

# AGRICULTURE AND AGRIFOOD BIODIVERSITY FOOTPRINT

Sectoral appendix

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Version 1 – DRAFT

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## A. PURPOSE OF THE DOCUMENT

The current **sectoral appendix** supports the **Food and Agriculture benchmark factsheet** and provides additional content that could not be included in the factsheet due to space constraints. Such additional content relates to the perimeter of the factsheet, more detailed results and charts and specific methodology and references.

In addition to the sectoral appendix, this factsheet is supplemented by two documents, common to all the factsheets:

- A **general appendix**, which provides methodological elements to understand how the sectoral benchmark factsheets are built and how computations and charts are obtained. It includes all the methodology and references which are common to all the factsheets, as well as guidance on how to read and use the factsheets.

A **reading guide**, which explains the structure of the factsheets. It provides the main contents, definitions and necessary elements to know how to read the factsheets for readers with limited knowledge about the Global Biodiversity Score.

Figure 1 below encapsulates the four benchmark documents available for each sector.



Figure 1: The four benchmark documents.

## B. WHAT DOES THE SECTOR INCLUDE?

The factsheet covers the Agriculture and Agrifood sector which is made of three EXIOBASE industries: “Crop and animal production, hunting and related service activities” (45% of the Agriculture and Agrifood sector), “Manufacture of food products” (47% of the Agriculture and Agrifood sector), and “Manufacture of beverages” (7% of the Agriculture and Agrifood sector).

The name of the industry group “Crop and animal production, hunting and related service activities” was changed to “Crop and animal production” for simplification purposes. The impact of commercial hunting is not assessed by the GBS 1.0.0.

The “Fishing, operating of fish hatcheries and fish farms” and “Manure treatment (biogas), storage and land application, Manure treatment (conventional), storage and land application” have been removed. The fishing sector was excluded from the GBS assessment because of the current lack of sufficient data and methods on marine biodiversity in the GBS (CDC Biodiversité 2020d). As for the manure sector, it was excluded due to a lack of information for most EXIOBASE regions, rendering averaged results biased.

These EXIOBASE industries correspond to divisions 1: Crop and animal production, hunting and related service activities 10: Manufacture of food products and 11: Manufacture of beverages of the NACE rev 2 classification.

The division 1 gathers all activities under “Crop and animal production, hunting and related service activities”, namely:

- Growing of non-perennial crops (1.1).

Which excludes:

- Growing of oleaginous fruits (included in 1.2)
- Growing of chillies, peppers (capsicum sop.) and other spices and aromatic crops (included in 1.2)
- Growing of mushroom sp
- awn (included in 1.3)
- Manufacture of tobacco products
- Growing of non-perennial spices, aromatic, drug and pharmaceutical crops (included in 1.2)

- Growing of perennial crops (1.2).

Which excludes:

- Manufacture of wine
- Growing of soya beans, groundnuts and other oil seeds (included in 1.1)
- Gathering of tree sap or rubber-like gums in the wild
- Growing of flowers, production of cut flower buds and growing of flower seeds (included in 1.1)

- Plant propagation (1.3).

Which excludes:

- Growing of plants for the purpose of seed production (included in 1.1 and 1.2)
- Operation of forest tree nurseries
- Farm animal boarding and care, (included in 1.6)
- Production of hides and skins from slaughterhouses

- Animal production (1.4).

Which excludes:

- Processing of milk

- Operation of racing and riding stables
- Sheep shearing on a fee or contract basis (included in 1.6)
- Production of pulled wool
- Processing of milk
- Production of feathers or down
- Production of hides and skins originating from hunting and trapping (included in 1.7)
- Operation of frog farms, crocodile farms, marine worm farms
- Operation of fish farms
- Boarding and training of pet animals

- Mixed farming (1.5)

Which excludes:

- Mixed crop farming (included in 1.1 and 1.2)
  - Mixed animal farming (included in 1.4)
- Support activities to agriculture and post-harvest crop activities (1.6).

Which excludes:

- Drainage of agricultural land
  - Landscape architecture
  - Activities of agronomists and agricultural economists
  - Landscape gardening, planting
  - Organisation of agricultural shows and fairs
  - Provision of space for animal boarding only
  - Veterinary activities
  - Vaccination of animals
  - Renting of animals (e.g. herds)
  - Pet boarding
  - Preparation of agricultural products by the producer, see corresponding class in groups (included in 1.1, 1.2 and 1.3)
  - Stemming and redrying of tobacco
  - Marketing activities of commission merchants and cooperative associations
  - Wholesale of agricultural raw materials
  - Growing of seeds, see groups (included in 1.1 and 1.2)
  - Processing of seeds to obtain oil
  - Research to develop or modify new forms of seeds
- Hunting, trapping and related service activities (1.7)

Which excludes:

- Production of fur skins, reptile or bird skins from ranching operations (included in 1.4)
- Raising of game animals on ranching operations (included in 1.4)

- catching of whales
- Production of hides and skins originating from slaughterhouses
- Hunting for sport or recreation and related service activities
- Service activities to promote hunting and trapping

The division 10 gathers all activities under “Manufacture of food products”, namely:

- Processing and preserving of meat and production of meat products (10.1)

Which excludes:

- Packaging of meat
- Manufacture of prepared frozen meat and poultry dishes
- Manufacture of soup containing meat
- Wholesale trade of meat

- Processing and preserving of fish, crustaceans and molluscs (10.2)

Which excludes:

- Processing and preserving of fish on vessels engaged in fishing
- Processing of whales on land or specialised vessels (included in 10.1)
- Production of oils and fats from marine material (included in 10.4)
- Manufacture of prepared frozen fish dishes (included in 10.8)
- Manufacture of fish soups,

- Processing and preserving of fruit and vegetables (10.3)

Which excludes:

- Processing manufacture of flour or meal of dried leguminous vegetables (included in 10.6)
- Preservation of fruit and nuts in sugar (included in 10.8)
- Manufacture of prepared vegetable dishes (included in 10.8)
- Manufacture of artificial concentrates (included in 10.8)

- Manufacture of vegetable and animal oils and fats (10.4)

Which excludes:

- Rendering and refining of lard and other edible animal fats (included in 10.1)
- Wet corn milling (included in 10.6)
- Manufacture of corn oil (included in 10.6)
- Production of essential oils
- Treatment of oil and fats by chemical processes

- Manufacture of dairy products (10.5)

Which excludes:

- Production of raw milk (cattle)
- Production of raw milk (sheep, goats, horses, asses, camels, etc.)



- Manufacture of non-dairy milk and cheese substitutes (included in 10.8)
- Activities of ice cream parlours
- Manufacture of grain mill products, starches and starch products (10.6)

Which excludes:

- manufacture of potato flour and meal (included in 10.3)
- manufacture of lactose (milk sugar) (included in 10.5)
- Production of cane or beet sugar (included in 10.8)
- Manufacture of bakery and farinaceous products (10.7)

Which excludes:

- Heating up of bakery items for immediate consumption
- Manufacture of potato snacks (included in 10.3)
- Manufacture of prepared couscous dishes (included in 10.8)
- Manufacture of soup containing pasta (included in 10.8)

- Manufacture of other food products (10.8)

Which excludes

- manufacture of glucose, glucose syrup, maltose (included in 10.6)
  - Manufacture of inulin (included in 10.6)
  - Manufacture of spirits, beer, wine and soft drinks (included in 11)
  - Preparation of botanical products for pharmaceutical use
  - Growing of spice crops (included in 1.2)
  - Retail sale of prepared meals and dishes in stores
  - Wholesale of prepared meals and dishes
  - Activities of food service contractors
  - Manufacture of perishable prepared foods of fruit and vegetables (included in 10.3)
  - Manufacture of spirits, beer, wine and soft drinks (included in 11)
  - Production of fishmeal for animal feed, see 10.20
  - Production of oilseed cake (included in 10.4)
  - Activities resulting in by-products usable as animal feed without special treatment, e.g. oilseeds (included in 10.4), grain milling residues (included in 10.6) etc.
  - Manufacture of prepared animal feeds (10.9)
- Which excludes
- Production of fishmeal for animal feed (included in 10.20)
  - Production of oilseed cake (included in 10.4)
  - Activities resulting in by-products usable as animal feed without special treatment, e.g. oilseeds (included in 10.4)
  - Grain milling residues (included in 10.6) etc.

The division 11 gathers all activities under “Manufacture of beverages”, namely:

**Manufacture of beverages (11)**

Which excludes:

- Production of fruit and vegetable juices (included in 10.3)
- Manufacture of milk-based drinks (included in 10.5)
- Manufacture of coffee, tea and mate products (included in 10.8)
- Manufacture of synthetic ethyl alcohol (included in 20.1)
- Manufacture of ethyl alcohol from fermented materials (included in 20.1)
- Merely bottling and labelling
- Manufacture of ice

## C. ADDITIONAL RESULTS

The following calculations presented in the tables were made with the GBS 1.2.2 by Alexis Costes in October 2021. The pressure “Ecotoxicity” is not included in the results of the benchmark because the methodology is still preliminary and calls for further work, impacts are therefore underestimated. As a reminder, the genetic diversity of seeds, cultivated plants, farmed, and domesticated animals are not included in the calculations as the GBS is focused on functional diversity and not generic diversity.

*Table 1: Scope 1 impact intensities for the Agriculture and Agrifood sector benchmark, computation with GBS 1.2.2 in October 2021, by Alexis Costes*

Accounting category	Realm	Footprint in MSA.m <sup>2</sup> /kEUR	Footprint in MSAppb/bEUR	Footprint in MSAppb/bEUR
Dynamic	Aquatic	1.3	130	250
	Terrestrial	16	120	
Static	Aquatic	290	28 000	56 000
	Terrestrial	3 800	28 000	



Table 2: Vertically integrated<sup>1</sup> impact intensities for Agriculture and Agrifood, computation with GBS 1.2.2 in October 2021, by Alexis Costes

Accounting category	Realm	Footprint in MSA.m <sup>2</sup> /kEUR	Footprint in MSAppb/bEUR	Footprint in MSAppb/bEUR
Dynamic	Aquatic	2.8	270	510
	Terrestrial	32	240	
Static	Aquatic	550	53 000	106 000
	Terrestrial	7 100	53 000	

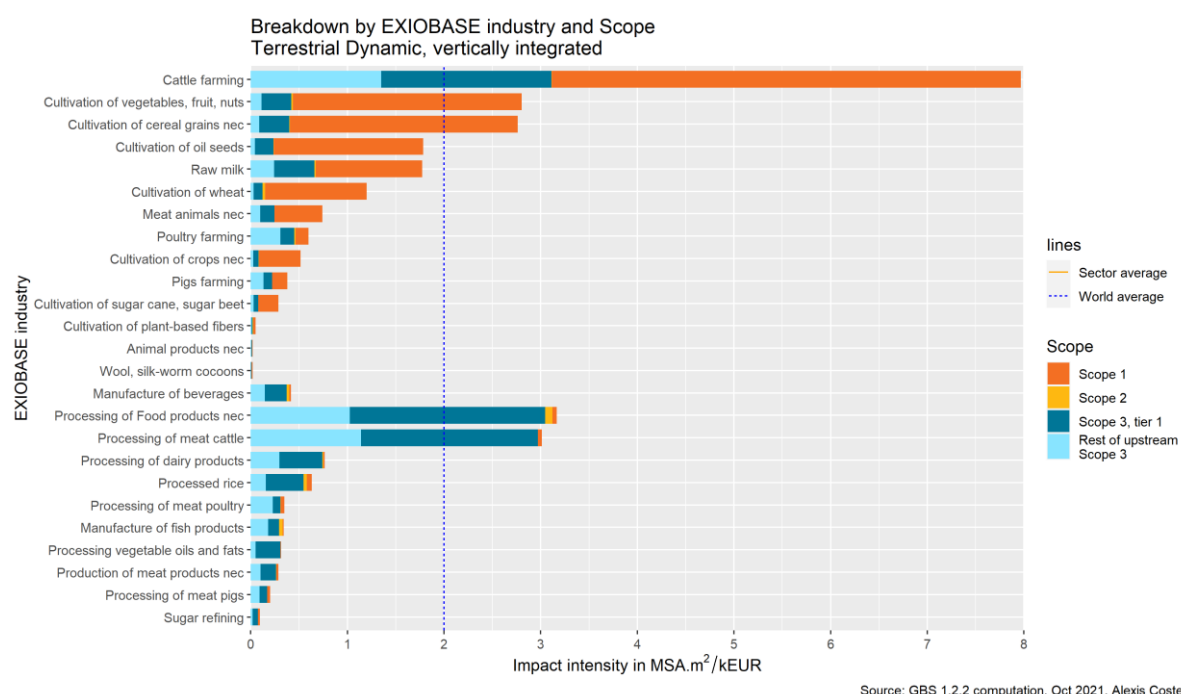


Figure 2: Breakdown by EXIOBASE industry and Scope, terrestrial dynamic, vertically integrated. MSA.m<sup>2</sup>/kEUR means MSA.m<sup>2</sup> per kEUR of turnover of the whole Agriculture and Agrifood sector.

<sup>1</sup> Vertically integrated = Scope 1 + Scope 2 + Upstream Scope 3

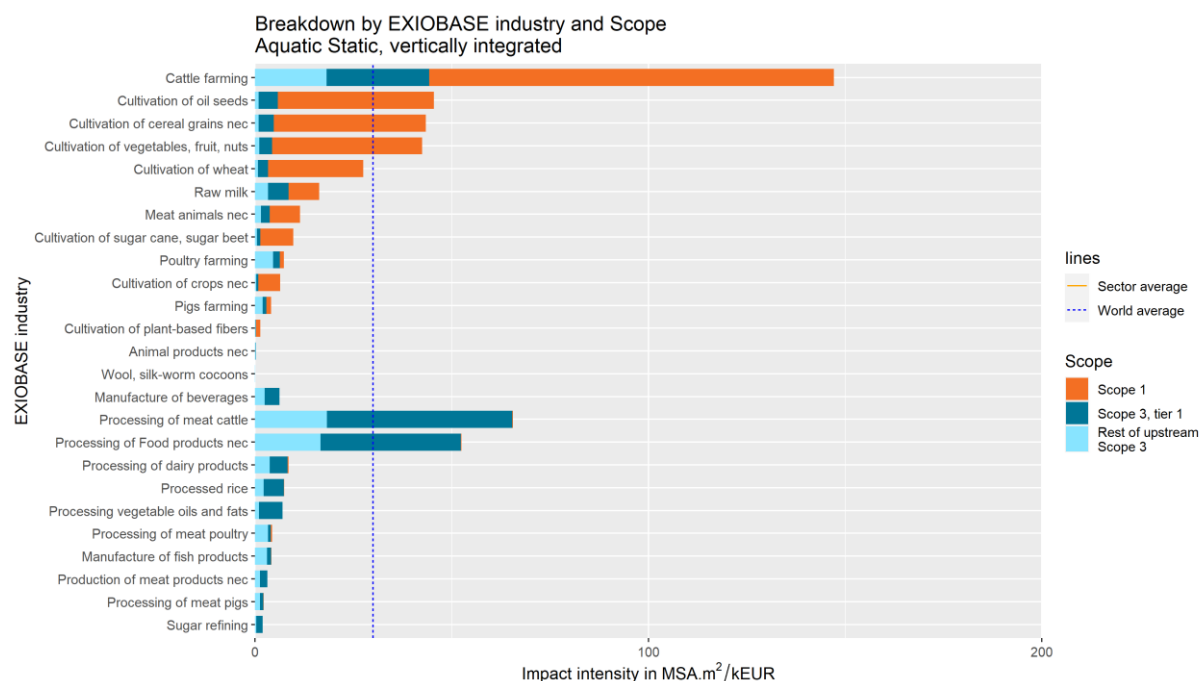


Figure 3: Breakdown by EXIOBASE industry and Scope, aquatic static, vertically integrated. MSA.m²/kEUR means MSA.m² per kEUR of turnover of the whole Agriculture and Agrifood sector.

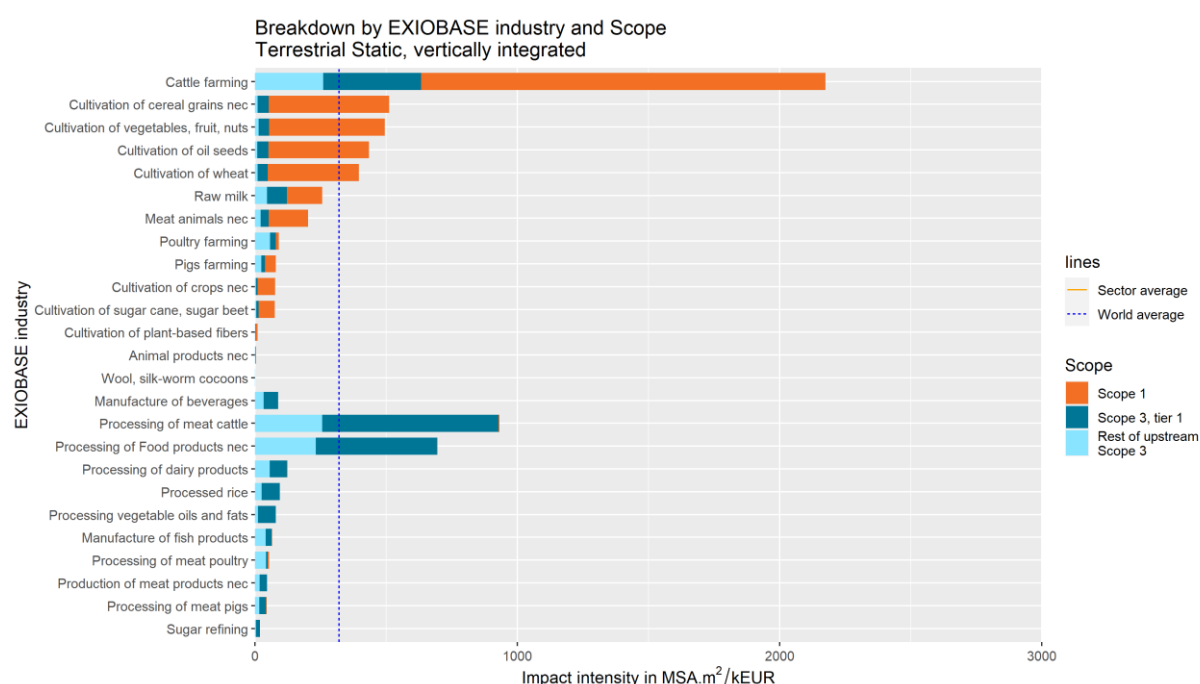


Figure 4: Breakdown by EXIOBASE industry and Scope, terrestrial static, vertically integrated. MSA.m²/kEUR means MSA.m² per kEUR of turnover of the whole Agriculture and Agrifood sector.

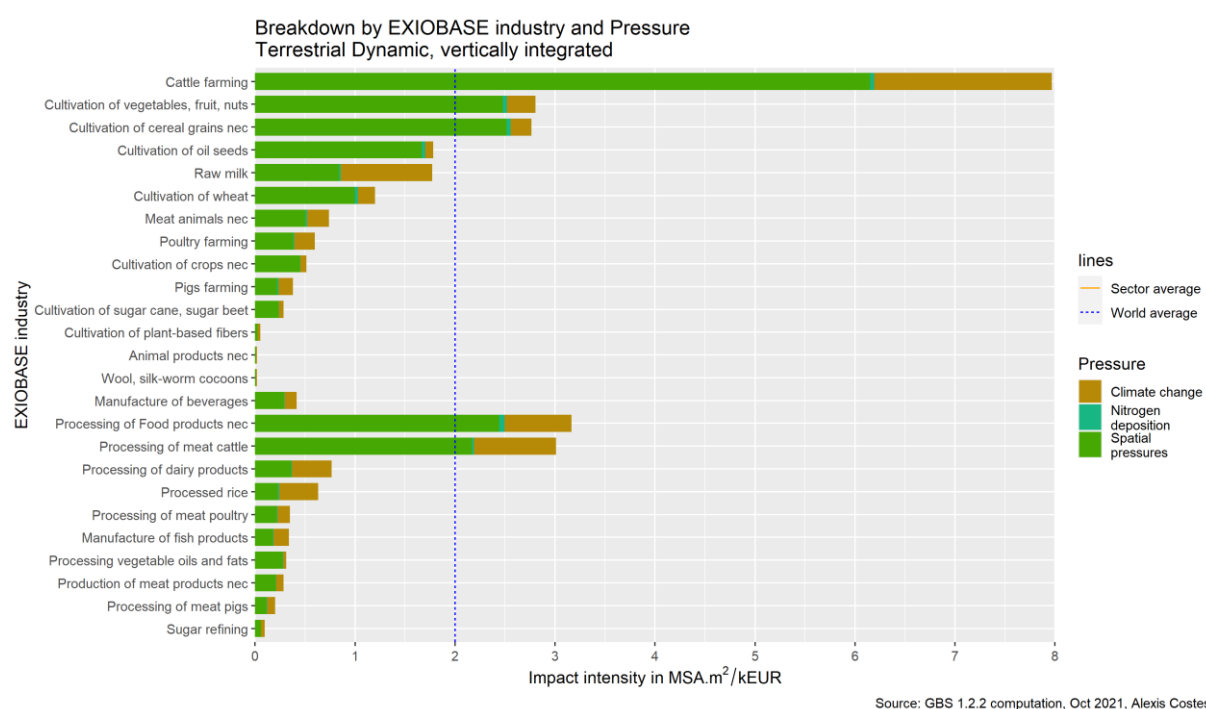


Figure 5: Breakdown by EXIOBASE industry and pressure, terrestrial dynamic, vertically integrated. MSA.m²/kEUR means MSA.m² per kEUR of turnover of the whole Agriculture and Agrifood sector.

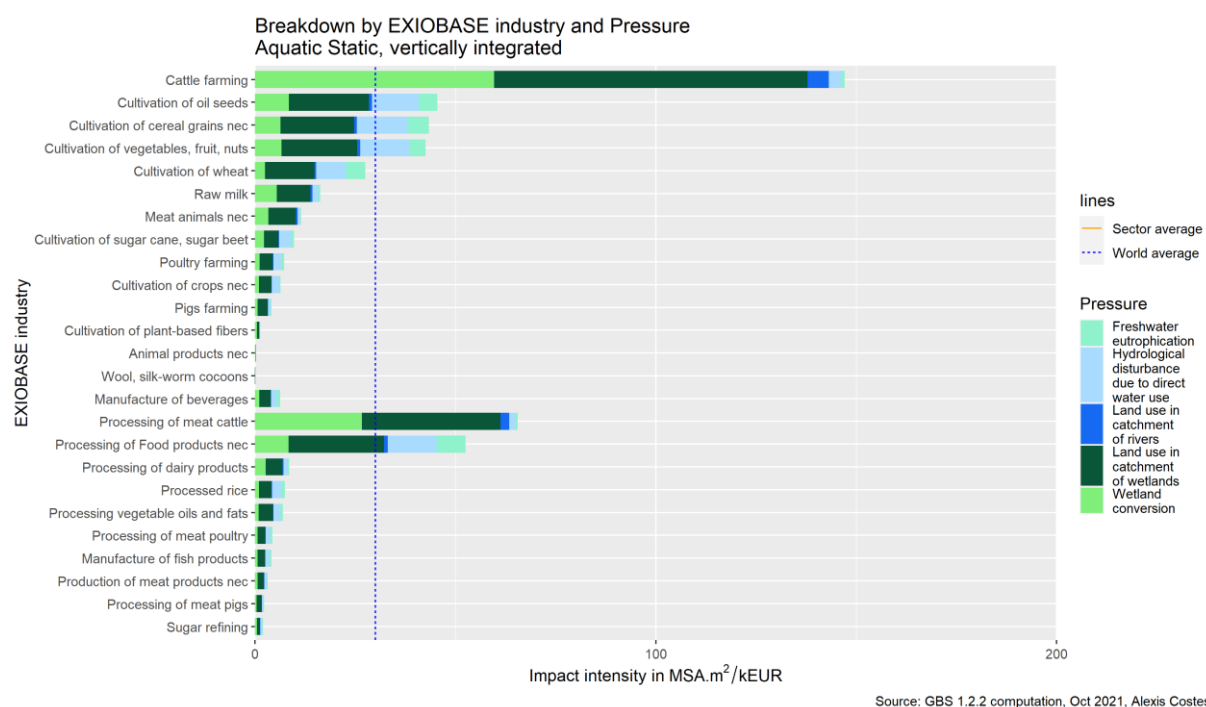


Figure 6: Breakdown by EXIOBASE industry and pressure, aquatic static, vertically integrated. MSA.m²/kEUR means MSA.m² per kEUR of turnover of the whole Agriculture and Agrifood sector.

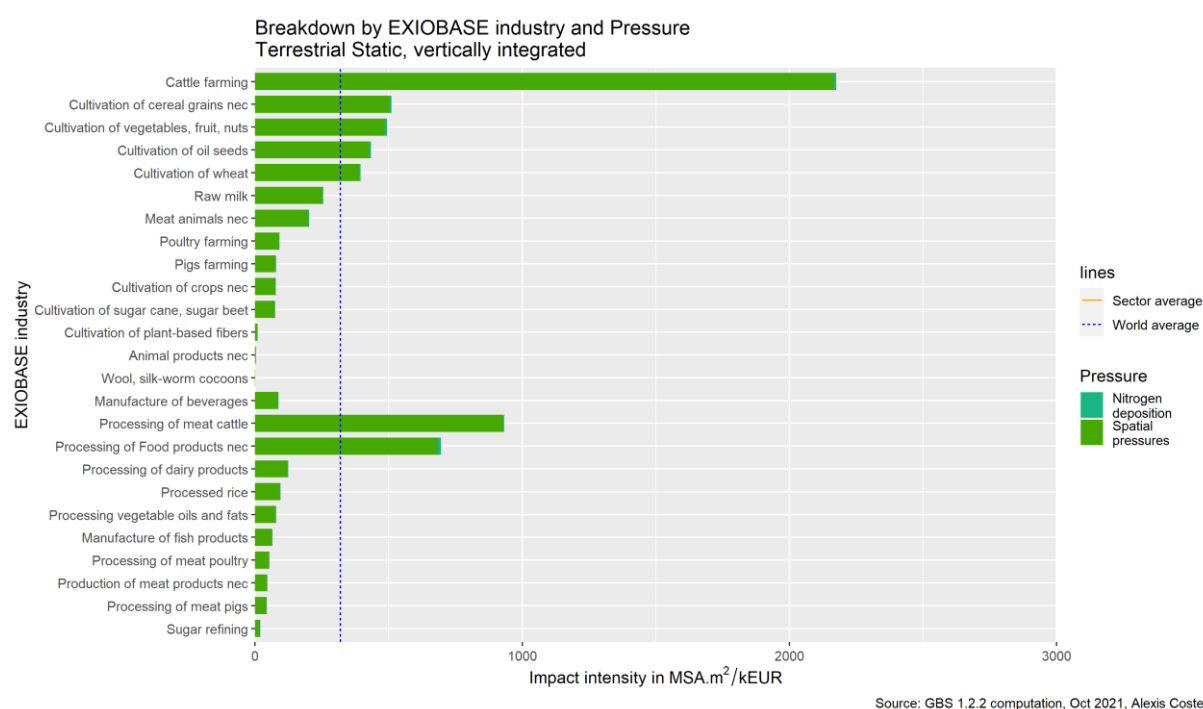


Figure 7: Breakdown by EXIOBASE industry and pressure, terrestrial static, vertically integrated. MSA.m²/kEUR means MSA.m² per kEUR of turnover of the whole Agriculture and Agrifood sector.

## D. ADDITIONAL DNSH GUIDELINES

The main Do No Significant Harm criteria for the sector (EU Technical Expert Group on Sustainable Finance 2020a) are provided in the factsheets. Additional criteria which did not fit within the factsheet are listed below (EU Technical Expert Group on Sustainable Finance 2020b).

### To not harm the objective of Circular economy and waste prevention and recycling, activities should:

Minimize raw material use per unit of output, including energy through increased resource use efficiency.

Minimize the loss of nutrients (in particular nitrogen and phosphate) leaching out from the production system into the environment.

Use residues and by-products of the production or harvesting of crops to reduce demand for primary resources, in line with good agricultural practice.

For Livestock production: activities should use residues and by-products and take any other measures to minimize primary raw material use per unit of output, including energy.

### To not harm the objective of Pollution prevention and control:

Nutrients (fertilizers) and plant protection products (e.g. pesticides and herbicides) should be targeted in their application (in time and area treated) and be delivered at appropriate levels (with preference to sustainable biological, physical or other non-chemical methods if possible) and with appropriate

equipment and techniques to reduce risk and impacts of pesticide use on human health and the environment (e.g. water and air pollution) and the loss of excess nutrients.

The use only of plant protection products with active substances that ensure high protection of human and animal health and the environment through leaching, volatilization or oxidation.

Ensure emissions to air, water and soil are within the BATAEL ranges / are prevented or reduced by using a combination of BAT techniques as set out in the BREF for the Intensive Rearing of Poultry or Pigs, and by using similar emission reducing techniques for dairy farming.

Ensure that mitigation and emission reduction techniques for feeding and housing of livestock and for manure storage and processing are applied, as recommended in the UNECE Framework Code for Good Agricultural Practice for Reducing Ammonia.

Where manure is applied to the land, activities should comply with the limit of 170kg nitrogen application per hectare per year, or alternatively, the derogated threshold where one has been set in that member state.

## E. ADDITIONAL POSSIBLE ACTIONS TO REDUCE THE IMPACT ON BIODIVERSITY

SMEs (Small and medium enterprises) and industries can refer to the “Practical guide on biodiversity for SMEs in the Agri-food sector” published by the European Commission and Business @ Biodiversity Platform (Fillet, Kisielewicz, and Verstraeten 2022) for further guidance.

## F. SOURCES

Sources used in the Agriculture and agrifood benchmark factsheet are listed here.

« Biodiversité et Agriculture. 6 Recommandations pour la transition agroécologique des entreprises agroalimentaires ». Noé, février 2018.

<http://noe.org/wp-content/uploads/2018/03/NOE-RapportFili%C3%A8resWEB.compressed.pdf>.

Dudley, Nigel, et Sasha Alexander. « Agriculture and biodiversity: a review ». *Biodiversity*, 28 juillet 2017, 1-5. <https://doi.org/10.1080/14888386.2017.1351892>

Entreprises pour l’environnement. « Companies and Biodiversity Managing Impacts on the Value Chain », mars 2017.

<http://www.epe-asso.org/en/companies-and-biodiversity-managing-impacts-on-the-value-chain-march-2017/>

FAO. 2019. The State of the World’s Biodiversity for Food and Agriculture, J. Bélanger & D. Pilling (eds.). FAO Commission on Genetic Resources for Food and Agriculture Assessments. Rome. 572 pp. <http://www.fao.org/3/CA3129EN/CA3129EN.pdf>

In Bélanger, J., In Pilling, D., Commission on Genetic Resources for Food and Agriculture, Food and Agriculture Organization of the United Nations (2019). The state of the world's biodiversity for food and agriculture.

INRA. « How can French agriculture contribute to reducing greenhouse gas emissions? », 2013. <https://www.inrae.fr/sites/default/files/pdf/etude-ges-synthese-version-anglaise-final.pdf>.

World Business Council for Sustainable Development. « CEO Guide to Food System Transformation », octobre 2019.

<https://www.wbcsd.org/Programs/Food-and-Nature/Food-Land-Use/Resources/CEO-Guide-to-Food-System-Transformation>.

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