

Case Study 6: Precious Plastics

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Plastic Processing Equipment © Precious Plastic

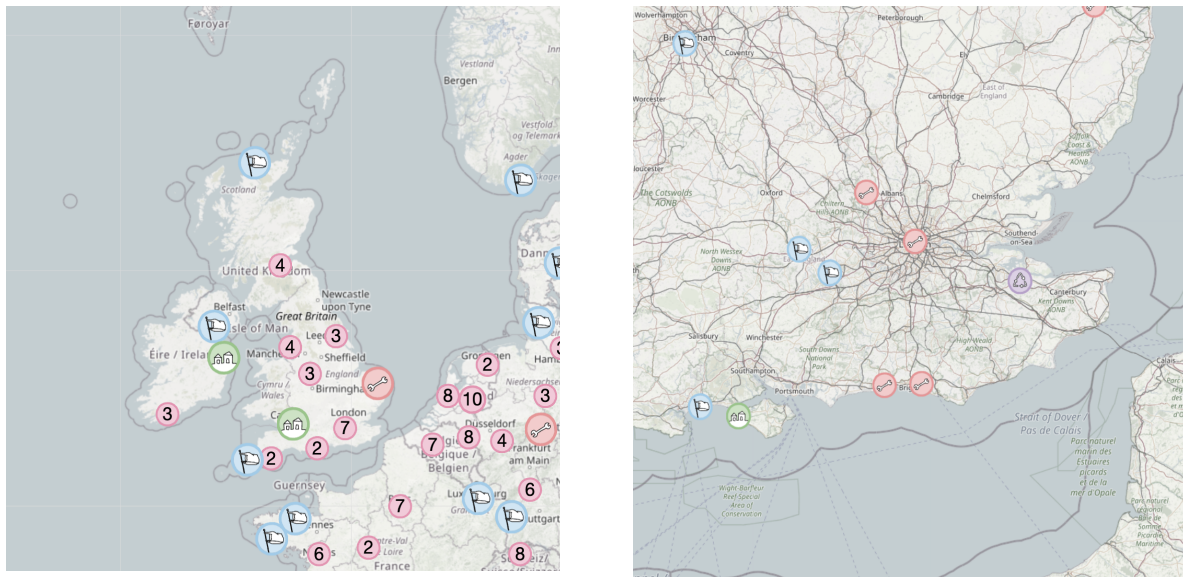
Wikipedia describes Precious Plastics (PP) as ‘an open hardware plastic recycling project and is a type of open-source digital commons project’ (Wikipedia, 2021). PP presents itself as “a global movement of thousands of people applying their creative genius to solve the plastic waste problem. Together. As a recycling army.” (Precious Plastics, 2021).

In practicality, PP provides blueprints to build DIY or professional machines that grind, melt, and inject recycled plastic, facilitating the creation of small scale recycling hubs all over the world. PP also encourages knowledge exchange through different engagement channels: a website, YouTube tutorials, social media accounts, an interactive map to find members and a Discord channel.

PP started in 2012 as Dave Hakkens’ graduation project at Eindhoven University of Technology (NL). Since then, the initiative has gone through four iterations. The first version, released in 2013, was Hakkens’ completed university project. In early 2016, the second version was published with refined machinery plans alongside a marketplace selling machines and products to DIY designers. A year later, the third version was delivered. In 2018, PP received a 300,000€ grant from the Famae award and free-of-rent offices in Eindhoven. In 2020, the release of the fourth version included free business models and recycling systems starter kits and is the most advanced iteration to date.

PP categorises five types of recycling spaces: workspace, collection point, community point, machine shop, member. To promote their designs, PP shares video tutorials and virtual 3D models, alongside examples of objects to create, such as bricks, plant pots, benches, skateboard planks and more. The platform also promotes and manages an online shop for makers, selling versions of the equipment, raw materials and finished plastic products.

Precious Plastic's impact in the UK



Community map © Precious Plastic

There are 27 established PP groups in the UK: 18 in England, 5 in Scotland, 3 in Wales, and 1 in Northern Ireland. Some act as workshop spaces, community points, collection points or machine shops. People identifying as members are not present on the PP map, but some can be reached via PP's Discord channel (a network app similar to Slack).

PP has supported the growth of DIY plastic recycling in the UK; some of the practitioners were interviewed and shared their perceptions of the initiatives. Most responses were positive. Still Life in Glasgow, Relic Plastic in Lancaster and Brothers Make in Bournemouth all affirmed their businesses started thanks to Precious Plastics. They valued the professional practice materials and access to a supportive and broad community.

“The platform has been and continues to be a fundamental part of our work. We’ve learnt pretty much everything we know about plastic from there. The community is such an amazing tool we use when building machines or sorting to think about new products.”

Will, from Still Life in Glasgow (Still Life, 2021)

“Precious Plastic was where it all began for us to be honest. Although we don't use Precious Plastic machines, the machines we are using are heavily inspired by them. We also are part of the Precious Plastic verified workspace program via the One Army website.”

Brothers Make in Bournemouth (Brothers Make, 2021)



Still Life product on the left, Relic Plastics products on the right

“The very basis of our business is dependent upon Precious Plastics as it was created as an open-source framework for others to copy, adapt and expand upon. The machines we use are reiterations of the designs created by Precious Plastics, and even they even provide documents to help with basic business calculations like establishing product costs, break-even points, etc. The fact that there is a community of people connected to this work who are mostly open, friendly and share experience and knowledge is a bonus but was driven by the way that Precious Plastics has operated from the beginning.”

Relic Plastic in Lancaster (Relic Plastic, 2021)

However, it also emerged that one respondent was not able to build the machines using the plans available. They felt the level of knowledge required to construct the equipment was far in excess of what was indicated and that the waste plastic they had access to turned out not to be suitable for PP’s recycling system.

“Many plans are very incomplete, some machines didn't even work and if you are not a skilled mechanic (trained or not) with a bit of material science background or electronics, it is unlikely that you will succeed.”

Julien, Plastic@Bay in the Highlands (Plastic@Bay, 2021)

The responses reveal a range of engagements with the Precious Plastics platform and the promoted products. These include relationships that appear tangential to those anticipated by its founder and individuals disillusioned by the realities of constructing the production equipment. Whether the online platform has reached its full potential is unclear but it has certainly acted as a focal point for aspirations and expectations and as a catalyst for change.

PP's Global Impact

PP published a global impact report in 2020 (Precious Plastics, 2020). This covered responses from a total of 1083 respondents located in 102 countries who had taken part in PP's survey. The results showed an average of 376 176 Kgs/year of plastic waste recycled by all workspaces, amounting to 835 kg/year or 69 kg/month for every PP workspace.

PP calculated a total revenue of over 2.1 Million € in yearly income. (7 279 €/year or 606 €/month for each workspace around the world. Workspace teams are typically composed of about 5 members, a third of these team members being women. 45% of team members are below 30 years old, 33% are between 30 and 40 years old, and 20% are above 40 years old. In 2020, 42% of the workshops registered started less than a year ago, showing promise of rapid growth.

In terms of profits, PP has calculated that 10% of workspaces generate a profit and 21% are financially sustainable, with spaces in Western Europe and South-East Asia being most successful. This happens through direct sales of products, machines and services. These figures were prior to the release of PP version 4, which included business models canvas and recycling systems starter kits. This version was released in early January 2020.

PP's relationship to sustainability and the circular economy

PP's mission is to remove plastic waste from the environment. They make no explicit mention of sustainability or the circular economy on their website. Instead, they focus on advocating small and direct actions, promoting zero waste living and new materials. They stand clear on their opinion of a theory of change: "We don't believe in techn-utopian, fix-it-all, dream technology."

Hakkens has shifted to tackling other global problems through his online network, such as addressing e-waste and fashion waste, promoting sustainable living, and supporting education.

References

- Wikipedia, 2021. *Precious Plastic*. https://en.wikipedia.org/wiki/Precious_Plastic. Accessed 03.12.2021.
- Precious Plastics, 2021. *Say hi to the Precious Plastic Universe*. <https://preciousplastic.com/>. Accessed 03.12.2021.
- Still Life, 2021. *Still Life*. <https://www.stilllife.earth/>. Accessed 03.11.2021.
- Brothers Make, 2021. *Brothers Make*. <https://www.brothersmake.com/>. Accessed 03.12.2021.
- Relic Plastic, 2021. *Relic Plastic*. <https://www.relicplastic.com/>. Accessed 03.12.2021.
- Plastic@Bay, 2021. *Plastic@Bay*. <https://www.plasticatbay.org/>. Accessed 03.12.2021.
- Precious Plastics, 2020. *Global Impact*. <https://preciousplastic.com/impact>. Accessed 03.12.2021.