Green Impact Product Report

Product: EarthCup v2.1

Impact Template: v1.1

Batch Estimate: 1000 units

Enterprise: EarthCup.io

Date: June 22nd, 2020

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About this Report

This report is created from a document template was developed by the Global Ecobrick Alliance (GEA) for the listing of regenerative products on the GoBrik Shop. All products that are added to the GoBrik Regen Store, must be accompanied by a Green Impact Report and must demonstrate a subtractive CO2 and Plastic impacts. It is under this condition that products in the store are considered “Regenerative”. The Green Impact Product Template and a further explanation of the terms and concepts herein can be found a www.ecobricks.org/principles.

Green Impact Reports are generated by the product, and not the GEA does not endorse, nor corroborate any of the information herein.

The Global Ecobrick Alliance

The GEA is a not-for-profit Earth Enterprise, that operates on regenerative principles. The GEA maintains the GoBrik platform and the Brikcoin manual blockchain. The GEA also maintains the GoBrik store as a space for regenerative products.

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Towards Greening, Circular & Regenerative Design

CO2 Impact

One the clearest ways to measure the impact of a product is by measuring how much carbon dioxide (CO2) is produced by the various processes that make up its life-cycle. The impacts of the various processes behind the production, marketing, sale, consumption and disposal of a product all have measurable determinations of CO2 equivalency (CO2e) from the amount of oil, gas and electricity that they involve. When fossil fuels are burned to power cars, trucks and airplanes or used to power the factories that produce our products, CO2 is produced. CO2 enters the atmosphere and oceans, contributing to climate change and ocean acidification. Around the world and for specific countries there are well established and a widely accepted means for evaluating our 'carbon footprint' of each of these. The calculations in this report are based on our researched coefficients and are documented in the footnotes of the report.

Processes that Generate CO2

Production

- The cutting, drilling and routing of EarthCups requires electricity. We estimate from our workshop electricity bill that 90 kwh of electricity are used to produce 1000 units. We estimate a 0.256 kg of CO2 is produced per kWh of electricity.[1] This results in an impact of **23.4Kg** CO2.
- The shipping of completed EarthCups from East Java to Bali by truck (219km) have an impact of 0.069Kg/km according to the ECTA.[2] This works out to an impact of **15.33kg** for shipping 1000 units to Bali.
- Production total: 38.73 Kg CO2e.

Materials

- Glue and finishing oils we use have CO2 production impacts. Crownpaints estimates the CO2 impact of a 5L can to be as 13.58 kgCO2e.[3] We estimate that we need one 250ml can per 50, or 5L or epoxy paint, for 1000 EarthCups.
- Materials Total: **13.58Kg** of CO2e.

1 https://bulb.co.uk/carbon-tracker/
2 https://www.ecta.com/resources/Documents/Best Practices Guidelines/guideline_for_measuring_and_managing_co2.pdf
3 http://www.newlifepaints.com/carbon-impact-of-waste-paint-the-stats

Server Usage

The purchase of a product on the GEA server has the approximate impact of 1mb of transferred data, which has an estimated impact of 0.050 kg[4] per order.

- Server Total: **50Kg** of CO2e

Shipping to Customers

- We're beginning with only Indonesian sales, and only shipping packages by domestic non-express shipping. Based on calculations in "The environmental impact of mail[5]" we estimate a CO2 footprint for our 250g EarthCup shipments of 75g.
- Shipping total: **75kg** of CO2e.

Product Process that Sequester CO2

Bamboo Plantation

- The growth, cultivation and replanting of the bamboo used for producing our earthcups has an estimated effect of sequestering 0.51Kg of CO2 per Kg of bamboo according to a study of Asian bamboo products[6].
- As each cup has an average weight of 0.2Kg of bamboo, we estimate a 0,102 Kg sequestered through plantation per unit
- Plantation Sequestration per 1000 units: 1002 Kg

Plastic Sequestration CO2 Credit

The Plastic Sequestration inspired by the product (see Plastic section below) prevents this plastic from degrading and releasing its carbon into the atmosphere as CO2. The GEA estimates that for each Kg of plastic 3.1 Kg of CO2 are also sequestered.[7]

- We are allocating 500 BRK of product for sale, this results in 50Kg of plastic sequestered

4 https://twosidesna.org/US/The-Carbon-Footprint-of-Email-is-quite-large/
5 https://www.pb.com/docs/US/pdf/Our-Company/Corporate-Responsibility/The-Environmental-Impact-of-Mail-A-Baseline-White-Paper.pdf
6 https://worldbamboo.net/wbcx/Keynotes/KeynotevanderLugt.pdf
7 Www.ecobricks.org/why

- Total CO2 Credit from Plastic Sequestration: 303Kg

Replacing a similar Industrial Product

Products that replace similar plastic and/or industrially produced products can also claim a CO2 credit.

- As a purchase of the EarthCup means that a similar plastic/metal tumbler does not need to be purchased the corresponding CO2 is not released. Alternatively, the use of an EarthCup also prevents the consumption of paper/plastic cups.[8]
    - Office Climate Solutions estimates the CO2 impact of a steel+plastic Tumbler to be 1.379 Kg per cup.[9] 1.379 x 80% = 1.1 kg
    - Office Climate Solutions estimates the one year CO2 impact of plastic/paper cups to be 38.06 Kg.[10] 38.06 x 20% = 7.61 kg
    - 0.69Kg + 19.03 = 19.72 Kg per unit
- After our 80/20 calculation, this results in a net offset of 8.71 kg per unit
- Total Industrial Product Replacement Impact: 8710 Kg CO2e

8As the EarthCup will result in a replacement of both, but in particular tumblers, we estimate that one EarthCup will prevent the consumption of 80%/20%impact of both alternatives over the course of a 1 year EarthCup life-cycle.

9 https://www.officeclimatesolutions.com/the-carbon-cost-of-coffee-cups.html

10 https://www.officeclimatesolutions.com/the-carbon-cost-of-coffee-cups.html

CO2 Impacts				
CO2 Produced per 1000 units				
Process	**Details**	**Kg of CO2**	**Units**	**Total**
Production	Electric sanding	23.4Kg	Batch	+38.73 Kg
Materials	Glue, paint	13.58Kg	Batch	+13.58Kg
Server	GoBrik Shop + emails	0.05 / unit	1000	+50kg
Shipping	Indonesian Delivery	0.075	1000	75kg
Total CO2 Produced				**+177.31 kg**
CO2 Sequestered				
Process	**Details**	**C02/Kg**	**Units**	**Total**
Bamboo	0.2 Kg of bamboo per product @ 0.51Kg CO2 per Kg bamboo	-0.102Kg CO2	1000	-102 kg
BRK Sales	0.25Kg of rattan per product	-155Kg CO2	Batch	-155 kg
Replacement of Plastic Product	Each EarthCup sale prevents a tumbler and plastic cups	- 8.71 Kg	1000	-8710 kg
Total Sequestered				**-8967 kg**
Total CO2 Impact				**-8789 kg**
Per unit sequestration				**8.7 Kg**

Plastic Impact

The plastic that is generated the product's life cycle has its own environmental impact. The disposal and recycling of plastic impacts the environment. Recycling can only process plastic several times-- each time plastic is recycled its value decreases until eventually it is no longer worth recycling. Consequently, all plastic, including recycled plastic, eventually ends up loose in the environment where it degrades into micro-plastics and chemicals that impact local ecologies. To estimate the products environmental impact, we record the net weight of all the plastic produced and consumed in its life-cycle.

Our product can also result in the removal of plastic from the biosphere. This is measure in Kg of plastic avoided and/or sequestered.

Plastic Production

Manufacturing

- We estimate that we need one 250ml (@250g) can of epoxy glue per 50 EarthCups. We also will use 100 grams of pen and 3 glue bottles per 1000 units.
- Total plastic impact: 12.6 kg plastic

Marketing / Labeling

- We've managed to completely eliminate plastic from our packaging and labeling.

Shipping

- The Indonesian post office uses plastic coating labels for shipping and often insists on putting plastic tape on packages. We've designed our packaging to minimize this need. Per package plastic is about 3g.
- For 1000 units shipped = 3Kg plastic

Plastic Sequestration

Plastic can be sequestered through company ecobricking corresponding to the product or through the sale of the product with a Brikcoin price. Products can thus claim a plastic offset impact corresponding to how many brikcoins are gained by the sale. Currently (07/20) *1ß = 0.11492 Kg of plastic sequestered*.[11]

11 https://www.gobrik.com/#cr/

Allocated Brikcoin Sales

- Allocated Brikcoin Sales: 500 BRK
- Sequestration: **57.5 Kg plastic**

Replacing Plastic Cups and Tumblers

- The average plastic/paper coffee cup contains 3g is plastic. A one year impact of plastic/ paper cups by one consumer is estimated to be 260 x 0.003Kg = 0.156 Kg plastic Estimates from Office Climate Solutions[12]
- The average 16oz. reusable steel tumbler weighs 315 grams for the cup and 60 grams for the plastic lid.[13] The one year impact would be 0.06 kg for one consumer.
- In 2013 1.84% of coffees in Starbucks were served in reusable cups Ref We will estimate however that an EarthCup replaces in one year 80% of the impact of tumbler and 20% of the impact of paper/plastic cups
  - 0.156 * 20% + 0.06 X 80% = 0.03 + 0.048 = 0.078 Kg per unit
- Total sequestration of **78Kg** plastic per 1000 units

12 https://www.officeclimatesolutions.com/the-carbon-cost-of-coffee-cups.html
13 https://www.officeclimatesolutions.com/the-carbon-cost-of-coffee-cups.html

Plastic Impacts				
Plastic Produced				
Process	**Details**	**Kg Plastic/unit**	**Units**	**Total**
Manufacturing	Glue bottles, epoxy, pen	12.6kg	batch	+12.6 kg
Marketing	none	0.000	-	-
Shipping	Tape, stickers	0.003		3Kg
Total Produced				**+15.6 kg**
Plastic Sequestered				
Process	**Details**	**Kg Plastic/unit**	**Units**	**Total**
Direct Ecobricking				0
BRK Sales	500 BRK sales allocated	57.5 Kg	batch	- **57.5** Kg
Plastic Replacement	Plastic cups and tumblers not bought	0.078 Kg	1000	-78 Kg
Total Sequestered				**-135.5 kg**
Total Plastic Impact				**-119.9 kg**
Impact per unit				120 g