11th Hour Racing Team
IMOCA 60 Sustainable Design & Build Report
- 2021 -

SCENARIO ANALYSIS - TRANSPORT

Supporting the main report
this document **Scenario analysis - Transport**
quantifies the impacts of transport of major components associated with
the design and build of 11th Hour Racing team IMOCA - 11-2

Measurements used are
kilos (kg), metric tons (t), Greenhouse gas (tC02e) or (kgC02e)

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DISCLAIMER

The team's LCA results were calculated using MarineShift360.
Backed by 11th Hour Racing as Founding Sponsor, MarineShift360 is a purpose-built marine industry life cycle assessment tool. MarineShift360 is an ISO 14040:2006 & ISO 14044:2006 compliant and certified life cycle assessment tool. LCA results herein are calculated using MarineShift360, which is under development and is currently in beta stage.
No statements regarding accuracy are made and results may change over time as the development of MarineShift360 continues.

Objective

The main objective of this scenario analysis is to identify and quantify the largest GHG impact linked to international transport stages in order to evaluate the potential environmental gain of using local suppliers.

Context

The differences of GHG impacts between transport types are very significant, with airfreight being almost 10 times more than road, and 100 times more than sea & rail.

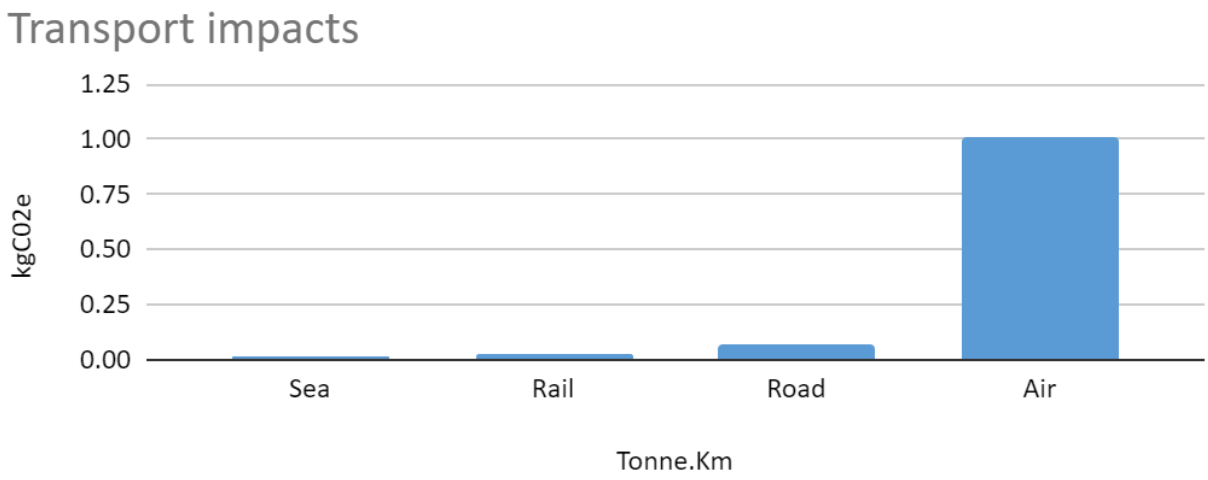

Figure: Source GHG protocol, GHG emissions by Tonne.km

Although the contribution of the transport stage of all materials is less than 2% (9t C02e) of the total C02e emissions of the full design and build (553 tC02e), some notable parts of the boat were built in other countries resulting in airfreight or long road distances.
It concerns :

- The Hull and Deck moulds : From Spain to Lorient
- One boom : From New Zealand to Lorient

Table: Assessing the GHG impacts of international freight choices, Calculated using GHG protocol, 2021

INTERNATIONAL FREIGHT	Quantity	Mode	km	Weight	Factor	Factor	kgC02e	% Total GHG (553 tC02e)
Boom	1	Air	18500	0.13	ton.km	1.01	2,429	0.44%
Hull and deck molds	3	Road	1500	8	Truck.km	1	4,500	0.81%
Total							6,929	1.25%

Conclusions:

The transport of the hull and deck moulds represents a major part of transport GHG emissions (4.5tC02e). This can be explained by the weight and dimension of the final parts which directly influences the GHG emissions.
The boom air freight from New Zealand, a significant distance by airfreight, represents 2.4tC02e, note per kg the impact of air freight transport is ***10 times*** that of road.

Recommendations:

- A total 7 tC02e can be saved by using closer supply chain solutions and builders from the same country of construction site.
- Where long distance transport is required forward planning enables the use of lower impact transport methods such as sea freight which is 100 times lower impact than airfreight