

# TRUE COSTS OF FOOD DATABASE

User Webinar



# AGENDA

- The data and methodology behind the database
- Demonstration of the database
- Q&A



# TRUE COSTS OF FOOD DATABASE

User Webinar



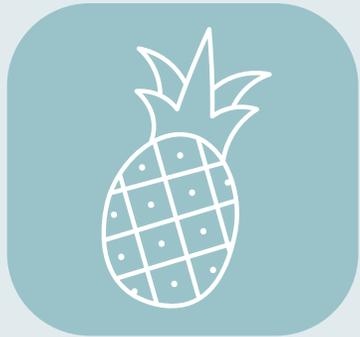
# ABOUT THE DATABASE

- The first open-access database on the true cost of food products consumed in the EU
- Covers production-related environmental and health impacts and associated hidden costs
- Created by TMG in collaboration with  True Price™
- Main data source: Sustainability Assessment of Foods and Diets (SAFAD) by SLU
- Download database and manual here

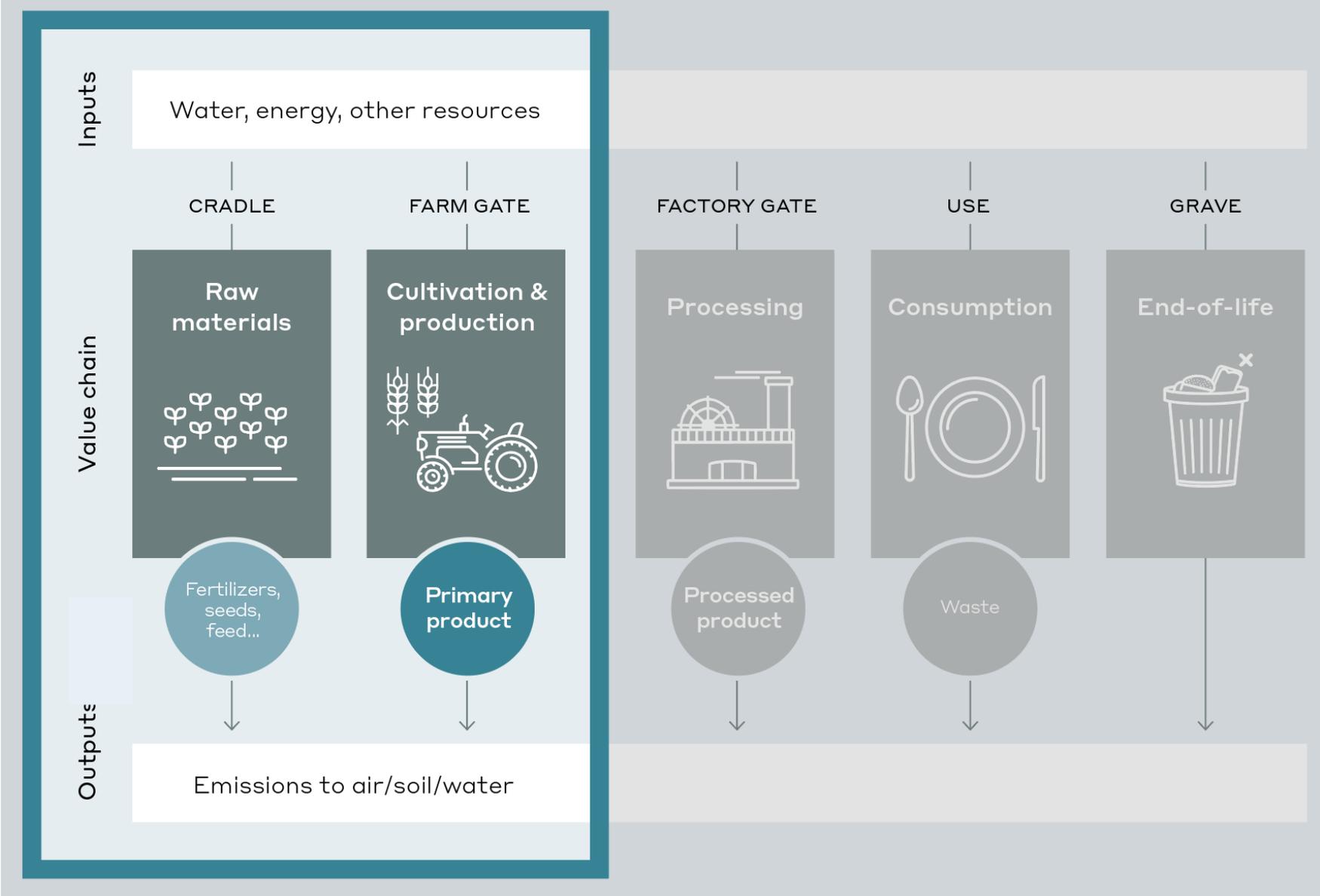


# SCOPE OF THE DATABASE

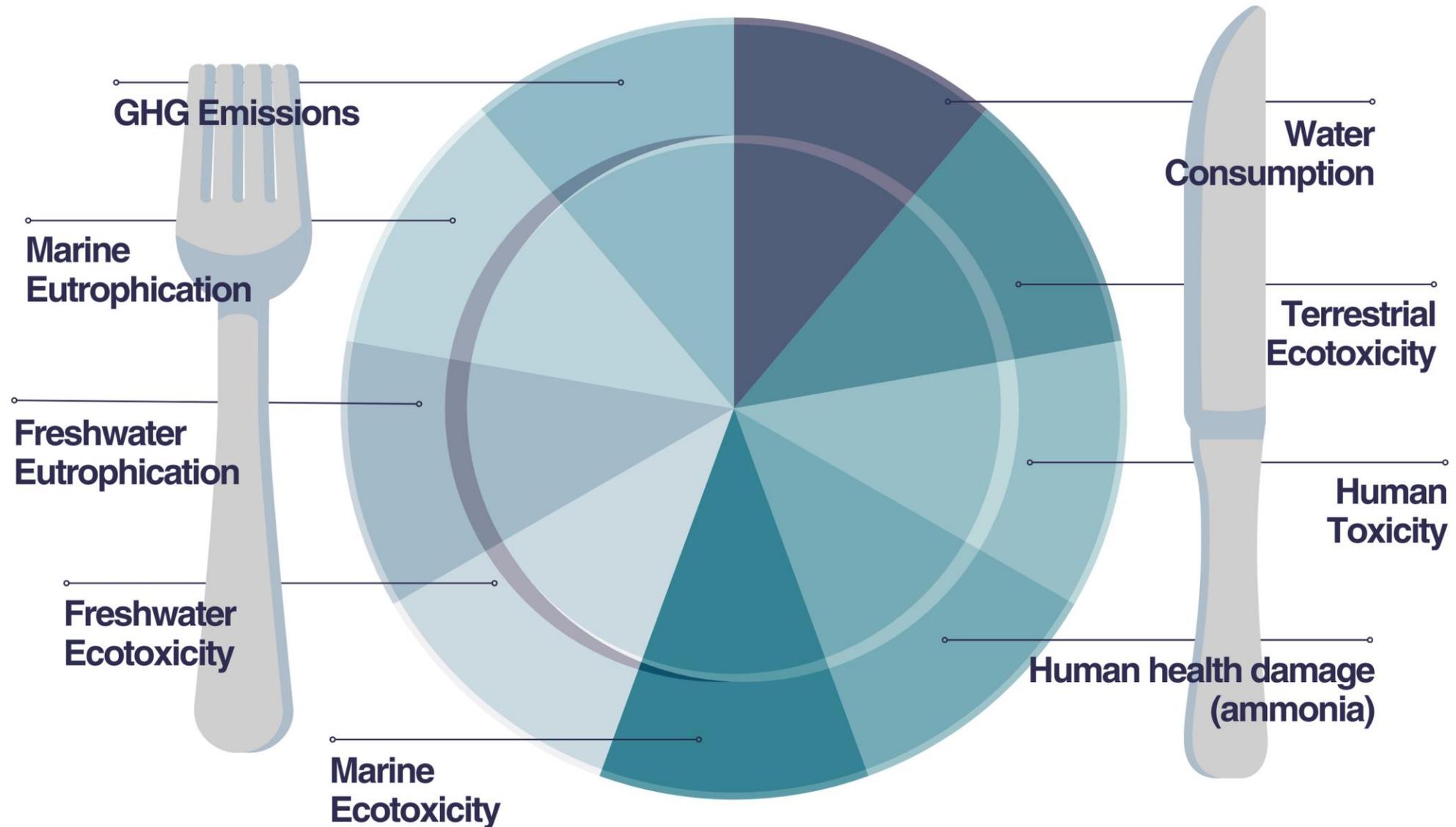
- 208 products consumed in EU
- sourced from 81 countries
- 2000+ product-country combinations
- raw products at farm gate



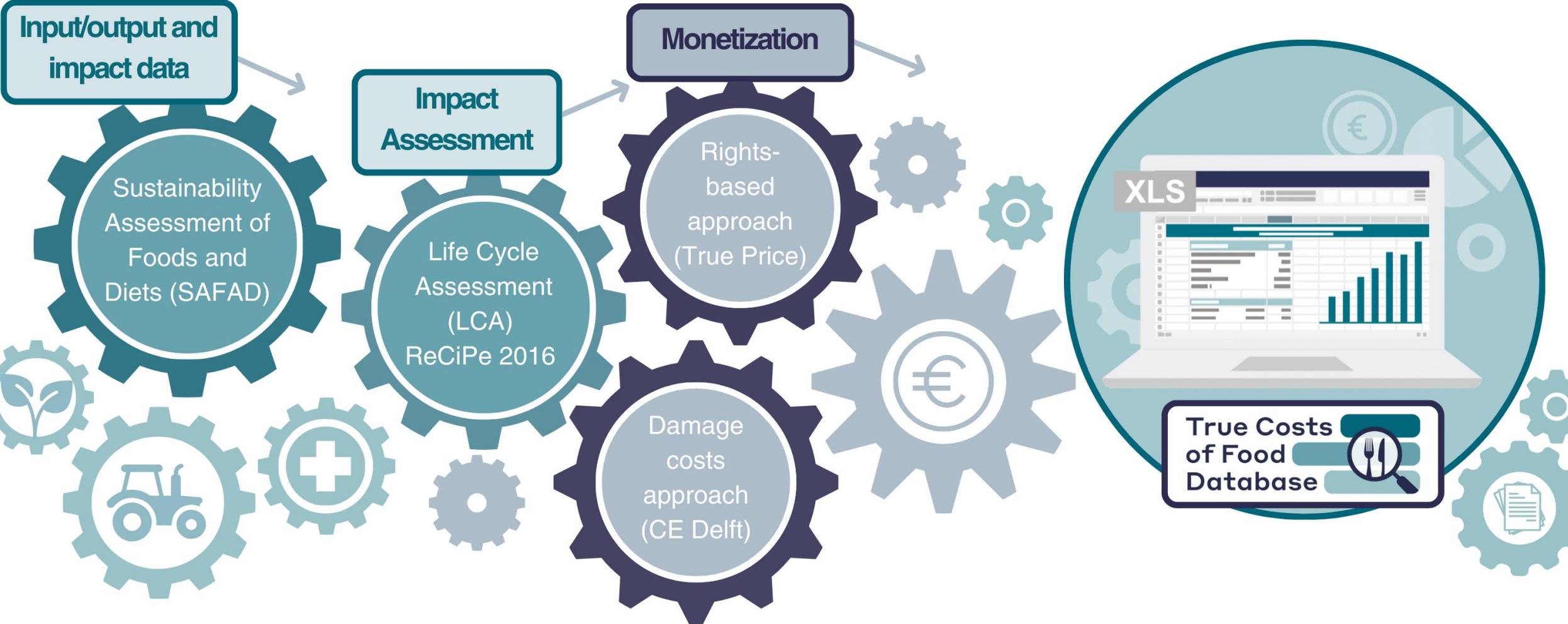
# SCOPE OF THE DATABASE



# SCOPE OF THE DATABASE



# How are true costs calculated?



# SAFAD v1.99 – DATA TYPE

The SAFAD database contains data at various levels:

- data at input and output level
- impact data at midpoint level



# SAFAD v1.99 – DATA TYPE



Climate change impacts are provided at midpoint level based on the well-recognized IPCC method.

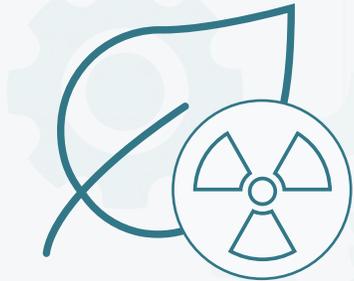


Water consumption is calculated using blue water footprint, equivalent to midpoint level.

# SAFAD v1.99 – DATA TYPE



Ammonia emissions are provided at output level.



Data on nitrogen, phosphorus, and pesticides are provided at input level.

# IMPACT ASSESSMENT METHOD



Indicator	Unit	Impact assessment method
GHG emissions	kg CO <sub>2</sub> -eq	GWP100 (IPCC, 2021)
Water consumption	m <sup>3</sup>	Blue water footprint (Mekonnen & Hoekstra, 2011)
Marine eutrophication	kg N-eq	ReCiPe 2016 - hierarchic midpoint
Freshwater eutrophication	kg P-eq	ReCiPe 2016 - hierarchic midpoint
Ecosystem (terrestrial, freshwater, marine) toxicity	kg 1,4-DCB-eq	ReCiPe 2016 - hierarchic midpoint
Human health impact - human toxicity (carcinogenic and non-carcinogenic)	DALYs	ReCiPe 2016 - hierarchic endpoint
Human health impact - ammonia emissions	DALYs	ReCiPe 2016 - hierarchic endpoint

# IMPACT ASSESSMENT METHOD



Indicator	Unit	Impact assessment method
GHG emissions	kg CO <sub>2</sub> -eq	GWP100 (IPCC, 2021)

- Total GHG emissions (carbon dioxide, methane, and nitrous oxide) from agricultural activities related to primary production
- Based on established methods used in LCA

# IMPACT ASSESSMENT METHOD



Indicator	Unit	Impact assessment method
Water consumption	m <sup>3</sup>	Blue water footprint (Mekonnen & Hoekstra, 2011)

- Volume of “blue water”: surface and groundwater consumed primarily for irrigation of crops
- Represents the volume of blue water used; does not directly reflect the environmental impact of water use
- Water scarcity is later accounted for with monetization

# IMPACT ASSESSMENT METHOD



Indicator	Unit	Impact assessment method
Marine eutrophication	kg N-eq	ReCiPe 2016 - hierarchic midpoint

- Emissions to water (kg N-eq to marine water) contribute to marine eutrophication
- Only accounts for new N inputs in fields (i.e. synthetic fertilizers, N fixed in legumes); does not account for N inputs through manure
- Characterization factors for emissions to agricultural soil from N inputs (kg N-eq/kg N) by ReCiPe 2016 used

# IMPACT ASSESSMENT METHOD



Indicator	Unit	Impact assessment method
Freshwater eutrophication	kg P-eq	ReCiPe 2016 - hierarchic midpoint

- Emissions to water (kg P-eq to freshwater) contribute to freshwater eutrophication
- Only accounts for new P inputs in fields (i.e. mined P); does not account for P inputs through manure
- Country-specific characterization factors for emissions to agricultural soil from P inputs (kg P-eq/kg P) from ReCiPe 2016 used

# IMPACT ASSESSMENT METHOD



Indicator	Unit	Impact assessment method
Ecosystem (terrestrial, freshwater, marine) toxicity	kg 1,4-DCB-eq	ReCiPe 2016 - hierarchic midpoint

- Emissions to air, soil, or water contribute to ecotoxicity
- Only accounts for toxic effects of pesticide application
- The composition of a global average pesticide mix used
- Characterization factors from ReCiPe 2016 applied to estimate ecotoxicity impacts

# IMPACT ASSESSMENT METHOD



Indicator	Unit	Impact assessment method
Human health impact - human toxicity (carcinogenic and non-carcinogenic)	Disability-Adjusted Life Years (DALYs)	ReCiPe 2016 - hierarchic endpoint

- Emissions to air, soil, or water contribute to human toxicity
- Only accounts for toxic impacts of pesticide application
- Characterization factors from ReCiPe 2016 applied

# IMPACT ASSESSMENT METHOD



Indicator	Unit	Impact assessment method
Human health impact - ammonia emissions	DALYs	ReCiPe 2016 - hierarchic endpoint

- Represents human health impacts of ammonia in the formation of particulate matter
- DALYs from ammonia emissions were determined using country-specific or regional endpoint characterization factors

# MONETARY VALUATION

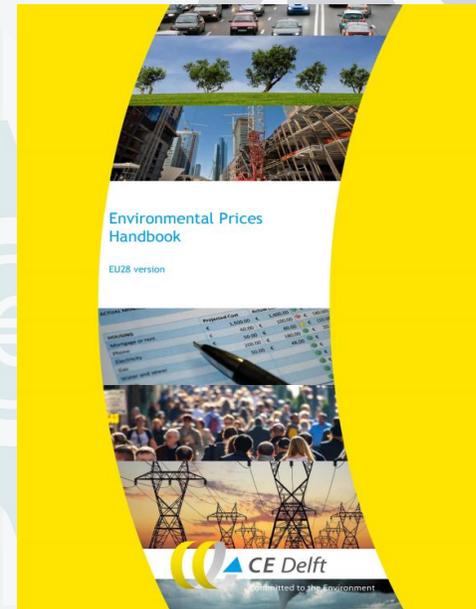
The user can choose between two valuation options:

Rights-based approach  
by True Price



- Restoration costs
- Compensation costs

Damage costs approach  
by CE Delft



- Compensation costs

# MONETARY VALUATION



Impact category	Application level	Geographic scope	Source
GHG emissions (kg CO <sub>2</sub> -eq)	Midpoint	Global	CE Delft and True Price
Marine eutrophication (kg N-eq)	Midpoint	Global	CE Delft and True Price
Freshwater eutrophication (kg P-eq)	Midpoint	Global	CE Delft and True Price
Ecosystem (terrestrial, freshwater, marine) toxicity (kg 1,4-DCB-eq)	Midpoint	Global	CE Delft and True Price
Water consumption (m <sup>3</sup> )	Midpoint	Global	CE Delft
Water consumption (m <sup>3</sup> )	Midpoint	Country-specific	True Price
Human health impact - human toxicity (carcinogenic and non-carcinogenic) (DALY)	Endpoint	Global	CE Delft and True Price
Human health impact - ammonia emissions particulate matter formation (kg PM <sub>2.5</sub> -eq or DALY)	Endpoint	Global	CE Delft and True Price

# MONETARY VALUATION

Source	True Price		CE Delft		
Impact	Interpretation	Value	Interpretation	Value	Unit
GHG emissions	Marginal abatement costs	0.168	Marginal abatement costs	0.144	EUR/kg CO <sub>2</sub> -eq
Water consumption	Restoration costs (country-specific)	1.437	Compensation costs	0.452	EUR/m <sup>3</sup>
Marine eutrophication	Restoration costs	15.7	Compensation costs	15.8	EUR/kg N-eq
Freshwater eutrophication	Restoration costs	226	Compensation costs	4.15	EUR/kg P-eq
Freshwater ecotoxicity	Compensation costs	0.0451	Compensation costs	0.0232	EUR/kg 1,4-DCB-eq
Marine ecotoxicity	Compensation costs	0.00206	Compensation costs	0.00355	EUR/kg 1,4-DCB-eq
Terrestrial ecotoxicity	Compensation costs	0.000281	Compensation costs	0.000711	EUR/kg 1,4-DCB-eq
Human health (toxicity and ammonia)	Compensation costs	115,000	Compensation costs	94,400	EUR/DALY

# LIMITATIONS OF THE DATABASE

Limitations related to modelling:

- Choice of impacts
- Toxicity
- Pesticide mix



# LIMITATIONS OF THE DATABASE

Limitations related to impact assessment:

- GHG emissions
- Extrapolation of data for foods within the same category

# LIMITATIONS OF THE DATABASE

Limitations related to monetization:

- Local vs Global monetization factors
- EU27 averages serve as global averages



# DEMO OF THE DATABASE



True Costs  
of Food  
Database



# Q & A



True Costs  
of Food  
Database



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Download database and manual:



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