CLiP Innovation Conference: STEM the tide of plastic waste in Africa

Conference Report and Proceedings

Commonwealth Litter Programme

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Executive Summary

The Commonwealth Litter Programme (CLiP) is an initiative delivered by the Centre for Environment, Fisheries and Aquaculture Science (Cefas) and funded by the United Kingdom's Department for Environment, Food and Rural Affairs (Defra). The initiative supports developing countries across the Commonwealth to establish programmes that will prevent plastics entering the ocean.

This report outlines the efforts of Sustainable Seas Trust in supporting the execution of the two-day CLiP Innovation Conference: "*STEM the tide of plastic waste in Africa*", held in Cape Town on December 4th and 5th 2019.

The conference was attended by government representatives from the British High Commission, as well as South African national, provincial and local government officials. Environmentalists featured prominently both in the form of activists and business owners or entrepreneurs. The plastics industry was well represented by their partners and key industry players. The conference had a good foundation in science through the representatives from universities and other scientific organisations. The audience was further diversified by the presence of youth, educators, media and online influencers.

The conference comprised plenary sessions in the form of panel discussions on both days and breakaway sessions in the form of world café sessions. Topics discussed ranged from the role of industry in tackling marine litter to how one can use citizen science to help tackle marine litter and empower consumer decisions. The world café sessions consisted of individual presentations given by researchers, educators and innovators, showcasing their work. The conference ended with a fun-filled STOMP Awards presentation and prize-giving ceremony, recognising and rewarding individuals, civil society organisations, interest groups and youth that are "taking action" and making an impact on the reduction of marine plastic pollution in South Africa. These Awards created an opportunity for individuals and groups to come together to act, create and innovate with a common purpose.

The conference was successful in showcasing Science, Technology, Engineering and Maths (STEM) solutions to tackle the problem of plastic waste in South Africa. Feedback from the conference was very positive and the delegates were excited about keeping the conversation going after the event. Sustainable Seas Trust is proud to be associated with Cefas/CLiP and herein documents the planning and execution undertaken before, during and after the conference.

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1 Introduction

Marine litter is found in all the oceans of the world and on land. It is found not only in densely populated parts but also in remote areas, far from obvious sources and human contact. It is estimated that more than 150 million tonnes of plastics have accumulated in the world's oceans (Jambeck et al., 2015). Up to 90% of marine litter is made up of plastics, originating from both land and sea-based sources. This makes plastic pollution one of the most widespread problems facing our oceans today. It is further confounded by waste being such a complex issue, and considering the challenges faced when identifying the sources of litter (Veiga et al., 2016). To tackle this issue and create solutions, urgent, coordinated and effective action is required.

The Commonwealth Litter Programme (CLiP) is an initiative delivered by the Centre for Environment, Fisheries and Aquaculture Science (Cefas) and funded by the United Kingdom's Department for Environment, Food and Rural Affairs (Defra). The initiative supports developing countries across the Commonwealth to establish programmes to prevent plastics entering the ocean.

Given the scale of this environmental issue, a multitude of innovative STEM (Science, Technology, Engineering and Mathematics) solutions are needed to assist with both tackling and preventing marine litter. The CLiP innovation STEM conference: STEM the tide of plastic waste in Africa was held in South Africa, 4th - 5th December 2019. This showcased solutions to marine litter and waste management that were identified during the CLiP contest, the STOMP (Stamp Out Marine Plastic Pollution) Awards (for more detail on the STOMP Contest, please refer to the report 'STEM Contest: The STOMP Awards – Stamp Out Marine Plastic Pollution').

In order to tailor solutions tackling marine litter, the problem and cause need to be fully understood; as such, Cefas, along with other organisations presented their research results, highlighting identified problem items and areas. This event was planned as a feeder event into the African Marine Waste Network (AMWN) conference "*Towards Zero Plastics to the Seas of Africa*". Although scheduled for April 2020, this has been postponed due to global medical concerns. The CLiP conference was organized by the Sustainable Seas Trust (SST) and was used to introduce SST's (and the AMWN's) work, which will link research, innovative solutions and policy tackling marine litter across Africa.

This open conference showcased different STEM solutions in an interactive format. The winners of the STEM contest, "The STOMP awards", were showcased and announced at this event. There were both informal sessions, in the "world café" sessions, and formal presentation sessions, highlighting solutions, research and the upcoming AMWN conference.

Art and innovative outreach have been shown to play a key role in tackling marine litter through awareness-raising and inspiration. As such, art was linked into this conference by an artist, Peter Mascher capturing the event and key concepts in real time artistic depictions (please see section 9.8, p 84).

2 Delegates

The conference was attended by 86 people of mainly African and Caucasian descent (Figure 2.3). A full list of delegates is included in the annexes and includes representatives from non-profit organisations, government, universities, academic institutions, and business sectors. Looking at the sector breakdown of delegates (Figure 2.2). The largest number of delegates were from NGOs coming in at 21 people, with a large number also attributed to STOMP award entries. There was a good turn out from government, with national, provincial and local government officers in attendance, coming in at 11 delegates. The gender breakdown of delegates revealed that 65% of delegates were female (Figure 2.5). The age breakdown of delegates releveled that 30-39 was the biggest age category (Figure 2.4) but there was also good representation from younger age groups, which is likely largely due to the influence of the STOMP awards. The number of attendees over the two days fell well below the 117 people that had registered (Figure 2.1); the possible reasons for this shortfall are discussed in section 6, later in this document.

Figure 2.1 A group photo of delegates taken on Day 2 of the conference.

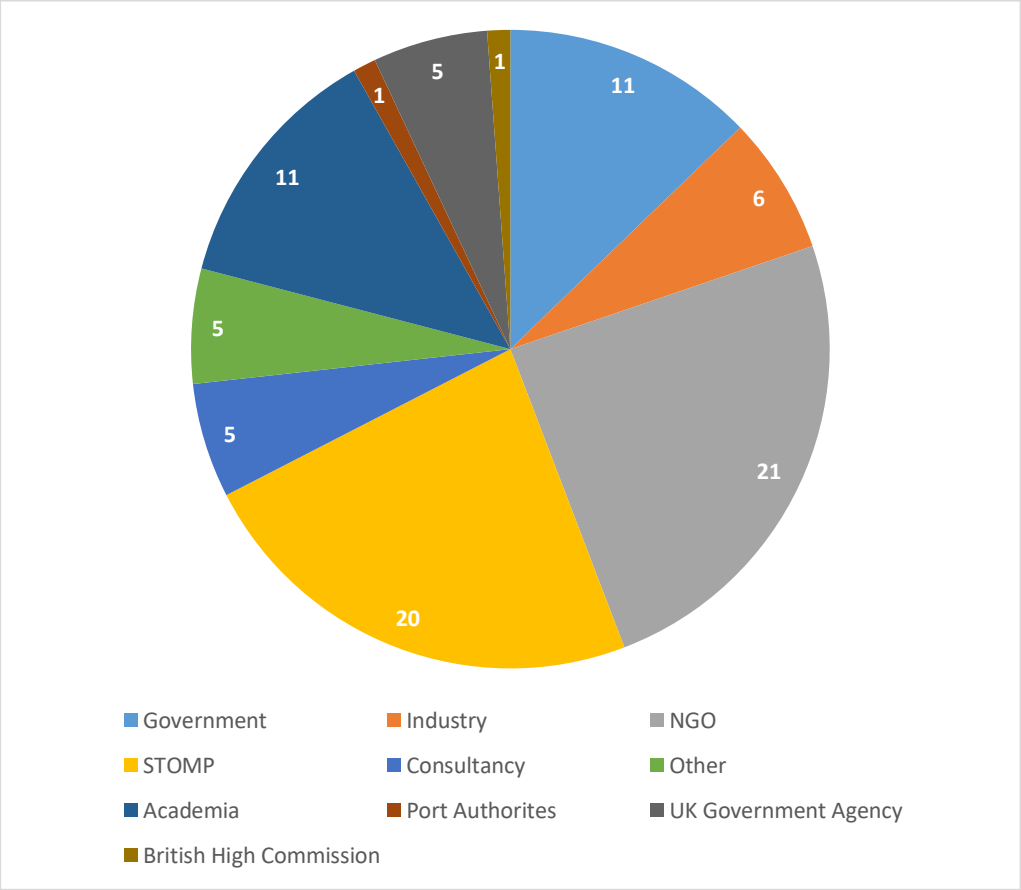

Figure 2.2 Chart showing representation from different sectors at CLiP Innovation Conference, 5th-6th December.

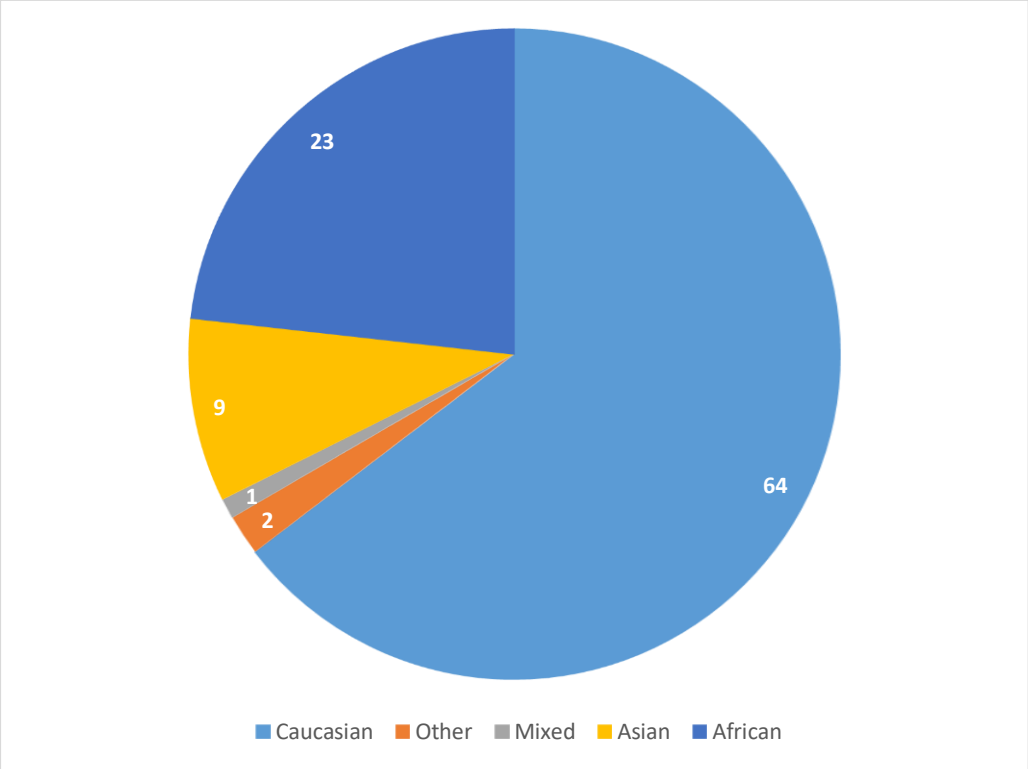

Figure 2.3 Chart showing representation of diversity at CLiP Innovation Conference, 5th-6th December.

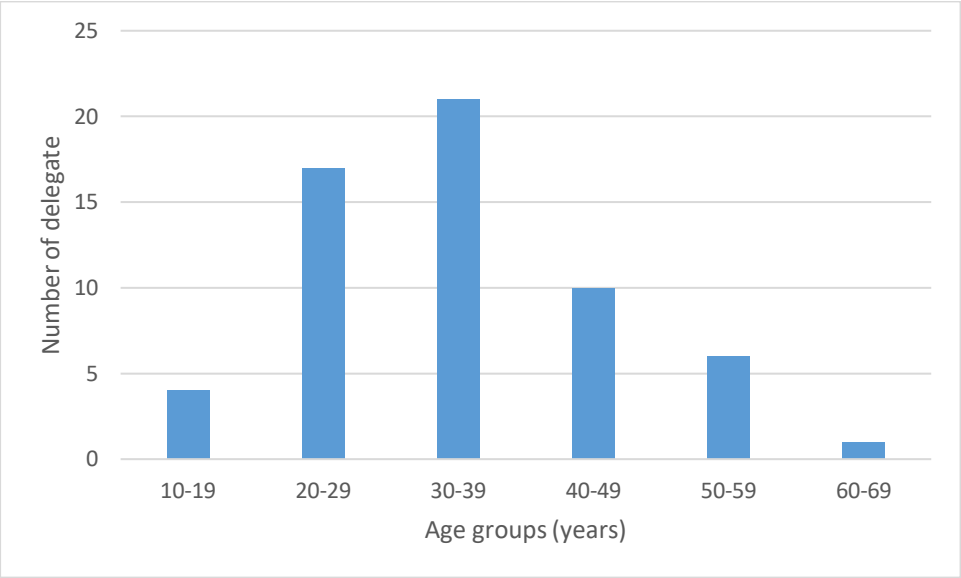

Figure 2.4 Chart showing age breakdowns of CLiP Innovation Conference Delegates

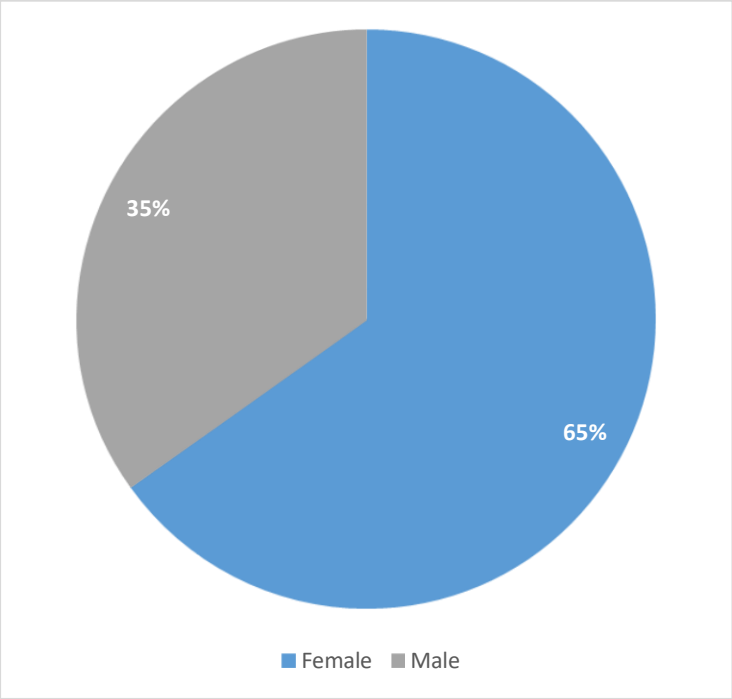

Figure 3.5 Chart showing gender breakdowns of CLiP Innovation Conference Delegates

3 Conference summary

3.1 Day 1

Welcome and Opening Presentations

09:00 – 10:00	***Delegate registration and refreshments***	
10:00 – 10:30	***Cefas Welcome***	***Fiona Preston-Whyte, CLiP Country Lead***
10:30 – 10:45	***SST & AMWN Welcome***	***Stacey Webb, Director SST***

The conference was opened by CLiP country lead Fiona Preston-Whyte. Fiona noted that while we are all aware that marine litter is an issue, there is a real need to come up with innovative solutions to STEM the tide of plastic waste to our oceans. The research and data showing the accumulation of marine litter has been around for a long time (30 years+) but the transfer of awareness of the issue to the people, in a way that has caused active behavioural change and large scale solutions, has not occurred until recently. In the past, science communication failed to make people aware of the issues, but this is now changing. It is crucial for us to understand why people are now taking note of marine litter, in order to drive the change and understand what methods led to that awareness. Some may have been derived from art and images, e.g. the multi-faceted Wavescape event[1] . This concept of communication through the arts is being explored during this conference by including, in the output production, an artist to capture discussions and concepts (See section 9.8).

Cefas has worked in marine science for over a century, and marine litter and microplastic for over 30 and ten years respectively. The Commonwealth Litter Programme (CLiP) was designed to create an innovative marine litter network across the Commonwealth. CLiP at the time of conference was active in its South African phase. Listed below is an overview of different activities undertaken as part of the programme within South Africa:

- Combining with the Council for Scientific and Industrial Research (CSIR) in a marine litter workshop (October 2019).
- Set up of two micro-plastic labs, in Port Elizabeth and Cape Town in conjunction with the South African Environmental Observation Network (SAEON) and the Department of Environmental Affairs (DEA).
- Port of Durban microplastic study in conjunction with Transnet.
- Macro- litter surveys in eThekwini in conjunction with the University of KwaZulu-Natal (UKZN).
- Microplastic baseline assessment in commercial fish, in conjunction with Department of Agriculture, Forestry and Fisheries (DAFF).
- A waste classification study conducted by Asia Pacific Waste Consultants (APWC).

[1] https://www.quicket.co.za/events/79100-wavescape-festival-2019/#?sort=dat

- A socio-economic study of packaging carried out through questionnaires.
- Production of material for a fisheries training course on marine litter in conjunction with WWF.
- Port authority audits (at 8 international and 6 local ports), conducted by APWC.
- Sponsorship of SST education workshop.
- STOMP Awards, a solutions-based conference focusing on Science, Technology, Engineering and Mathematics (STEM) contest run by Green Corridors.
- Sponsorship of marine litter display at uShaka Marine World with South African Association for Marine Biological Research (SAAMBR).
- Pilot studies looking at solutions to marine litter in none or poorly serviced areas with different socio-economic environments run by Green Corridors.

This talk was closed with the concept that marine pollution is tied to many other factors, such as consumerism and production, and that these resources have value and should not be seen as waste. The world's current use of these resources is unsustainable, and innovative solutions are needed, hence the gathering at the conference.

The second welcome speech was given by Stacey Webb of the Sustainable Seas Trust (SST). SST is a charitable trust, well known for its programme: the African Marine Waste Network (AMWN). The network was launched in 2016. At its first conference in 2017, representatives from all over Africa were asked: What is it that we need to do, to combat waste in the environment? The democratic answer was a multidisciplinary approach to both understanding the problem and creating solutions and easy-to-follow action plans.

South Africa is uniquely placed in Africa, as it has a coastline on both sides of Africa, making it a member of both the Abidjan and Nairobi conventions. Thus, through the AMWN South Africa is able to collaborate with other African countries on both coastlines, to research the extent of pollution in each country and create solutions to these complex waste issues.

SST's largest project is the AMWN with a theme and goal of achieving Zero Plastics to the Seas of Africa. SST, as well as their collaborators, have four pillars that are interlinked in achieving this goal. The aim of this project is to ensure that zero plastic goes into the seas (and environment) of Africa. This doesn't mean zero plastics produced, as plastic is a useful product, it means zero plastic ending up in the oceans and environment.

SST has a four-pillar approach:

Research – if we don't know the problem or its magnitude, we cannot come up with solutions.

Education – to be able to make people aware that there is a problem (building capacity with countries throughout Africa).

Enterprise Development – to incentivise cleaning the environment and earn a living from waste in low income communities.

Communication –to put the correct information out there and create a wave of change that makes an impact.

Ms Webb noted that Africa is the second most polluted continent and set to overtake Asia if changes do not occur. In order to make this change, there is a great need to rethink how we, as humans, do things. There is a need to create a system that does not produce waste but rather a raw material for other industries, thereby creating a circular economy. Waste needs to be turned into a resource, as it has value.

Ms Webb introduced some of the content to be covered in the two-day conference: researchers talking about how they are investigating and monitoring plastic waste pollution, how different organisations are combatting litter and the innovative ways of using waste as a resource. Innovation is incredibly important in this process and this conference has enabled a multidisciplinary discussion around innovation by bringing together researchers, educators, communicators, government, youth and entrepreneurs, all of which are working towards the same goals.

Ms Webb ended with two final thoughts:

1. We need to design with the end-product in mind. In the design phase, we need to already know where the product is going to end up and the impact it could potentially have on the environment. This will allow us to make changes in the design stage that can facilitate a circular economy and end with no waste entering the environment.

2. Plastic and waste are complex issues; collaboration is key to making progress. No one person or organisation can do this alone. This conference has now given us the opportunity to all meet and share. I would like to encourage you to keep the conversation going long after this event.

Ms Webb explained that when the AMWN conference is held, we will bring together people from all over Africa and from different organisations to discuss actions plans and best practices for Africa to have zero plastics entering the environment.

Panel Discussion- What is the Role of Industry in helping to tackle marine litter?

11:00 – 12:30	**Panel discussion** ***What is the role of industry in helping to tackle marine litter?***	Jaisheila Rajput, CEO TOMA-Now Douw Steyn, Plastics SA Harro von Blottnitz, University of Cape Town Facilitator- Stacey Webb, SST

This panel discussion highlighted several problems around plastic waste and marine litter in South Africa. The clear message from this session was that no one wants plastic in the environment, but that the responsibility must be spread across the entire value chain, from polymer producers to converters all the way down to consumers. This would lead to the implementation of a full circular economy that would value new ideas and products, sometimes not recognised by the current concept of 'being green' which can be too narrow. This shift in thinking would also be important to safeguard employees of the sector. Questions

were allowed from the floor as well as through social media live feeds, this led to an active discussion about the issues faced.

The current waste management system in South Africa was deemed insufficient. Particular challenges present in South Africa were also discussed, such as, in rural areas where the land is sparsely populated over a large area and economic resources are limited. There was consensus that there should be an effort to upgrade the collection of waste around the nation, as most of the waste is mismanaged and only one third ends up compacted in proper landfills. The point was also made that the informal waste collection sector should also be recognised and better managed.

Recycling rates are currently very low and are not the only way to tackle the problem. For the future, the focus needs to shift to alternative solutions to recycling, such as new design of products; the use of materials that are fit for purpose (which would reduce multi-layering); and the education of consumers to reducing and reusing.

Alternatives to plastic must also be carefully explored. The terms bioplastics and biodegradable plastics are confusing and sometimes seen only as a 'green wash' by industries. They are not necessarily bad, but regulation backed by science is needed. This means: more research to be done; certifications granted abroad through biodegradability tests done in different environments to be validated; imports to be checked and being clear on labels about technical aspects, for example, about industrial versus home composting.

Awareness has a central role in solving the problems of plastic pollution by leading towards a behavioural change. The industrial sector has several initiatives (schools, clean-ups) already but more network and coordination are needed. These actions are on a national, regional and global scale. Consumers must be empowered to make the right choice and take ownership of their actions. This is also to avoid unintended consequences when solutions are considered (for example increasing the price of virgin materials and/or oil).

Fig 3.1-1 Panellists: Ms Jaisheila Rajput (CEO TOMA-Now), Mr Douw Steyn (Plastics SA: Director Sustainability), Mr Harro von Blottnitz (University of Cape Town) and panel facilitator, Ms Stacey Webb (Sustainable Seas Trust, Executive Director).

World Café Session 1: CLiP and Partner Projects

13:30 – 15:00 **World Café Session**

APWC: Rosie Downie
Cefas: Adil Bakir, Fiona Preston-Whyte, Umberto Binetti, Kyle Briggs and Bryony Meakins
SST: Toshka Barnardo & Nozi Mbongwa

Green Corridor: Ayanda Mnyandu

UKZN: Thandy Makgolane, Nivisti Singh, Iliya Kwoji, Tusiwe Mkhize, Prishani Boodraj

After lunch on day one, the first World Café Session provided an opportunity for delegates to dynamically move through the conference rooms, listening to short presentations on the results of work undertaken through CLiP in South Africa, alongside some of the work of the CLiP Partners. A short description of each station is detailed below:

Microplastics in Biota (Cefas)

In collaboration with the Department of Aquaculture, Forestry and Fisheries (DAFF), CLiP conducted a baseline study of microplastics in economically important species of marine and estuarine fish in South Africa (sardines [*Sardinops sagax*], anchovies [*Engraulis encrasicolus*] and the redeye round herring [*Etrumeus whiteheadi*]). Samples were collected by DAFF during their surveys throughout 2019. At the time of the conference, analysis was still underway. Primary results however showed that the percentage of individuals containing plastics (in their stomachs?) ranges from 57% for anchovies from stratum F up to 90% for sardines from stratum G (stratum referring to geographical regions). This is in line with other South African biota studies. Most frequently found items were fibres (i.e., polyamide and polyester).

Microplastics in Durban Harbour (Cefas)

The Department of Environmental Affairs (DEA) requested a microplastic study of the Port of Durban. This was designed on key questions from Transnet around microplastics from input sources and sediments within the harbour. The uMhlatuzana, uMbilo and uManzimnyama river catchments all flow into the Port of Durban, as well as 10 storm water drains. There is active discharge of harbour sediment into Durban Bay to prevent sediment build-up in the port's channels.

Water samples were collected from seven locations around the Port of Durban using a microplastic pump, which filtered 2000 litres through four different sieve sizes, to identify the quantity and size distribution of microplastics present in the bay. In addition, sediment samples were collected from 25 locations within the harbour, and one outside the harbour, for microplastic and particle size analysis. Accompanying surface water temperature, salinity, turbidity and dissolved oxygen data were collected at each station using a hand-held CTD.

Regarding the water samples, a total of 1508 microplastics were collected, with an estimated total abundance of 0.754 items per litre filtered water or 754 items per cubic metre. Regarding polymer type, polyethylene and polypropylene were the common polymers. At time of the conference, sediment samples were still under analysis, but initial results showed a variation in numbers of microplastics observed between sites.

Household Waste Audit (APWC)

A household waste audit was carried out for Cape Town and Durban, covering a wide range of economic backgrounds. The results indicated that the highest category by weight was nappies and plastic bags. Organic items also constituted a large proportion of the waste.

Fig 3.1-2 Dr Adil Bakir (Cefas), Ms Rosie Downie (APWC), Dr Iliya Kwoji (University of KZN).

Packaging Questionnaire (Cefas)

The socio-economic study aimed to explore individual preferences and attitudes towards food packaging, including sustainability of materials, reduction, reuse, and recycling habits. The study included the analysis of results of a web-based survey questionnaire targeting the Municipality of the Cape Town residents. The study suggested that people are willing to pay for locally recycled materials, and they are more likely to reuse materials when they feel empowered to do so. These values are per item, and if a whole weekly shop is considered (R4 extra for every item makes much more of a difference). The study also needed to consider a wider demographic.

Port Reception Audit (APWC)

Currently, South Africa has a system in place that works for international and commercial ports, but all the waste that is landed is categorised as galley waste and is considered hazardous**.** A regulation change is needed so that this categorisation can be varied dependant on type of waste in the ports. There is also a need to upgrade the small ports as they often require vessels to keep waste on board and land at the next port. Port waste must be integrated with land waste to enable a better system.

Daily Accumulation Study (UKZN/ Cefas)

A daily accumulation study took place over 11 days at two locations approximately 20 km from Durban City: uMhlanga to the north and Amanzintoti to the south. Litter was collected from 100 meters of beach from the high tide line to the back of the beach and from below the high tide line down to the water line. The materials collected were dominated by plastic, which constituted more than 90% of all items found during the clean-ups. Most items were small pieces of plastic, too small to be recognised. The accumulation rates

fluctuated by day but showed a consistent pattern between the two beaches suggesting that wider events (such as weather patterns) were a key driver of this.

Abandoned, Lost or otherwise Discarded Fishing Gear

This desktop study assessed what is known regarding production of marine litter by the fishing industry, as well as, the effects of marine litter on the fishing industry in South Africa. When fishing gear is lost, abandoned or discarded into the marine environment, it becomes marine litter. It can cause navigational hazards to boats, with economic impacts. These items can also cause damage to wildlife, through entanglement but also through ghost fishing (where fishing gear continues to catch animals, even when lost). In terms of mitigation, preventative methods are the most effective (gear marking, collection schemes, etc.) but a combination with others are needed. It is not a localised issue and so global and regional discussions are needed to tackle this issue.

Community outreach and removal/reduction pilot study (Green Corridors)

This study focused on two informal communities in eThekwini, which do not receive regular formal waste collection. They have different geographic barriers, different socio-economic situations, as well as different power structures. They are both good reflections of other communities across South Africa. Both settlements are situated alongside tributaries of the uMngeni River, which is a major source of marine plastic pollution in the region. These pilot studies, based in Query Road West and the KwaShemba area, were community-based studies, looking for community-based solutions, which the communities identified and co-created as part of CLiP. There was a strong outreach and education element to this study. Drama, music, photos and video were used to inform and ignite conversations and action around plastic and marine plastic pollution.

Monitoring (SST)

SST monitors macro and meso litter on beaches and in rivers. This is based in Port Elizabeth but is carried out in collaboration with six other African countries -Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Tanzania, as part of the WIOMSA (Western Indian Ocean Marine Science Association) Marine Litter Monitoring Programme. The purpose of this is to understand how much waste there is in the environment and to monitor change over time. The results can be used to guide litter reduction measures, as well as, awareness and outreach campaigns. Results were presented from a recent beach accumulation survey that looked at the amount of litter washing up on beaches daily. The study was conducted over 10 days after an initial Day Zero clean-up of the beach.

Education (SST)

Education is key to changing behaviour to tackle marine litter. SST invited educators and specialists from seven African and Indian Ocean Countries (South Africa, Mozambique. Tanzania, Kenya, Seychelles, Madagascar and Mauritius). The workshop aimed at strengthening the network of well-informed teachers and educators, fulfilling one of the duties of the African Marine Waste Network (AMWN). Educators shared educational materials and knowledge that could assist African schools to stop waste at source before it lands up in the ocean. This workshop was one of several planned workshops and interactive sessions calling upon educators from different parts of Africa to contribute towards the development of a curriculum on

plastics. SST is working to produce educational materials for this educators' network. Observations and recommendations that rose from the workshop are being incorporated into SST's education programmes.

Fig 3.1-3 Ms Ayanda Mnyandu (Green Corridors), Dr Umberto Binetti (Cefas), Ms Toshka Barnardo (Sustainable Seas Trust).

World Café Session 2: STOMP Award Entries and Finalists

15:30 – 16:30 World Café Session
STOMP Awards exhibition

The 2nd World Café session gave the STOMP award finalists the floor. Delegates again had the opportunity to dynamically move through the conference rooms, listening to short presentations on STOMP award entries and for the finalists to network with delegates. A short description of each station is detailed below but for more detail on the STOMP Contest, please refer to the report 'STEM Contest: The STOMP Awards – Stamp Out Marine Plastic Pollution'.

PATCH Bamboo Plasters

A family importing business, selling bamboo plasters. The plasters avoid harmful ingredients that can irritate skin and will compost in your home compost bin, in a matter of weeks.

Monica Da Silva Beeswax wraps

Monica makes and sells beeswax wraps which provide an easy alternative to single use plastic items like cling-film. The wraps are made of cotton coated in beeswax and can be easily refreshed at home using your oven.

Save a Fishie

Zoe is a 17-year-old environmental enthusiast who has set up a shop to make plastic free alternatives more easily available. She sells bamboo straws, pens made from recycled paper and firelighters made out of coffee grounds.

The Big Scoop

The Big Scoop uses reusable bags and containers for pet waste collection and disposal. They have a product that gets sprinkled over the pet waste and helps remove the scent. In Somerset West, where they are based, they collect your pet waste when your container is full and compost it into fertilizer. They are hoping to

expand but are encouraging others to spread the message and convert other pet owners to more responsible waste disposal methods.

The Green Cabin

This is a mobile eco-friendly/ biodegradable detergent refilling station. She has a schedule and services complexes, estates or neighborhoods to allow residents to refill all their home detergents. They encourage using glass bottles or refilling existing detergent packaging. This not only benefits the environment but cuts costs for the household detergents.

WILDTRUST Pyrolysis plant

The pyrolysis plant converts waste plastic to fuel. They have installed a small-scale pyrolysis unit at their Midmar recycling depot. They collect waste from various areas and separate into waste streams. The polypropylene is shredded and loaded into a reactor, six to seven hours later the material has been processed into vehicle grade fuel after going through a small-scale refinery. They use their fuel to run their vehicles collecting recycling.

Oceano Reddentes

This non-profit organisation was started by Jade Bothma when she was 12. She runs clean-up campaigns, collects data on the waste, does education around waste issues and uses the waste from her clean-ups to create eco bricks. She not only saves the environment but also hopes to build the first eco brick home.

Singakwenza Education and Health

Singakwenza was started nine years ago, when Julie Hay started experimenting with the household packaging to see if she could create similar toys to the ones that are for sale. The Singakwenza programme was born in 2010 and is based completely on household packaging. Crèche teachers, parents and caregivers only have to buy a pair of scissors and a marker pen, and they are able to create a multitude of toys and educational materials for their children. It is a useful way for teachers and parents to be able to educate re-using their waste.

Codemakers Super Scientist Programme

Super Scientists is changing the way that young people see scientists and science. They are creating superhero profiles of living scientists and showcasing their superpowers. The aim is to engage and inspire kids to contribute to Science.

Luke Rudman

Luke is a performance artist who uses recycled material to create his fashion creations. His aim is to create awareness of waste in a creative and impactful way. He calls them his “plastic monsters” and has showcased his pieces as part of a “protect the oceans” campaign.

Mermaid tear catcher

Clare designed and created a frisbee and sieve that removes nurdles from the environment. The sale of the tear catchers funds her litter for tokens programme which is a social enrichment project providing food for recycling.

Eden College

Eden College has an eco-show called Norman Klutsky: Eco Warrior of the High Seas. They use the show to educate about waste and to encourage people to get involved in the Moving Mountains programme. This programme installs recycling depots in schools that are managed by disabled people.

Captain Fanplastic

Captain Fanplastic is a pirate themed educational programme that aims to educate kids about the plastic issue. It also encourages innovation around upcycling of waste.

Figure 3.1-4 The conference artist, Peter Mascham's rendition of some of the STOMP awards finalists.

3.2 Day 2

The African Marine Waste Network and Reflections from Day 1

09:00 – 09:30	**"Towards zero plastics to the seas of Africa"**	**Dr Tony Ribbink** **Sustainable Seas Trust**
09:30 – 10:00	**Reflections from Day 1**	**Ms Belinda Langenhoven** **Western Cape Government** **Deputy Director: Sub Directorate (Waste Policy and Minimization)**

Dr Tony Ribbink (SST) kicked off day two of the conference, presenting on SST's African Marine Waste Network. He began his talk by describing three environmental phases in the recent past:

Phase 1 - During the 1980s when the HIV/AIDS pandemic emerged was also the time when the first conservation and environmental issues became real. No university was teaching environmental/conservation science at that time, but university courses were initiated by people, who at that stage had not been trained as environmental scientists. The first researchers recognised the urgency of situations and called for action, invoking the precautionary principle, which was often before scientific evidence was absolutely conclusive. Purists viewed environmental science as a lesser science.

Phase 2 - The second wave came in the 1990s and highlighted climate change. Once again, those at the forefront of introducing teaching in universities had themselves not been trained in "climate change science" but had to pioneer the curricula. The issues are still in 2019 in a stage of conflict and scepticism, but what is clear is that greater emphasis on spreading the "truth" in terms that can be readily understood is a prerequisite to developing commitments to action. Climate change is the greatest threat to human life on the planet. Plastic waste is a more recent problem of global proportions but is more easily understood than the climate change issues so could be a way to helping promote understanding of climate change.

Phase 3 - We have known about plastics and the environment for about 60 years, and activities such as those of the International Coastal Clean-up have been operational for more than 30 years, but the general populace only became concerned on a really large scale in 2017 following the UNEA meeting. The media also drew attention to the issues, of which Sky News is a leader. Once again with regard to education, those leading education in the plastics disciplines are the pioneers. There are no well-established full curricula in universities and schools, and those in NGOs and elsewhere doing the teaching are themselves not trained in the disciplines. An absolute imperative for those involved in pioneering the teaching is to provide accurate information that is evidence based and leads to guiding decision-makers.

He went on to highlight that there are common perceptions that are not based in science or supported by evidence. Success of educators depends on sorting fallacies from fact and providing the truth.

UNEP is calling for action plans, which is tricky as one needs to know about the issues. Banning plastics can be a rash decision when someone doesn't know what else to do and can be a knee-jerk reaction. This may not be necessary with the correct education. It is important to do the right thing especially in Africa as it's the second most polluted continent and on track to become the most polluted by 2050. We need to adopt the precautionary principle and implement informed action plans. Africa needs to attract investment which will prevent it from becoming the most polluted, and so needs to build capacity. The population trajectory means we need urgent attention and investment before it's too late and becomes unaffordable. Asia is improving as their projects are working, population estimates show a stabilising trend, and education programmes are being successful.

Stemming the flow of plastics to the sea is more challenging than rocket science as we are dealing with people who have variable behaviour and are in different circumstances and different cultures. Overall, the knowledge of what to do is not as good as it should be. We need to invest in dealing with land-based plastic. We need to generate and share knowledge. We need to educate the nations. There is a gap in tertiary teaching about plastics, so we need to become educated, invest in building capacity and then teaching. Normal communications will not change behaviour and thinking of the millions of people who are our stakeholders – we need to think of the extraordinary. We need to ensure that information we provide is reliable and trustworthy.

If Africa is threatening to become the worst polluted continent, then the world should be investing in Africa.

Following this, Belinda Langenhoven, Deputy Director: Sub Directorate (Waste Policy and Minimization) provided a brief summary of the previous days along with her take-home thoughts so far.

Panel Discussion: How can we use citizen science to help tackle marine litter and empower consumer decisions.

10:30 – 12:00	**Panel Discussion** ***How can we use citizen science to help tackle marine litter and empower consumer decisions?***	**Jackie May, Editor Twyg** **Maria Honig, The Beach Co-op** **Toshka Barnardo, SST** **Facilitator- Umberto Binetti, Cefas**

This panel session was chaired by Cefas' Umberto Binetti and focused on 'How citizen science can help tackle marine litter and empower consumer decisions'. The discussions during this session covered a broad spectrum of topics, reflecting the variety of expertise on the panel. Questions were posed from the room and also using interactive live-stream functions of social media.

The session began with discussions around citizen science and how this can help to educate citizens about marine litter. Maria Honig explained that her organisation, The Beach Co-op, uses citizen science beach clean-ups. These activities are inclusive to all and empower citizens to feel that they are doing their bit, while also having fun. The activities combine science and education, and the involvement allows for collective action, creating a larger voice. The panellists noted that while citizen science data is not 100% accurate, it is enough to give a signal and accuracy can be improved with training. The Beach Co-op has noted that a lot of people attend regular sessions, and that beach clean-ups have now become a life-style choice. It is noted that there is a wish to pursue PhD and MSc research into measuring impacts from citizen science activities to better understand this.

SST and the Beach Co-op both complete social surveys of before and after clean-ups and buy back centres to gauge effectiveness. These however struggle to capture the reality of lifestyle changes as they simply offer a snapshot of

opinions. Assessing behaviour is a huge task, especially when dealing with school learners, and that different teachers have different approaches. One idea is to use a waste diary to record waste and track process. SST brought together educators from different countries at a recent workshop where they compiled different approaches that can be used. In terms of lifestyle changes, it takes time for people to practice what they've learnt. What is clear is that there is a need for more measurements and research to know if the actions are successful.

Another theme of this discussion was how to inspire others to make more sustainable changes to their life. One way to do this is through the use of media. Jackie May has created an online magasine Twyg[2], with the purpose of inspiring sustainable life choices. An industry of particular focus is the fashion industry as it is currently dominated by imports. Questions like "how can we reduce our demand for 'fast fashion'?", which is driven through imagery and trends need to be addressed. There are signs of some positive change already as there is a new demand for thrifted clothes which can be altered, which is very encouraging. Microfibre release from textiles was also acknowledged as an issue that needs to be addressed by the textile industry. A move to use more natural fibres along with testing of technology, such as the "planet care filter", along with novel uses of natural materials (e.g. alpaca wool to minimise release of fibres) is needed.

Any approach taken is important to align with regional efforts to maximise impact. SST has a partnership with the Western Indian Ocean Marine Science Association (WIOMSA), doing a regional litter monitoring programme with six other African countries. Litter monitoring projects in each of those countries, use the same techniques to collect data, which can be shared and results can be compared. This has also been used to create a volunteer platform for involvement and creating community awareness. The different countries have different perspectives and the collaboration allows for engagement, discussion and better understanding. Different countries have different policies, beliefs, cultures etc. and this could influence the results, which is very important. The litter problem is a global one and we need to work together to solve the problem. Working on that scale (across countries) creates more awareness and has more of an impact. SST's various methods have had a positive impact and allowed for bridging the gap.

Fig 3.2-1 Panellists: Jackie May (Editor TWYG), Maria Honig (The Beach Co-op), Toshka Barnardo (Sustainable Seas Trust) and panel facilitator, Dr Umberto Binetti (Cefas).

[2] https://twyg.co.za/

STOMP Awards Presentations and Prizegiving

13:30 – 15:00 STOMP Awards Presentation & Prizegiving Presenter: Sifiso Mngoma, Green Corridors

The STOMP awards "highlight video"[3] was aired, and the awards for each category followed. For more information on the STOMP awards, please refer to the report on STEM Contest: The STOMP Awards – Stamp Out Marine Plastic Pollution'.

Technical Design category

Fig 3.2-2 Winner: The Mermaid Tear Catcher, submitted by Clare Swithenbank-Bowman with Ben Boddy (British High Commission) and Sifiso Mngoma (Green Corridors).

[3] https://www.facebook.com/stompawards/videos/485435468734540/

Product Category

Fig 3.2-3 Winner: Patch Bamboo Plasters submitted by Dr Milliea Anis with Ben Boddy (British High Commission) and Sifiso Mngoma (Green Corridors).

Adult Inspire Category

Fig 3.2-4 Winner: Luke Rudman's "The 12 Plastic Monsters" performance art with Ben Boddy (British High Commission) and Sifiso Mngoma (Green Corridors).

Youth Inspire Category

Fig 3.2-5 Winner: The Oceano Reddentes NPC submitted by twelve-year-old Jade Bothma with Ben Boddy (British High Commission) and Sifiso Mngoma (Green Corridors).

Special Recognition Award for Action

Fig 3.2-6 Winner: Singakwenza submitted by Julie Hay with Ben Boddy (British High Commission) and Sifiso Mngoma (Green Corridors).

15:30 – 16:00 **How to inspire future STEM leaders** **Tatenda Ruswa**

Dream Factory Foundation

The final session was given by Tatenda Ruswa, on how to inspire the future STEM leaders, from his experiences working at Dream Factory Foundation. Dream Factory is a youth organisation that empowers youth from marginalised communities and underprivileged backgrounds. When young people are not inspired to dream, they forget about the future. The foundation provides a coding factory for women who have dropped out, and other programmes that focus on encouraging kids in school to dream. At schools they launch coding clubs and host coding workshops to empower kids by developing coding skills. They work in the Eastern Cape and Western Cape regions of South Africa.

STEM or STEMAC (addition of agriculture and coding) are important. These systems train learners to be empowered and equipped for a brighter future than they are currently living in. New companies like Google and Facebook are becoming more prominent and so it is essential they develop these skills.

Why coding and why STEM? The reason for the conference is to talk about waste and the volumes that have been dumped into oceans. Coding can play a role in developing fun solutions for these problems and remove plastic from the environment, reimagining resources and rethinking waste. STEM should be made available, as new ways of thinking are needed to solve the issues. Coding programmes have been launched in schools with great success at much younger ages than previous generations developing the same skills. We need to try not to deprive students of skills that will take them further in life. They could be part of creating systems and new technology that will destroy unwanted plastic in our ecosystems? We want to inspire these thoughts in younger people so that they can provide innovative solutions when they're required to.

4 Communications, media coverage and other outputs

Science communication is extremely important in sharing key messages with the general public. Traditionally, technical words and inaccessible outputs have meant that the public has been largely unaware of important environmental issues such as marine pollution. As mentioned previously, this is now changing with the inclusion of film, tv, social media and art and is an area that this conference wanted to include, in order to maximise the impact of the conference.

4.1 Artist renditions of concepts

Peter Mascher is a very talented caricature artist, cartoonist, illustrator and storyboard artist based in Cape Town, South Africa. He has, over the years, created cartoons for books, newspapers and entertainment. This is the first time he has created concept cartoons of this kind at a conference. His work reflects many concepts and common misperceptions that were discussed over the two-day conference and can be found in the Appendix 9.8.

4.2 Social Media (Sustainable Seas Trust)

Social media posts were planned in order to publicise the conference and to reach the maximum amount of people. Table 5.2-1 outlines the number of posts and the reach that each of the social media networks achieved. Each of the networks has a distinct feel and target audience so the posts were custom designed for the maximum impact, although the posts were themed to still have a connection to each other and the conference (please see sections 9.3 to 9.6 for examples). Live feeds on Instagram and Facebook were used to include input from people through social media. Our panel discussions received and answered questions during live feeds. Social media is an incredibly powerful tool to reach people. Even in Africa a large percentage of the population have phones and use social media. It is therefore a great forum for communicating important messages.

Table 4.2-1 A summary of the social media posts and reactions.

Details	Instagram	Twitter	Facebook	LinkedIn
Posts/ Tweets	7	12	9	5
Shares/ Retweets		9	34	
Stories	18			
Live sessions	2			
Comments	4			
Mentions	6	5		
Private sends	8			
Love reactions	146	24	87	27

Interactions/ Engagements	971	85	627	
Reach/ Impressions	**3299**	**3456**	**6860**	**1927**
Annexure #	9.3	9.4	9.5	9.6

4.3 Other Media

A video of highlights from the conference was produced and multiple news articles were published. The press releases were sent to all local news outlets in South Africa. The press releases were custom tailored to reflect the news that each province or city would be more likely to want to print. Interestingly, the news outlets were very interested in the STOMP awards and so the press releases that were published were largely due to that rather than the conference. This is a good point to note for future and perhaps the "spin" of the articles about the conference could be tailored along an avenue that would interest the news outlets more. The video can be viewed at https://youtu.be/Cdky4sD4z38 (for full coverage please refer to annexure 9.7).

5 Delegate Feedback

The delegates were asked to leave parting comments or feedback on the last day, and those that did comment thought the conference was very informative and evoked a spirit of wanting to do more towards marine conservation.

A few examples of the type of comments received included the following: "Really great spread of stakeholders, with engaged discussion between private sector, academia and civil society. Excellent panel speakers," and "Very good range of stakeholders for networking."

A lot of the feedback received shares the delegates' hopes that the discussions will be turned into action, and that they will be able to see more anti-marine litter projects taking off (please refer to section 9.9 for photos of delegate feedback).

6 Next Steps and Recommendations

One of the key issues was delegate attendance. We had 117 delegates register to attend and 86 delegates arrived on the day including walk-ins. It is unclear whether the difference in registered and attended numbers was due to the time of the year chosen for the conference, clashes with other conferences in the same field or whether it was due to the lack of a registration fee. All of these should be taken into consideration for future conferences.

We have identified a few areas that can be changed in order to improve the conferencing experience for the delegates as well as the smooth running of the conference:

- The illustrations should have been highlighted more, perhaps with a translator standing at each board. They can assist by explaining the drawings for anyone for whom it was not clear and by inspiring discussions between people at each drawing.
- We loved the World Café sessions; however, the execution can be improved. Arrange presentation of pre-intros for each person including their topic titles, so that guests know who they can visit and what the presentations will be about. The conference programme on the screen could be simplified to make it easier for guests and delegates to understand. Timekeepers are essential, but they need to ensure they have synchronised watches.
- Delegates needed desks or tables as well as charging stations to improve their experience.
- There needs to be a dedicated timekeeper for each session throughout the conference.
- Extra microphones would have assisted in the question and answer sections. One per audience space would have been ideal.
- The conference would have been improved by the presence of a “Master of Ceremonies” or “Programme Director”.

This conference has provided an excellent launching platform for collaboration, in the future we need to take the following steps to tackle marine litter:

- Expand the research to identify the problems.
- Collaborate and innovate to find creative solutions.
- Continue to educate and spread the correct information through communication channels.
- Engage with the authorities to ensure legislation evolves to assist with combatting marine litter.
- Attend the AMWN conference to contribute to the broader African discussion.

7 Closing Remarks

The Sustainable Seas Trust thoroughly enjoyed working with CLiP and Cefas on this conference. This conference was beneficial in developing relationships between all the interested and affected parties in South Africa that are dealing with plastic waste. These relationships need to be developed and the collaborative atmosphere achieved at the conference should be maintained. We hope that CLiP/ Cefas representatives will be able to join the AMWN conference when it takes place.

8 References

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Veiga, J.M., Fleet, D., Kinsey, S., Nilsson, P., Vlachogianni, T., Werner, S., Galgani, F., Thompson, R.C., Dagevos, J., Gago, J., Sobral, P. and Cronin, R. 2016. Identifying Sources of Marine Litter. MSFD GES TG Marine Litter Thematic Report; JRC Technical Report; EUR 28309; doi:10.2788/018068

9 Appendices

9.1 Programme – Day 1

Table 9.1 Programme outline for the 4th of December 2019, Day 1 of the conference

4TH DECEMBER		
Time	Agenda Item	Presenter
09:00 – 10:00	Delegate registration and refreshments	
10:00 – 10:30	Cefas Welcome	**Fiona Preston-Whyte**, CLiP Country Lead
10:30 – 10:45	SST & AMWN Welcome	**Stacey Webb**, Executive Director SST
10:45 – 11:00	Morning tea and refreshments	
11:00 – 12:30	Panel discussion What is the role of industry in helping to tackle marine litter?	**Jaisheila Rajput**, CEO TOMA-Now **Douw Steyn**, Plastics SA **Harro von Blottnitz**, University of Cape Town Facilitator- **Stacey Webb**, SST
12:30 – 13:30	Lunch	
13:30 – 15:00	World Café Session Three rooms showcasing marine litter and waste management research, alongside examples of innovative solutions in South Africa	APWC Cefas SST STOMP Award Contestants WWF
15:00 – 15:30	Afternoon tea and refreshments	
15:30 – 16:30	World Café Session Three rooms showcasing marine litter and waste management research, alongside examples of innovative solutions in South Africa	APWC Cefas SST STOMP Award Contestants WWF

9.2 Programme – Day 2

Table 9.2 Programme outline for the 5th of December 2019, Day 2 if the conference

5TH DECEMBER		
Time	Agenda Item	Presenter
09:00 – 09:30	African Marine Waste Network	Dr Tony Ribbink, SST
09:30 – 10:00	Reflections from Day 1	**Ms Belinda Langenhoven** – Deputy Director: Sub Directorate (Waste Policy and Minimization)
10:00 – 10:30	Morning tea and refreshments	
10:30 – 12:00	Panel Discussion How can we use citizen science to help tackle marine litter and empower consumer decisions?	**Jackie May**, Editor Twyg **Maria Honig**, The Beach Co-op **Toshka Barnardo**, SST Facilitator- **Umberto Binetti**, Cefas
12:30 – 13:30	Lunch	
13:30 – 15:00	STOMP Awards presentations and prizegiving	Session Led by **Sifiso Mngoma**, Green Corridors
15:00 – 15:30	Afternoon tea and refreshments	
15:30 – 16:00	How to inspire future STEM leaders	**Tatenda Ruswa,** Dream Factory Foundation
16:00 – 16:15	Wrap up and close	**Fiona Preston-Whyte**, Cefas

9.3 Instagram

The figures shown in this section show all the Instagram posts (both to SST's page and to SST's story), the grey images depict the "activity" or "interactions" with the posts at the time the download happened. These numbers could have increased since writing this report.

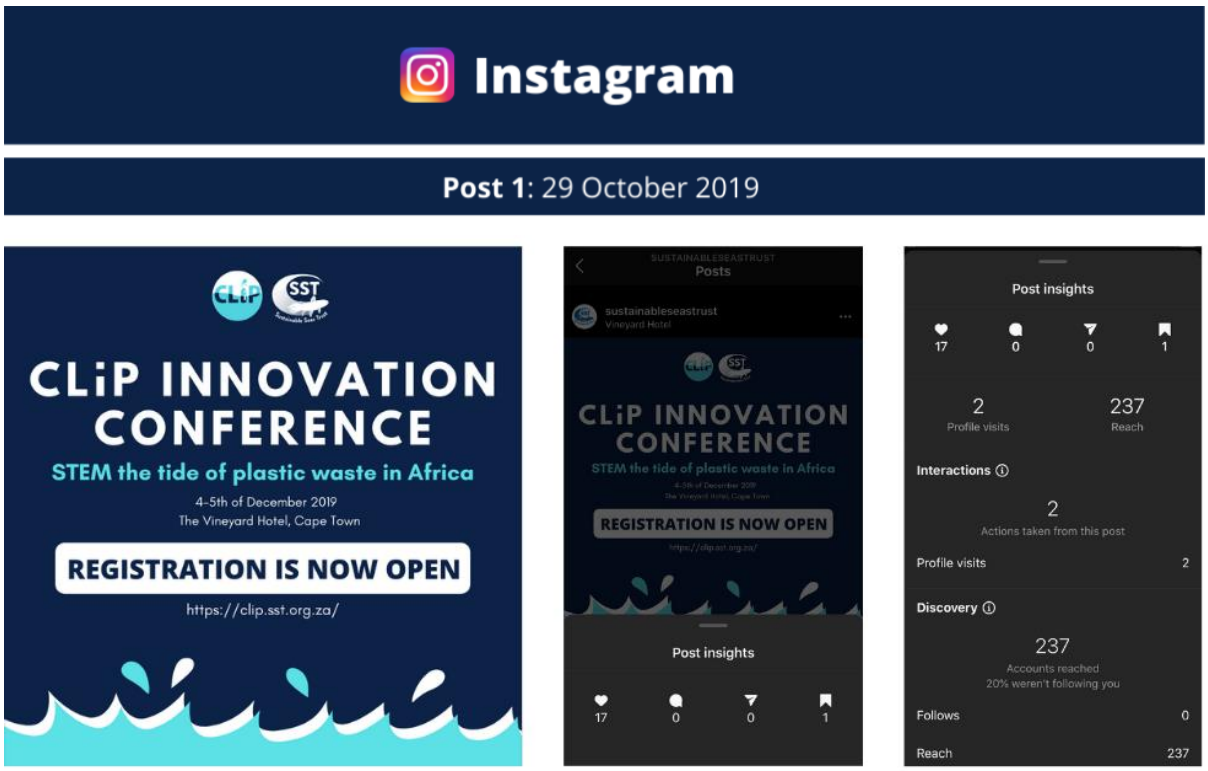


Figure 9.3-1 Instagram post regarding registration

Figure 9.3-2 Instagram post prompting registration of delegates

Figure 9.3-3 Instagram post reminding delegates to register

Figure 9.3-4 Instagram post advertising the amazing panellists

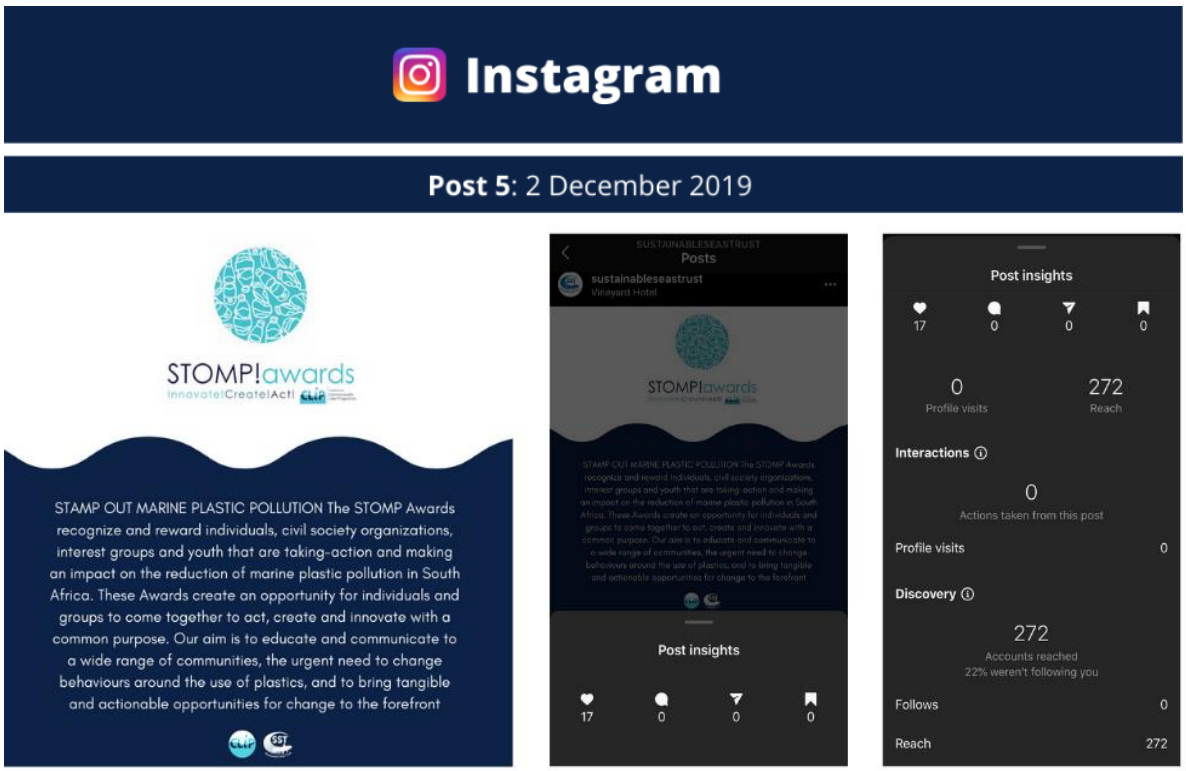


Figure 9.3-5 Instagram post highlighting the STOMP! Awards

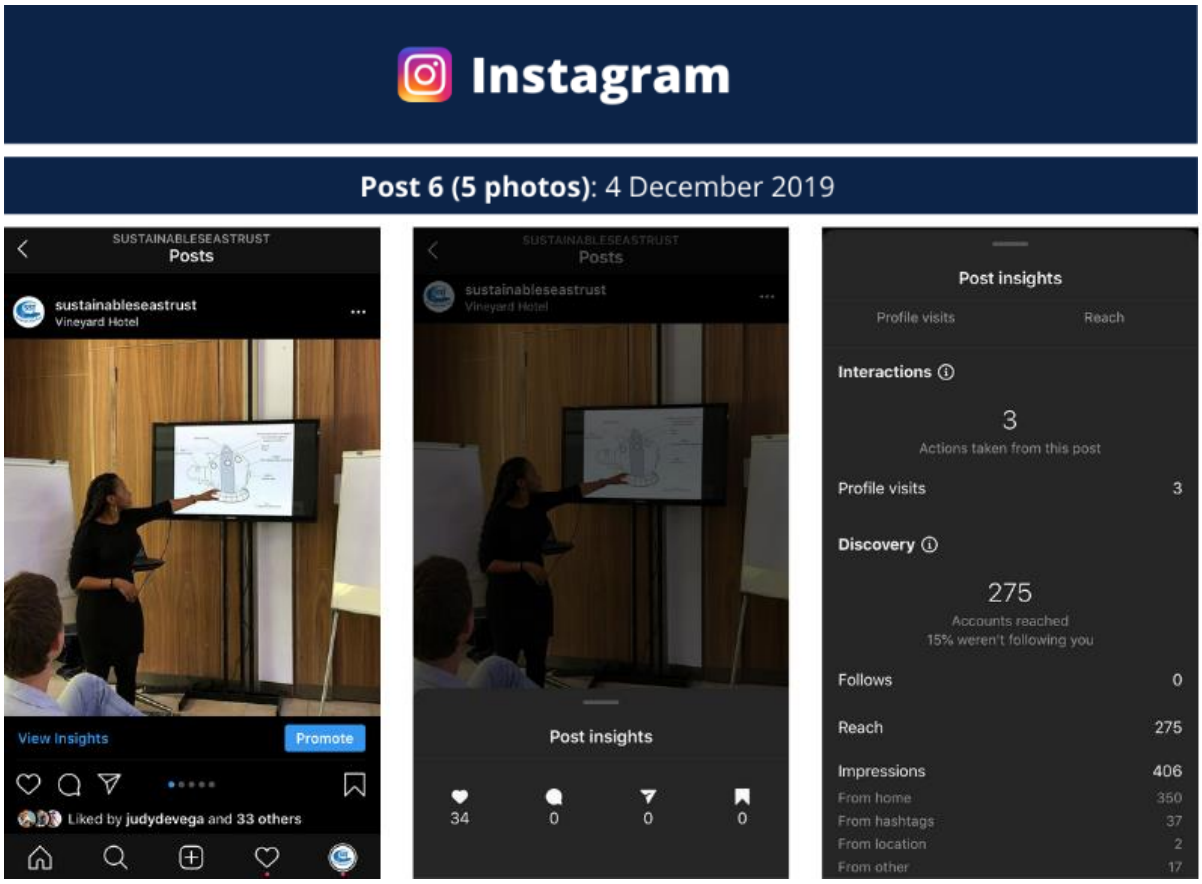


Figure 9.3-6 Instagram post about the presentation session

Instagram

Post 7 (3 photos): 5 December 2019

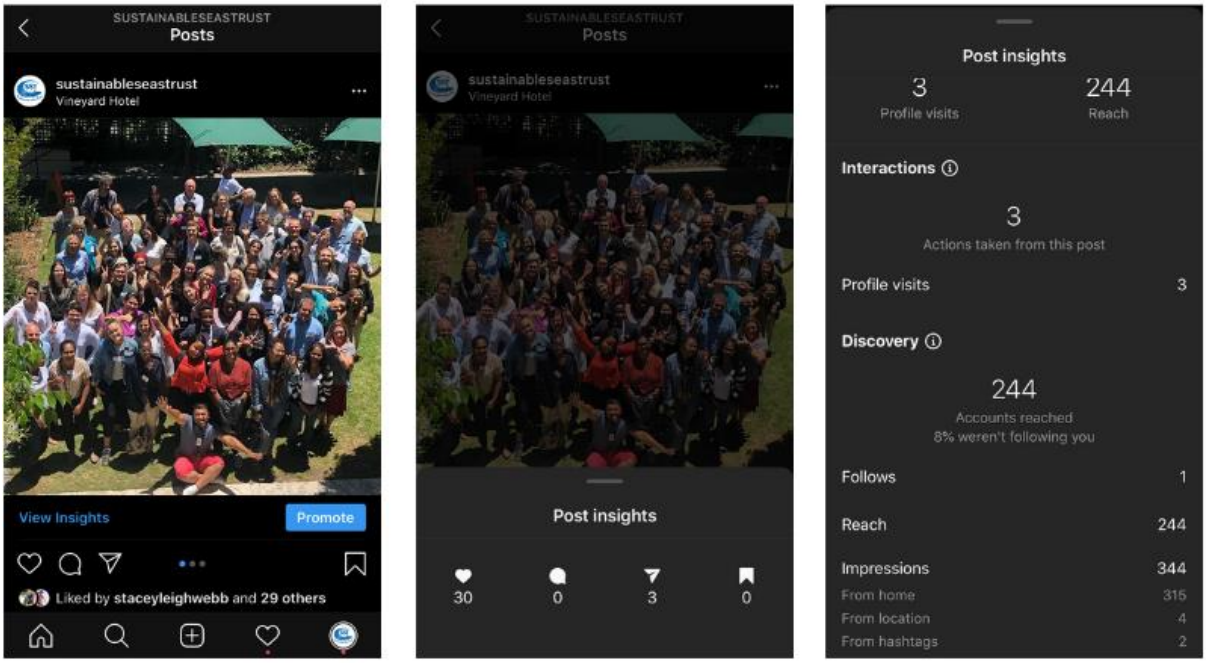


Figure 9.3-7 Instagram post showing the group photo of the delegates

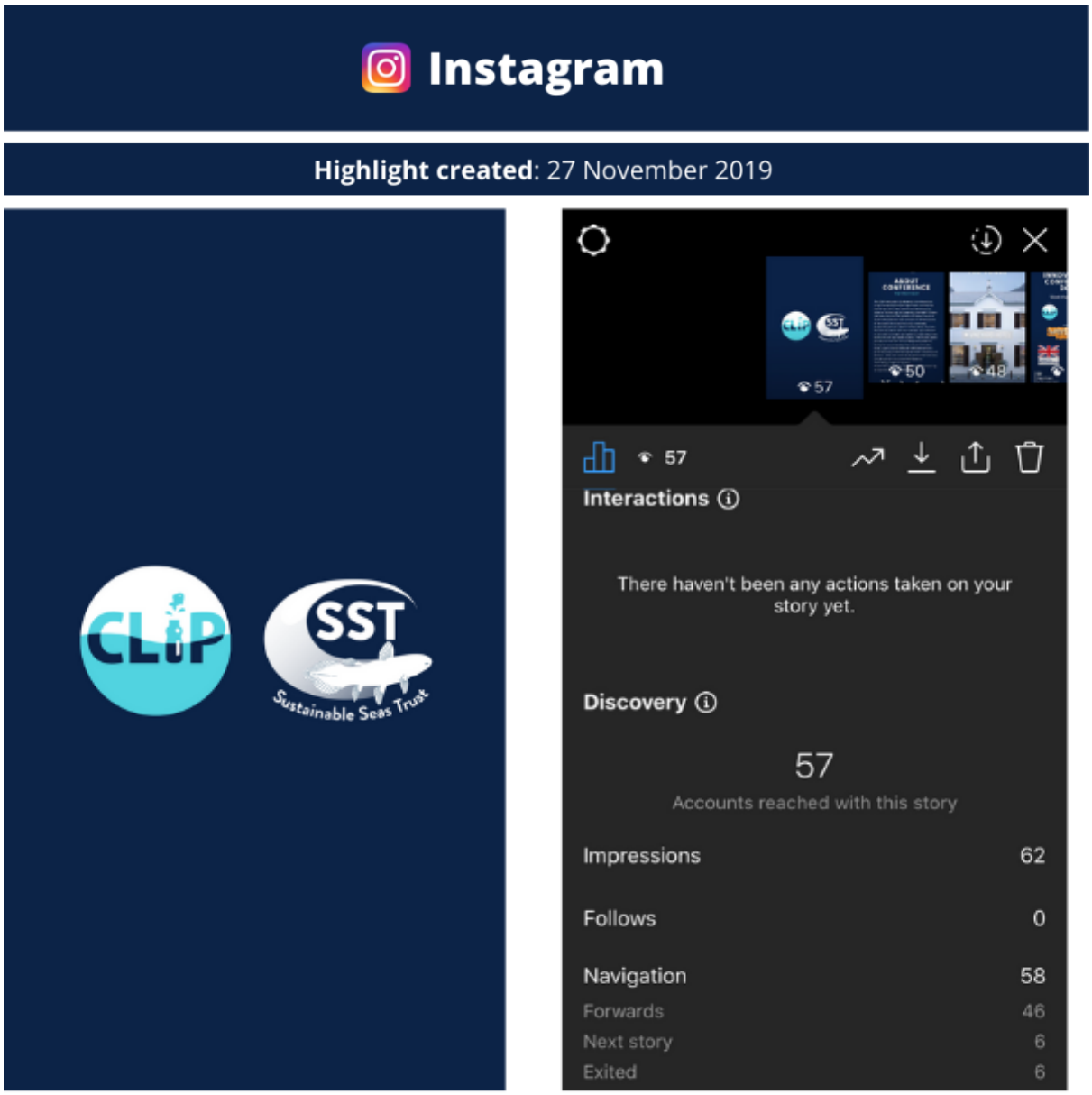


Figure 9.3-8 Instagram highlight showing the partnership between CLiP and SST, starting the story slides 27 November 2019

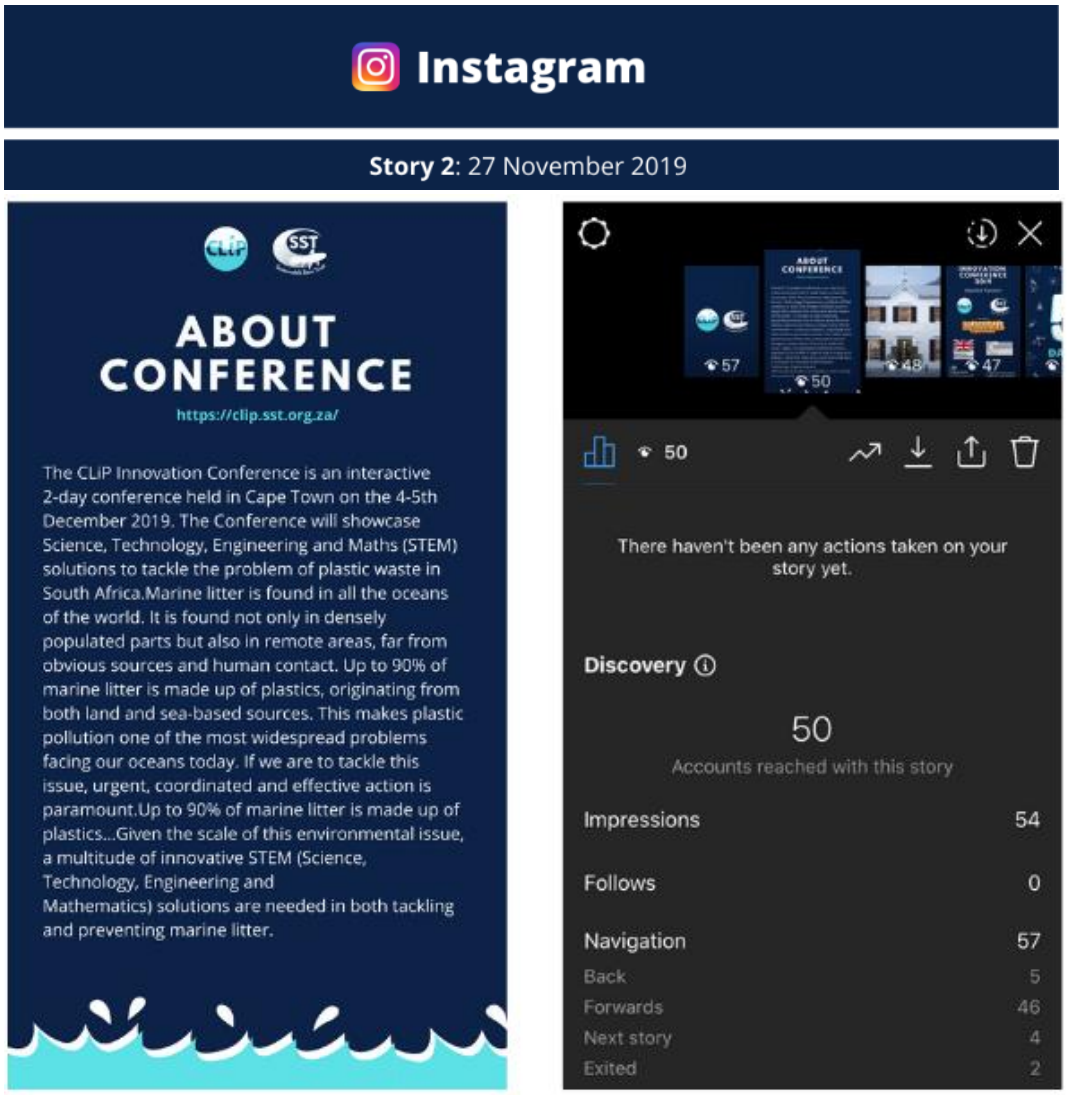


Figure 9.3-9 Instagram story slide 2 with details about the conference. Story slides 27 November 2019

Instagram

Story 3: 27 November 2019

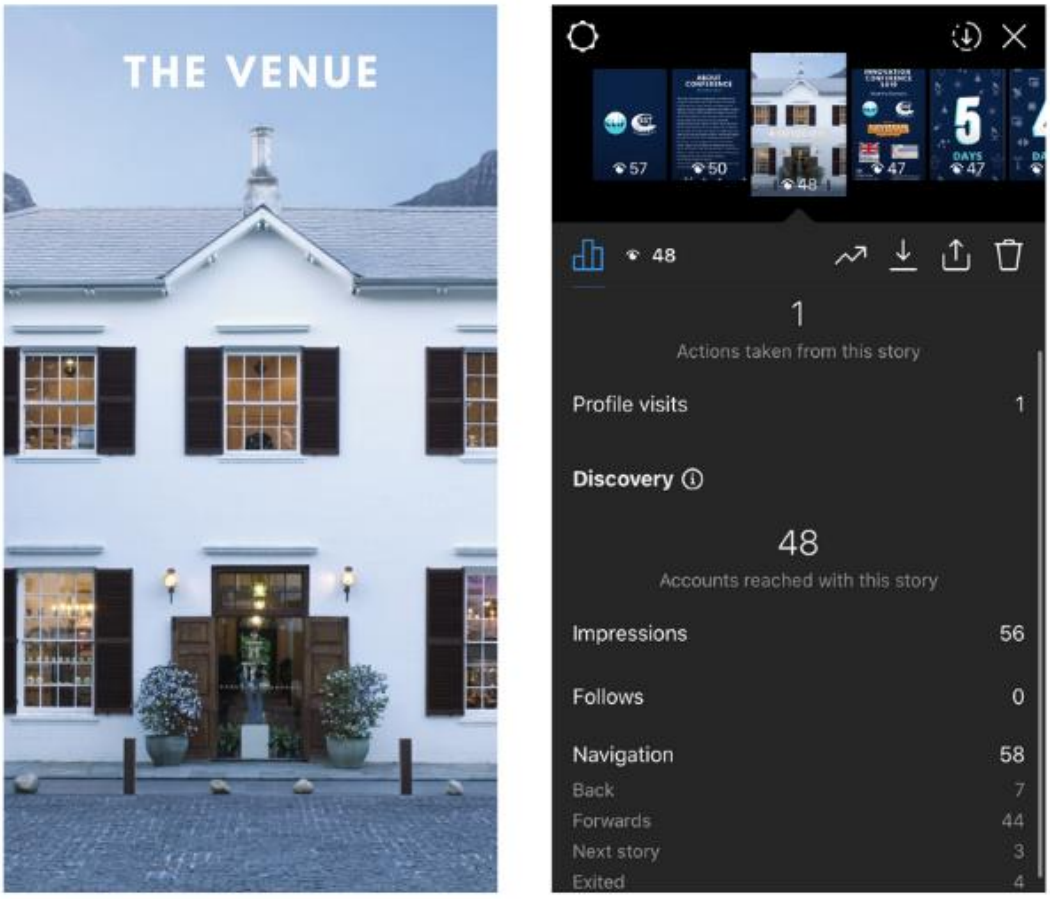


Figure 9.3-10 Instagram story slide 3 with details about the conference venue. Story slides 27 November 2019

Instagram

Story 4: 27 November 2019

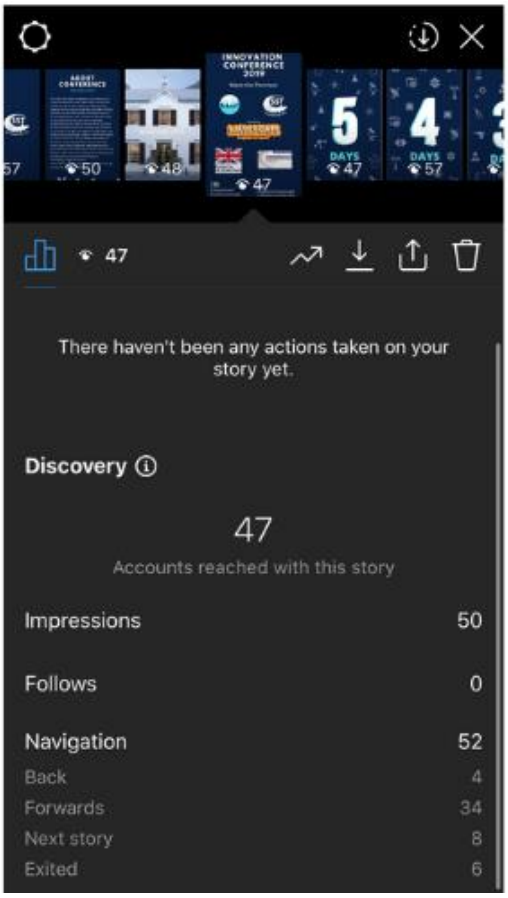


Figure 9.3-11 Instagram story slide 4 showing all the logos of the partners. Story slides 27 November 2019

Instagram

Story 5: 29 November 2019

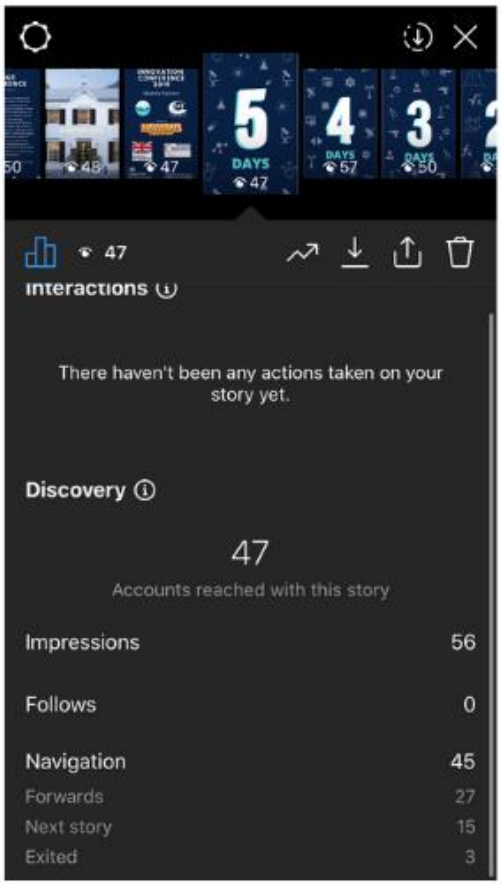


Figure 9.3-12 Story slides were added to on the 29 November 2019, with the start of a 5 day count-down

Instagram

Story 6: 30 November 2019

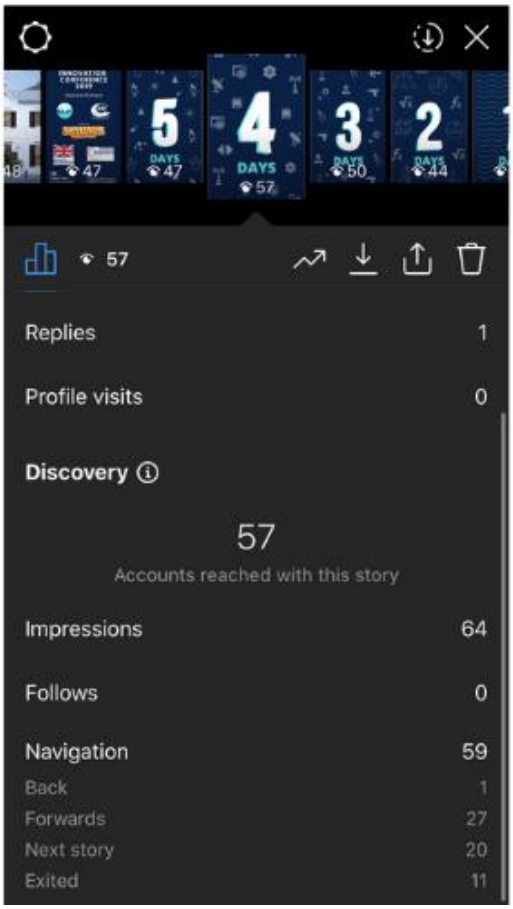


Figure 9.3-13 Story slides were added to on the 30 November 2019, count down continues

Instagram

Story 7: 1 December 2019

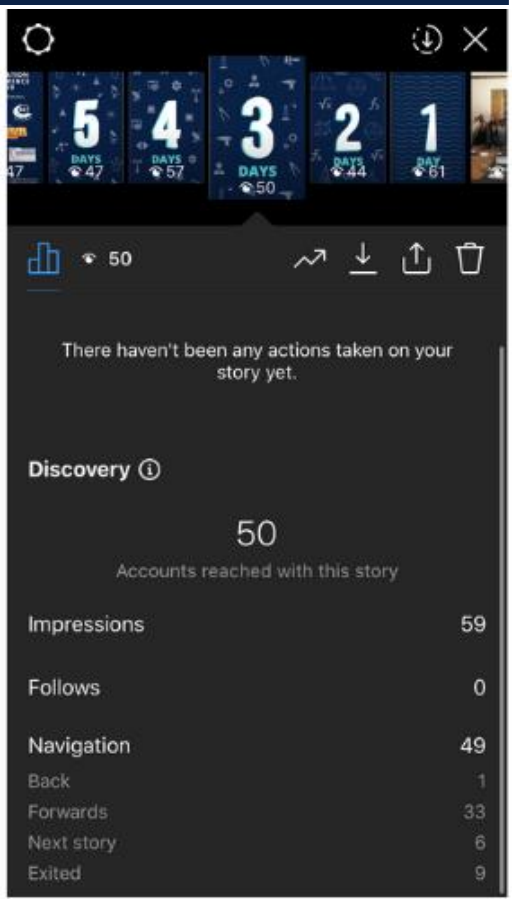


Figure 9.3-14 Story slides were added to on 1 December 2019, count down continues

Instagram

Story 8: 2 December 2019

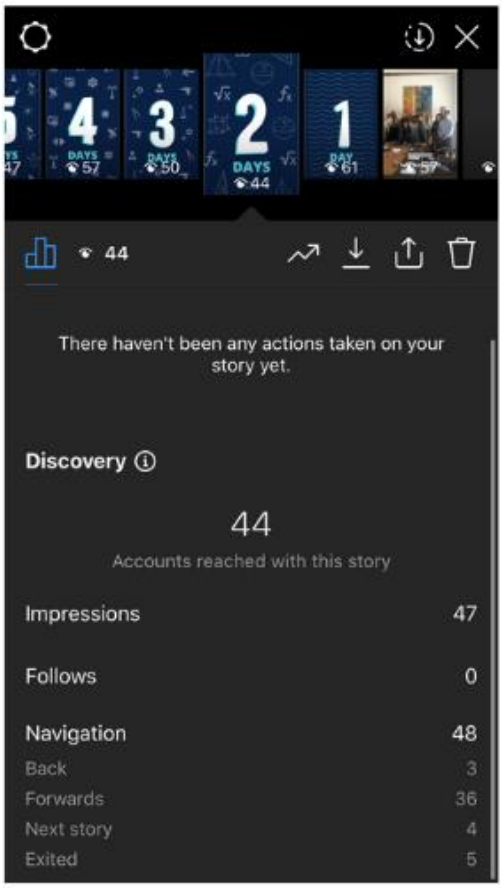


Figure 9.3-15 Story slides were added to on 2 December 2019, count down continues

Instagram

Story 9: 3 December 2019

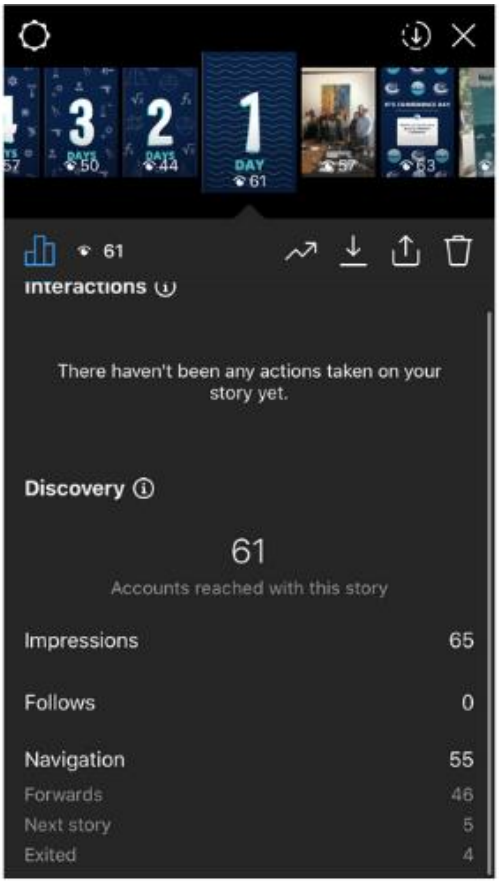


Figure 9.3-16 Story slides were added to on 3 December 2019, count down continues

Instagram

Story 10: 3 December 2019

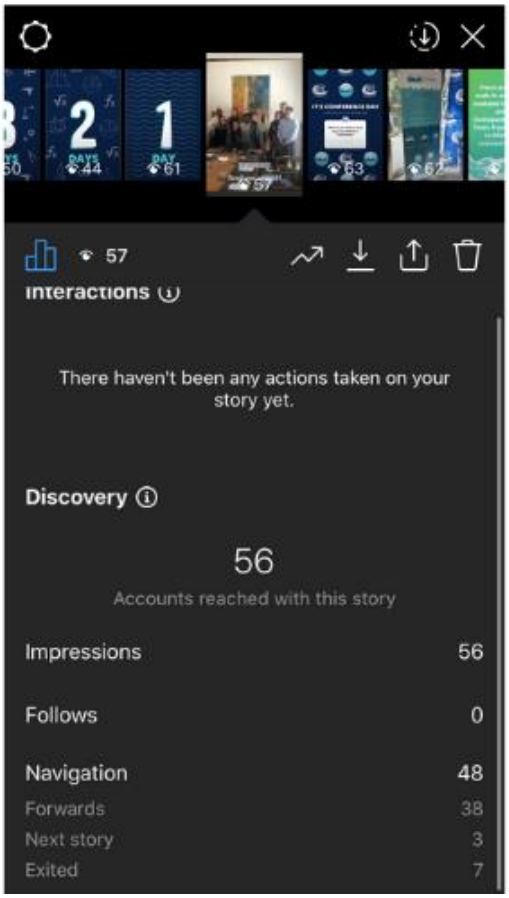


Figure 9.3-17 Story slides were added to on 3 December 2019, group photo at the start

Instagram

Story 11: 4 December 2019

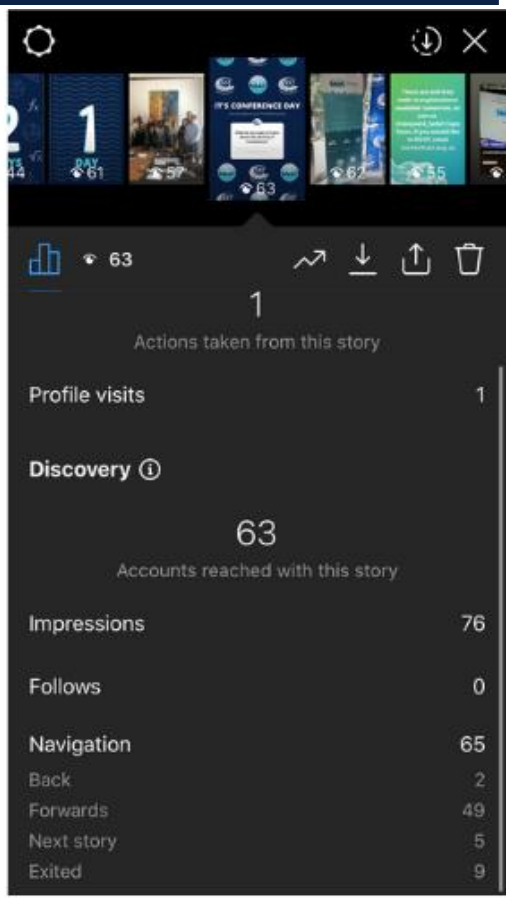


Figure 9.3-18 Story slides were added to on 4 December 2019, prompting questions from the online audience

Instagram

Story 12: 4 December 2019

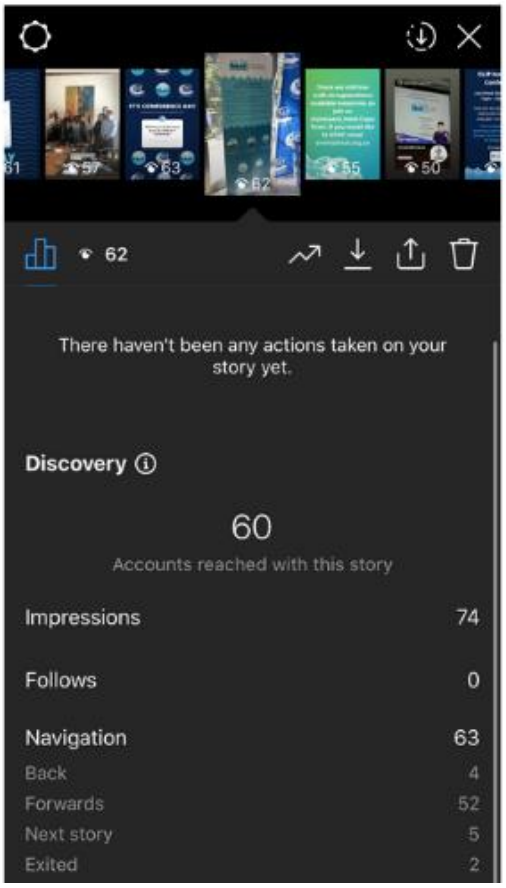


Figure 9.3-19 Story slides were added to on the 4 December 2019, showing live photos

Instagram

Story 13: 4 December 2019

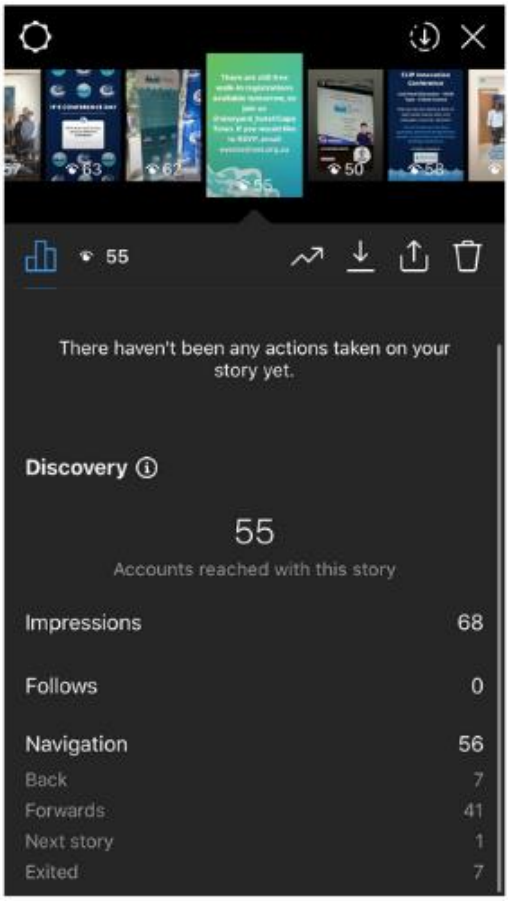


Figure 9.3-20 Story slides were added to on 4 December 2019, advertising the availability of walk-ins

Instagram

Story 14: 4 December 2019 (reshare)

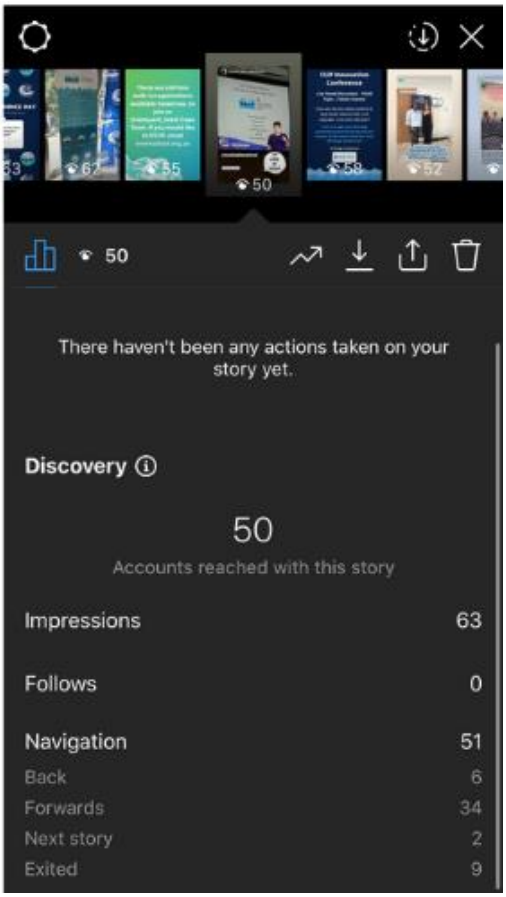
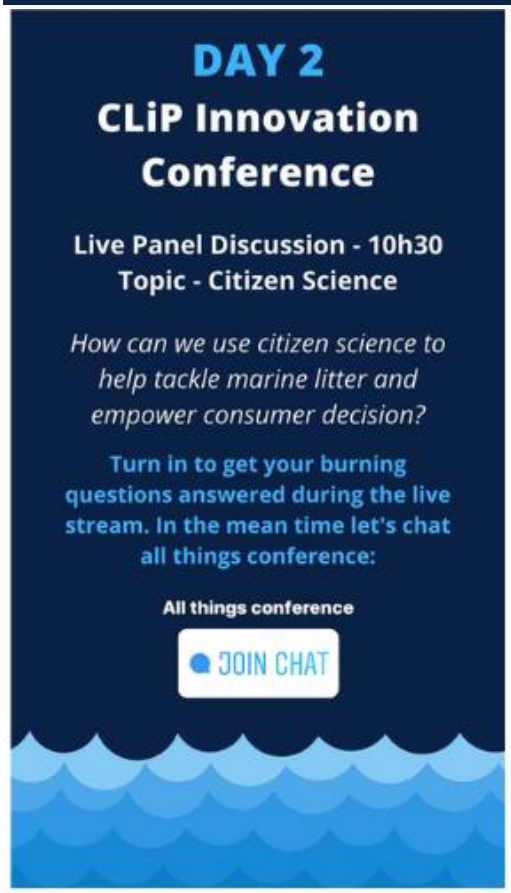


Figure 9.3-21 Story slides were added to on 4 December 2019, showing a slide from one of the first talks showing all the different people and organisations attending the conference

Instagram

Story 15: 5 December 2019



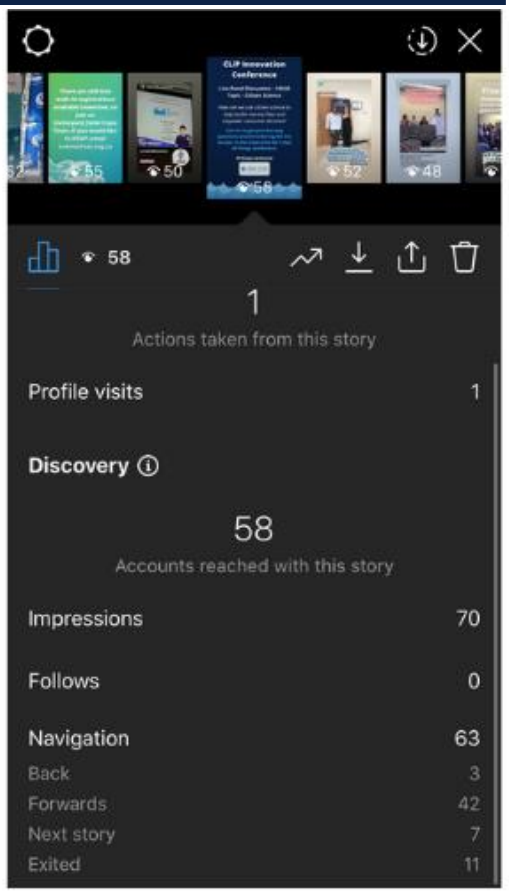


Figure 9.3-22 Advertising a live feed for the panel discussion

Instagram

Story 16: 5 December 2019 (reshare)

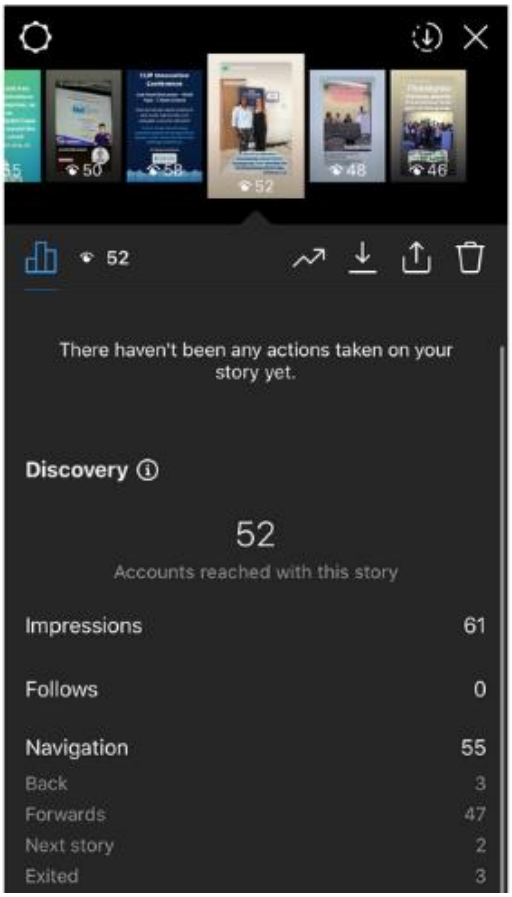


Figure 9.3-23 A re-share to our story from delegates

Instagram

Story 17: 5 December 2019 (reshare)

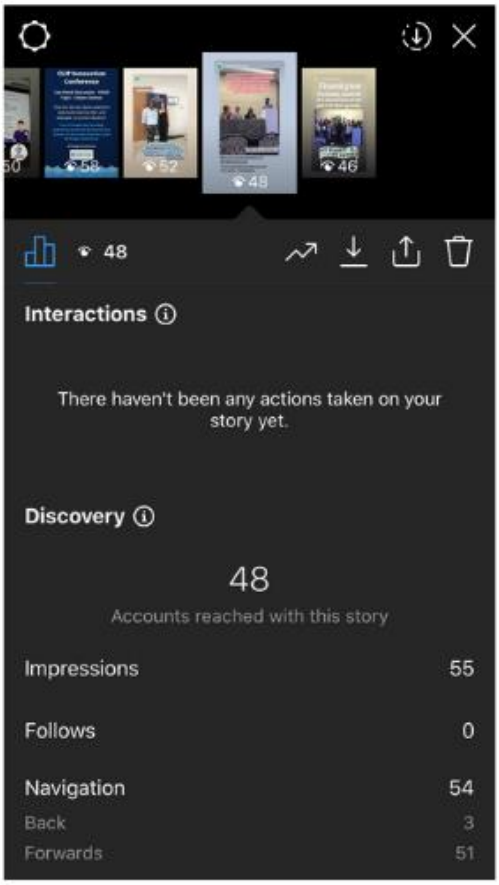


Figure 9.3-24 A re-share to our story from delegates

Instagram

Story 17: 5 December 2019 (reshare)

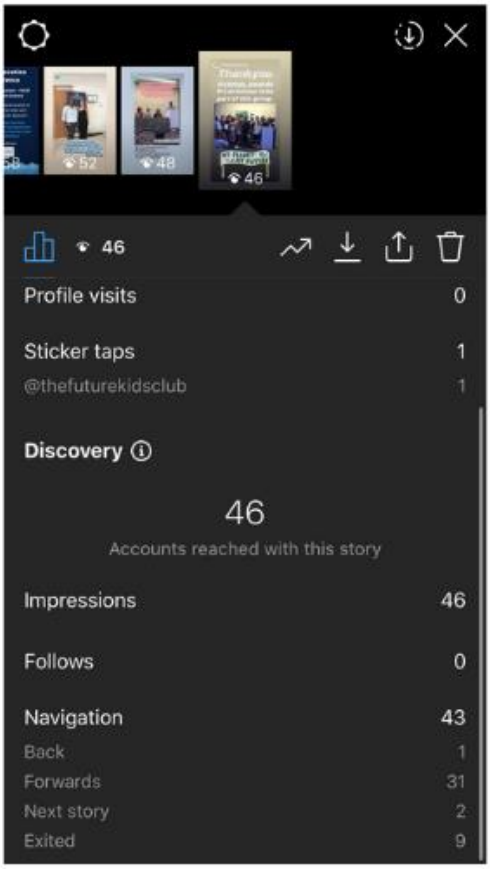


Figure 9.3-25 A re-share to our story from delegates

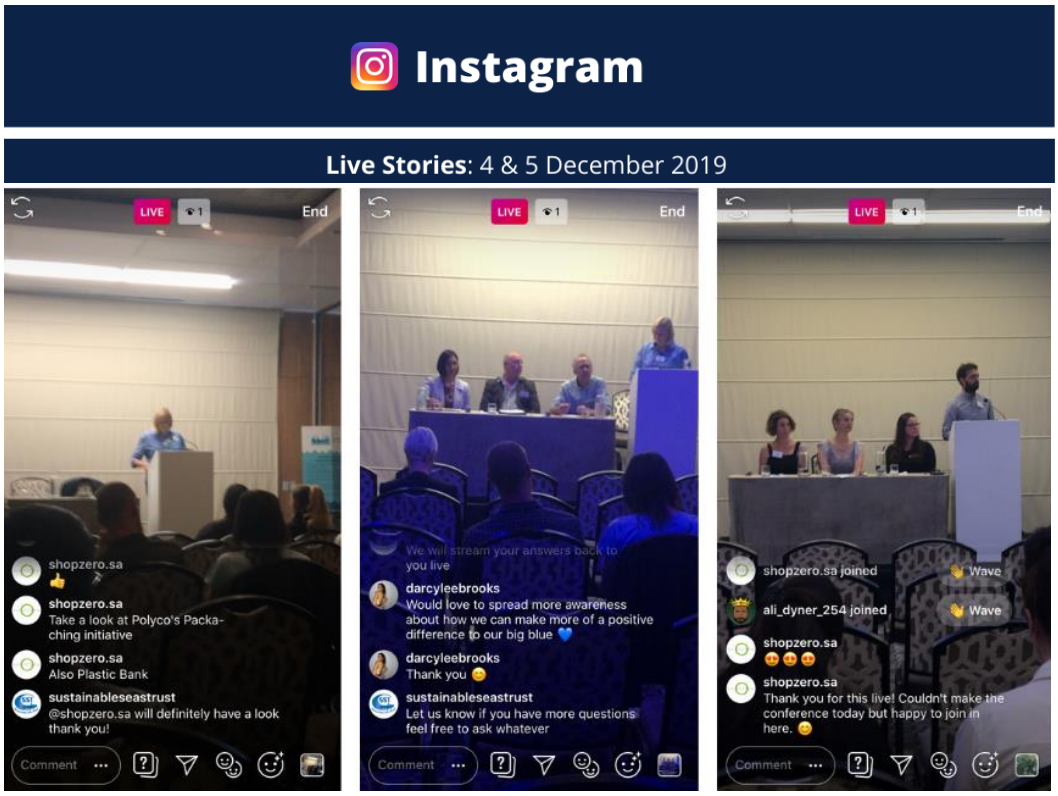


Figure 9.3-26 Live stories we hosted on Instagram received a lot of interactions, comments and even questions during our panel discussion

9.4 Twitter

The following images show all the tweets posted before, during and after the conference. On some of the images the engagements and interactions with the tweets have been shown.

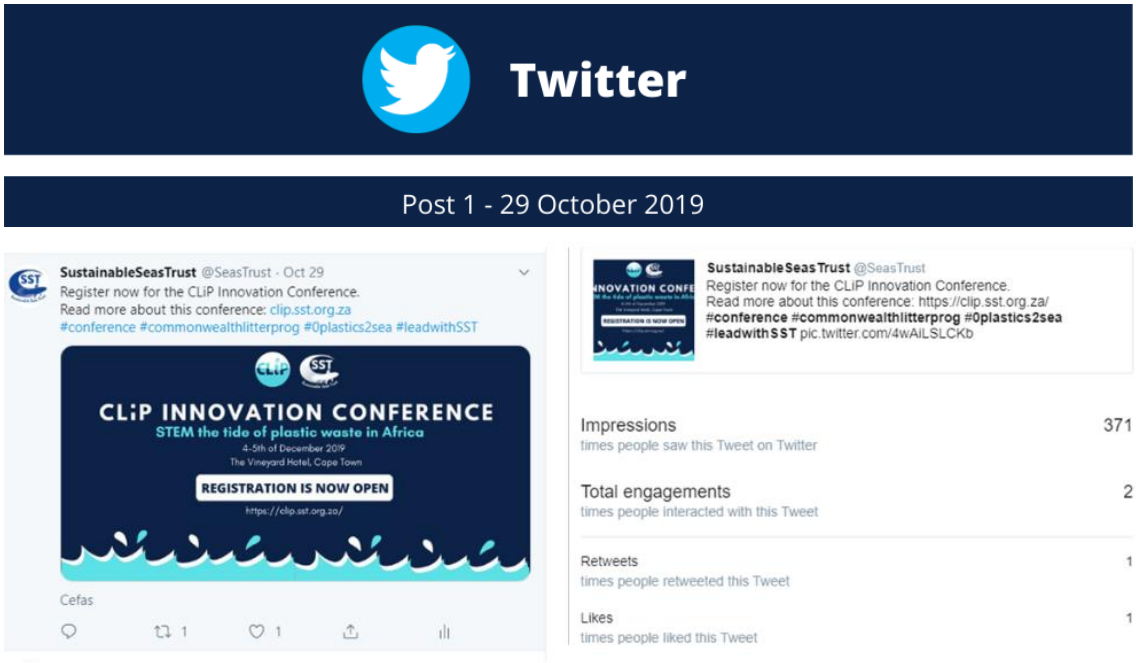


Figure 9.4-1 Twitter post advertising registration for delegates

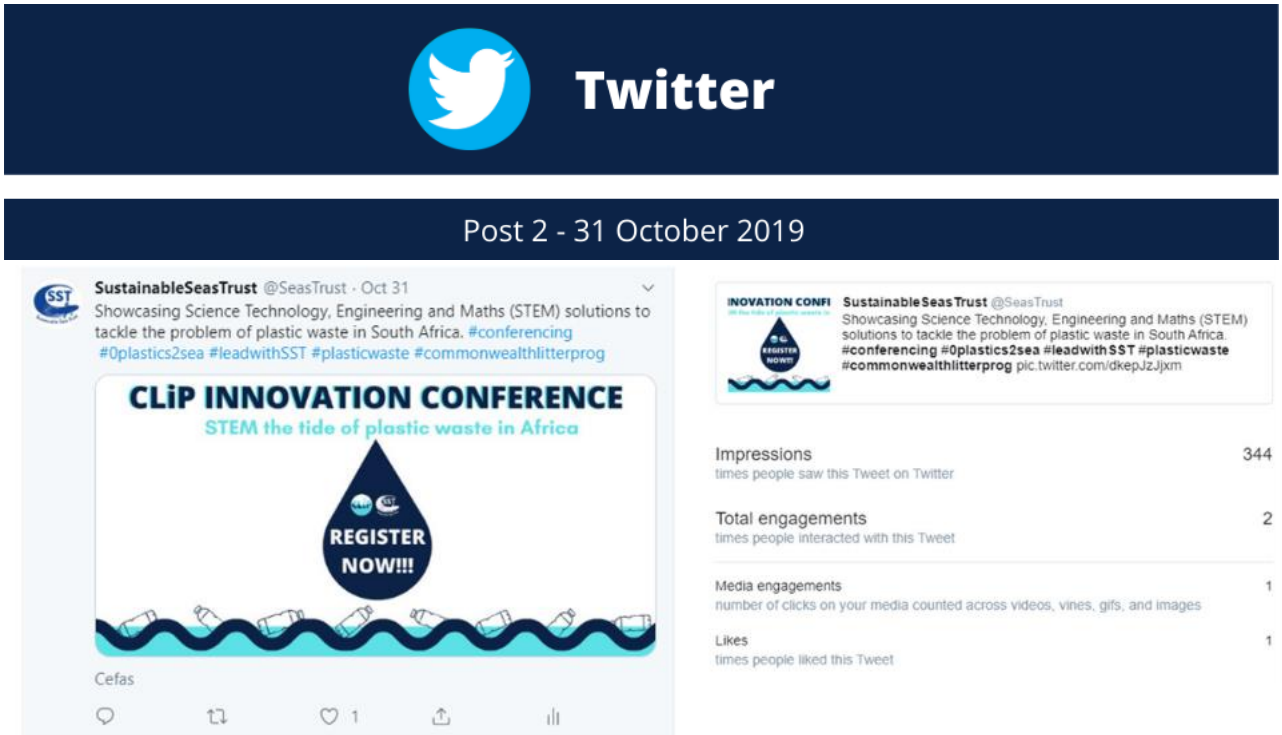


Figure 9.4-2 Twitter prompting delegates to register

Figure 9.4-3 Twitter post reminding delegates to register

Figure 9.4-4 Twitter re-post by SANCOR

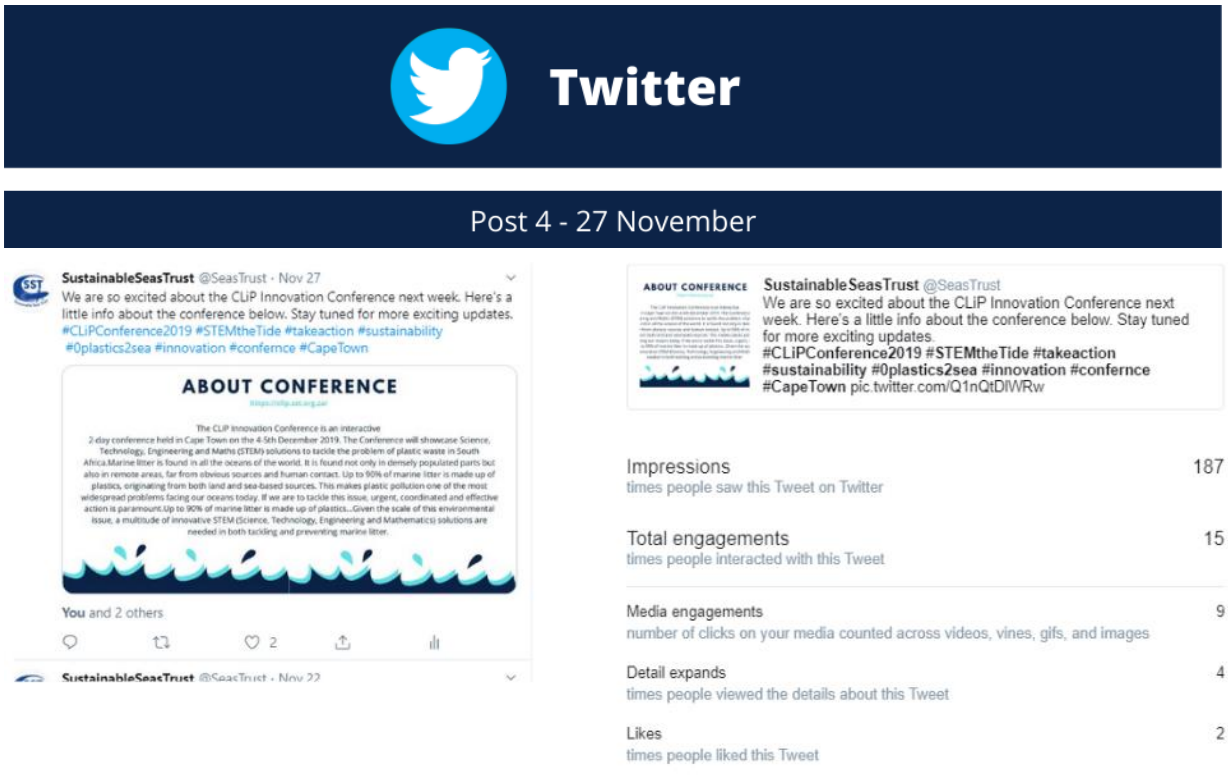


Figure 9.4-5 Twitter post giving more details about the conference

Figure 9.4-6 Twitter post giving more details about the panellists

Twitter

Post 6 - 2 December 2019

Figure 9.4-7 Twitter post about the STOMP! awards

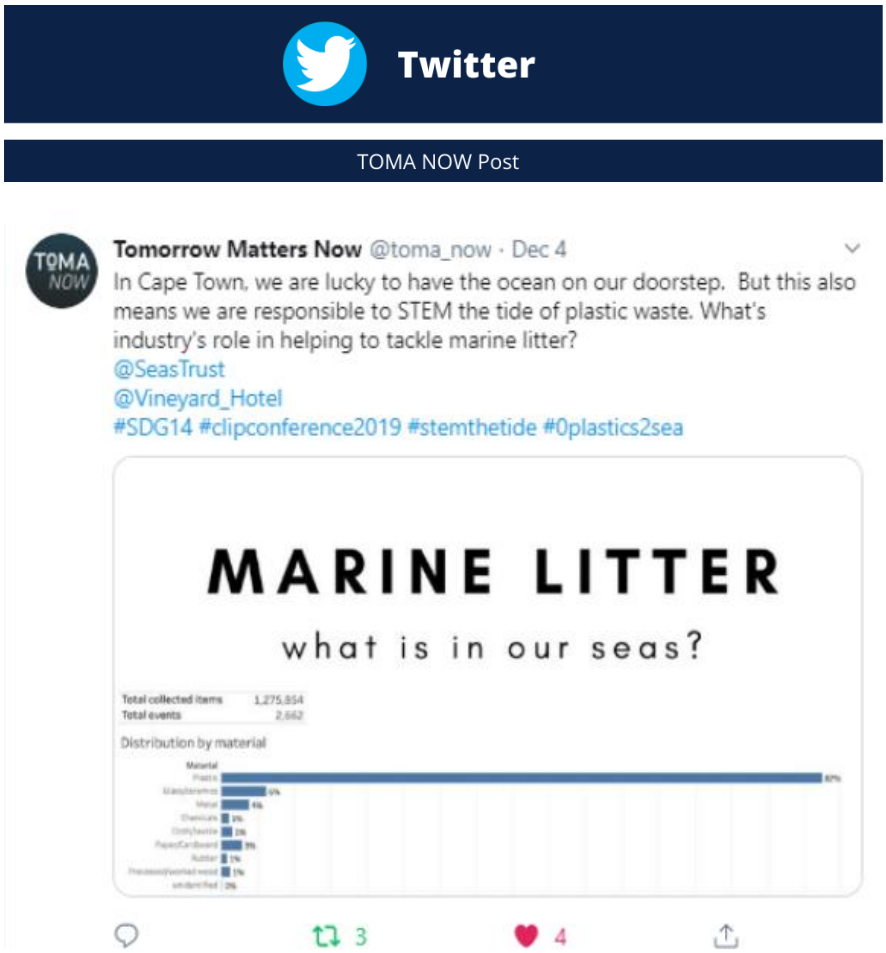


Figure 9.4-8 Twitter post by TOMA NOW regarding the conference and marine litter

Figure 9.4-9 Twitter post on conference day highlighting live feeds on Instagram

Figure 9.4-10 Twitter post during the first panel discussion

Figure 9.4-11 Twitter post advertising more walk-ins

Twitter

Post 10 - 5 December 2019

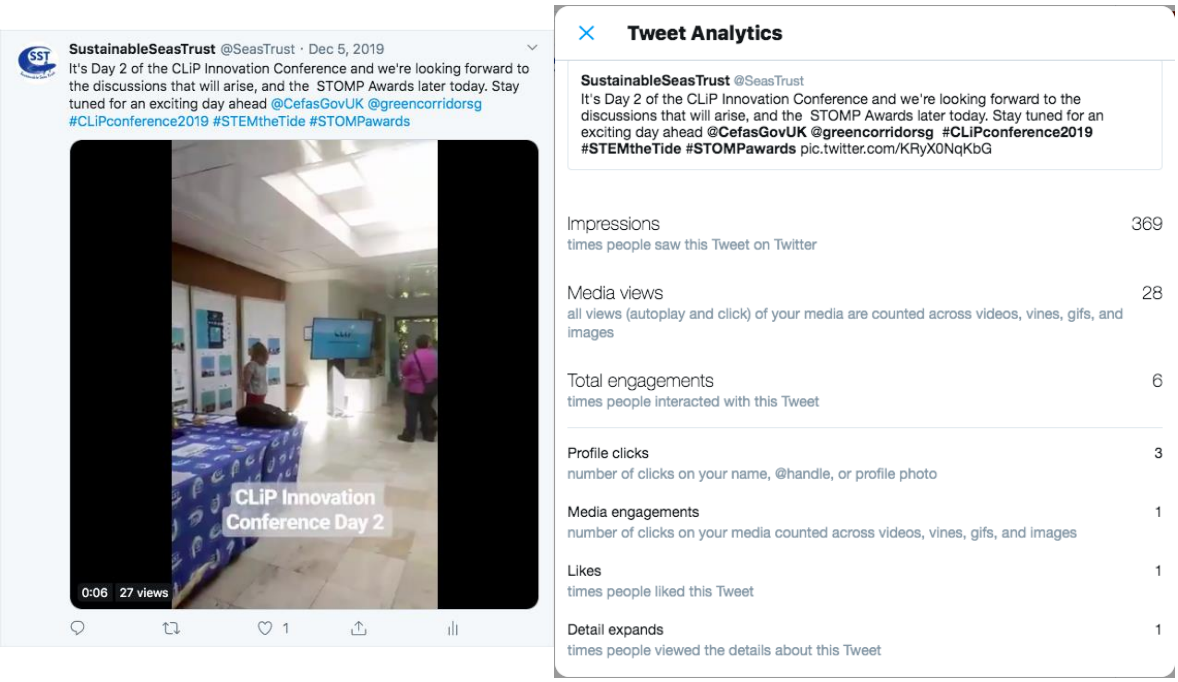


Figure 9.4-12 Twitter post on conference day 2

Twitter

Post 11 - 5 December 2019

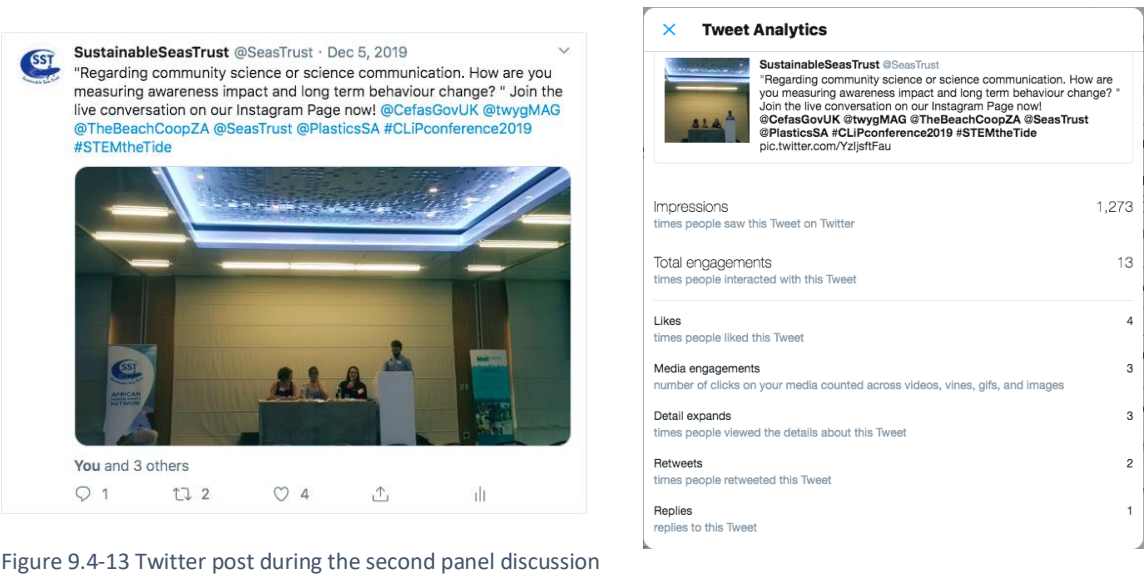


Figure 9.4-13 Twitter post during the second panel discussion

Figure 9.4-14 Twitter post by CEFAS during the second panel discussion

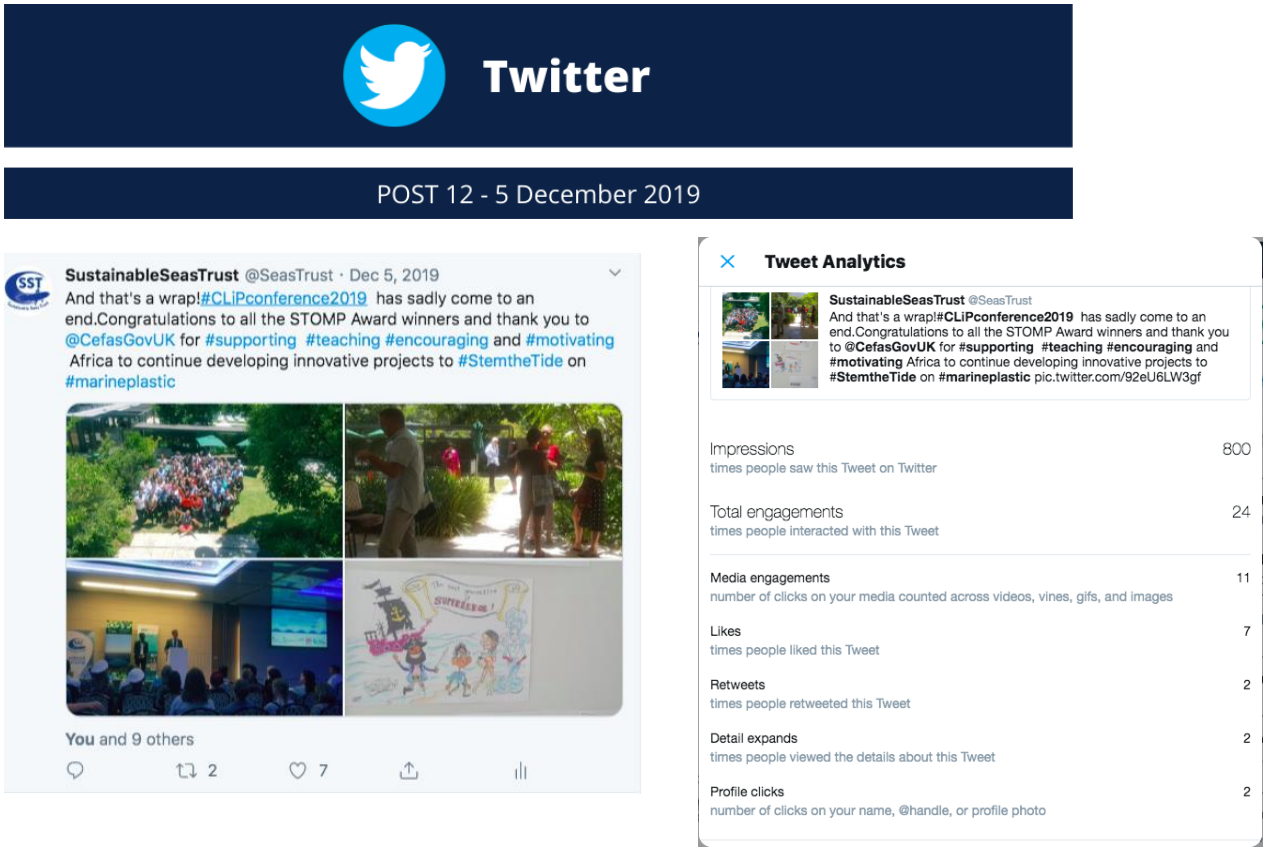


Figure 9.4-15 Twitter post with highlights from day 2 and the STOMP! awards prizegiving

9.5 Facebook

The below images depict the posts that were posted to Facebook and the engagements and reach that each of the posts achieved.

Facebook

Post 1 - 29 October 2019 , 02:56 PM

Figure 9.5-1 The first Facebook post prompting registration

Facebook

Post 2 - 1 November 2019 , 2:18 PM

Figure 9.5-2 Facebook post prompting delegates to register

Facebook

Post 3 - 6 November 2019 , 09:35 AM

Sustainable Seas Trust
Published by Courtenay Webster [?] · November 6, 2019 ·

Entry for the STOMP Awards closes this Friday 8th November! Last chance to enter this week!

As part of CLiP, this competition seeks innovative STEM solutions and ideas on tackling plastic pollution, with ideas contributing to the CLiP Innovation Conference being hosted in Cape Town in December.

The overall winner will go to the London CLiP conference next March. There are also various other prizes, with finalists supported to attend the CLiP Innovation: STEM the tide of plast... See More

STOMPAWARDS.CO.ZA
CLiP Stomp Awards - Home
The STOMP Awards recognize and reward individuals, civil society...

444 People Reached
29 Engagements
Boost Unavailable

8
3 Shares

Figure 9.5-3 The Facebook post highlighting the STOMP! awards

Facebook

Post 4 - 9 November 2019 , 11:19 AM

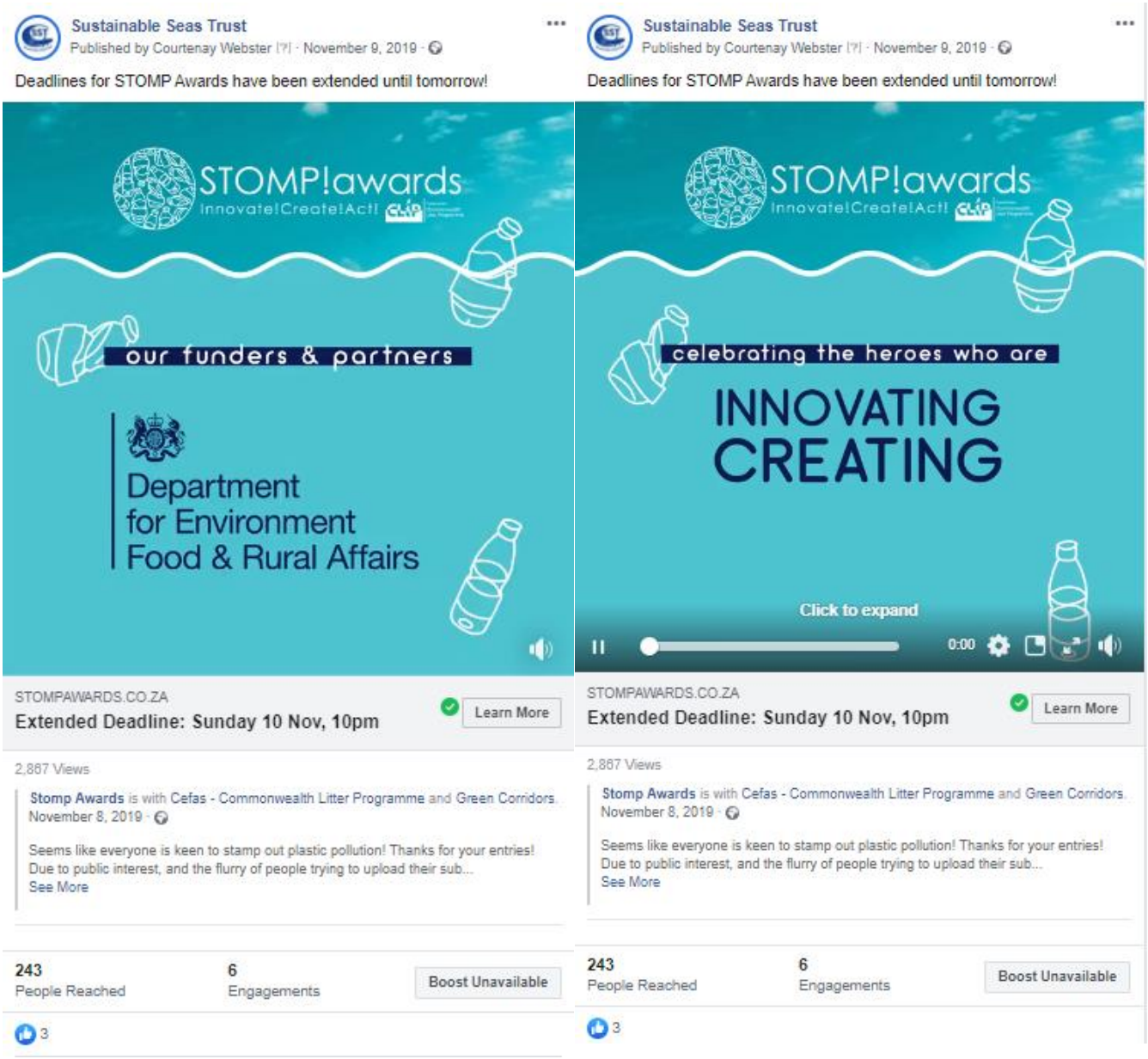


Figure 9.5-4 The Facebook post for award submission extension

Facebook

Post 5 28 November 2019, 10:51 AM

Figure 9.5-5 Facebook post introducing the speakers of the CLiP conference

Facebook

Post 6 - 5 December 2019, 3:15 PM

Figure 9.5-6 Facebook post about Day 1 of the conference

Facebook

Post 7 5 December 2019, 10:51 AM

Sustainable Seas Trust is with Clare Swithenbank-Bowman and 2 others.

Published by Courtenay Webster [?] · December 5, 2019 ·

Today was the last day of the CLiP Innovation Conference: Stem the Tide of Plastic Waste!

Given the scale of this environmental issue, a multitude of innovative STEM (Science, Technology, Engineering and Mathematics) ideas and solutions were discussed and offered in both tackling and preventing marine litter.

Thank you to the Commonwealth Litter Programme (CLiP) for this partnership and collaboration. We are looking forward to working with you in future!

1,129 People Reached | 128 Engagements | Boost Post

15 | 7 Shares

Figure 9.5-7 Facebook post about Day 2 of the conference.

Facebook

Post 8 12 December 2019, 15:30 PM

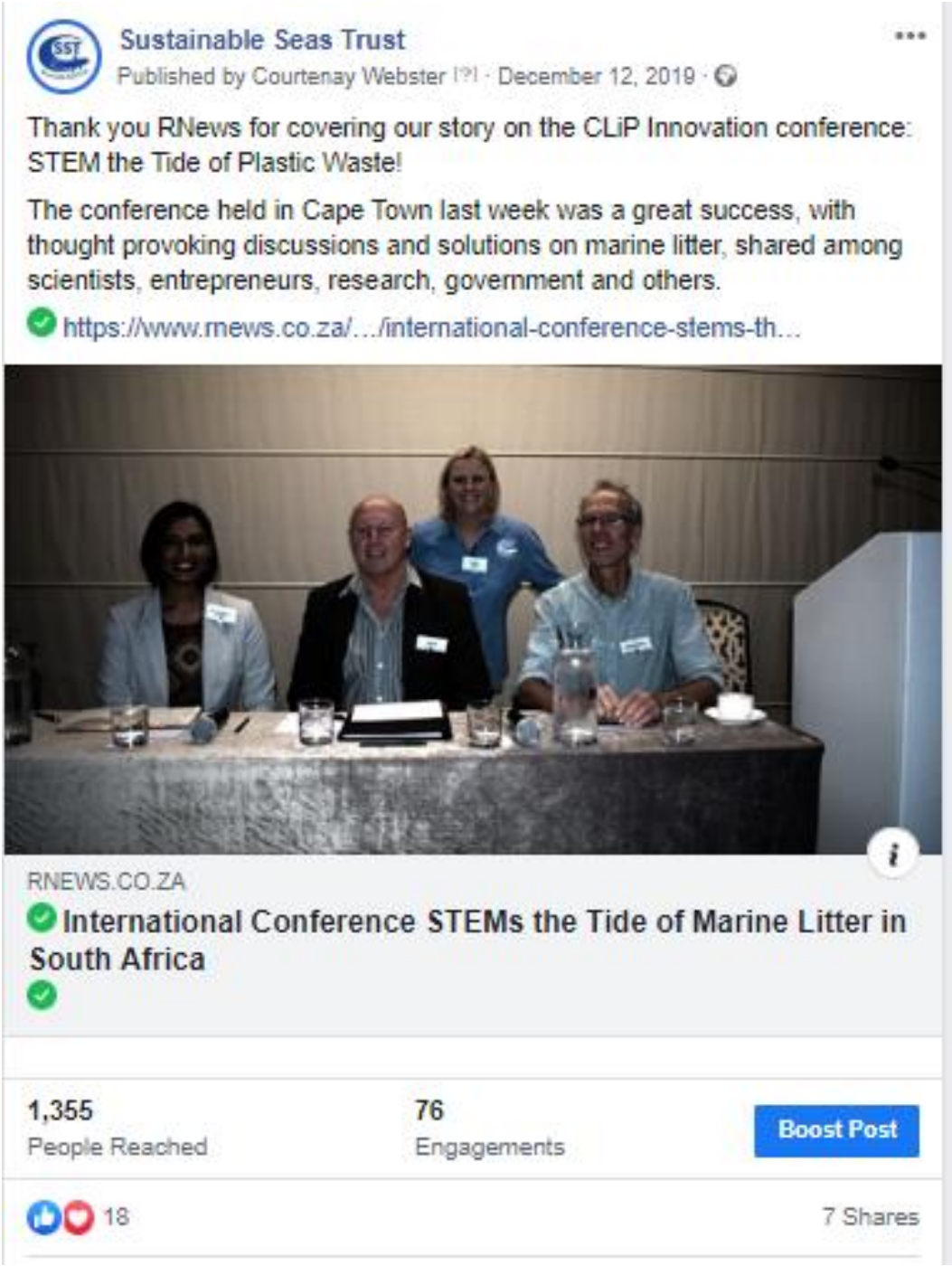


Figure 9.5-8 Facebook post about CLiP conference news covered.

Facebook

Post 9 20 December 2019, 15:30 PM

Figure 9.5-9 Facebook post sharing the CLiP conference video.

9.6 LinkedIn

The below images show all the LinkedIn posts and the engagements achieved through the posts.

Figure 9.6-1 LinkedIn post advertising registration.

LinkedIn

Post 2: 30 October 2019

Sustainable Seas Trust • 1st
Non Profit Organisation at Sustainable Seas Trust
3mo •

Showcasing Science Technology, Engineering and Maths (STEM) solutions to tackle the problem of plastic waste in South Africa.

Marine litter is found in all the oceans of the world. It is found not only in densely populated parts but also in remote areas, far from obvious sources and human contact. Up to 90% of marine litter is made up of plastics, originating from both land and sea-based sources. This makes plastic pollution one of the most widespread problems facing our oceans today. If we are to tackle this issue, urgent, coordinated and effective action is paramount.

Register now to secure your spot.
https://clip.sst.org.za/
#conference #capetown #water #plasticwaste #solutions #science #engineering #technology #innovation #environment #sustainability #environmental

Figure 9.6-2 LinkedIn post advertising registration.

LinkedIn

Post 3: 12 November 2019

Figure 9.6-3 LinkedIn post as a reminder to delegates.

LinkedIn

Post 4: 29 November 2019

Figure 9.6-4 LinkedIn post giving more detail on the conference and the panel members.

LinkedIn

Post 5 5 December 2019, 15:30 PM

Figure 9.6-5 LinkedIn post showcasing the STOMP awards!

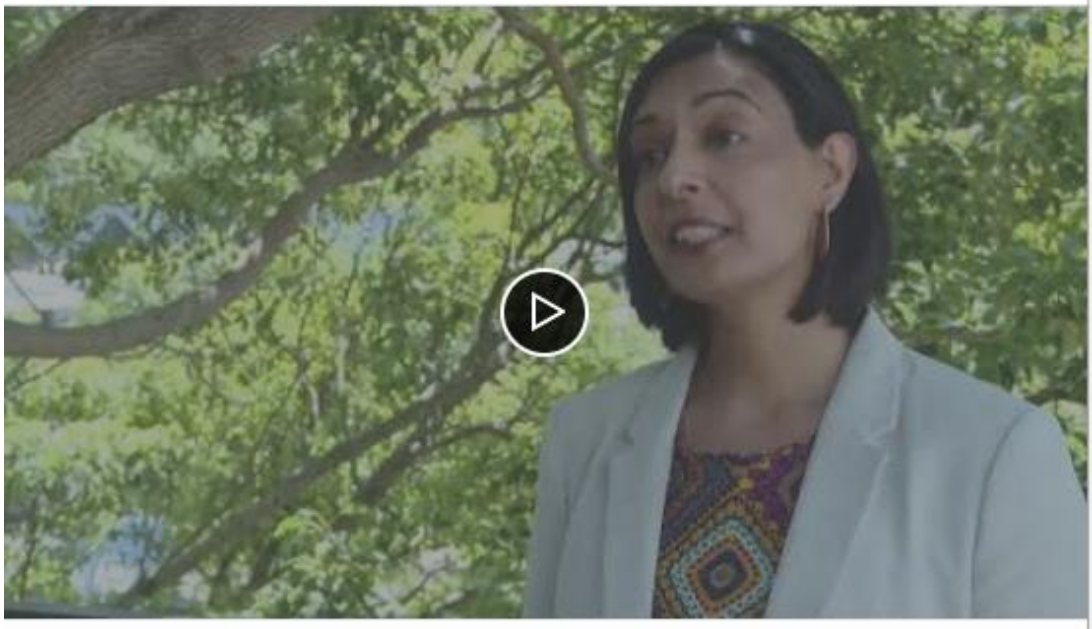
LinkedIn

Post 6 20 December 2019, 15:30 PM

Sustainable Seas Trust • 1st
Non Profit Organisation at Sustainable Seas Trust
2mo • Edited •

Marine litter is found in all the oceans of the world. It is found not only in densely populated parts but also in remote areas, far from obvious sources and human contact. Up to 90% of marine litter is made up of plastics, originating from both land and sea-based sources. This makes plastic pollution one of the most widespread problems facing our oceans today. If we are to tackle this issue, urgent, coordinated and effective action is paramount.

The CLiP Innovation Conference showcased how Science, Technology, Engineering, and Maths (STEM) solutions can tackle the problem of plastic waste in South Africa.
https://lnkd.in/gDceiew
#0plastics2sea #leadwithsst #stompawards #sustainableseastrust #sustainableseastrust #commonwealthlitterprog #science #stemthetide #clipconference2019 #tide #environment #fightplasticpollution #engineering #capetownsouthafrica #technology #innovation
Cefas



CLiP Innovation Conference 2019 - "STEM the Tide of Plastic Waste"
youtube.com

8

Figure 9.6-6 LinkedIn post showcasing the CLiP conference highlights video.

9.7 Other Media

9.7.1 Video of the conference

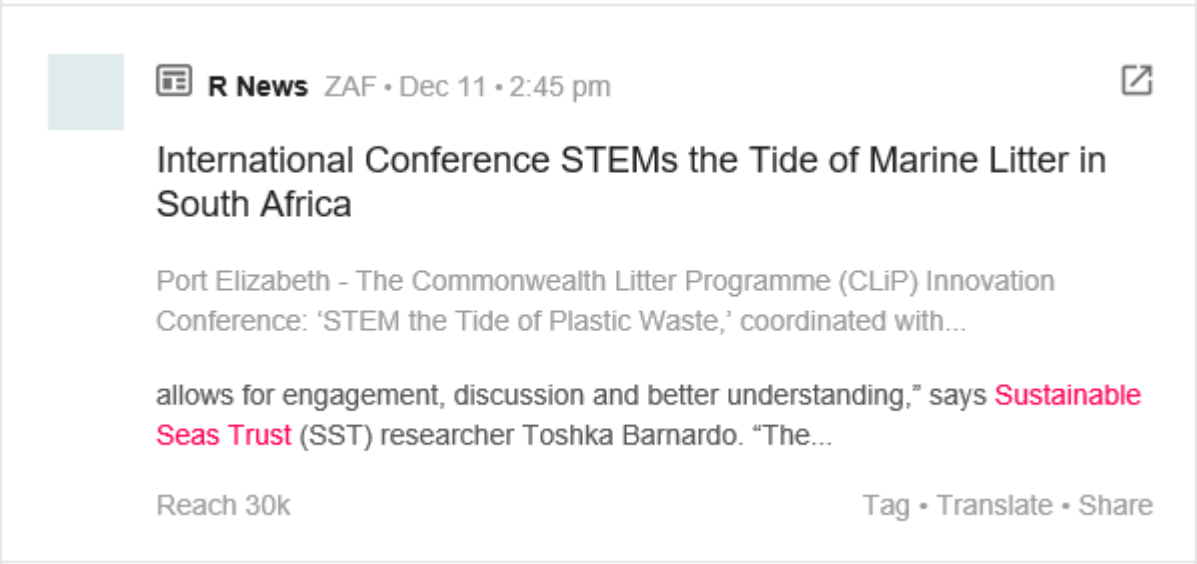
https://youtu.be/Cdky4sD4z38

9.7.2 Social Media - Twitter

https://twitter.com/CefasGovUK/status/1202183499412856834

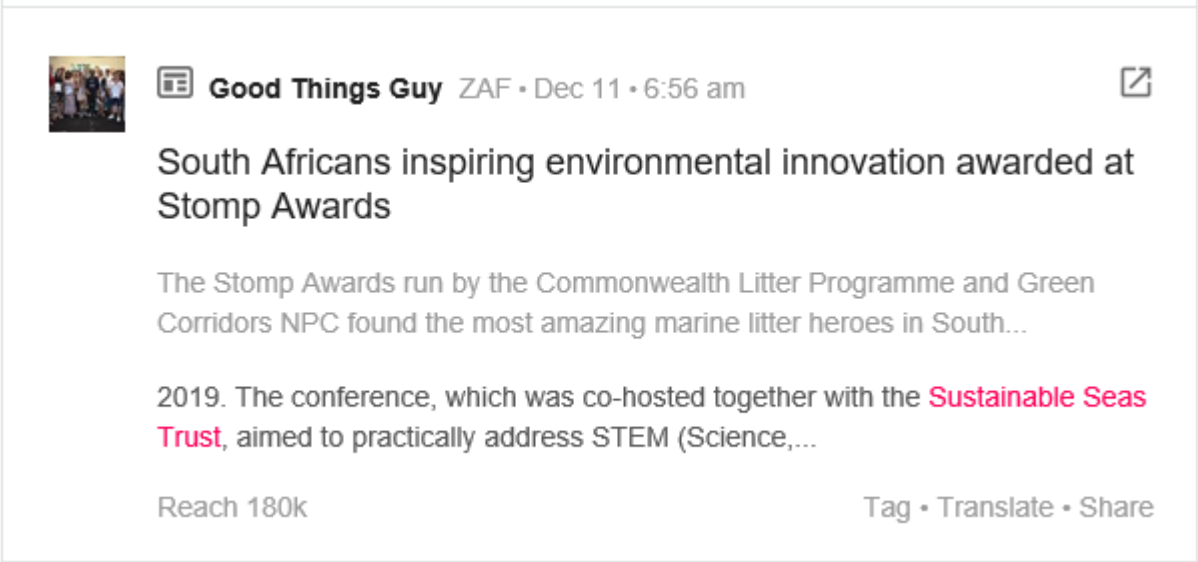
9.7.3 News article - R News

https://www.rnews.co.za/article/25940/international-conference-stems-the-tide-of-marine-litter-in-south-africa



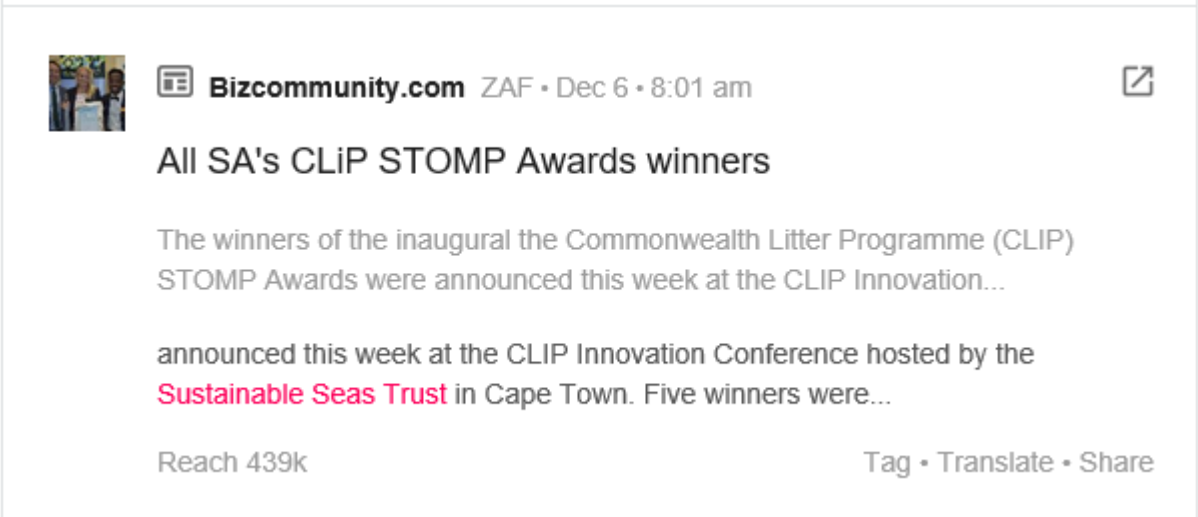
9.7.4 News article - Good Things Guy

https://www.goodthingsguy.com/environment/stomp-awards-winners-2019/



9.7.5 News article - Bizcommunity

https://www.bizcommunity.com/Article/196/703/198736.html



9.7.6 News article - Berea Mail

https://bereamail.co.za/181211/local-finalists-announced-in-eco-competition/

Berea Mail Lauren Walford • ZAF • Dec 4 • 6:00 pm

Local finalists announced in eco competition

Finalists have been announced in CLiP's STOMP Awards.

conservationists, and policy-makers, is co-hosted with the Sustainable Seas Trust, will be looking at STEM (Science, Technology,...

Reach 43k

Tag • Translate • Share

9.7.7 News article - artSMart

http://news.artsmart.co.za/2019/12/finalists-in-clips-stomp-awards-sa.html

artSMart ZAF • Dec 3 • 7:54 pm

FINALISTS IN CLIP'S STOMP AWARDS – SA

Finalists in the Commonwealth Litter Programme (CLIP) STOMP Awards have been announced. CLIP is led by the United Kingdom through the...

conservationists, and policy-makers, is co-hosted with the Sustainable Seas Trust, will be looking at STEM (Science, Technology,...

Reach 2k

Tag • Translate • Share

9.7.8 News article - Phoenix Sun

https://phoenixsun.co.za/80406/finalists-announced-stomp-awards/

Phoenix Sun (2 other sources) • ZAF • Dec 3 • 5:00 am

Finalists announced for STOMP Awards

Over 60 entries in five categories were submitted.

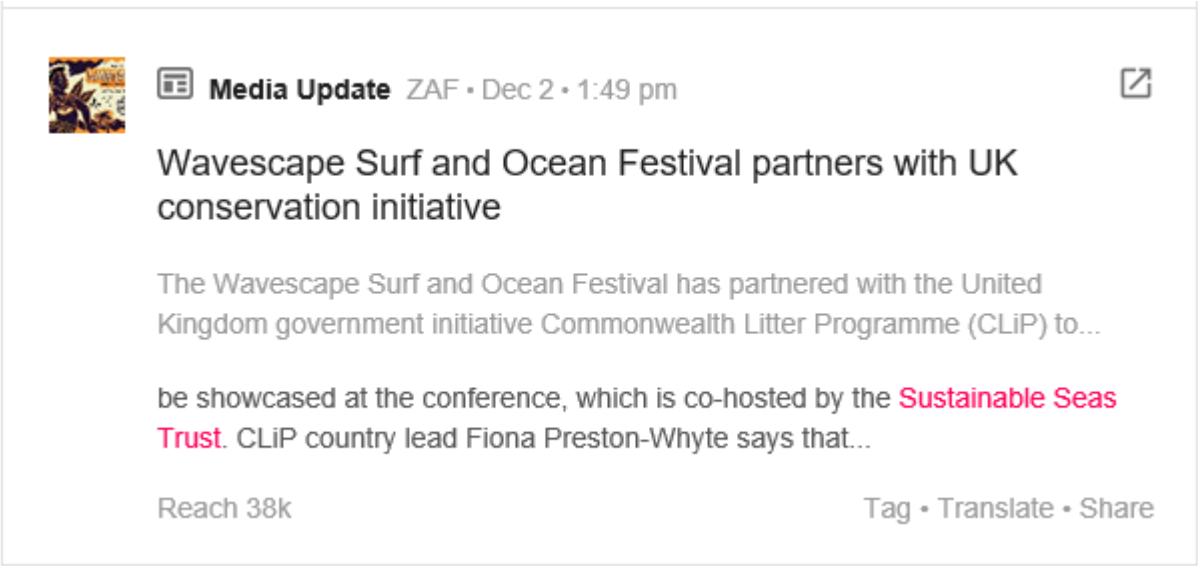
conservationists, and policy-makers, is co-hosted with the Sustainable Seas Trust, will be looking at STEM (Science, Technology,...

Reach 19k

Tag • Translate • Share

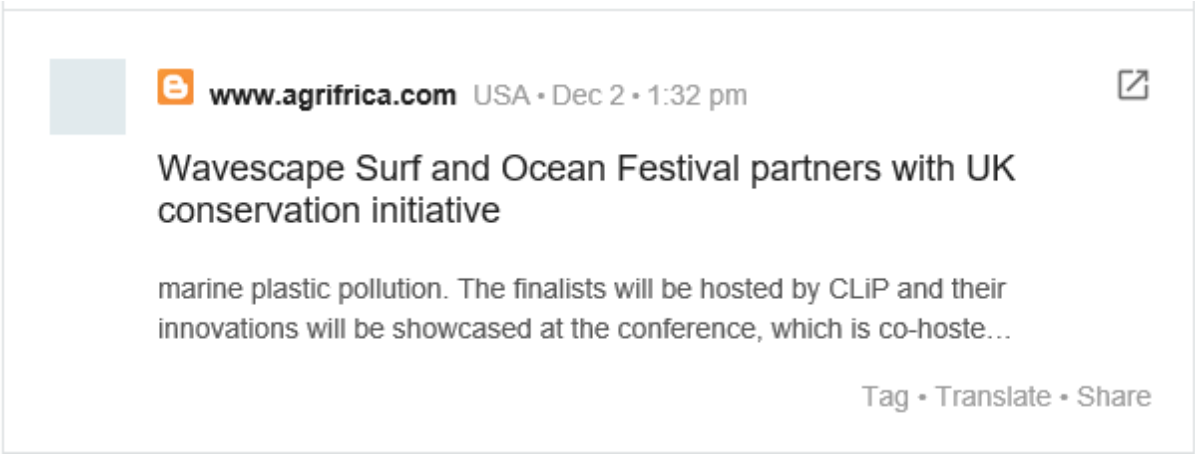
9.7.9 News article - Media Update

https://www.mediaupdate.co.za/publicity/147626/wavescape-surf-and-ocean-festival-partners-with-uk-conservation-initiative



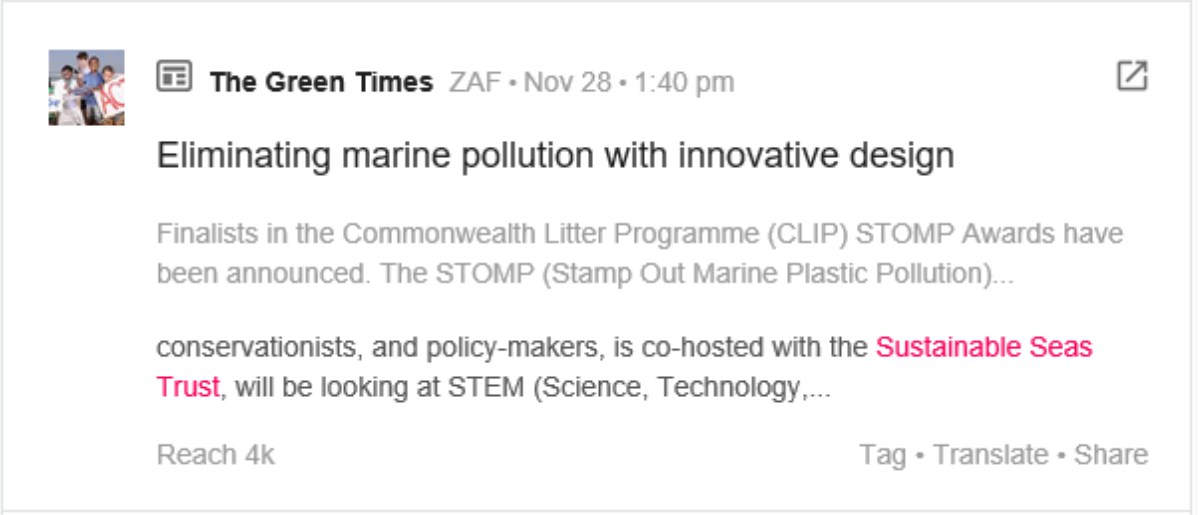
9.7.10 News article - Agrifrica

https://www.agrifrica.com/2019/12/02/wavescape-surf-and-ocean-festival-partners-with-uk-conservation-initiative/



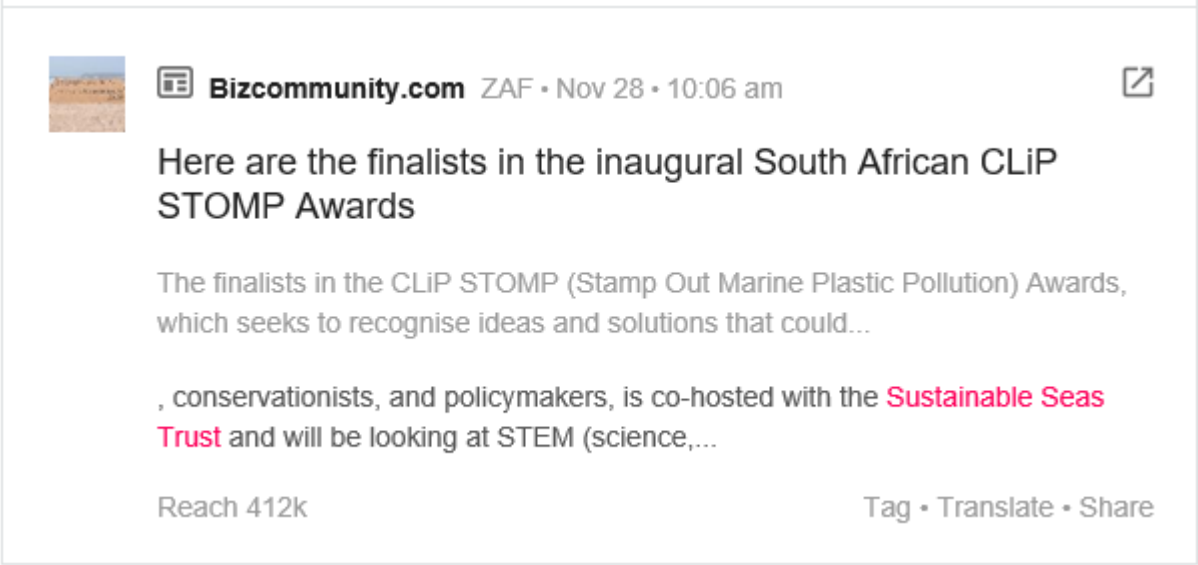
9.7.11 News article - The Green Times

http://thegreentimes.co.za/eliminating-marine-pollution-with-innovative-design/



9.7.12 News article - Bizcommunity

https://www.bizcommunity.com/Article/196/701/198425.html



9.7.13 News article - The Green Times

http://thegreentimes.co.za/eliminating-marine-pollution-with-innovative-design/

thegreentimes.co.za ZAF • Nov 28 • 3:40 pm

Eliminating marine pollution with innovative design

5. The Conference, which will be attended by scientists, environmentalists, conservationists, and policy-makers, is co-hosted with the Sus...

Tag • Translate • Share

9.7.14 News article - Bizcommunity

https://www.bizcommunity.com/Article/196/703/197936.html

Bizcommunity.com ZAF • Nov 15 • 8:21 am

Vote now in CLiP'S inaugural STOMP Awards

Public voting in the inaugural Commonwealth Litter Programme's STOMP (Stamp Out Marine Plastic Pollution) Awards closes this Friday, 15...

be showcased at this conference, which is co-hosted with the Sustainable Seas Trust. CLIP is led by the United Kingdom through the Centre

Reach 412k

Tag • Translate • Share

9.7.15 News article - Northglen News

https://northglennews.co.za/172041/stamp-out-marine-plastic-pollution/

Northglen News ZAF • Nov 10 • 7:00 am

Stamp out marine plastic pollution

The conference, which is co-hosted together with the Sustainable Seas Trust, aims to practically address STEM (Science, Technology,...

. The conference, which is co-hosted together with the Sustainable Seas Trust, aims to practically address STEM (Science, Technology,

Reach 62k

Tag • Translate • Share

9.7.16 News article - Rising Sun Port

https://risingsunoverport.co.za/79563/search-21st-century-innovation-will-help-reduce-eliminate-plastic-waste/

Rising Sun Overport (2 other sources) • ZAF • Nov 5 • 6:12 am

Search is on for 21st century innovation that will help reduce and eliminate plastic waste

The awards, which are open to all South African residents, are grouped into four categories: Technology or Technical Design, Product...

ideas or projects at CLIP's Innovation Conference co-hosted by the Sustainable Seas Trust, titled 'STEM the tide of plastic waste in Africa...

Reach 31k

Tag • Translate • Share

9.8 Artist Renditions of Concepts

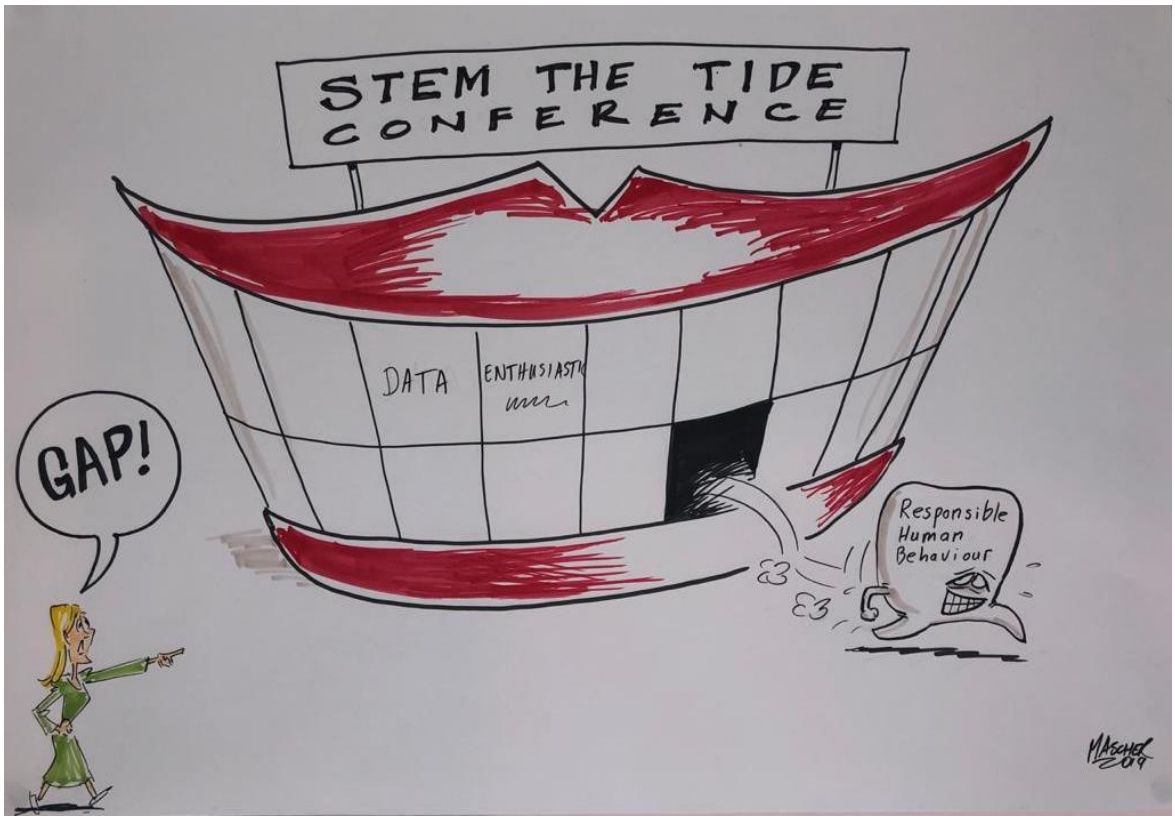


Figure 9.8-1 Identifying the gap in waste management issues.

Figure 9.8-2 The STOMP! awards contestants are the new superheroes.

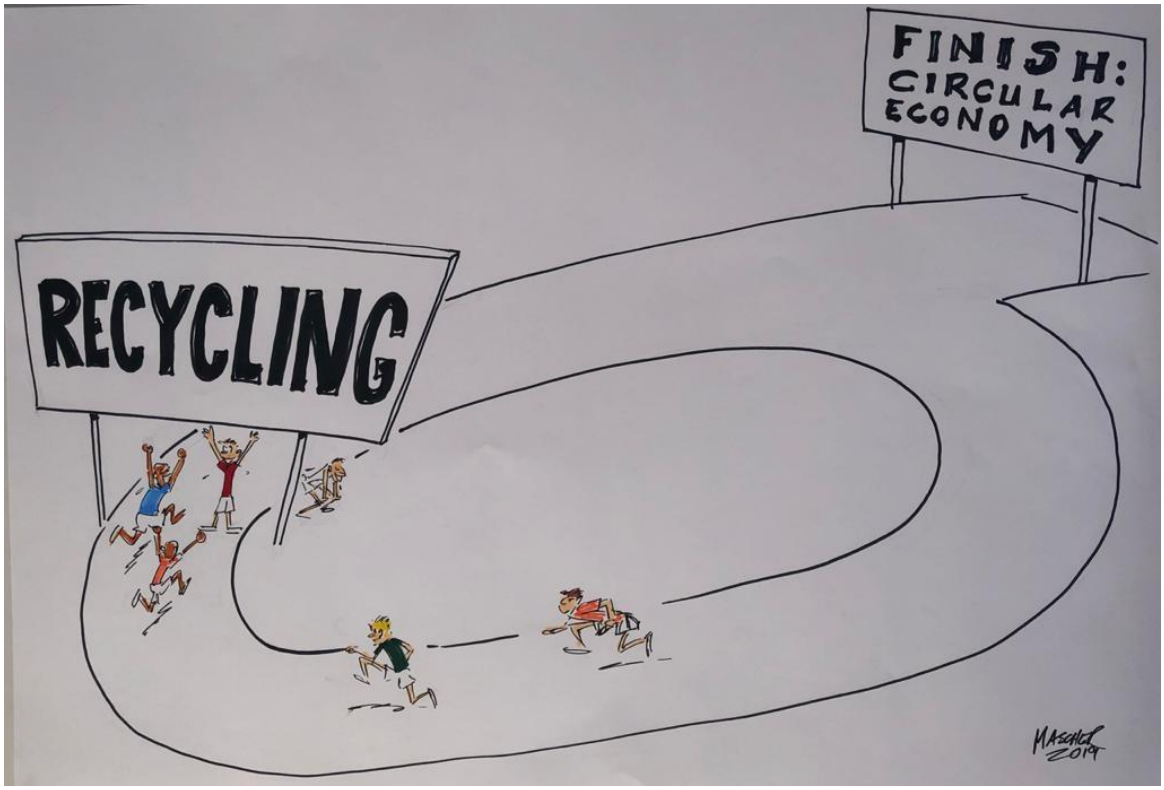


Figure 9.8-3 The finish line is not recycling for successful waste management.

Figure 9.8-4 Waste thrown away does not disappear, it is coming back to get us.

Figure 9.8-5 Microplastics in our food sources are caused by the waste we "sweep under the rug".

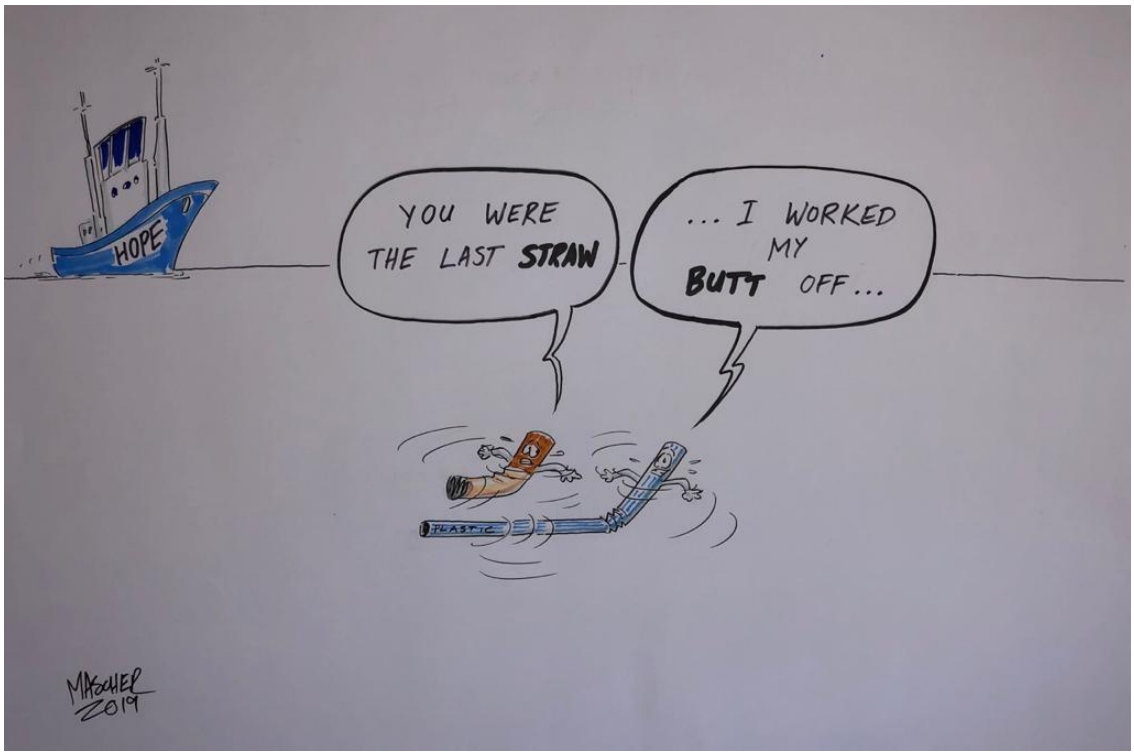


Figure 9.8-6 With growing awareness about the most common polluters found in the ocean, there is hope for the future.

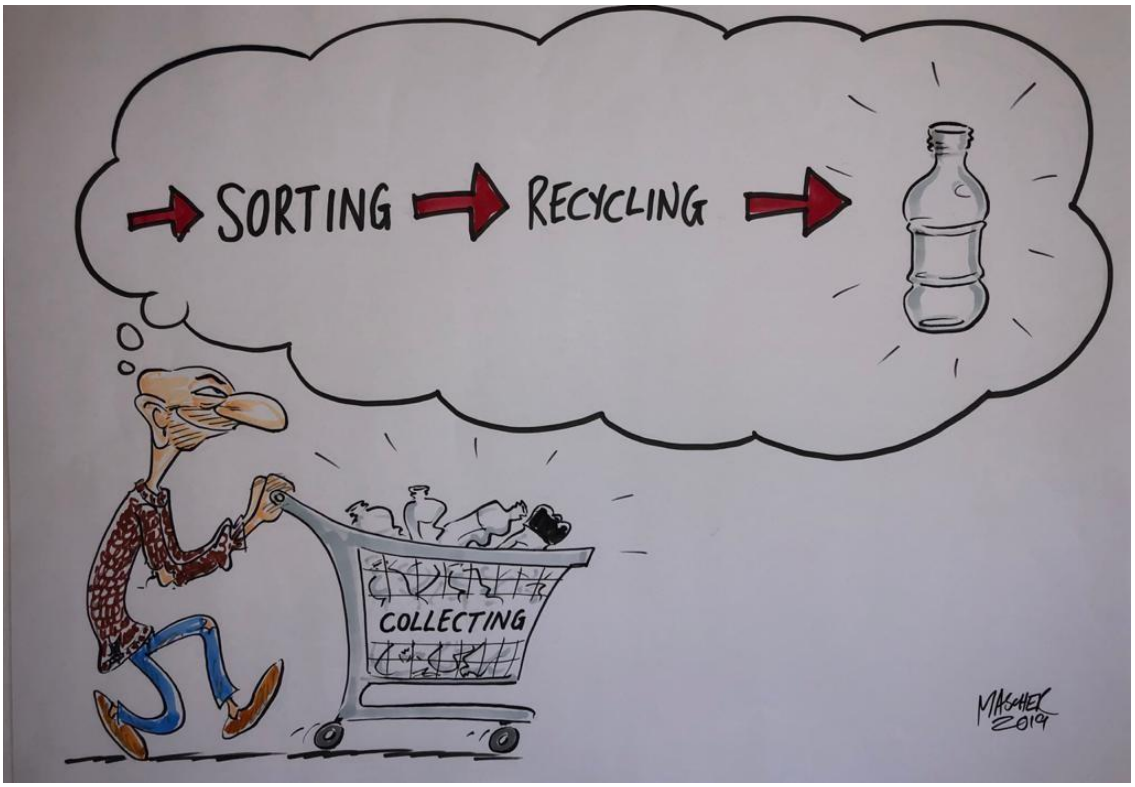
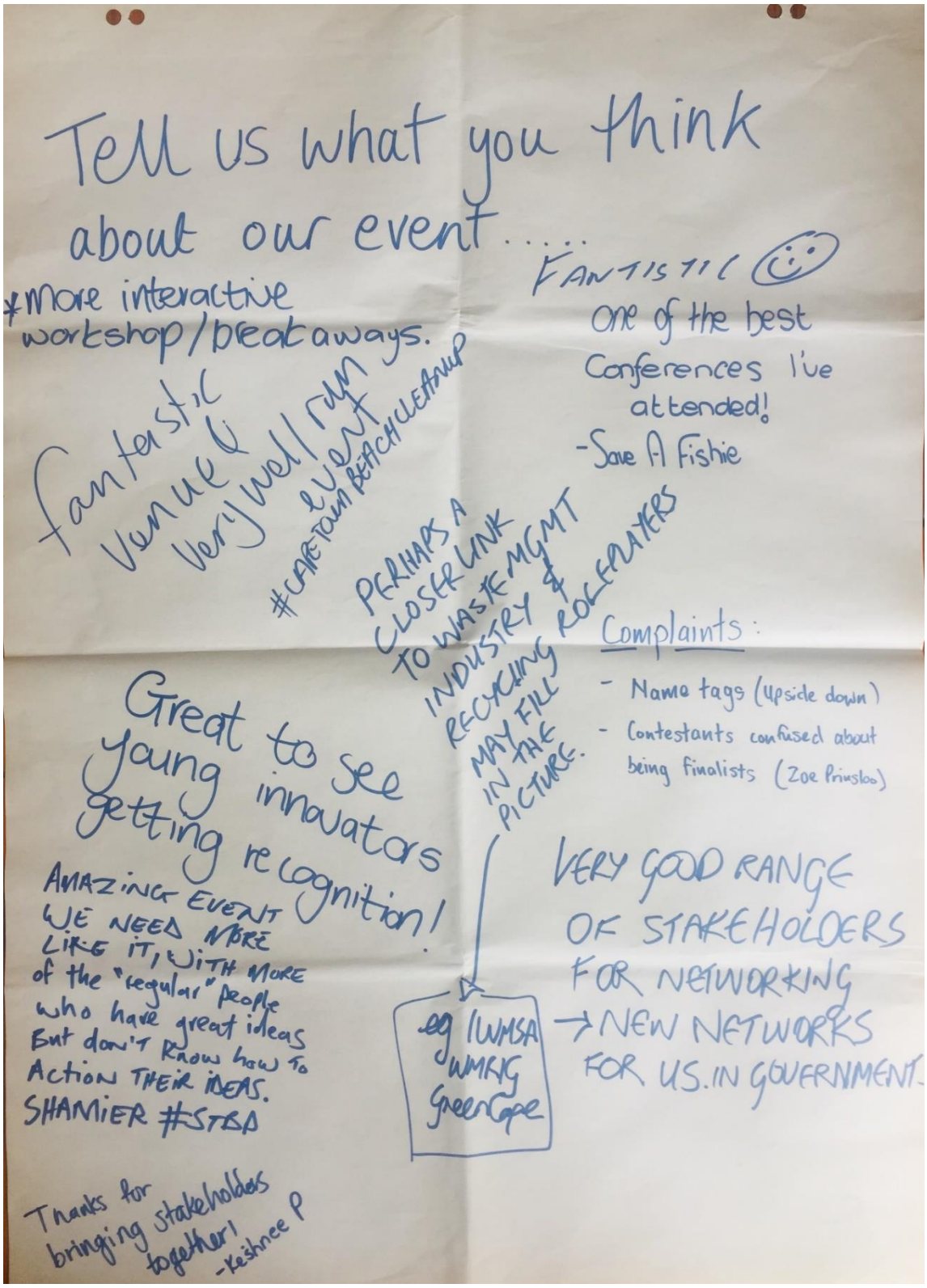


Figure 9.8-7 Clarity regarding the stages of waste and recycling is essential.

Figure 9.8-8 The winning team!

Figure 9.8-9 Sometimes solutions to problems can be more impactful on the environment.

9.9 Delegate Feedback



lots of great dialogue./discussion.
↳ perhaps tracking key take home messages
and keeping discussion on topic.
↳ Wish I could absorb more of it
and convert into actions and opportunities.
↳ Great participants 10/10

Thanks for the most inspirational 2 days!
Am fired up to keep going.
Thanks for everything. ☺

Inspiring, hopeful + positive. So privileged to be surrounded by like-minded passionate people. Thank you for all the effort that went into making this happen.

Fantastic event. Very inspired. Well organised
Need more discussions and put them all into action +

I realy appreciated the platform provided a group of committed professionals with a passion for their work. Bravo!!

Really great spread of stakeholders, with engaged discussion between private sector, academia + civil society. Exullent panel speakers.

AWESOME CONNECTIONS!

Thanks for bringing us altogether !!

Jacked. Inspired. fired-up. Amped. Pumped... Hopeful!

Great event, #nformative + engaging discussions.

Thank you to all the amazing people who helped to make it happen. Warrior Youth

9.10 Table of Delegates

Title	Name	Organisation
Mr	Abiola Babatunde	University of Cape Town
Dr	Adil Bakir	Cefas
Ms	Alexie Kalenga	Sustainable Seas Trust
Ms	Alexis Wellman	The Big Scoop SA
Ms	Alison Davidson	City of Cape Town
Mrs	Andrea Shaughnessy	The Green Cabin
Ms	Ange Standford	Yacht Boaz Alliance
Ms	Anje Claassen	Sustainable Seas Trust
Dr	Anthony Ribbink	Sustainable Seas Trust
Ms	Aurelia Van Elden	Full Circle
Miss	Ayanda Mnyandu	Green Corridors
Ms	Belinda Langehoven	Western Cape: Dept of Environmental Affairs & Development Planning
Consul General	Ben Boddy	British Consulate General, British Commission
Ms	Bryony Meakins	Cefas
Ms	Bulelwa mShumpela	
Ms	Bulelwa Ntswabi	Western Cape: Dept of Environmental Affairs & Development Planning
Ms	Clare Swithenbank-Bowman	Mermaid Tear Catcher
Miss	Courtenay Webster	Sustainable Seas Trust
Mr	Douw Steyn	Plastics SA
Mr	Dumisani Buthelezi	Personal Capacity
Mr	Duncan Pritchard	Green Corridors

Mr	Eddie Hanekom	Western Cape: Dept of Environmental Affairs & Development Planning
Ms	Emma Algotsson	Kompost-It
Ms	Emma Stander	The Big Scoop SA
Ms	Evodia Boonzaier	Western Cape: Dept of Environmental Affairs & Development Planning
Ms	Fiona Preston-Whyte	Cefas
Mr	George	Pristine Earth Collection
Mr	Greg Player	Clean C
Ms	Hannah Nietzman	Captain Fanflastic
Mr	Hanno Langenhoven	Wild Trust
Dr	Harro von Blotnitz	University of Cape Town
Ms	Hayley McLellan	Two Oceans Aquarium
Mr	Ian Hurst	Ocean Ambassador
Dr	Iliya Kwoji	University of KwaZulu Natal
Miss	Jade Bothma	Oceano Reddentes
Dr	Jaisheila Rajput	TOMA-Now
Ms	Jamie Potgieter	TOMA-Now
Mrs	Janneke Blake	Shop Zero
Ms	Jessica Sjouerman	Warrior Youth
Miss	Julie Hay	Singakwenza Education and Health
Dr	Justin Yarrow	CodeMakers
Miss	Kara Levy	PETCO
	Keshnee Pillay	Western Cape: Dept of Environmental Affairs & Development Planning
Mr	Kyle Briggs	Cefas
Ms	Leslie Bloy	Sustainable Seas Trust

Mr	Luke Rudman	Nelson Mandela University
Ms	Maria Honig	The Beach Co-op
Mr	Matthew Furlonger	Warrior Youth
Ms	Maude Sandham	Well Worn Theatre Company
Ms	Megan McLaren	University of Cape Town
Ms	Megan Rose Francis	The Beach Co-op
Dr	Miliea Anis	PATCH Bamboo Bandages
Ms	Monica Da Silva	Beeswax Wrap
Ms	Bulelwa	WasteNot
Mr	Mulalo Tshikotshi	Western Cape: Dept of Environment, Forestry & Fisheries
Mr	Murray Charter	Vivo Solutions
Mrs	Nina Bothma	Oceano Reddentes
Ms	Nivisti Singh	University of KwaZulu Natal
Ms	Nomsa Tsotetsi	BOATS App
Mr	Oliver Bonstein	Green Cape
Miss	Prishani Boodraj	University of KwaZulu Natal
Dr	Rob van Hille	The Moss Group
Mr	Rocco da Silva	The Future Kids
Mr	Ron Mukanya	Western Cape: Dept of Environmental Affairs & Development Planning
Ms	Rosie Downey	APWC
Mr	Shamier Magmoet	#seathebiggerpicture Ocean Initiative
Ms	Sharlene Versfeld	Versfeld & Associates
Mr	Sifiso Mngoma	Green Corridors
Mr	Siraj Paruk	Transnet National Ports Authority
Ms	Sizakele Sibanda	University of Cape Town

Mrs	Stacey Webb	Sustainable Seas Trust
Mrs	Tania da Silva	The Future Kids
Mrs	Tanya Prinsloo	Save A Fishie
Ms	Tara Scheckle	Sustainable Seas Trust
Mr	Tatenda	Dream factory Foundation
Ms	Tatiana Bork	Dream factory Foundation
Miss	Thandy Makgolane	University of KwaZulu Natal
Mrs	Thozeka Letuka	eThekwini Conservancies Forum
Miss	Toshka Barnado	Sustainable Seas Trust
Miss	Tusiwe Mkhize	University of KwaZulu Natal
Dr	Umberto Binetti	Cefas
Mrs	Vera Mukasa	Western Cape: Dept of Environmental Affairs & Development Planning
Mr	Yanga Gceya	Captain Fanplastic
Miss	Zoe Prinsloo	Save A Fishie
Ms	Charlotte Nell	Aquilla Environmental
Ms	Nozi Mbongwa	Sustainable Seas Trust

Centre for Environment Fisheries & Aquaculture Science

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- other scientists from research councils, universities and EU research programmes.
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- local communities and voluntary groups, active in protecting the coastal, marine and freshwater environments.

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