental impact goals, as they tend to "(i) address issues of affordability and resource constraint by being frugal and making effective use of limited resources and (ii) involve excluded groups, both as users as well as producers and distributors of products and services."[38]

Moreover, innovators in the Afri-Plastics Challenge are setting the scene for more advanced technologies to be integrated in the future: they are contributing to the development of waste collection and management infrastructure, including waste collection units and separation-at-source solutions, that will eventually allow the embedding of digital technology-based solutions, including those described above.

The public sector often has an essential role to play in ensuring that the infrastructure contributed by various start-ups and scale-ups eventually connect up into a comprehensive waste management system, creating "one integrated solution rather than piecemeal approaches that are unlikely to integrate at scale."[39] With favourable global regulatory tailwinds including the High Seas Treaty and proposed EU packaging regulations[40], funders and designers of challenge prizes tackling plastic waste are encouraged to engage with local and national governments in their target regions to ensure a joined-up strategy between the public and private sectors. Section VI. includes specific recommendations for embedding public-sector partnerships into challenge prizes.

# V.
# KEY CHALLENGE PRIZE MECHANISMS

**As we have seen in Section IV, scaling prizes may embed, directly or indirectly, a wide range of strategic levers for impact. Besides explicit challenge prize components such as the cash incentive for winners, and the financial and non-financial support for participants, the Afri-Plastics Challenge illustrated how these levers rely heavily on two mechanisms for impact that are central to the challenge prize methodology:**

1. **Raising the profiles of prize participants**
2. **Attracting a broad and diverse range of innovators and solutions**

## Visibility and endorsement

Successful challenge prizes elevate the profiles of participating innovators and solutions. This mechanism works through two interconnected channels:

- The publicity associated with the challenge prize provides additional incentives and motivation for participants, beyond the cash prize. A review on the effectiveness of challenge prizes even suggests that "the prestige and visibility of a prize seems to matter much more than the cash reward in incentivizing participants"[41]
- Advancing to the final stages of a prestigious challenge prize provides a strong boost to participants' reputation, increasing not only the visibility but also the credibility of their solutions. Challenge prizes can provide effective "signals of quality" in markets where informational costs are high[42], and this endorsement can help participants without existing strong track records enter new markets[43]

This mechanism was very prominent in the Afri-Plastics Challenge. The Challenge was visible and regarded as highly prestigious in the wider ecosystem, with one of our interviewees remarking that in unrelated meetings they were recognised as a judge for the Afri-Plastics Challenge by other stakeholders, who all "saw the importance and significance" of the Challenge. Another judge identified the high cash prize as one of the reasons for the challenge's unique status among other funding and support options in the African plastics space.

Based on feedback from the participating innovators, the increased publicity, visibility and credibility conferred to them by the Challenge has helped them to:

- Access new customers
- "Customers have got in touch wanting to work with us due to the publicity we received from the Challenge. Particularly for international customers this visibility has been very valuable"
- Improved relationship with suppliers and other actors in the value chain
- "Our suppliers are beginning to see us as a significant buyer. The Challenge also raised our credibility, particularly amongst organisations which value innovation"
- "The Challenge raised us up amongst other organisations in the sector"
- Access public procurement contracts
- "The Challenge gave us access to municipal government authorities, who we are now working with"
- Influence relevant policies and regulations
- "We have been able to use our participation in the Challenge to recommend ourselves to ministers and collaborate with the environmental ministry in particular"

# Rewarding unusual suspects

A common justification for the need of challenge prizes emphasises that "the social nature of many grand challenges forces policymakers to think beyond existing market incentives" to attract a sufficiently diverse and committed range of innovators to yield the required solutions[44]. As such, challenge prizes should actively "identify and engage nontraditional participants and unorthodox approaches."[45]

While research suggests that impact-oriented accelerators fail to drive investment to ventures with women on their founding teams[46], and local-born entrepreneurs in developing countries are at a disadvantage when seeking grant funding[47], challenge prizes arguably have a greater ability to recognise and reward solutions from "unusual suspects."

As a result, Strand 1 of the Afri-Plastics Challenge attracted 239 entries from SMEs, social enterprises and NGOs from 27 countries across the continent, with nearly half of all entries submitted by majority-women owned entities. The design of the prize also allowed participants with promising but risky or unproven ideas to demonstrate the merit of their solutions. Participants progressed through the stages of the prize: shortlisted, semi-finalist, finalist and winning entries, or exited the programme if they did not advance to the next stage.

This process demonstrated that initial assessment scores, while informative overall, did not over-determine entrants' chances of winning: many entries moved up or down in scoring, especially between the middle and the top tiers through the stages.

In fact, one organisation whose initial submission was rated as belonging to the bottom third of the shortlisted applications was recognised as high-potential by the first judging panel, and went on to ultimately become one of the three winners of the prize.

**The Afri-Plastics Challenge provides an inspiring example of how – through a series of conscious design and delivery choices – competitions can attract, grow and reward high-quality solutions from a diverse group of innovators**:

1. The challenge prize design was informed by research that actively sought out the perspectives of women innovators, and covered both Francophone and Anglophone countries across the continent
2. The Challenge's outreach partners were embedded in local innovation ecosystems, and went beyond online channels to identify and support potential prize entrants in more remote areas, with a special attention to reach women-owned or -led organisations
3. Eligibility criteria were not set too high so as to be prohibitive for organisations serving marginalised communities
4. Challenge-related communication was designed to be jargon-free and easy to understand, and was always provided both in English and French
5. Training and capacity-building were offered both in English and French (with attempts to create original material specifically targeted to the Francophone countries' context, rather than just offering translations of the English material)
6. The prize engaged judges who brought both deep sectoral expertise and also intimate knowledge of the regional ecosystem. The majority of judges were women
7. Even though the prize did not include hard quotas for representation by gender, the delivery team embedded gender equity considerations into the assessment process and judging criteria
8. Even though the prize's ultimate scaling target was defined as an absolute achievement at the endline rather than as a measure of progress through the prize, semi-finalist and finalist assessments focused on scaling potential rather than actual capacity and reach

# VI. RECOMMENDATIONS FOR FUTURE PRIZES

**Challenge prizes can play a unique role in supporting the scaling stage of social innovation. Building on lessons from the Afri-Plastics Challenge, we have identified the following recommendations to maximise their impact.**

## Embed prizes within the broader innovation ecosystem

No innovation funding or support initiative exists in a vacuum, and challenge prizes can achieve greater impact if they are explicitly designed to fill gaps or exploit synergies with other ecosystem players. A mapping of other relevant funders, support providers, networks and initiatives in the problem space allows challenge prize designers to partner with other key players to tackle constraints that the challenge may not be a good fit to address, and to collaborate on market- and ecosystem-building activities.

It is essential to carefully consider the challenge prize's relationship to other forms of funding, including impact funding, in order to "minimise the risk of merely providing a cheap substitute for impact capital."[48] In the design stage, consulting (impact) investors about their requirements and criteria helps challenge prize designers guide early-stage pioneer firms towards true investability, and ensures that participation in the challenge creates the right signal for other funders and investors.

Such ecosystem-level collaborations can help ensure continuity beyond the challenge prize programme. This could include creating and maintaining a network for all challenge prize entrants, partners and other relevant ecosystem players to connect with each other and access relevant information and training material, as well as leveraging relationships with other funders and support providers to ensure that finalists who didn't receive a final award can still access the right support they need to continue to grow.

## Recognise the value of partnerships as enablers of scale

Most models of transformational social change build on a foundation of strong partnerships: "progress happens most effectively when organisations come together in a spirit of genuine partnership that puts the issue first and organisational status second."[49] This approach is not necessarily straightforward to reconcile with scaling prizes' focus on growing and rewarding specific social enterprises, and thus requires special care from challenge prize designers.

The Afri-Plastics Challenge provides several good examples of embedding partnerships, both on the challenge prize and the participant level:

- Its theory of change recognises partnerships as one of the key routes to impact
- The Challenge Works team co-designed and delivered the challenge prize in partnership with organisations embedded in the local innovation ecosystem
- The challenge prize included non-financial support aimed at improving innovators' understanding of the role of partnerships, and their ability to cultivate them
- The challenge prize's assessment criteria also included innovators' partnerships as an indicator of their capabilities

Future challenge prizes could further strengthen the partnership element by:

- Sharing the credit with winner organisations' partners and allies to avoid a "private sector hero" narrative
- Encouraging innovators to develop specific public-sector engagement strategies
- Designing a challenge prize explicitly aimed at public-private partnership entries
- Partnering on the challenge prize-level with large corporates who are interested in opening up their brands and supply chains to the finalists

## Design an explicit strategy to address institutional barriers

In order to contribute to lasting, system-level change, challenge prize designs should consider the strategic levers that aim to address or navigate institutional barriers (especially those related to markets and regulations). Creating a specific strategy for approaching institutional and infrastructural barriers is necessary for explicitly differentiating between:

- Constraints to alleviate vs. constraints to circumvent/ design around
- Support for direct and indirect beneficiaries (winners – finalists – entrants – local innovators)
- Routes to impact within and beyond the time frame of the challenge prize

This strategy could inform any market- or ecosystem-building activities and challenge prize-level partnerships to be undertaken in connection with the challenge, and the broader partnership considerations discussed above.

## Maximise the effectiveness of key prize mechanisms

Recognising the crucial role that visibility and reputation-building play in driving impact, challenge prizes should experiment with various approaches to maximising their positive impact on participants' visibility and reputation, such as:

- Exploring ways of providing "official, verified" endorsement and proof of track record to finalists
- Encouraging all challenge prize partners to actively spread the word, making the best use of judges' and delivery partners' professional networks
- Creating and tracking challenge prize-level targets on traditional and social media coverage

When it comes to challenge prizes' unique ability to attract and reward solutions from unusual suspects, assessment criteria may play an important role. From selecting shortlisted entries, semi-finalists and finalists, as well as choosing the winners, the choice of assessment criteria needs to maintain a balance between challenge prizes' different routes to impact. On the one hand, challenge prizes need to provide strong incentives to scale, warranting a focus on absolute achievements and rewarding investability. At the same time, challenge prizes have an important role in correcting for inefficiencies and biases in other forms of support and funding. To achieve this latter goal, challenge prizes may need to add explicit assessment criteria that:

- Focus on progress and potential in initial assessments
- Embed additionality considerations into the selection of winners, ensuring that the award (and the associated cash prize) enables new innovation and/or scaling activity instead of just subsidising what would have taken place anyway

## Support innovations that unlock scale

While in many problem areas, digital technology-based solutions may represent novel and high-value innovations with a potential to unlock scale, they are not necessarily well-matched to emerging economy contexts. Recognising this, challenge prizes with economic development goals often champion frugal innovation, valuing innovative responses to resource constraints and community needs.

At the same time, prizes can also help set the scene for more advanced technology adoption in the future, by incentivising innovators to build the infrastructure that will eventually enable more advanced technologies to be developed and deployed. To embed this consideration into challenge prize design, future challenges might recognise and reward not only a particular solution's scalability, but also their contribution to the broader physical and/or digital infrastructure that allows other innovative solutions to scale.

# APPENDIX

## Information about Strand 1 finalists and judges

| Finalists and their solutions | |
|---|---|
| **CareMe Bioplastics Rwanda** | CareMe Bioplastics is involved in the collection and recycling of plastic, using a mobile app to collect the plastics from the end-users and process the collected plastics, and turning the plastics wastes into valuable items such as school desks, and both indoor and outdoor furniture. |
| **Chaint Afrique Academy Ghana** | This organisation focuses on the collection of PET, HDPE and monofilament nylon nets at coastal communities and the Lake Volta and estuaries in Ghana. The solution leverages technology to educate households, reward them in the process, and more. |
| **Chanja Datti Ltd Nigeria** | Chanja Datti's solution is a technology driven in-house end-to-end process for plastics waste recycling by purchasing directly from our waste aggregators and waste pickers, who are some of society's most marginalised people. |
| **eTrash2Cash Nigeria** | A social enterprise which helps communities to earn and save direct cash incentives from trash. It establishes Trash Banks as waste collection points that are accessible for people to directly exchange their trash for cash incentives. |
| **Full Development Agency Democratic Republic of the Congo** | Full Development Agency is a social enterprise that provides sustainable management solutions for urban wastes from different sources and to limit the impact of urban waste on the environment, the ecosystem and public health. |
| **Green Industry Plast – Togo Togo** | The GIP-Togo solution consists of setting up collection units and sorting facilities for plastic waste in Togo's major cities, in collaboration with the local authorities. The purpose of this is to collect and recover plastic waste for recycling purposes. |
| **Greenhill Recycling Nigeria** | A social enterprise that addresses poverty, unemployment, and climate change challenges by using plastic waste as a currency to exchange value. They provide people living in indigent communities with the opportunity to capture value from their waste. |
| **Mega Gas Kenya** | Mega Gas converts unsorted plastic waste into clean and affordable cooking gas through a patented process. The company's main objective is to convert unsorted waste polythene/plastics that litter the environment into clean gaseous fuel. |
| **Mental and Environmental Development Initiative for Children Nigeria** | RESWAYE is a buy-back recycling initiative which aims at empowering women and youths through collection and recycling of plastic waste to combat the menace of plastic pollution in the coastal areas of Lagos State, Nigeria. |
| **Nelplast Eco Ghana Limited Ghana** | Nelplast Eco Ghana Ltd is an environmental and social impact company that recycles all types of waste plastics through a polymer-sand composition and extrusion process, into waterproof, heat resistant, and durable, reusable eco bricks for various domestic and large scale construction works. |
| **Planet 3R Nigeria** | Planet 3R converts textile and plastic wastes into affordable eco-friendly products for low and middle-income earners. The fascinating nature of recycled products creates a huge brand appeal which makes people within the target market always want products made from recycled materials. |
| **Ramtsilo South Africa** | This organisation is South Africa's first plastic brick manufacturing plant, not only to have brought innovation to the industry –a certified plastic brick– but are also blazing a trail for recycling, social responsibility and grassroots empowerment. They are able to recycle any type of plastic. |

| **Finalists and their solutions** (continued) | |
|---|---|
| **Recyplast**<br>**Côte D'Ivoire** | Plastock is a mobile application for the environment. It offers an original model for the collection of plastic wastes using Plastock Boxes, or plastic waste purchasing points, installed at participating homes. |
| **TakaTaka Solutions**<br>**Kenya** | TakaTaka Solutions is the only end-to-end waste management company in Kenya – providing a service that spans the waste value chain all the way from waste collection to inhouse recycling. They sort collected waste into over 40 fractions. |
| **Watamu Marine Association**<br>**Kenya** | The Ambatana Project is creating innovative value chains, through initiating dynamic partnerships between the tourism industry and local women and youth groups who provide an environmental service. |

| **Judges** | |
|---|---|
| **Dr. Adenike Akinsemolu**<br>Founder & Director,<br>The Green Institute | Founder director of the Green Institute in Nigeria, Adenike is a passionate environmental educator and author on sustainability. Her book, The Principles of Green and Sustainability Science, is the first text to deal exclusively with sustainability issues in Africa. |
| **Edward Mungai**<br>Lead Consultant and Partner,<br>Impact Africa Consulting Limited | Edward is Lead Consultant and Partner at Impact Africa Consulting Limited. He worked with Kenya Climate Innovation Center, the Danish International Investment Funds (IFU) in Copenhagen and Africa, where he headed the regional office. He has helped develop financing mechanisms for SMEs in agribusiness, renewable energy, water and sanitation. |
| **Ida Nganga**<br>Regional Head, Anglophone Countries for UNESCO Emerging Technologies | Ida leads the award-winning Regional Consortium for Development, whose experts use technology and engineering as an enabler for achieving Sustainable Development Goals (SDGs) (RCD Africa). Ida Nganga is Regional Head, Anglophone Countries, for UNESCO Emerging Technologies for Development. She has been proactive in innovation competitions worldwide. |
| **Jocelyne Landry Tsonang**<br>Executive Team Member & Cameroon Country Representative, African Circular Economy Network | Jocelyne from African Circular Economy Network is a Cameroonian entrepreneur. Driven by her Pan-African mindset, she has founded an association of young female leaders, Maluwa Africa, incorporated in Nigeria with some 100 members in 20 African countries. |
| **Radhia Mtonga**<br>Social Enterprise Learning & Development Coordinator, BongoHive | Radhia is a Zambian social entrepreneur whose driving passions are social entrepreneurship, environmental sustainability and the circular economy. As Founder of Ulubuto, a recycling initiative, her goal is to promote sustainable and responsible resource usage. Radhia has also been able to offer support to the budding social enterprise ecosystem in Zambia through her work at BongoHive and Social Enterprise Academy Zambia. |

**Table 4: Barriers to scaling social enterprises in the plastic waste management sector in Sub-Saharan Africa**

| Categories | | | Specific barriers in the Afri-Plastics context | Examples based on interview and literature insights |
|---|---|---|---|---|
| **Organisational** | **Growth aspiration** | | Small- and medium-sized actors may lack the strategic orientation or confidence to scale their organisations. | Judge interview, Jocelyne Tsonang: "Scaling requires the entrepreneur to leave their comfort zone, to get to know a new geography, to make new contacts. Taking people out of their comfort zone can be a challenge: it feels like they need to start everything over again even if they are just opening a new unit in a new city! It requires passion, a focus on the goals they want to achieve. Women owners may not be as assertive, and might be more likely to stay in their comfort zones, due to societal and family responsibilities, and other obligations."<br>Literature: "Social enterprises may assume self-imposed behavioural barriers. […] Policy makers can help social enterprises overcome this state of mind, when it is based on fear rather than on a conscious business development choice."[50] |
| | **Access to capital** | **Physical** | Small and medium-scale actors have limited access to quality machinery, making processes such as washing and shredding increasingly difficult.<br>Community-based recyclers struggle to reach the quality and technical specification required by large producers (including composition and purity, processing and mechanical properties). | Innovator interview: "We needed additional space to process a larger volume of plastic." |
| | | **Financial** | Hard to access funding for investment in equipment.<br>Actors in waste management have to rely on donor funding and voluntary or low-paid, precarious labour (in particular women) in order to continue their work. | Innovator interview: "Banks are not waiting to give you money if you are a small business. And as a social impact organisation, we worry that private investors will want us to change too much, in the wrong direction." |
| | | **Human** | Lack of business- and product-development and technical expertise in organisations.<br>NGOs' reliance on time-constrained volunteers.<br>Highly precarious, unsafe and fragmented work in informal sector to collect plastic waste from households, urban areas and landfills.<br>Women across the value chain facing physical security risks, health hazards, exposure to harassment, and difficulty balancing childcare responsibilities with the need to secure income. | Judge interview: "Social entrepreneurs need capacity-building around different revenue models that they can incorporate"<br>Innovator interviews:<br>• "We wanted more information on existing solutions for plastic waste management – which technologies are most applicable and appropriate to scale, and how each technology can be integrated into the plastic value chain"<br>• "One barrier we anticipated at time of entry to the challenge was a lack of staff in the business to scale our solution." |

**Table 4: Barriers to scaling social enterprises in the plastic waste management sector in Sub-Saharan Africa** (continued 1)

| Categories | | | Specific barriers in the Afri-Plastics context | Examples based on interview and literature insights |
|---|---|---|---|---|
| **Organisational** | **Access to capital** | **Financial** | Lack of valuable partnerships, including access to potential customers, peer organisations. | Innovator interviews:<br>• "More experience-sharing with peer organisations would be eye-opening"<br>• "People you know are in the same situation as yourself" |
| **Institutional** | **Formal** | | Policy-making, budgetary and implementation challenges limit the formal waste collection coverage in urban and rural areas.<br>Lack of supportive environment (e.g. high/multiple operational licence fee).<br>Lack of harmonised regulatory environment across countries limits scaling regionally. | Judge interview, Radhia Mtonga:<br>"The biggest barrier is how governance works, this is true across Africa. We need policies in place to create a favourable, enabling environment for social entrepreneurs. Now, those creating a new innovation face licences to pay, the local council to answer to, an environmental body to answer to… their wings are clipped before they even begin. Without buy-in from your government, it is difficult to do anything." |
| | **Informal** | | Corruption and unfair competition.<br>Cultural norms constraining women's entrepreneurship and agency. | Literature: "The heterogeneity within and across countries, which includes significant diversity in colonial histories, language, religion, culture, community assets, and social development, essentially means that there is 'no single story'. Innovations have to be tweaked or significantly altered to enable scaling from one community to another, which is not only more expensive, but also slows the scaling process."[51] |
| | | | Corruption and unfair competition.<br>Cultural norms constraining women's entrepreneurship and agency. | Delivery partner interviews: "Our gender integration work needs to recognise that there are more traditional systems in place, cultural systems embedded, and a deep-seated patriarchal system is the backdrop."<br>Innovator interview: "The women and girls were not always happy doing the job of collecting plastic. They felt like they were being ridiculed and their job not taken seriously in their community."<br>Expert interview: "One friction in Sub-Saharan Africa is governance issues around corruption. Though obviously far from unique to Africa, the resource constraints amplify this challenge and make it very difficult to incentivize public sector officials to do anything where they are not personally benefiting." (Bright Simons) |

**Table 4: Barriers to scaling social enterprises in the plastic waste management sector in Sub-Saharan Africa** (continued 2)

| Categories | | Specific barriers in the Afri-Plastics context | Examples based on interview and literature insights |
|---|---|---|---|
| **Institutional** | **Markets** | Volatility of inputs from both formal and informal waste collectors;<br>Markets for recycled plastics are highly volatile, as their price is coupled with that of virgin plastics (which is in turn driven by oil market trends rather than its own production costs).<br>Waste processing and recycling facilities are currently concentrated in a few localities. Because of this, small and medium-scale players face additional costs incurred by intermediaries such as waste buy-back centres, storage and transportation. | Literature:<br>"Pioneer firms need to prepare the conditions in the market and within the firm in order to support sustainable scaling. This is especially true where the firm is, in effect, attempting to create a new market, by virtue of establishing a new category of product or a new value chain model."[52]<br>"Sadly, with underdeveloped distribution and marketing systems, social innovators essentially have to work along all aspects of the value chain, filling gaps that ordinarily would not exist in other markets to reach people."[53]<br>"As a result of these factors, the availability of quality sorted plastic in emerging markets is limited, with recyclers often having to set up their own collection and sorting systems and pay high prices for waste."[54] |
| | **Human resources** | Social enterprises struggle to hire employees with the right business or technical skills, either because of overreliance on their existing network in finding talent, and/or because of skill shortages on the local labour market. | Expert interview, Bright Simons: "Social innovation is not very sexy. People are interested in the technical aspect of the problem, but not in the social, behavioural aspects. Senior professionals can really struggle with the social innovation space, because it's highly entrepreneurial, lacks structure, very similar to the startup environment, but without the startup payoff. What is our unique talent incentive model? If you want to scale, the complexity of the business model and operational system becomes very intense. And then you need very senior people, all of a sudden, and I'm not too sure about the pipeline at that level." |
| **Infrastructural** | | Missing broader waste management system and infrastructure.<br>Low landfill fees discourage formally collected waste from being diverted to recycling.<br>Limited/no sorting at the source: materials recovery facilities have to process dirty, contaminated waste. | "With some minor incentives (such as free land or tax exemptions) or with higher dump site fees, a materials recovery facility (MRF) could become profitable."[55] |

**Table 5: Mapping the Afri-Plastics Challenge's strategies using the Routes to Scale framework**

| Strategy | Approach | Relevant activity | Supporting evidence |
|---|---|---|---|
| **Create supply and demand** | **Indirect** | Enabling suppliers of plastic waste management solutions to:<br>• expand their capacity & reach<br>• build infrastructure that unlocks further opportunities for scale | Supply: All respondents in the finalist survey reported:<br>• an increase in the amount of plastic their organisation processed and/or recycled<br>• having been able to access new markets during the Challenge<br>The majority of survey respondents also agreed that the Challenge's support sped up (92%) and de-risked (62%) their scaling process.<br>Demand: Strand 3 of the Challenge supported solutions that aimed to steer consumers towards more informed and responsible choices. |
| **Unlock capital** | **Unlock capital Direct** | Financial grants to (semi-) finalists, cash award to winners. | Judge interview: Not many other forms of support come with such a high cash prize, and even the finalist grants in Strand 1 were considerable, "this amount can move things in a company".<br>Innovator interview: They purchased equipment with the funding that has helped them expand their processing capacity. |
| | **Indirect** | Improving participating organisations' ability to access external funding. | Innovator interviews:<br>• The growth in their impact which has occurred through the Challenge will make them more attractive to donors<br>• They are much more confident in their abilities to raise funding. The Challenge has sharpened their pitching and paperwork skills, and they are confident that these can be applied to any investor, donor or funder in the future |
| **Design for mass reach** | **Indirect** | Increasing innovators' capacity to design and deliver scalable solutions, through training modules on innovation and markets (non-financial support). | Innovator interviews:<br>• The Challenge gave them an opportunity to look deeply at every aspect of their business and prepare it for scale<br>• Following the training, they are considering strategies to improve collection efficiency<br>• The Challenge helped them identify their specific strengths and work on a solution which emphasises them |
| **Expand the organisation** | **Indirect** | Enabling suppliers of plastic waste management solutions to expand their capacity and reach – incl. by growing their organisation. | Innovator interviews:<br>• Their organisation has grown from collecting plastic in one coastal village to multiple locations and communities<br>• The grant helped them identify and purchase property where they can build a factory in the future<br>• The grant allowed them to hire additional managers with language skills in a regional dialect spoken by their plastic collection employees<br>• The grant allowed them to hire more women |

**Table 5: Mapping the Afri-Plastics Challenge's strategies using the Routes to Scale framework** (continued 1)

| Strategy | Approach | Relevant activity | Supporting evidence |
|---|---|---|---|
| **Use new vehicles** | **Indirect** | Enabling suppliers of plastic waste management solutions to expand their capacity and reach – incl. through franchising, licensing, joint ventures, etc. | Innovator interviews:<br>• With the grant from the Challenge, they are establishing three additional cooperatives working as collectors, and beginning to look at how to connect them to recycling firms<br>• They pivoted to a less capital intensive franchise model where waste is delivered to them by a third party rather than installing and managing/collecting their own bins |
| **Adapt business model for scale** | **Indirect** | Increasing innovators' capacity to focus on scalable solutions and business models, through training modules on innovation and markets (non-financial support). | Innovator interviews:<br>• They were able to pivot away from selling to individuals to corporate customers<br>• They pivoted from recycling waste into products in-house, now beginning to sell raw waste<br>• They realised they needed to pivot after the classes – now feel like they had spent too long "following the script" before realising their need to pivot |
| **Develop talent** | **Direct** | Increasing innovators' capacity through various forms of non-financial support: training, mentoring and masterclasses. | Innovator interviews:<br>• Classes were "incredible" and introduced them to new approaches to business which they had not considered before (esp. human centred design)<br>• Participation in the challenge helped them see the value of community engagement, and in product improvement through speaking with customers<br>• Training provided "invaluable" materials and skills<br>• Social media and communications and marketing training were all important in building new partnerships throughout Africa during the Challenge |
| **Harness collective effort** | **Direct** | Increasing innovators' capacity through various forms of non-financial support: training, mentoring and masterclasses. | 239 entries from SMEs, social enterprises and NGOs, from across the continent.<br>Innovator interviews:<br>• Have kept in touch with experts from the Challenge, and still receive support from them. Insights from experts and peers was "incredible", and they enjoyed setting up meetings with other innovators<br>• Mentors were fantastic, and they are still in touch. "From the semi-finalist stage, it felt like they were family"<br>Delivery partner interview: Networking opportunities were one of Challenge's advantages. |
| **Shape sector practice** | **Indirect** | Changing how innovators work by sharing ideas and tools, with the view of enabling knowledge spillovers beyond the Challenge through building peer networks. | Delivery partner interviews:<br>• Many innovators benefitted from the message that they should not only focus on the number of women they employed, but look at fairness in pay, where in the organisation women are employed, and how they are involved in decision making<br>• It was very important to discuss the concept of circular economy, and end-of-life considerations. Useful discussions emerged around greenwashing and unintended negative environmental impact from products, even if made from recycled plastic |

**Table 5: Mapping the Afri-Plastics Challenge's strategies using the Routes to Scale framework** (continued 2)

| Strategy | Approach | Relevant activity | Supporting evidence |
|---|---|---|---|
| **Build the evidence base** | **Direct** | Producing and sharing evidence of successful routes to scale, providing examples to help replications, and making the case for broader change. | The prize website displays all the finalists and shorts descriptions of their solutions. More details about the winning solutions will be shared during and following the prize's Award Ceremony.<br>The current report is part of a research project commissioned by Challenge Works to capture and disseminate evidence on the prize methodology and its effectiveness. |
| **Alter or reallocate funding** | **Indirect** | Driving funding towards waste management solutions by making the case and highlighting investable organisations. | 85% of respondents in the finalist survey reported that they were able to secure external funding or investment during the challenge, and 100% reported that their organisation was likely to attract larger rounds of financing if it meets its growth projections. |
| **Improve regulation and standards** | **Indirectly** | Increasing innovators' ability to engage with regulators by providing endorsement, visibility and publicity. | Innovator interviews:<br>• Working with their government on developing plastic waste management legislation<br>• The Challenge gave them access to municipal government authorities, who they are now working with<br>• Receiving the grant money helped them to get support from the government which is keen to back its innovative companies to "fly the flag" and boost their national profile. They have been able to use their participation in the Challenge to recommend themselves to ministers and collaborate with the environment ministry in particular<br>• Becoming finalists gave them a chance to link up with political figures who are much keener to hear from them as a result of their achievements in the Challenge |
| **Attract media spotlight** | **Directly** | Bringing attention to the problem and highlight the innovators and their solutions, with the support of a media partner. | All respondents in the finalist survey agreed or strongly agreed that the Challenge has brought added attention and focus to the issue of reducing marine plastics in Sub-Saharan Africa.<br>Innovator interviews:<br>• The prize has made them better known: they have appeared in local and national media reports<br>• The challenge raised them up amongst other organisations in this sector. News coverage across Africa has raised their international profile<br>• They have already noticed an increased profile, especially beyond Africa. As well as visibility, they felt the prize had granted them more credibility |
| **Challenge the status quo** | **Indirectly** | Encouraging behaviour change (also through movement building in Strand 3 of the Challenge). | All respondents in the finalist survey agreed or strongly agreed that the Challenge has brought added attention and focus to the issue of reducing marine plastics in Sub-Saharan Africa<br>Innovator interviews:<br>• The prize has made them better known: they have appeared in local and national media reports<br>• The challenge raised them up amongst other organisations in this sector. News coverage across Africa has raised their international profile<br>• They have already noticed an increased profile, especially beyond Africa. As well as visibility, they felt the prize had granted them more credibility |

# REFERENCES


Bandyk, Stephanie, and Rebecca Stark. "Partnering to Scale Sustainable Innovation." WheelerBlog by the Wheeler Institute for Business and Development (blog), May 16, 2022. https://wheelerblog.london.edu/partnering-to-scale-sustainable-innovation/.

Battilana, Julie, Anne-Claire Pache, Metin Sengul, and Marissa Kimsey. "The Dual-Purpose Playbook." Harvard Business Review, March 1, 2019. https://hbr.org/2019/03/the-dual-purpose-playbook.

Challenge Works. "Challenge Prizes: A Practice Guide," 2022. https://challengeworks.org/what-we-do/our-method/practice-guide/.

Challenge Works. "Rapid Recovery Challenge." Challenge Works (blog). Accessed March 10, 2023. https://challengeworks.org/broader-programmes/rapid-recovery-challenge/.

Davies, Anna, and Julie Simon. "How to Grow Social Innovation." Young Foundation, 2013. https://www.youngfoundation.org/our-work/publications/how-to-grow-social-innovation/.

Davies, Iain Andrew, Helen Haugh, and Liudmila Chambers. "Barriers to Social Enterprise Growth." Journal of Small Business Management 57, no. 4 (2019): 1616–36. https://doi.org/10.1111/jsbm.12429.

European Commission. "H2020 Programme Model Rules of Contest for Prizes." European Commission, July 20, 2017. https://ec.europa.eu/research/participants/data/ref/h2020/prizes_manual/h2020-prizes-roc_en.pdf.

European Commission, OECD, Stellina Galitopoulou, and Antonella Noya. "Policy Brief on Scaling the Impact of Social Enterprises: Policies for Social Entrepreneurship." LU: OECD Publishing, 2016. https://data.europa.eu/doi/10.2767/45737.

European Environment Agency. "Digitalisation and Waste Management." Briefing. Accessed March 3, 2023. https://www.eea.europa.eu/themes/waste/waste-management/digital-technologies-will-deliver-more.

Freeman, Christopher, and Luc Soete. "Developing Science, Technology and Innovation Indicators: What We Can Learn from the Past." Research Policy, Special Issue: Emerging Challenges for Science, Technology and Innovation Policy Research: A Reflexive Overview, 38, no. 4 (May 1, 2009): 583–89. https://doi.org/10.1016/j.respol.2009.01.018.

Gabriel, Madeleine. "Making It Big: Strategies for Scaling Social Innovations." Nesta, 2010. https://www.nesta.org.uk/report/making-it-big-strategies-for-scaling-social-innovations/.

Gao, Wenting, Thomas Hundertmark, Gillian Pais, Andrew Ryba, and Jeremy Wallach. "Addressing the Challenges of Plastic Waste: Circularity and Leakage." McKinsey & Company, September 2, 2022. https://www.mckinsey.com/industries/chemicals/our-insights/addressing-the-challenges-of-plastic-waste-circularity-and-leakage.

International Finance Corporation, and Women Entrepreneurs Finance Initiative (We-Fi). "Sourcing2Equal Kenya: Barriers and Approaches to Increase Access to Markets for Women- Owned Businesses." International Finance Corporation, 2021. https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/gender+at+ifc/resources/sourcing2equal-study-kenya.

Kay, Luciano. "How Do Prizes Induce Innovation? Learning from the Google Lunar X-Prize," Georgia Institute of Technology, July 7, 2011. https://smartech.gatech.edu/handle/1853/41193.

Khan, B. Zorina. Inventing Ideas: Patents, Prizes, and the Knowledge Economy. Oxford University Press, 2020.

Koh, Harvey, Ashish Karamchandani, and Robert Katz. "From Blueprint to Scale: The Case for Philanthropy in Impact Investing," Monitor Group and Acumen Fund, 3, no. 1357 (April 2012): 1357. https://doi.org/10.21955/gatesopenres.1116259.1.

Kudymowa, Jenny, and Bruce Tsai. "How Effective Are Prizes at Spurring Innovation?" Rethink Priorities, Shallow Investigation, November 1, 2022. https://rethinkpriorities.org/publications/how-effective-are-prizes-at-spurring-innovation.

Lall, Saurabh A., Li-Wei Chen, and Abigayle Davidson. "The Expat Gap: Are Local-Born Entrepreneurs in Developing Countries at a Disadvantage When Seeking Grant Funding?" Public Administration Review 79, no. 6 (2019): 880–94. https://doi.org/10.1111/puar.13076.

Lall, Saurabh A., Li-Wei Chen, and Peter W. Roberts. "Are We Accelerating Equity Investment into Impact-Oriented Ventures?" World Development 131 (July 1, 2020): 104952. https://doi.org/10.1016/j.worlddev.2020.104952.

Lall, Saurabh A., and Jacob Park. "How Social Ventures Grow: Understanding the Role of Philanthropic Grants in Scaling Social Entrepreneurship." Business & Society 61, no. 1 (January 1, 2022): 3–44. https://doi.org/10.1177/0007650320973434.

Locke, Edwin A. "Toward a Theory of Task Motivation and Incentives." Organizational Behavior and Human Performance 3, no. 2 (May 1, 1968): 157–89. https://doi.org/10.1016/0030-5073(68)90004-4.

Maina, Isabella, and Zoe Marks. "Strengthening and Scaling the Next Generation of Women Entrepreneurs in Africa." Policy Brief, Women and the Changing Face of Entrepreneurship in Africa, 2020. https://africa.harvard.edu/files/african-studies/files/women_entrepreneurship_in_africa_policy_brief_-_next_generation_final.pdf.

Moore, Michele-Lee, Darcy Riddell, and Dana Vocisano. "Scaling Out, Scaling Up, Scaling Deep: Strategies of Non-Profits in Advancing Systemic Social Innovation." The Journal of Corporate Citizenship, no. 58 (2015): 67–84.

Murdoch, Adrian. "Recycling Plastic: A Short-Term Remedy for a Growing Waste Pile." Capital Monitor (blog), February 4, 2022. https://capitalmonitor.ai/factor/environmental/recycling-plastic-a-short-term-remedy-for-a-growing-waste-pile/.

Murray, Fiona, Scott Stern, Georgina Campbell, and Alan MacCormack. "Grand Innovation Prizes: A Theoretical, Normative, and Empirical Evaluation." Research Policy 41, no. 10 (December 1, 2012): 1779–92. https://doi.org/10.1016/j.respol.2012.06.013.

National Academy of Engineering. Concerning Federally Sponsored Inducement Prizes in Engineering and Science. Report of the Steering Committee for the Workshop to Assess the Potential for Promoting Technological Advance through Government-Sponsored Prizes and Contests. Washington, D.C.: National Academies Press, 1999. https://doi.org/10.17226/9724.

Nwuneli, Ndidi Okonkwo. Social Innovation In Africa: A Practical Guide for Scaling Impact. London: Routledge, 2016. https://doi.org/10.4324/9781315646190.

OECD Development Assistance Committee. "The DAC Prize 2015." OECD, 2016. https://www.oecd.org/dac/DAC%20prize%20booklet.pdf.

Prabhu, Jaideep. "Frugal Innovation: Doing More with Less for More." Philosophical Transactions. Series A, Mathematical, Physical, and Engineering Sciences 375, no. 2095 (June 13, 2017): 20160372. https://doi.org/10.1098/rsta.2016.0372.

Rudgard. "The EU Is Cracking Down on Plastic. Will Others Follow?" Bloomberg.Com, February 27, 2023. https://www.bloomberg.com/news/features/2023-02-27/the-eu-is-cracking-down-on-plastic-will-other-countries-follow.

Sadan, Zaynab, and Lorren de Kock. "Plastic Pollution in Africa: Identifying Policy Gaps and Opportunities." WWF South Africa, Cape Town, South Africa, 2022. www.wwf.org.za/report/plastic_pollution_policy_in_africa.

Seelos, Christian. "The Face of Poverty." Stanford Social Innovation Review, 2014. https://ssir.org/articles/entry/the_face_of_poverty.

Social Finance. "Building Routes to Scale," 2021. https://www.socialfinance.org.uk/insights/building-routes-to-scale.

Tippmann, Esther, Tina C. Ambos, Manlio Del Giudice, Sinéad Monaghan, and Dimo Ringov. "Scale-Ups and Scaling in an International Business Context." Journal of World Business 58, no. 1 (January 1, 2023): 101397. https://doi.org/10.1016/j.jwb.2022.101397.

# ENDNOTES


1. Social Finance, "Building Routes to Scale."
2. Challenge Works, "Challenge Prizes: A Practice Guide."
3. European Commission, "H2020 Programme Model Rules of Contest for Prizes."
4. The finalist survey was administered by the Challenge Works team, and was completed by 13 out of the 15 Strand 1 finalists.
5. For a companion process evaluation report of the Afri-Plastics Challenge, we also conducted additional interviews with innovators and judges involved in the other strands of the prize. In total, we conducted 29 interviews.
6. A companion process evaluation report covers all three strands of the Afri-Plastics Challenge.
7. Details of the 15 finalists and their solutions can be found in the Appendix.
8. More information on the Strand 1 judges can be found in the Appendix.
9. Seelos, "The Face of Poverty."
10. Murray et al., "Grand Innovation Prizes."
11. Tippmann et al., "Scale-Ups and Scaling in an International Business Context."
12. Gabriel, "Making It Big."
13. Social Finance, "Building Routes to Scale."
14. European Commission et al., "Policy Brief on Scaling the Impact of Social Enterprises."
15. Kudymowa and Tsai, "How Effective Are Prizes at Spurring Innovation?"
16. Freeman and Soete, "Developing Science, Technology and Innovation Indicators."
17. Locke, "Toward a Theory of Task Motivation and Incentives."
18. An interesting lesson learned during the Challenge was that organisations' internal accounting made it easier for them to report with confidence the amount they sold, rather than collected, each month.
19. Challenge Works, "Rapid Recovery Challenge."
20. Kay, "How Do Prizes Induce Innovation?"
21. OECD Development Assistance Committee, "The DAC Prize 2015."
22. Lall and Park, "How Social Ventures Grow."
23. Battilana et al., "The Dual-Purpose Playbook."
24. Kudymowa and Tsai, "How Effective Are Prizes at Spurring Innovation?"
25. Davies, Haugh, and Chambers, "Barriers to Social Enterprise Growth."
26. Sadan and de Kock, "Plastic Pollution in Africa: Identifying Policy Gaps and Opportunities."
27. Gao et al., "Addressing the Challenges of Plastic Waste: Circularity and Leakage."
28. International Finance Corporation and Women Entrepreneurs Finance Initiative (We-Fi), "Sourcing2Equal Kenya: Barriers and Approaches to Increase Access to Markets for Women-Owned Businesses."
29. Maina and Marks, "Strengthening and Scaling the Next Generation of Women Entrepreneurs in Africa."
30. Davies and Simon, "How to Grow Social Innovation."
31. Moore, Riddell, and Vocisano, "Scaling Out, Scaling Up, Scaling Deep."
32. Social Finance, "Building Routes to Scale."
33. Challenge Works, "Challenge Prizes: A Practice Guide."
34. Bandyk and Stark, "Partnering to Scale Sustainable Innovation."
35. Murdoch, "Recycling Plastic."
36. European Environment Agency, "Digitalisation and Waste Management."
37. Gao et al., "Addressing the Challenges of Plastic Waste: Circularity and Leakage."
38. Prabhu, "Frugal Innovation."
39. Gao et al., "Addressing the Challenges of Plastic Waste: Circularity and Leakage."
40. Rudgard, "The EU Is Cracking Down on Plastic. Will Others Follow?"
41. Kudymowa and Tsai, "How Effective Are Prizes at Spurring Innovation?"
42. Khan, Inventing Ideas.
43. Kay, "How Do Prizes Induce Innovation?"
44. Murray et al., "Grand Innovation Prizes."
45. National Academy of Engineering, Concerning Federally Sponsored Inducement Prizes in Engineering and Science.
46. Lall, Chen, and Roberts, "Are We Accelerating Equity Investment into Impact-Oriented Ventures?"
47. Lall, Chen, and Davidson, "The Expat Gap."
48. Koh, Karamchandani, and Katz, "From Blueprint to Scale."
49. Social Finance, "Building Routes to Scale."
50. European Commission et al., "Policy Brief on Scaling the Impact of Social Enterprises."
51. Nwuneli, Social Innovation In Africa.
52. Koh, Karamchandani, and Katz, "From Blueprint to Scale."
53. Nwuneli, Social Innovation In Africa.
54. Gao et al., "Addressing the Challenges of Plastic Waste: Circularity and Leakage."
55. Gao et al.

StateUp

CHALLENGE WORKS
a nesta enterprise

## ABOUT CHALLENGE WORKS

For a decade, Challenge Works has established itself as a global leader in designing and delivering high-impact challenge prizes that incentivise cutting-edge innovation for social good. We are a social enterprise founded by the UK's innovation agency Nesta. In the last 10 years, we have run more than 80 prizes, distributed £84 million in funding and engaged with 12,000 innovators.

We believe no challenge is unsolvable. Challenge Works partners with organisations, charities and governments around the globe to unearth the entrepreneurs and their innovations that can solve the greatest challenges of our time.

Challenge prizes champion open innovation through competition. We offer large cash incentives to encourage diverse innovators to apply their ingenuity to solving the problem. The most promising solutions are rewarded with seed funding and expert capacity-building support, so that they can prove their impact and effectiveness. The first or best innovation to solve the problem wins. This approach levels the playing field for unknown and previously untested innovators so that the best ideas, no matter their origin, are brought to bear on the most difficult of global challenges.

Challenge Works is the trading name of Nesta Challenges.

Visit us at **challengeworks.org**

---

## ABOUT STATEUP

StateUp is a leading provider of intelligence, evaluation, and data products focused on public-purpose technologies – technologies that address major public needs, and the infrastructure around them. Our vision is to enable complex, systems-level change for good through digital innovation with public purpose. Our green technologies practice area focuses on the possibilities of engaging climate innovations to enable a built environment that flourishes for generations to come.

We combine multidisciplinary expertise in public policy, data analytics, behavioural science, and machine-learning to provide deep, actionable understanding. Our policy and programme design and evaluation, sector analysis and public-purpose technology platform help to bridge the gap between the worlds of governance and technology to enhance social, economic and environmental wellbeing.

Deeply embedded in university ecosystems, we engage research and policy expertise to produce the highest quality multidisciplinary research, and 'translate' it into actionable products and data and evidence platforms that meet the needs of twenty-first century policy and innovation decision-makers. We work internationally with governments, international organisations, world-class technology companies, and research bodies, underpinned by the belief that context is key.

Visit us at **https://stateup.co**

CHALLENGE WORKS
a nesta enterprise

58 Victoria Embankment
London EC4Y 0DS

+44 (0)20 7438 2500
info@challengeworks.org
@Challenge_Works
facebook.com/ChallengeWorksUK
linkedin.com/company/challenge-works
challengeworks.org