European Green Compound

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Presentation

EGC offers two new generations of agro-compounds: its product line Eco-Materials and its product line Bio-Materials ("Eco" for polymers derived from petroleum and "Bio" for PLA polymers derived from starch) which are associated with micronized wood fibers, olive stone or rice hull. Six references were studied Ecobois, Ecolive , Ecobardi, Biobois, Biolive & Biobardi.

Real partner in the development of new materials with optimized overall performance in terms of their occupancy, EGC supports through its network of partners all industrial extruder or injection willing to innovate and implement high-performance materials with minimized environmental impact.

Its customers are plastic processors who manufacture products in the areas of landscaping, decorating, building and construction, packaging, gardening, etc. ....

Goal of the project

EGC wanted to measure the environmental performance of its product line "Eco" and "Bio" to validate its business strategy. This study was an opportunity to know exactly what the potential environmental impacts of different EGC products are, and to consider improvements in technology, material, equipment and organizational.

This will help to drive future choices, to consolidate or not ways for innovation or improvement

EGC also wanted to compare the use of its products with competitive solutions in order to improve its sales presentation.

The Functional Unit

The functional unit is the reference unit of the life cycle assessment, for this project it's:

The production of one kilogram of compound filled with micronized natural fibers up to the Publy production site door.

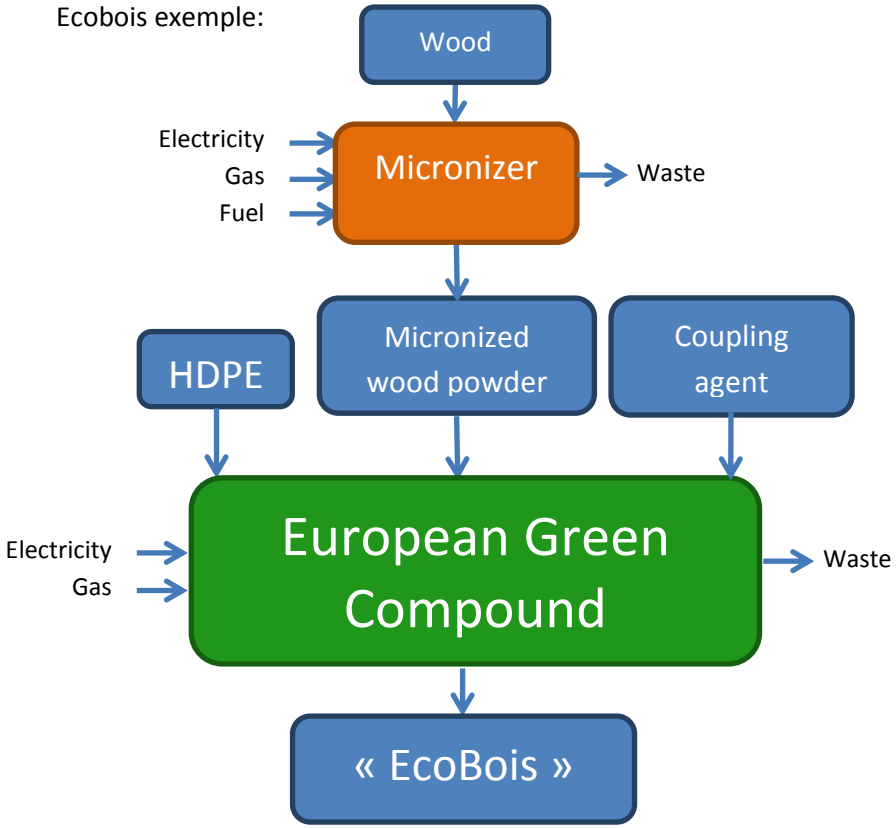
Sequences of project

- Project goals and scopes were defined
- All energy and material flows within the scope were measured and collected.
- Flows were modeled in Life Cycle Assessment software to calculate the potential impacts of the agro-compound production.
- Results were analyzed and laid up for more readability.
- Recommendations were given to improve the environmental profile

Scope of the project

During this project, we have studied the environmental impacts of agro-compound (raw materials) produced by EGC up to the door of its Publy production site.

Ecobois exemple:



Calculation method used

For this project, environmental impact indicators from the standard NFP 01-010 were used. This standard is a French standard assessment of environmental impacts specific to the building sector. This choice is justified by the fact that these standard indicators are valid for most industrial sectors and EGC products find opportunities in the building sector (floor decking, interior layout...).

Potential impact indicators used in this standard are:

- Energy consumption in MJ
- Abiotic depletion expressed in kg antimony equivalent.
- Water consumption in liters.
- Solid waste in kg.
- Climate change expressed in kg CO_2 equivalent
- Atmospheric acidification expressed in kg SO_2 equivalent.
- Air pollution expressed in m^3 of air necessary to dilute the emissions
- Water pollution expressed in m^3 of water required to dilute the emissions
- Ozone layer depletion expressed in kg CFC-11 equivalent.
- Photochemical ozone formation expressed in kg ethylene equivalent.

Results

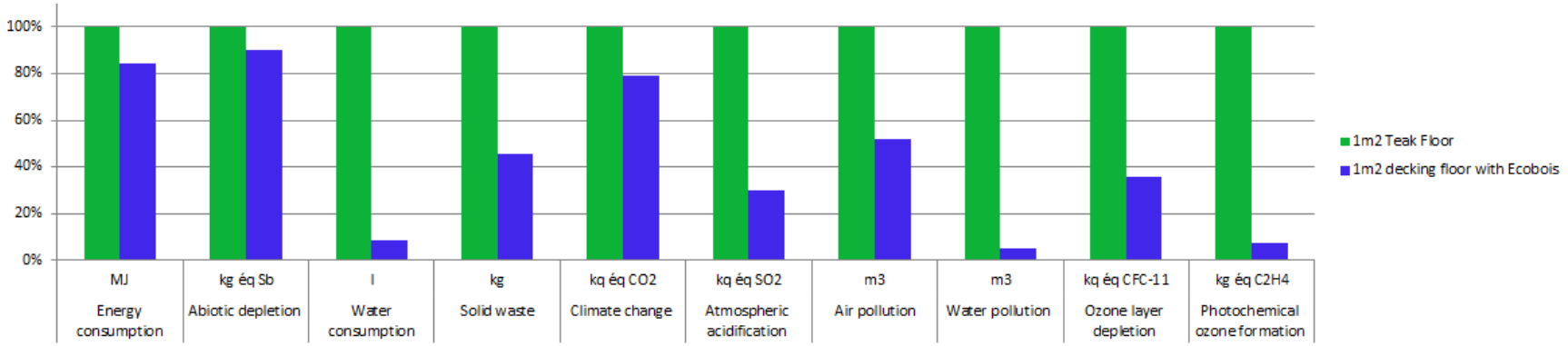
The table below shows the raw results of the impact of the production of 1 kilo of “Ecobois” with HDPE resin.

	Energy consumption	Abiotic depletion	Water consumption	Solid waste	Climate change	Atmospheric acidification	Air pollution	Water pollution	Ozone layer depletion	Photochemical ozone formation
	MJ	kg éq Sb	l	kg	kq éq CO2	kq éq SO2	m3	m3	kq éq CFC-11	kg éq C2H4
Wood	3,65E-02	1,55E-05	9,30E-03	3,40E-07	2,15E-03	9,96E-06	1,31E-01	3,13E-01	2,06E-13	8,33E-08
Electricity, production wood powder	2,50E+00	1,33E-04	1,52E+00	1,32E-05	1,98E-02	1,22E-04	2,44E+00	1,10E+00	1,50E-11	6,30E-07
Gaz, production wood powder	3,17E+00	1,38E-03	3,08E-02	8,12E-08	1,00E-01	1,14E-04	2,12E+00	1,90E+00	4,93E-14	4,09E-05
Fuel, production wood powder	4,93E-01	2,17E-04	1,00E-01	6,54E-06	2,64E-02	1,06E-04	1,53E+00	3,87E+00	1,91E-12	1,12E-05
Wood micronized fiber	1,83E-02	7,75E-06	4,65E-03	1,70E-07	1,07E-03	4,98E-06	6,54E-02	1,56E-01	1,03E-13	4,17E-08
HDPE	2,29E+01	9,88E-03	1,24E+00	1,51E-05	5,94E-01	2,11E-03	6,10E+01	1,05E+01	6,29E-12	1,25E-05
Coupling agent	1,47E+00	6,24E-04	2,21E-01	1,61E-05	9,92E-02	1,90E-04	2,37E+00	7,56E+00	1,08E-11	2,77E-06
Electricity, EGC production site	4,35E+00	2,31E-04	2,64E+00	2,29E-05	3,43E-02	2,12E-04	4,23E+00	1,91E+00	2,61E-11	1,09E-06
Ecobois	**3,50E+01**	**1,25E-02**	**5,78E+00**	**7,45E-05**	**8,77E-01**	**2,87E-03**	**7,39E+01**	**2,73E+01**	**6,05E-11**	**6,92E-05**

Impacts are mainly linked to the quantity of HDPE used and also from energy consumed to micronize vegetable fibers and to manufacture the compound.

These results are interesting for the company but are not indicative of the environmental performance of products for the customers. To improve the measure it is necessary to make a comparison in use. For this, we compared the use of "Ecobois" in decking floor with its competitor in teak on a surface of $1m^2$ over a period of 30 years.

The results:



In our study conditions and in light of information currently available, over a period of 30 years, Ecobois decking is more efficient than the Teak decking because it has the advantage of requiring no maintenance with teak and synthetic oil unlike its competitor.

efficient innovation

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