

CARBON FOOTPRINT

FISCAL YEAR 2017



CO₂e
Assessed
Organisation



ENVIRONMENTAL RESPONSIBILITY AT STARBOARD

This report is our first step considering Starboard's CO2 emission's, our goals and our strategies. We welcome feedback on how to improve the report and also ideas on become a "more good and less bad" company. Please help spot any mistakes that we may have made in this report. For questions, please contact us at : <footprint@star-board.com>

Every decision humans make affects the planet, and that's why we at Starboard are paying closer attention to our decisions. Innovation and quality have since 1994 been the driving force behind our products – now we're applying those work ethics to help save the planet. We think board sports are the perfect vehicle to showcase new strategies. This is a journey in many directions, from using ecologically sourced materials, to building boards in a smarter, cleaner way, to cleaning up the garbage that's out there – and ultimately, encouraging people to create less waste. At the same time its about creating a truly greener world for future generations, so for each board shipped we plant one Mangrove in the Thor Heyerdahl Climate Park in Myanmar, absorbing up to 1 ton CO2 over 20 years.

OUR MISSION:

TO BRING MORE TO THE ENVIRONMENT THAN WE TAKE FROM IT

We have calculated our total carbon footprint of fiscal year 2017 (June 2016- May 2017) and planted Mangrove trees in collaboration with the Thor Heyerdahl climate park in Myanmar to make up for our emissions. We started our carbon footprint journey by conducting a Life Cycle Analysis for our boards and paddles.

To calculate our company's carbon footprint we looked at everything we did throughout FY2017. This includes finding out how far each employee drives to work, the DreamTeam's flights, how many catalogues and leaflets we produce, our electricity consumption and so on. From here we calculated our carbon footprint by using the Ecoinvent Database.

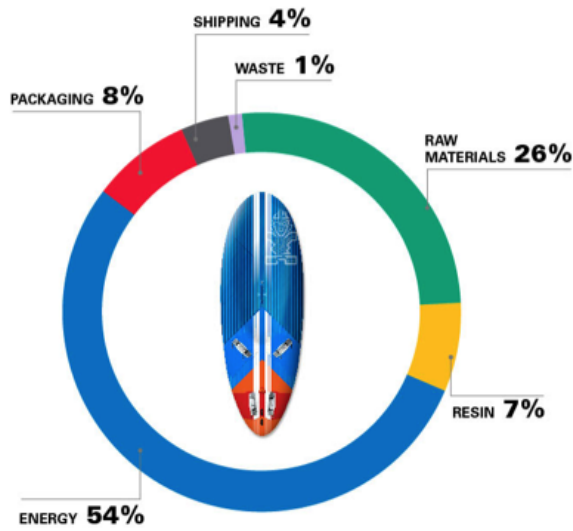
WE BELIEVE A SUSTAINABLE BUSINESS STARTS WITH THE PRODUCT LINE

Most of our 2017 composite boards, fins and paddles are being made with non-toxic, plant-based resins. We are now transitioning to recycled EVA pads and recycled injection molded parts like inserts and plastic fins. We are also shifting our packaging towards bio-based & recycled materials. We have calculated the emission of our production boards and paddles by conducting LCA's so we can see what areas we should continue to improve. Life Cycle Analysis (LCA) is an efficient way to measure the impact a product has on the environment by stating the greenhouse gas potential. We have done a cradle-to-gate analysis, including the raw materials, electricity, waste, packaging and shipping that goes into making one board/paddle.



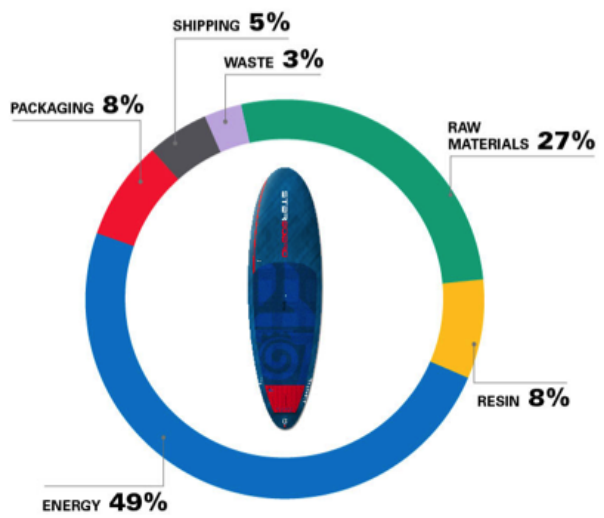
WHAT IS THE CARBON EMISSION OF A BOARD?

The diagram below compares a bestselling windsurfing board to a bestselling paddleboard. The “Whopper” paddleboard is significantly larger in volume than the Futura 117 windsurf board, which is the main reason for the great difference in the carbon footprint. We use mostly the same materials for windsurf and paddle boards, but different quantities.



84.99
KG CO2 E

FUTURA 117
REFLEX CARBON



93.55
KG CO2 E

WHOPPER
BLUE CARBON

DIAGRAM : Comparing the carbon footprint of our bestselling windsurf board, Futura117, and our bestselling paddleboard, whopper.

CARBON FOOTPRINT OF THE WINDSURF BOARD RANGE

To calculate the carbon footprint of our windsurf boards we started off by finding the amounts of raw materials that goes into the board. The most common materials for the technologies are EPS, glass fiber, carbon fiber and epoxy, and the different footprints are a result of different quantities of materials. We found that the electricity amounts that goes into the assembly line is a major CO₂ contributor. Packaging, shipping and waste amounts are quite prominent. The results are verified by CarbonFootprint co Ltd.

The LCA's are presented in the diagram below in kg CO₂ e, comparing the footprint of our four windsurf technologies; 3DX, Starlite, Reflex carbon and Carbon LCF. We found the main part of the footprint, electricity, way too high and will work with our assembler to implement 100% solar reducing the energy footprint by 80%. We were also surprised by the high impact of the resin we use in spite of our of 33% BIO content. This resin has approximately half the carbon footprint than the previous resin we used for the 2016 board range.

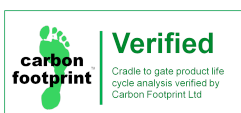
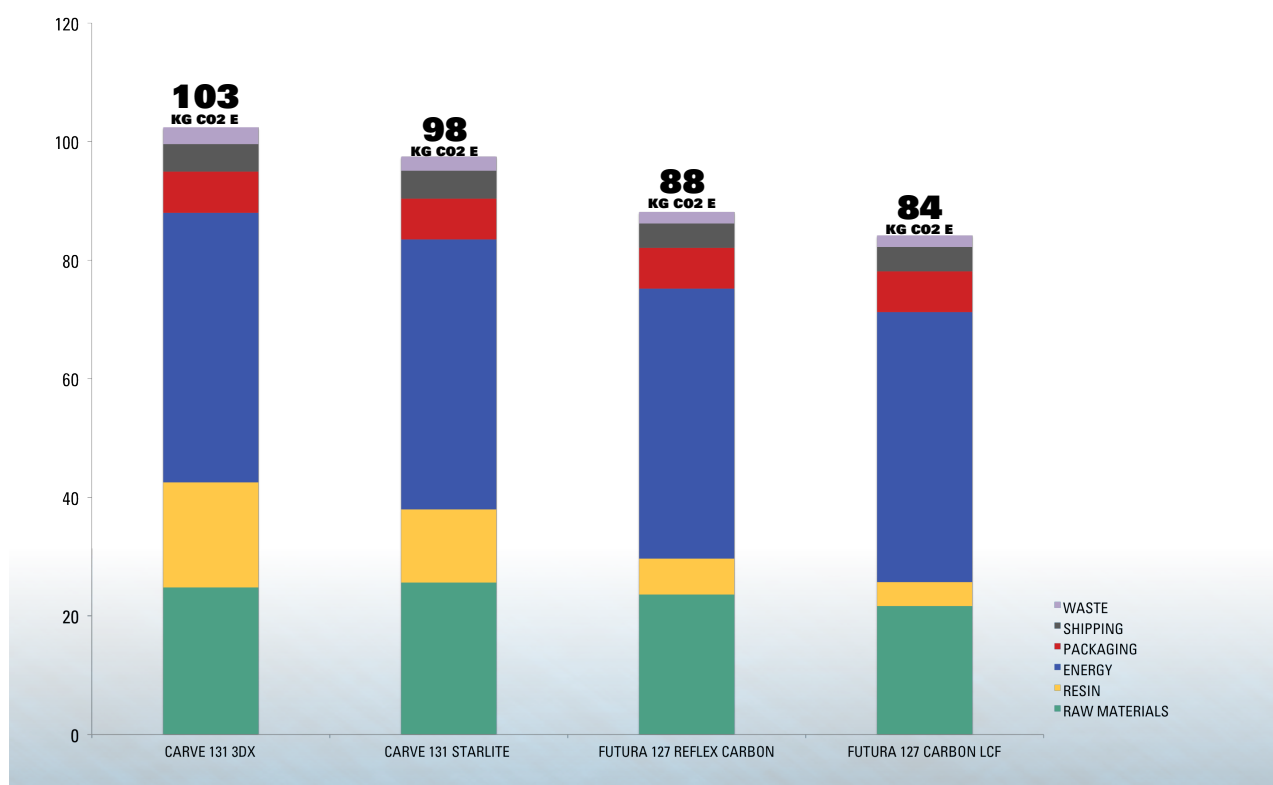


DIAGRAM: Comparing LCA results of 4 windsurf board technologies, 3DX, Starlite, Reflex Carbon and Carbon LCF. Results in kg CO₂ e.

CARBON FOOTPRINT OF THE STAND UP PADDLE BOARD RANGE

The most common materials for all paddle board technologies are EPS, glass fiber, carbon fiber and epoxy; the different footprints are a result of different quantities of materials. Further we found the electricity amounts that goes into the production, packaging, shipping and waste amounts.

The results are verified by CarbonFootprint co Ltd.

The LCA are presented in the diagram below in kg CO₂ e, comparing the footprint of 5 of our Paddle board technologies; Pine Tek, Starlite, ASAP, Starshot and Blue Carbon. We found the main part of the footprint, electricity, way too high and will work with our assembler to implement 100% solar. We were also surprised by the high impact of the resin we use in spite of our of 33% BIO content. This resin has approximately half the carbon footprint than the previous resin we used for the 2016 board range.

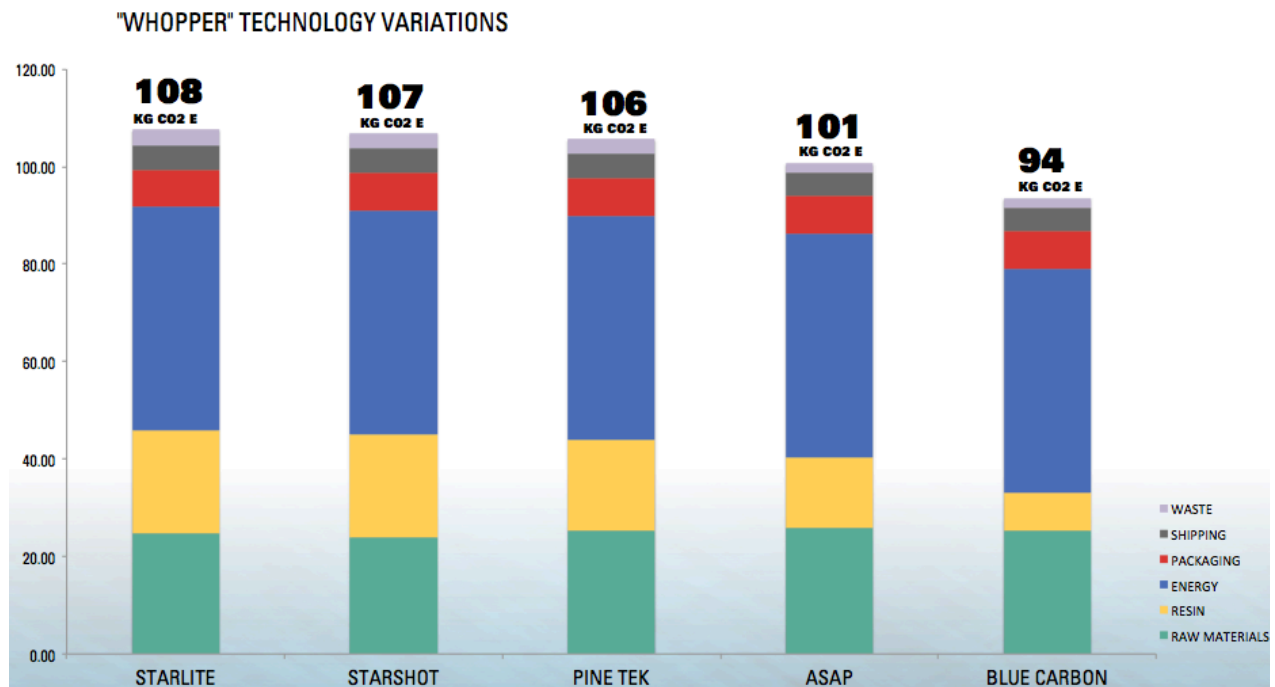
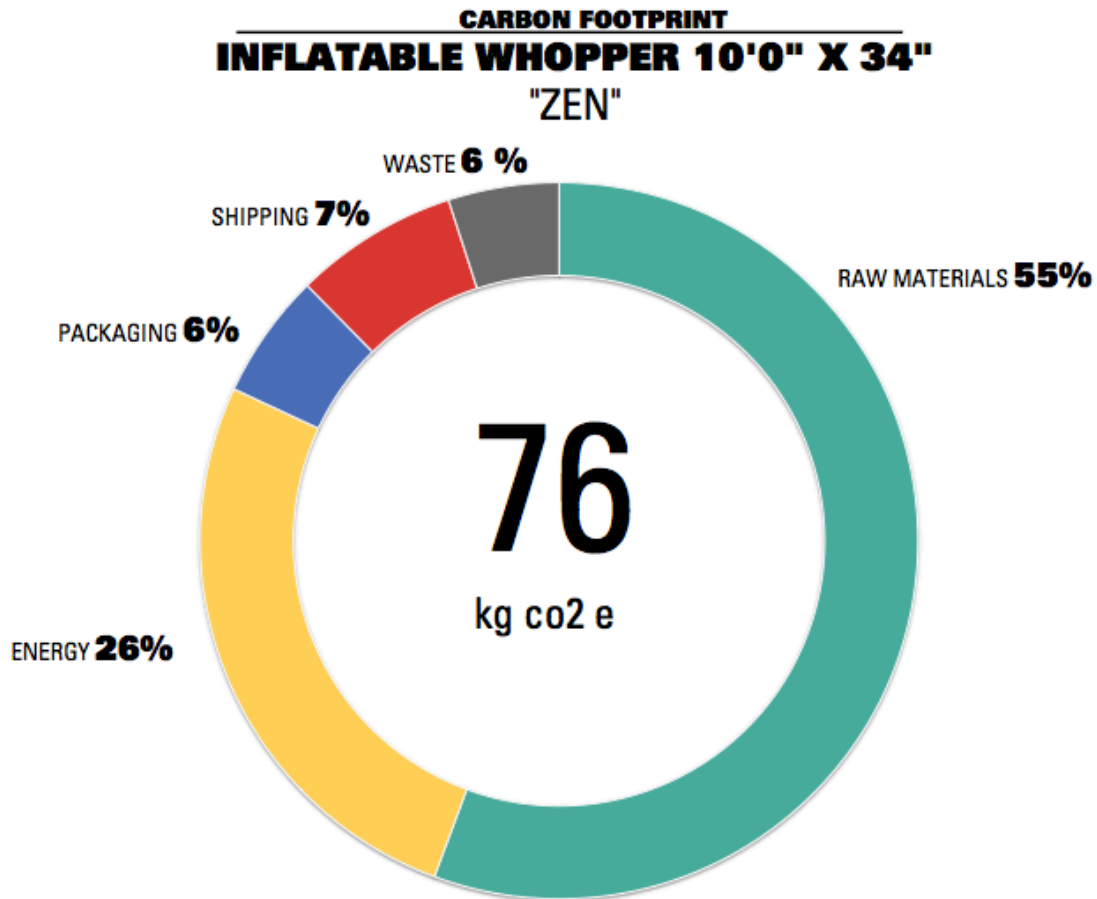


DIAGRAM: Comparing LCA results of 5 "Whopper" Stand Up Paddle board technologies, Pine Tek, Starlite, ASAP, Starshot and Blue Carbon. Results in kg CO₂ e.

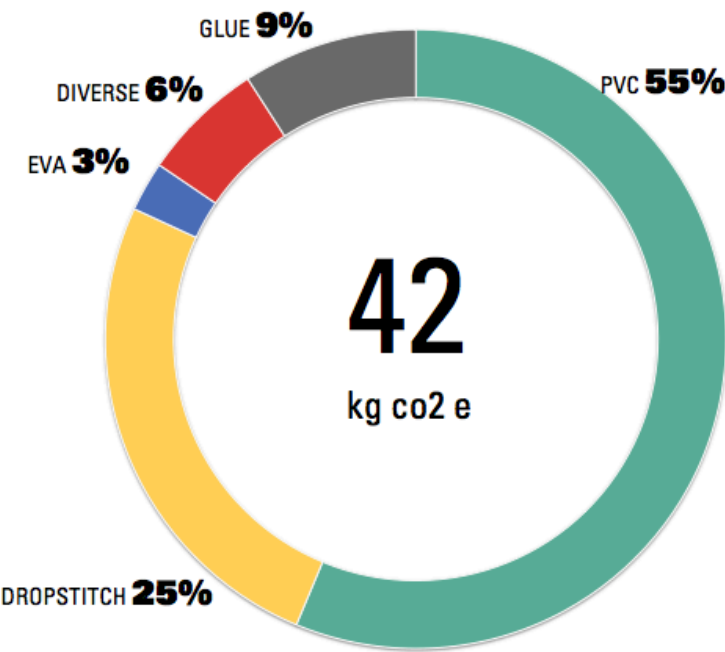


FAQ: WHY IS THE CARBON FOOTPRINT OF A COMPOSITE HIGHER THAN AN INFLATABLE?

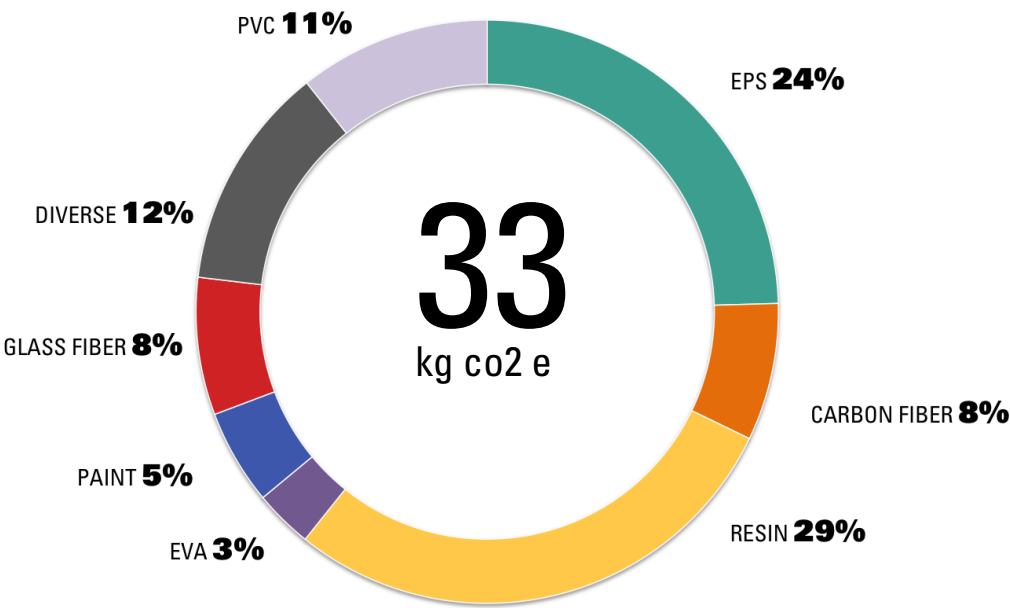
The reason for this is the great energy amounts used for our composite boards. If we were to only compare raw materials the footprint of an inflatable would be significantly larger (see next page). You can see this when comparing the percentage of raw materials. For our composite board the raw material percentage is only 27%, while the raw materials for the inflatable is at 55%. The packaging is also a factor, as the box for our inflatables is way smaller than the composite box. The footprint of our cardboard packaging is surprisingly high, due to large energy amounts that go into making them.

ARBON FOOTPRINT OF RAW MATERIALS FOR AN INFLATABLE VS COMPOSITE BOARD

WHOPPER 10'0" X 34"
"ZEN"
RAW MATERIAL DISTRIBUTION



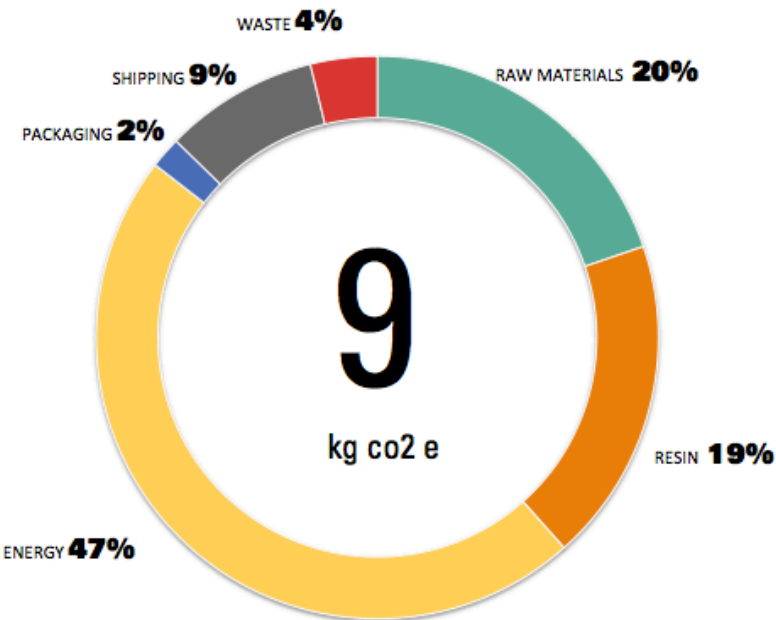
WHOPPER 10'0" X 34"
"BLUE CARBON"
RAW MATERIAL DISTRIBUTION



CARBON FOOTPRINT OF OUR BESTSELLING PADDLES

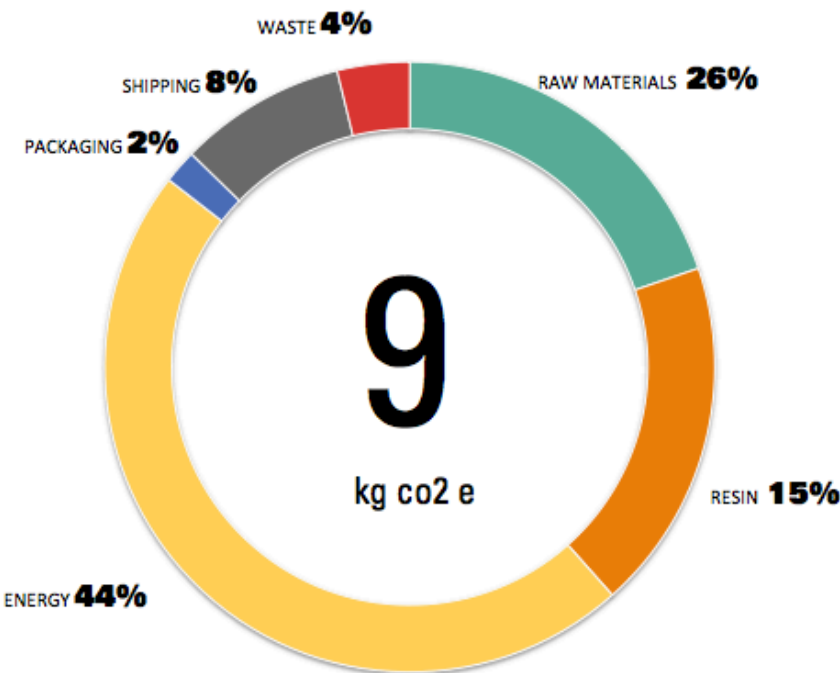
TIKITECH PADDLE

2 PCS
CARBON FOOTPRINT



CARBON PADDLE

2 PCS
CARBON FOOTPRINT



CARBON FOOTPRINT STARBOARD FY2017

Our next step was to calculate the footprint of the whole company. Everything we did/purchased in FY 2017 was measured and calculated into CO₂. While it was impossible to execute a 'molecular level' quantification, we have included even small line items electricity amounts from HQ, flights from all our sponsored riders and employees, production of prototypes, our commute to work, purchased items, diverse shipments as well as production of catalogues. Our footprint in FY2017 was 3600 tons CO₂e.

CARBON FOOTPRINT FISCAL YEAR 2017 (JUNE 2016- MAY 2017) INCLUDING PRODUCTION

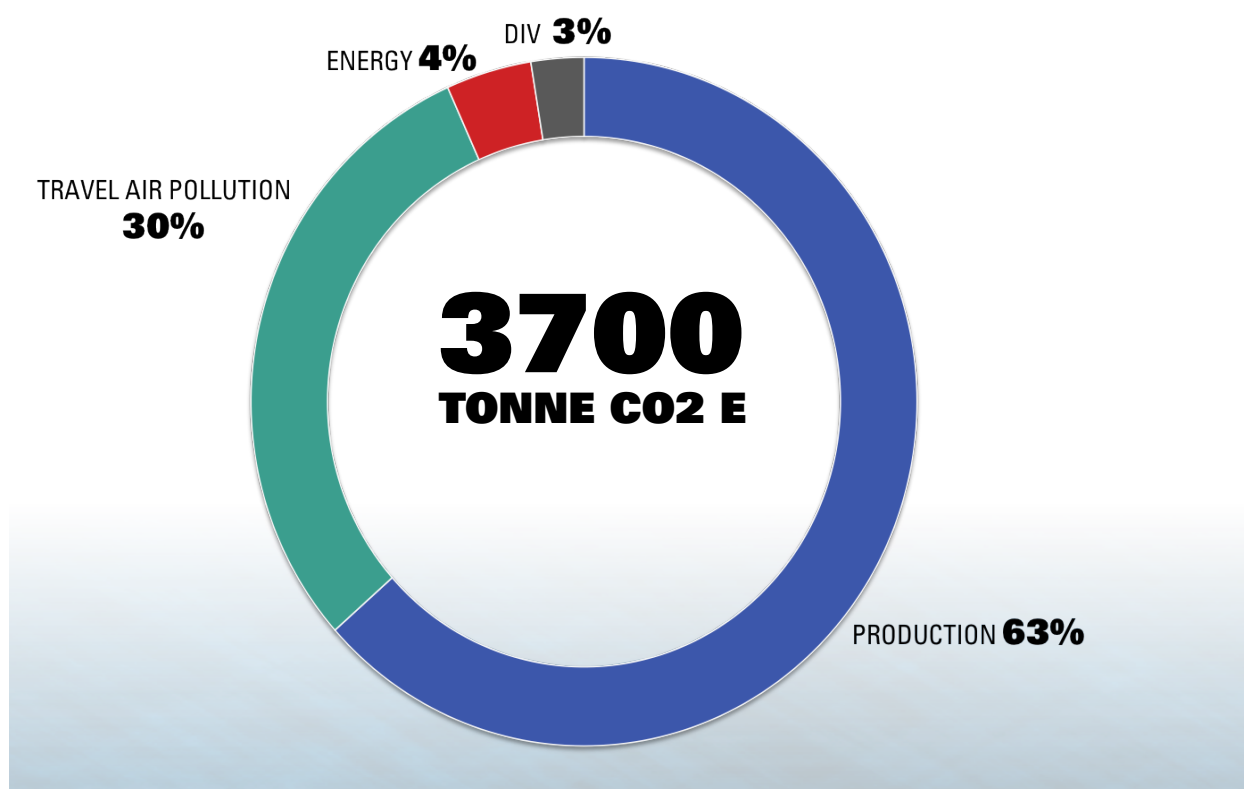


DIAGRAM: *Starboard carbon footprint Fiscal Year 2017.*
*DIV: *Production prototypes, production catalogues, commute to work, diverse shipments, purchased items*

The greatest factor is our production followed by air pollution from flights. Our product developers are constantly working on finding better materials for the environment, BIO or recycled. We are already using soy ink for our catalogues and recycle paper as well as making the most of the natural light in our office. We plan to install solar on the rooftop of our office and are already now setting up solar charging stations for our E -bikes.

INTRODUCING OUR CLIMATE POSITIVE INITIATIVE

By planting Mangrove trees in collaboration with one of our ECO partners, [Thor Heyerdahl Climate Park in Myanmar](#) the carbon net positive pledge has been achieved. A mangrove tree's main feature is its ability to absorb and store great amounts of CO₂. A mangrove mitigates 1 ton of CO₂ over the course of 20 years. Our collaboration with the Thor Heyerdahl Climate park has resulted in 81 500 Mangroves being planted, absorbing approximately 81,500 of tons CO₂ over the next 20 years.

The diagram below states how much CO₂ we can absorb in the next 20 years by planting mangrove trees, VS our emitted CO₂, and how we see the distribution of the absorbed CO₂. We plant one mangrove per board sold. Our collaboration with the ISA event in Fiji resulted in 4000 trees planted for their benefit. To balance the events footprint, including all participants' travels, would actually have needed only the 800 trees absorption over 20 years. Check out ISA's carbon footprint report [here](#).

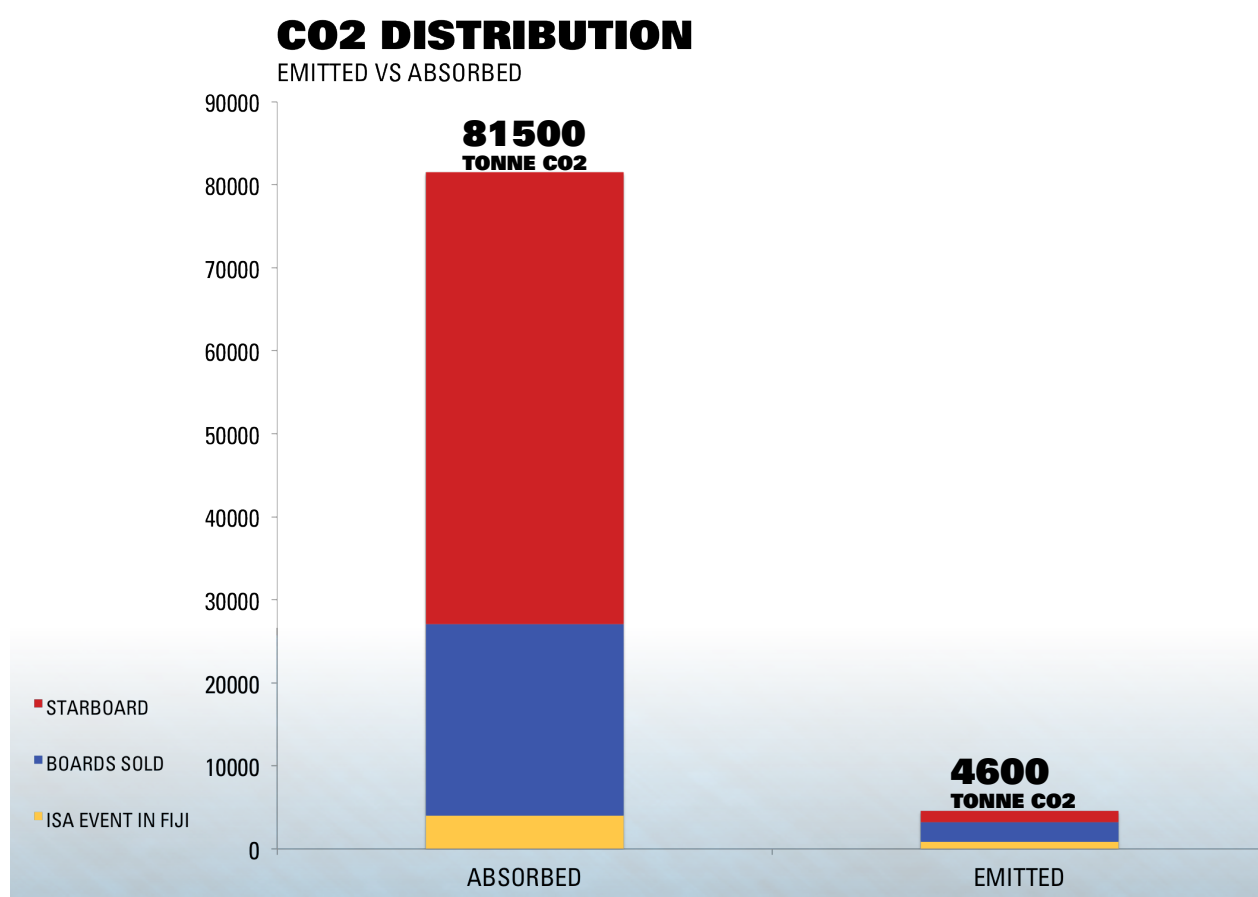


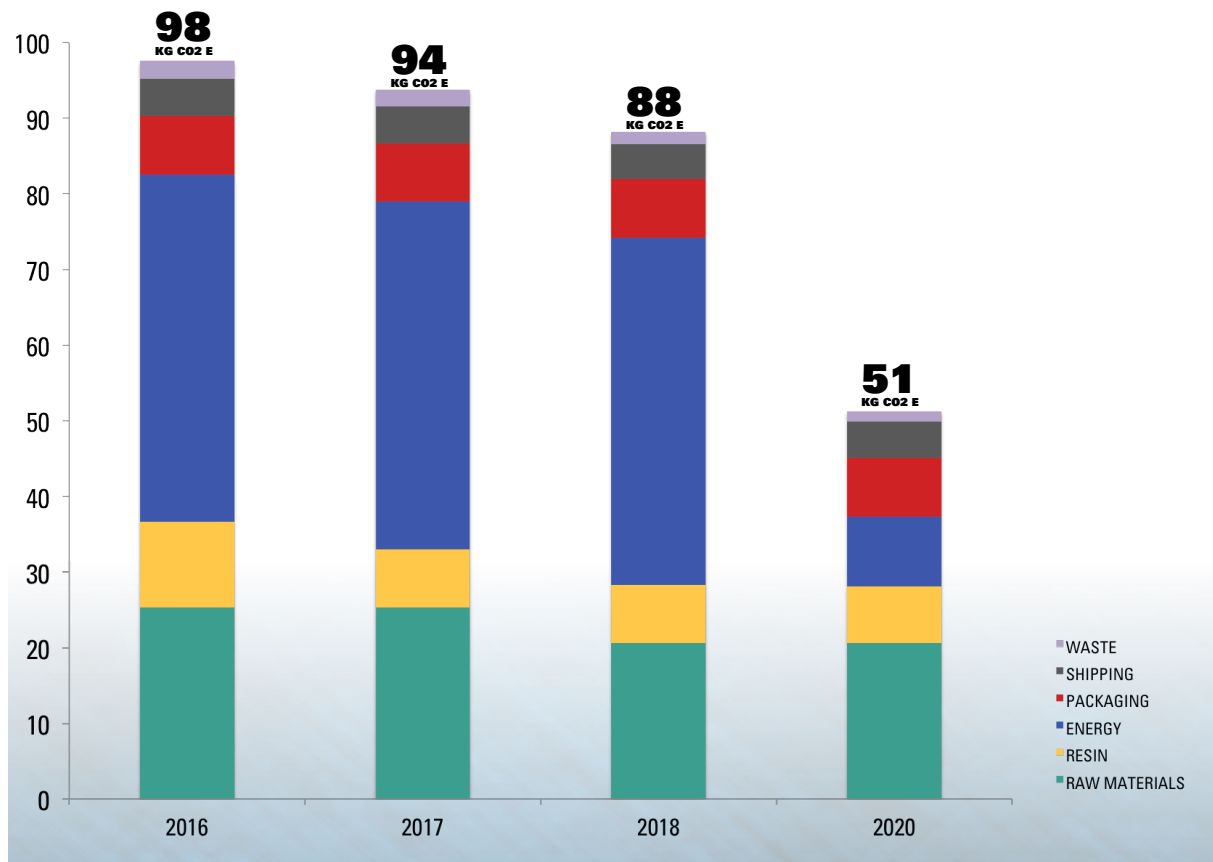
DIAGRAM: Starboards emitted CO₂ in FY 2017 contra how much CO₂ we will absorb over the next 20 years from our mangroves planted the same year.

The diagram above is including emissions from the ISA event in FIJI. Check out their carbon footprint [here](#).

HOW MUCH CAN WE REDUCE A BOARDS CARBON FOOTPRINT IN 4 YEARS?

WHOPPER "BLUE CARBON"

REDUCING CARBON FOOTPRINT YEAR BY YEAR



We target to reduce the footprint of our Blue Carbon paddleboards with 50% within 2020. This can be achieved by using 100% solar energy, recycled and BIO materials.

2016: Our business as usual offering of the 2016 model year line.

2017: Our first line of sustainable boards with 33% BIO resin with a 50% lower footprint than the previous resin and transition to non plastic packaging.

2018: Continued use of the 33% BIO resin, added features such as 50% recycled EVA (deckpad), recycled fins and boxes, less paint. PVC replaced with balsa wood.

2020: To reach our goal of reducing the footprint by 50%, there will be solar power on assemblers roofs (reducing energy emission by about 80%), move to 56% BIO resin and continue the search for recycled and BIO materials.

SUSTAINABILITY IS NOW IN OUR LONG TERM BUSINESS PLAN

We invite you to get on board and join us.

