

Submission by PlaSTEAMed to the Victorian Parliamentary Enquiry into Recycling and Waste Management

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Background

Plastic isn't the problem. The way we regard plastic is the problem. Everybody loves to recycle but few members of the general public understand how it actually works. The centralised model of recycling with very large capital investments has significant logistics, sorting and cleanliness issues. These issues result in a fundamentally commercially unsustainable business model.

Plasteamed have developed a technology platform and business model to transform the business of recycling plastic. Plasteamed's focus is on changing people's habits and thinking around plastic so that they see plastic as a valuable resource and not waste. This is achieved through a commercially viable plastic recycling and education business.

Plasteamed has two streams of activity to achieve our goal of a large-scale distributed recycling infrastructure across Australia:

- The first is through deployment of consumer-friendly micro sized recycling plants into commercial properties.
- The second is through generational behaviour change in schools. We deliver a suite of equipment that has been specially designed to operate safely in schools. We also provide access to matching K-12 curriculum and complete training, operating and certification systems. Children bring their PET and HDPE bottles to school and learn how to make things from plastic. The excess is sold into the commercial market to generate revenue to pay for the equipment.

Initially we are addressing the plastic waste problem in Australia. Australia uses around 370,000tonnes/year of plastic packaging - the majority of which is PET and HDPE. In 2015 125,000 tonnes of PET+HDPE were recycled however most of this was sent offshore. China, India and Malaysia have all stopped importing contaminated plastic waste.

Australia **imports** recycled PET (rPET) to meet local demand. At scale we will recycle 100,000 tonnes of PET+HDPE in Australia. Our output will be uncontaminated, colour sorted and shredded.

We have already commenced discussions into other countries, including discussions with the government of another nation. Globally the recycled plastic market is worth around US\$35B p.a. and is forecast to grow at 6.5% CAGR for the next 7 years. Companies such as Coca Cola have committed to achieving 50% rPET in their packaging by 2030. There is a huge opportunity for local businesses, communities and schools in every country to participate in this growing sector. Our aim is to be operating globally.

How It Works

Corporate

We place specialised equipment with embedded Artificial Intelligence (AI) into corporate offices for shredding plastic combined with a distributed logistics network for collecting shredded plastic on-demand using Internet of Things (IoT) technology. Pick-ups are scheduled automatically only when there is sufficient product to warrant collection. Alongside this we deploy a training system to enable people to understand how the system works and how to make it work as effectively as possible.



Logistics tracking is completely transparent enabling every container of shredded plastic to be tracked through to final commercial sale. Full data for each and every office is available to every person in that office to encourage engagement with the process and personal connection with the final product that the recycled plastic is to be used for.

Schools

We deliver a suite of equipment that has been designed and validated to operate safely in schools. The equipment consists of recycling machines similar to the ones used in the corporate offices. In addition, we provide simple extrusion, injection and compression moulding machines for making products. It's effectively a tiny micro-manufacturing plant. Along with the equipment we provide access to a matching K-12 curriculum in the areas of Science, Technology, Engineering, Art and Mathematics (STEAM). The complete operating, training and safety certification system is also provided.

Children bring their plastic to school and learn about plastic and recycling. As the students progress through school they learn how to make things from recycled plastic. By Year 12 they will have the opportunity to compete in inter-school competitions to establish a start-up company to design, make and sell a new product.

The excess plastic that the schools don't use is sold into the commercial recycling market. The net revenue from sales of recycled plastic go towards paying down the installed equipment.

Artificial Intelligence

Our distributed model allows each and every container to be scanned using AI technology to ensure robust separation of plastic streams.

Data and Product Packaging Design Feedback Loop

Every container that goes through the shredding process is imaged and scanned. Some containers are much easier to prepare for recycling than others. We will be providing detailed statistically significant data to manufacturers and retailers. We will also be encouraging product purchase decisions for each family/employee based on the ease of recycling the packaging. There will be direct commercial feedback to retailers and manufacturers.

Identifying Short- and Long-Term Solutions

Stockpiling

Stockpiling occurs due to the structure of the current business models. Our business model is based on the principles from high volume manufacturing. All efficient high volume systems have continuous flow and zero stockpiling. Our system is driven by the sale of a commercial product (recycled plastic), not the purchase of waste. We turn waste plastic into a commercially valuable product at source.



Cleaning, Sorting and Processing

The fundamental problems are twofold. Firstly, the current industrial approach to recycling drives comingling of waste streams in order to lower logistics costs. Comingling of material streams generates two problems.

1. The comingled streams need to be sorted at scale and at high speed back into separate streams.
2. Comingling generates large amounts of contamination. Much of the material we put in our recycling bins ends up in land fill due to contamination.

Second, there is no opportunity for individuals to learn tacitly how the system works, why sorting is important and how much cleaning is required.

No sorting is required with PlaSTEAMed's system as material streams are never comingled. Our technology brings the recycling down to the human scale and uses AI as a quality control backstop. People directly see the problems with contamination and how the right level of cleaning streamlines the whole process. Our human scale technology enables habit change at an individual level.

Expansion

Australia imports recycled PET to meet local demand. Our product will displace this imported product. As we are able to produce large commercial quantities of recycled PET and HDPE profitably. We will be enabling commercial exports instead of imports.

We aim to be in 65% of Australian schools within 5 years. With both the school and corporate streams of business we will be recycling around 100,000 tonnes (combined) of PET and HDPE in Australia.

Increase Recycled Materials in Local Manufacturing

Short Term

In the short term we will produce high quality rPET and rHDPE at a competitive price point.

Long Term

The long-term impact of our human scale system will be to organically drive up demand for products packaged in recycled plastic. The level of personal involvement and engagement in the process will drive a sense of ownership of recycled plastic. The only long-term sustainable means of increasing the use of recycled plastic in local manufacturing is to drive natural demand.

Quantifiable Benefits

Increased Recycling

We will produce and sell 100,000 tonnes of high-quality recycled PET and HDPE.

Decreased CO₂

Recycled plastic requires around 50% less CO₂ than virgin plastic.



Real World Skills

Our hands-on STEAM curriculum will drive increased interest in STEM careers. By combining tacit and theoretical knowledge we will produce students with real-world-ready skills.

Economic Development for Victoria

We will be manufacturing between \$100M and \$200M of plant and equipment in Victoria over a five to seven year period as we build out the infrastructure for all of Australia. We will use existing underutilized manufacturing capabilities in either Geelong or Campbellfield for our manufacturing base.

Existing Sustainability Fund

Our system uses an approach where very large numbers of quite small investments are made to finance the equipment. Our entire technology platform opens up an investment market for a very large number of low risk investments. The existing sustainability fund could be used to back the distributed financing of the infrastructure through a commercial approach.

Strategies to Reduce Waste Generation

Product Stewardship

Genuine product stewardship requires a change in thinking around plastic. Once people see plastic as a valuable resource instead of waste, they will begin to change their habits. Changing the thinking around plastic and then driving habit change is the core principle of our business.

Plasteamed's system provides direct commercial feedback to product manufacturers, retailers and product packaging designers through changes in purchase decisions by every individual. People will seek out products where the packaging is both recycled and easy to recycle once they become personally engaged in the process of recycling.

We also provide statistically useful deidentified data to governments, manufacturers and retailers as our technology uses AI to scan every single container that goes through the system.

Container Deposit Schemes

Our platform has been designed to enable container deposit schemes right from the start as we will be operating in jurisdictions where they are already in place. These schemes can positively influence people's thinking around plastic and enhance the message that plastic is a valuable resource.

Banning Single Use Plastics

Banning single use plastics can have unintended consequences. Plastic is an extremely efficient material for packaging products – especially food. It significantly reduces logistics driven CO₂ emissions as it is lighter and more compact than the alternatives.



Increasing the recycling rate of plastic is a much better solution when you view the entire system as a whole.

The Gold Standard

Food Grade to Food Grade Recycling

We are currently conducting research using AI and various scanning technologies to enable us to achieve the ultimate in plastic recycling. Taking food grade plastic and turning it back into food grade plastic.



Enquiries

All enquiries should be directed to Andrew Hynson at:

