Sostenibilità: le sfide nella nutrizione animale e nelle pratiche di allevamento

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Trouw Nutrition

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Presentazione dei contenuti

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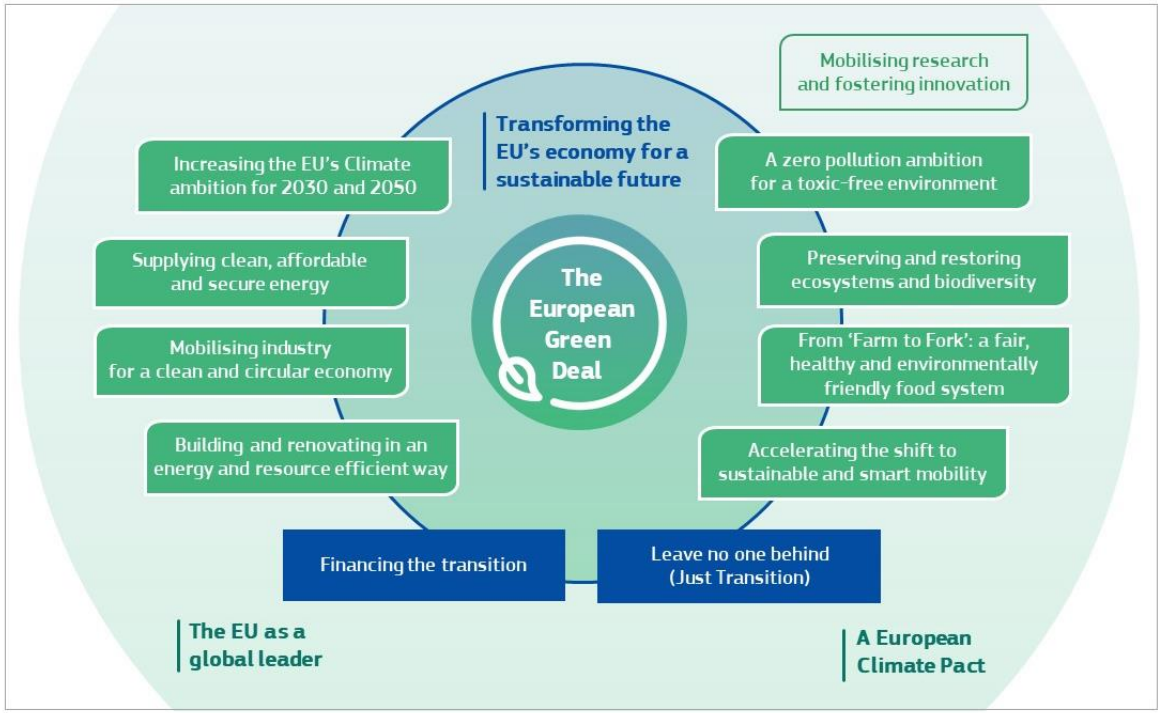
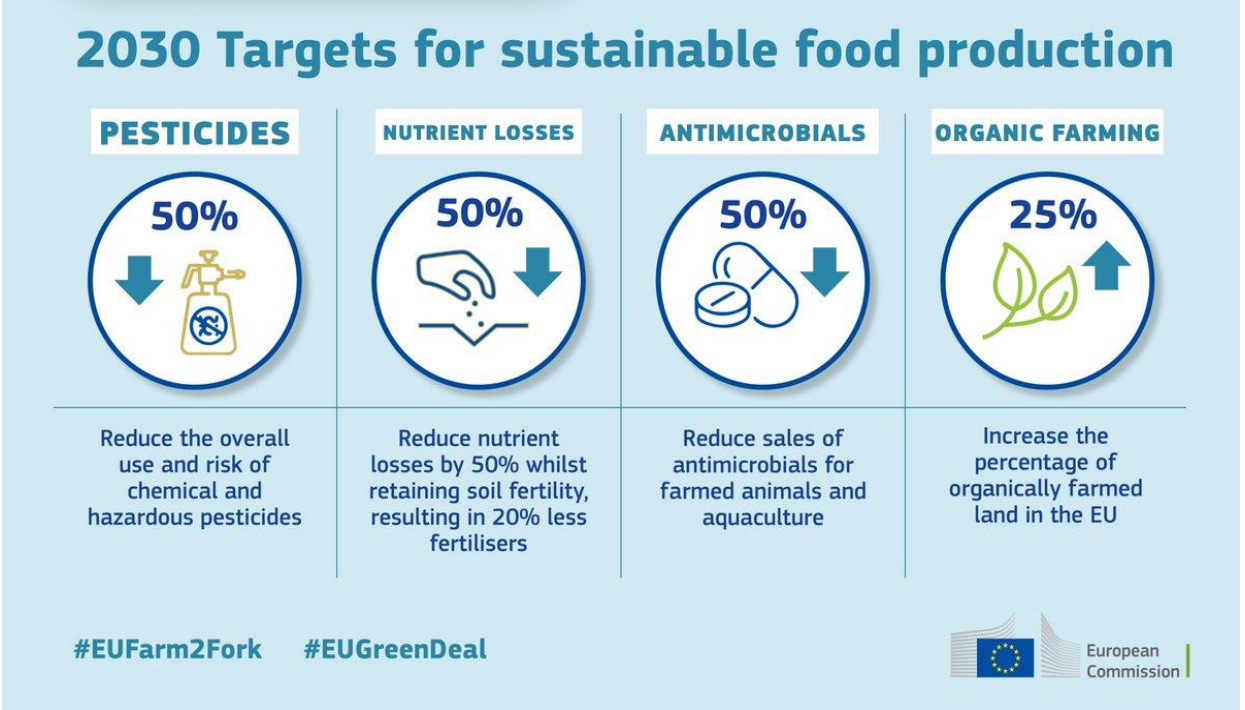
Agenda EU sulla sostenibilità

EU Green Deal and Farm2Fork Strategy





EU GHG emission: 55% in 2030 • Net-zero 2050

Sustainability will be 'license to operate'

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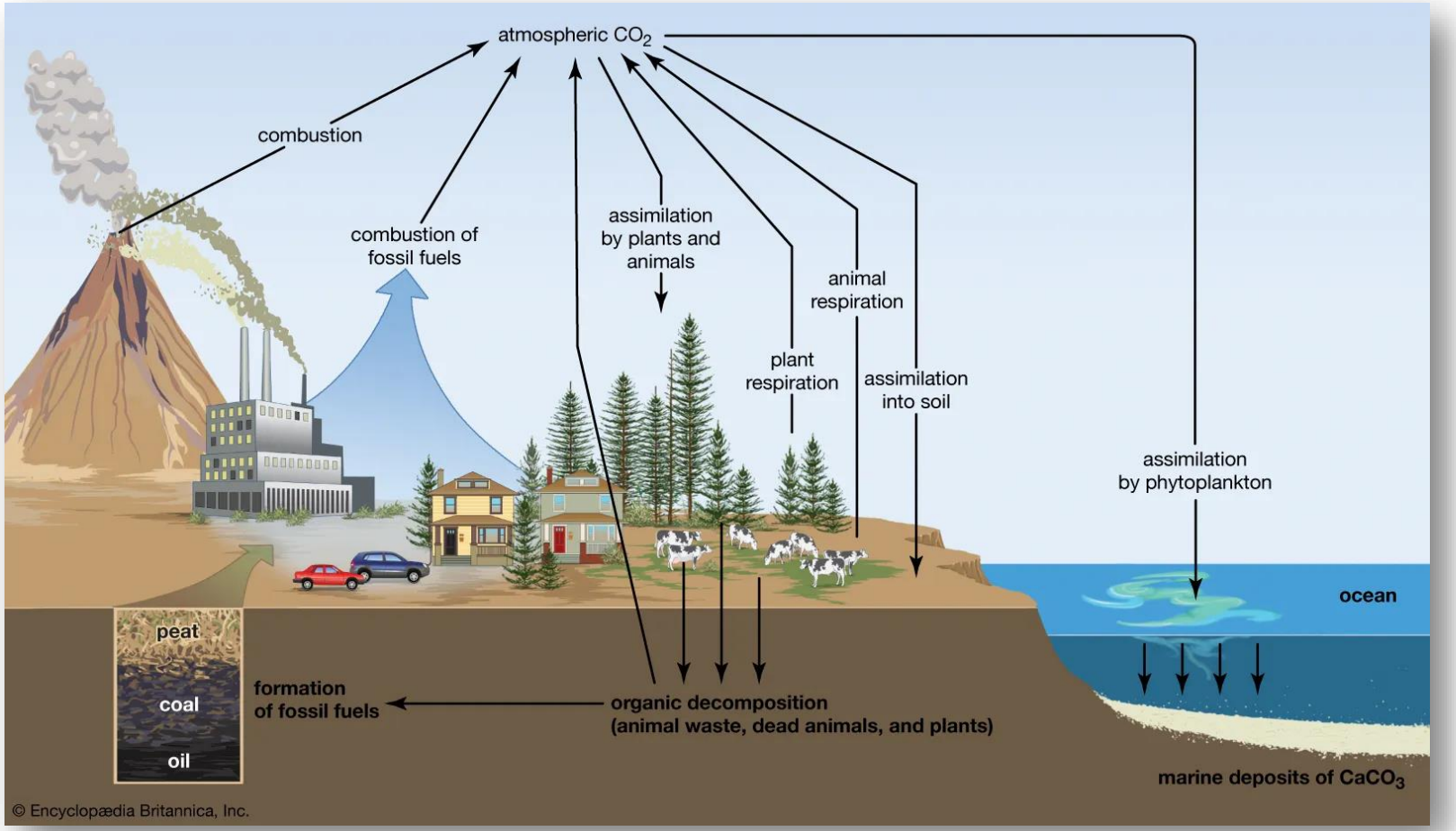
Oltre a ridurre le emissioni di gas serra, l'aumento del sequestro del carbonio è una seconda strada per ridurre la CO2 atmosferica



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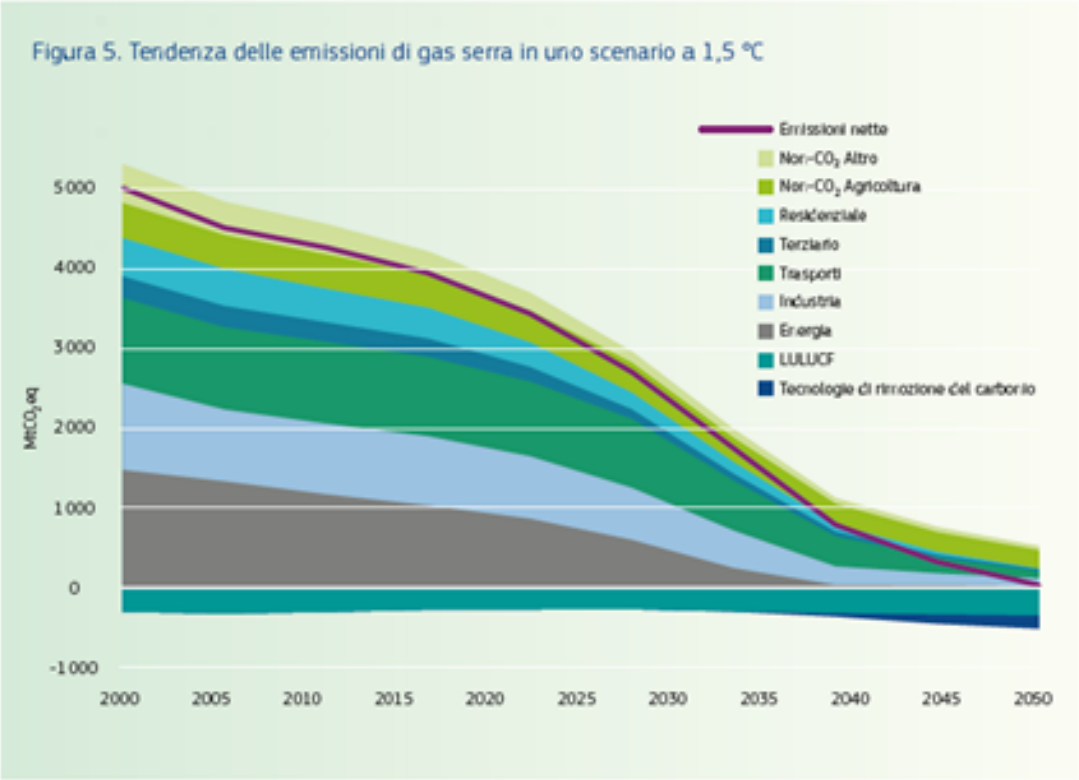
Road map EU per la neutralità climatica



Road map EU per la neutralità climatica

I nostri allevatori si trovano di fronte a maggiori richieste in fatto di sostenibilità

I temi più urgenti della sostenibilità nella produzione animale nell'UE

Focus di oggi

- Benessere degli animali
- Consumo di antibiotici e resistenza antimicrobica
- Emissioni di gas serra (GHG)
- Acidificazione ed eutrofizzazione
- Circolarità
- Biodiversità
- Deforestazione
- Sicurezza dei mangimi e degli alimenti

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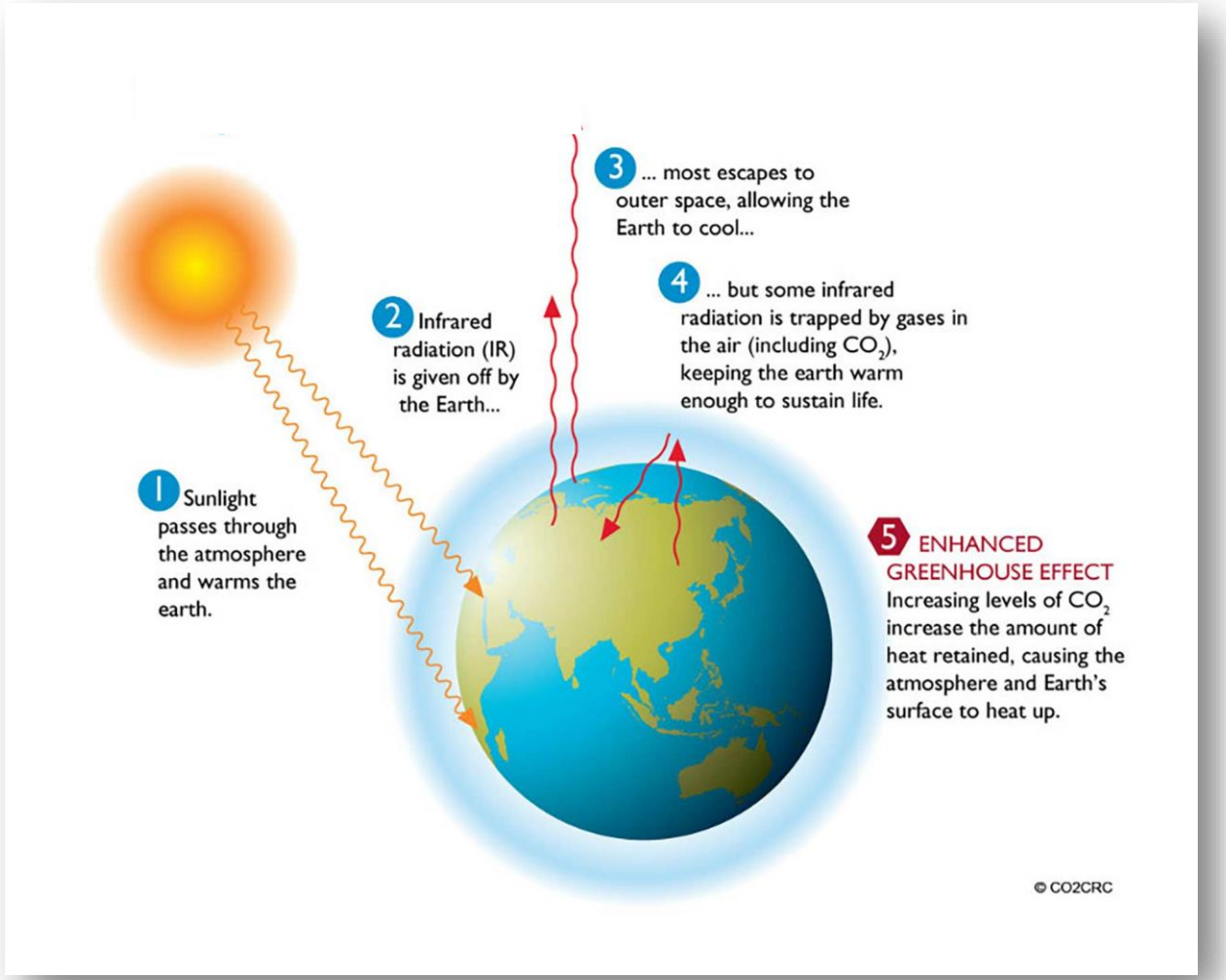
L'effetto serra



I gas serra più rilevanti in agricoltura:

- **Anidride Carbonica** CO_2
- **Metano** CH_4
- **Protossido di N** N_2O

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Carbon footprint in $CO_{2\,eq}$

- **CO2 equivalent (CO_2eq)** = unit of measuring how much different GHGs contribute to global warming
- Each GHG has a **global warming potential**, defined by the IPCC

Most important GHG in Agriculture and their relative global warming potential	GWP IPCC 2021 AR6, 100-year
Carbon dioxide (fossil, peat and LUC)	1
Carbon dioxide (biogenic/short-cycle)	0
Methane (fossil)	29.8
Methane (biogenic)	27
Nitrous oxide	273

GWP = Global Warming Potential: coefficient are used to calculate the kg CO2 equivalents per kg gas
IPCC = Intergovernmental Panel on Climate Change

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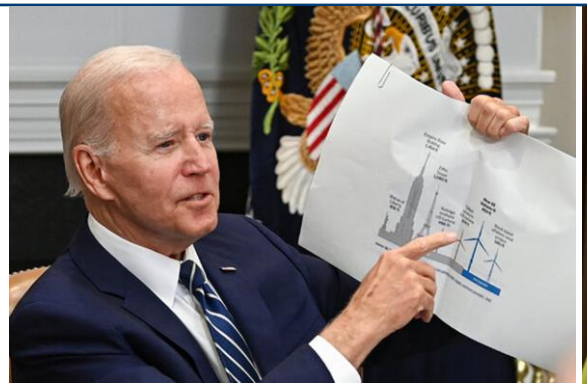
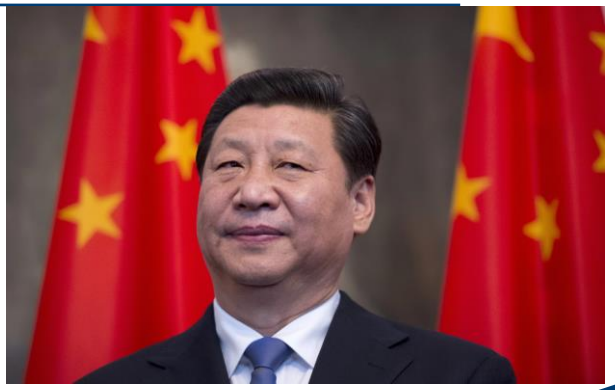
I leader mondiali si sono impegnati a raggiungere obiettivi di riduzione dei gas serra

Mantenere l'aumento della temperatura globale in questo secolo al di sotto dei 2 °C, preferibilmente al di sotto di 1,5 °C

	EU	USA	Canada	Brazil	Mexico	China	India
Reduction GHG 2030 vs 2005	55%	50%	40%	43%	22% Black Carbon emission (fossil fuel) 52%	40 to 45%	45%
'Net Zero' Target	2050	2050	2050	2050	No	2060	2070





GHG emissions need to be reduced by 45% by 2030 and reach net zero by 2050.

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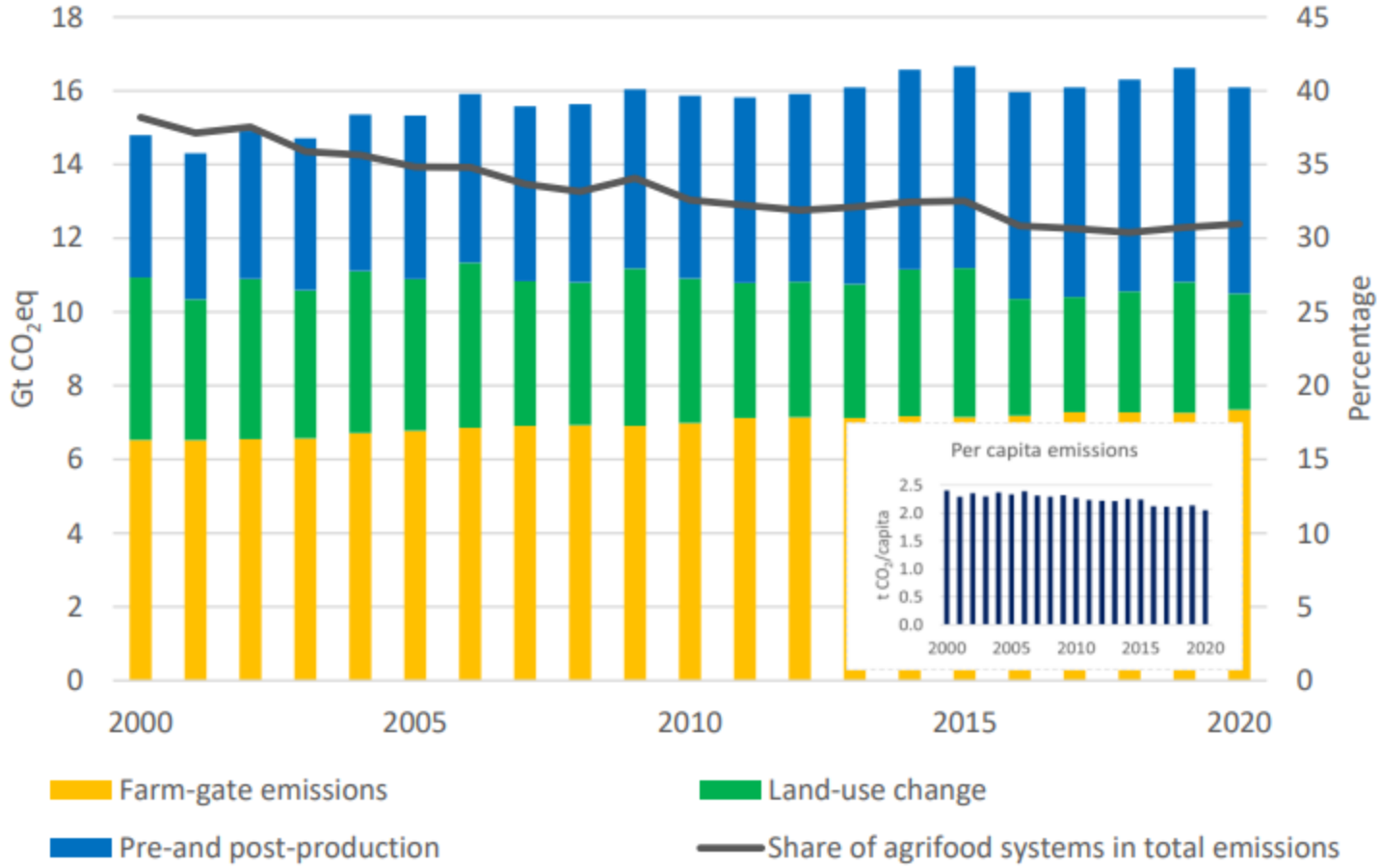
Circa il 30% delle emissioni totali di CO2eq proviene dal settore agro-alimentare



Source: FAO Stat Analytical Brief Series nr 50, 2022

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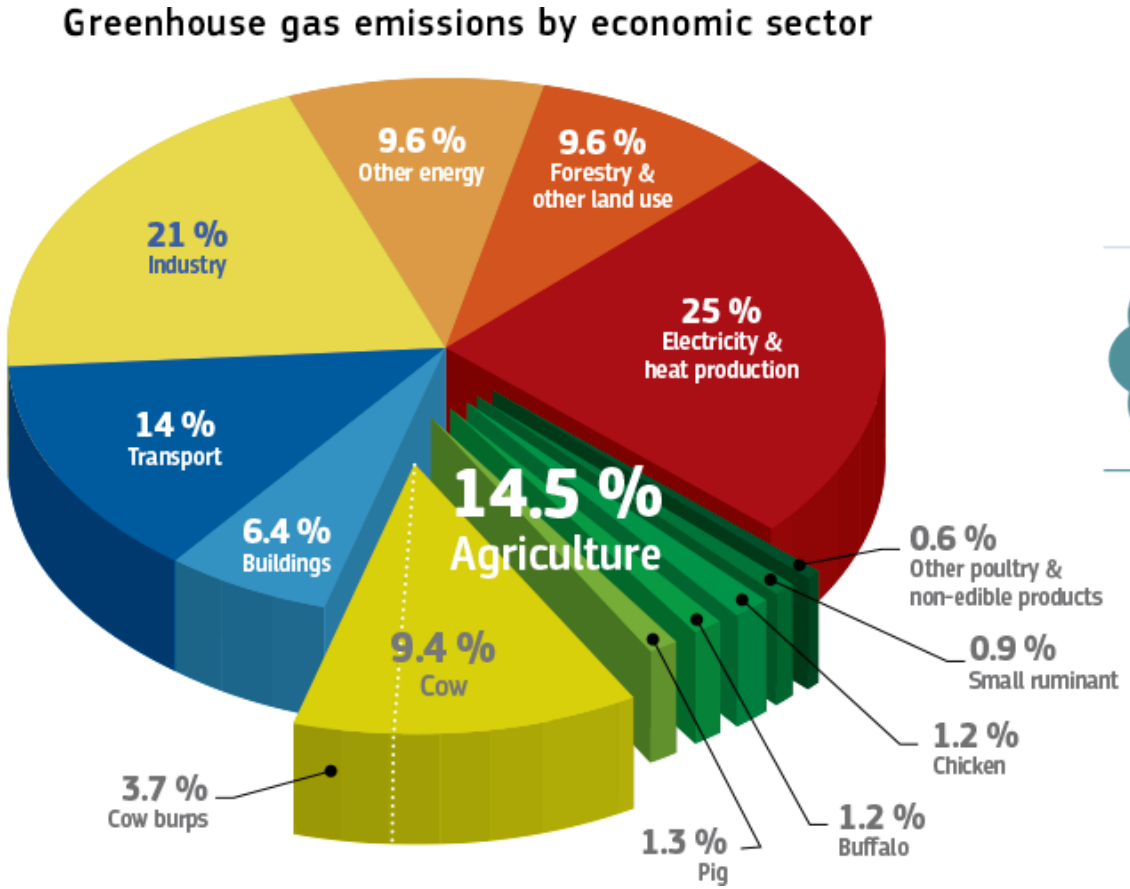
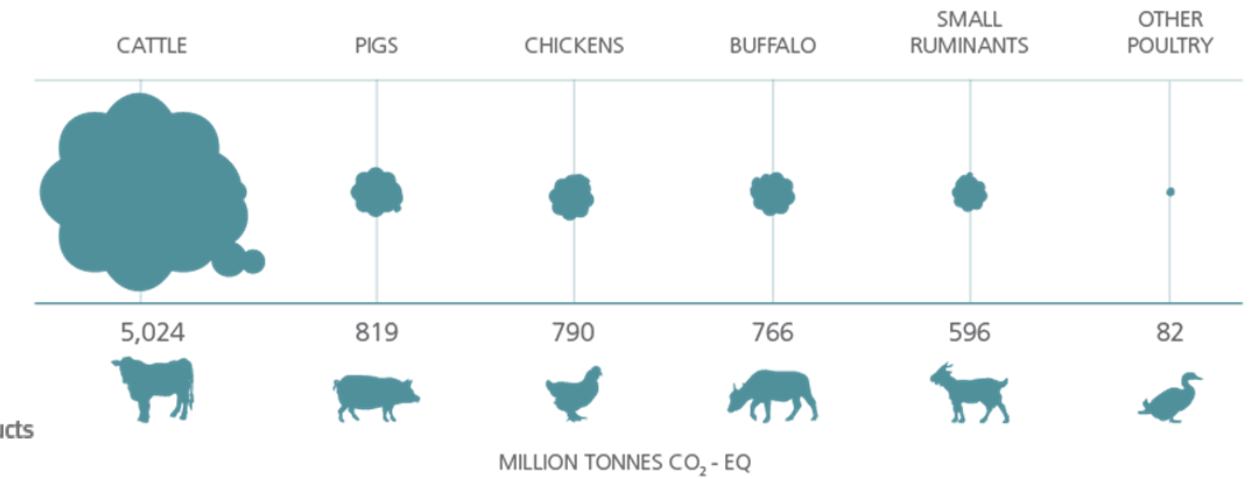
Il 14,5% delle emissioni antropogeniche di gas serra proviene dall'allevamento

7.1 Gt CO_2eq





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Come la GDO prepara il terreno per la riduzione dei gas serra nella produzione animale

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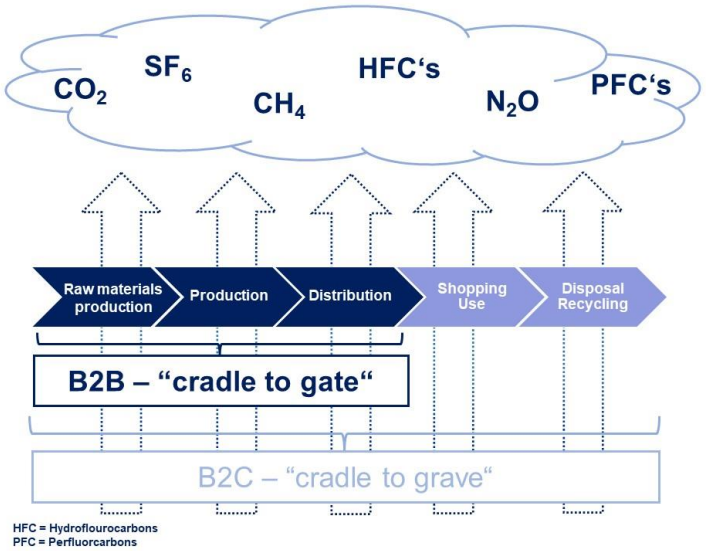
Come "raggruppiamo" i gas serra nell'LCA?

It depends on what you look at…

Product

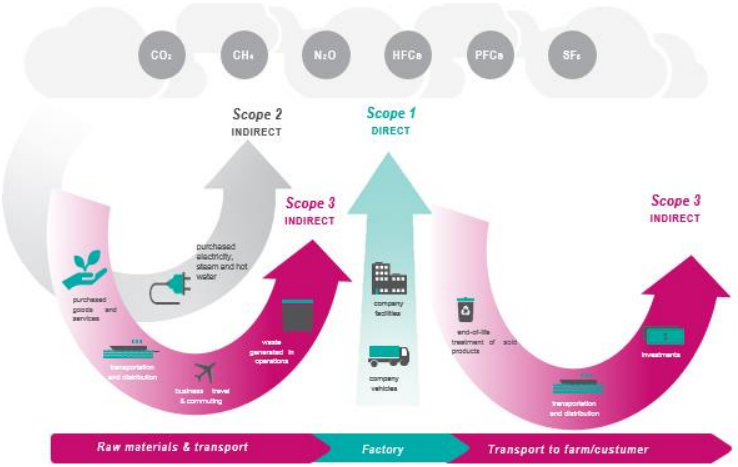
By covered stages of the product life cycle

- **Cradle-to-gate:** e.g., footprint per kg feed
- **Cradle-to-grave:** e.g., footprint per kg edible meat



Company

By **scope**, while scopes are defined by the level of influence/ control a company has over them



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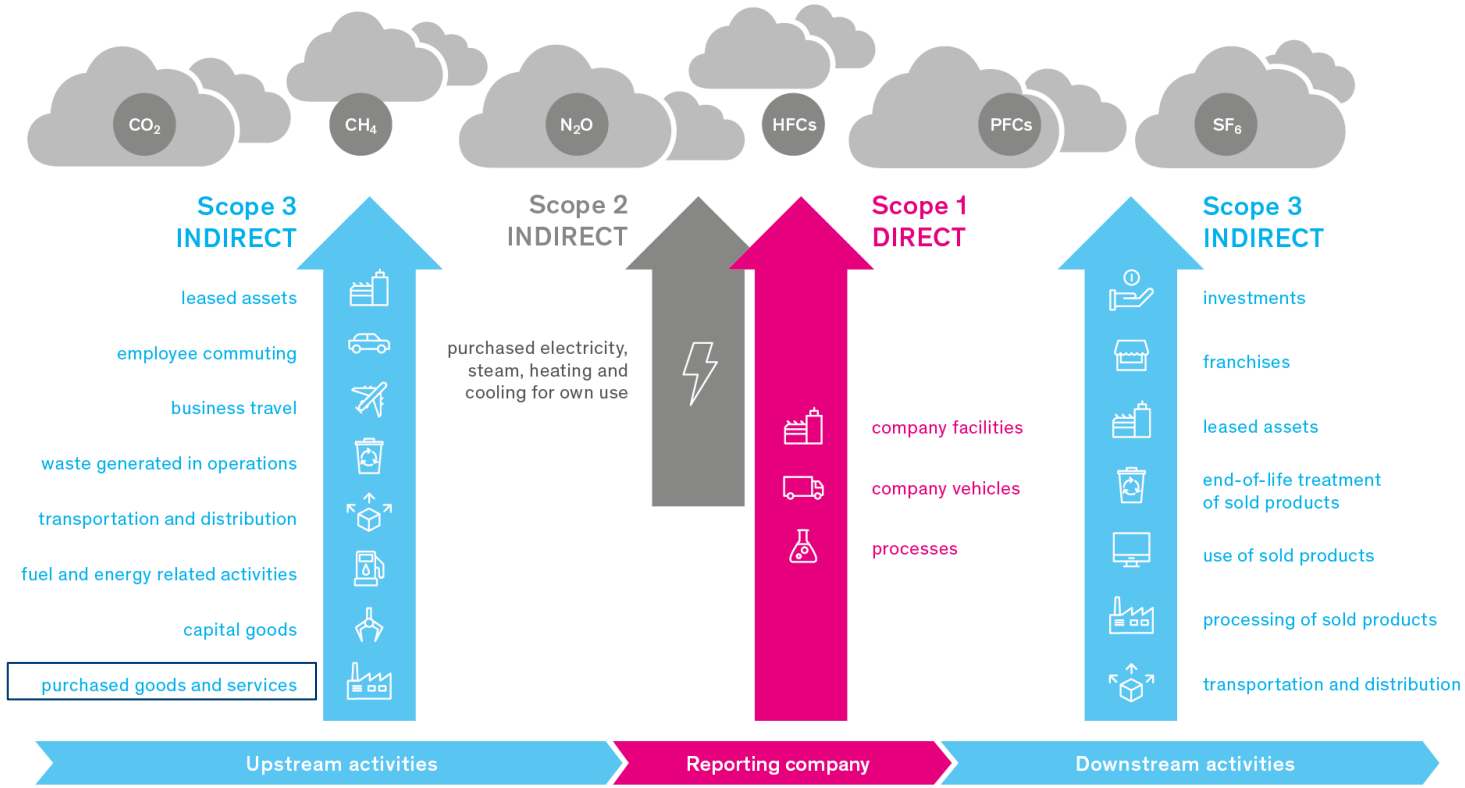
La grande distribuzione, le aziende alimentari e mangimistiche hanno ade

SCIENCE BASED TARGETS

A well-defined and externally controlled process to set targets in Scope 1, 2 and 3 GHG emissions, monitor progress and report



Purchased goods is for a retailer, a food processor and animal nutrition company the most important source of footprint

Reporting is from cradle to next gate

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SBTi FLAG e non-FLAG a confronto

FLAG = Emissioni legate a Foreste, Terreni, Agricoltura

FLAG = nuova linea guida Science-Based Target initiative (SBTi) per **facilitare la definizione di obiettivi in materia di GHG** per i settori ad alto sfruttamento di suolo

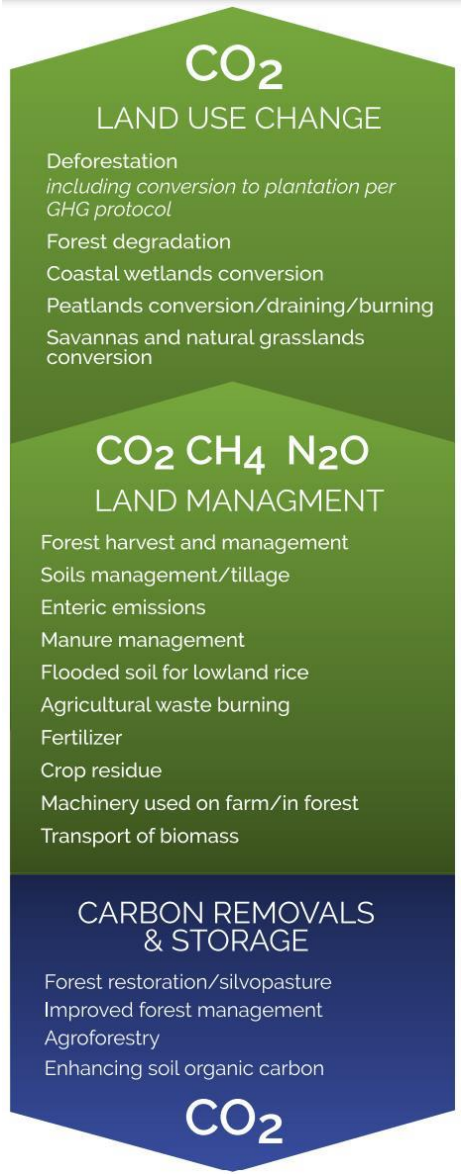
SBTi targets FLAG*

- Flag emission: See figure
- **30.3%** reduction **2020-2030**
- At least **72%** reduction no later than **2050**

Examples **Non-Flag** emissions:

- Upstream and down-stream transport
- Fertilizer production (emission from use is FLAG)
- Non-land related machinery use

*Scope 1 and 3



SCIENCE BASED TARGETS

Source: SBTi

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Esempio di formulazione del target SBTi(FLAG)

TARGET FORMULATION

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Near-term submission

Energy/industrial near-term target(s)	*[Company] commits to reduce **scope 1 and 2 GHG emissions** 42% by 2030 from a 2020 base year. [Company] also commits to reduce **scope 3 GHG emissions** 25% within the same timeframe.*
FLAG near-term target(s)	*[Company] further commits to reduce **scope 1 and 3 FLAG GHG emissions** 30.3% within the same timeframe*. Finally, [company] commits to **no deforestation** across its primary deforestation-linked commodities with a target date of FY2025.* **Target includes FLAG emissions and removals.*

Net-zero submission (must have approved near-term science-based targets to be eligible for net-zero validation)

Energy/industrial long-term target(s)	*[Company] commits to reduce **scope 1, 2 and 3 GHG emissions** 90% by 2050 from a 2020 base year.*
FLAG long-term target(s)	*[Company] also commits to reduce **scope 1 and 3 FLAG GHG emissions** 72% within the same timeframe*.* **Target includes FLAG emissions and removals.*

La GDO globale sta fissando obiettivi in linea con l'accord di Parigi

Scope 3 reduction targets retailers (status Sep 22)

	TESCO		Carrefour	LIDL
CO2eq reduction **targets 2030**	**39%**(2032) vs 2019	**45%** vs 2018	**30%** vs 2019	75% suppliers 2026 to join SBT*
Net zero target	2050	2050	2040	-

*Science Based Targets initiative to reduce carbon footprint

Animal protein important for retailers to meet their scope 3 reduction targets

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La GDP si prepara per informare i consumatori sull'impronta ambientale

L'etichettatura dell'impatto ambientale degli alimenti è in discussione nell'UE (ma non c'è ancora un accordo)

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Le aziende di trasformazione alimentare hanno fissato i loro target

Obiettivi di riduzione Scope 3 (FLAG) per le aziende di trasformazione alimentare (Settembre 22)

	Danish Crown	Vion Food Group	DANONE ONE PLANET. ONE HEALTH	FrieslandCampina nourishing by nature	Nestlé
	Meat	*Meat*	*Dairy*	*Dairy*	*Dairy*
CO2-eq reduction target **2030**	**20%** vs 2020	**30%** vs 2020	**30%** vs 2020	**33%** on member dairy farms	**50%**
Net zero target	2050	2050	2050	2050	2050

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Introduzione all'analisi del ciclo di vita di un prodotto e al modo in cui calcoliamo l'impronta delle materie prime e dei mangimi

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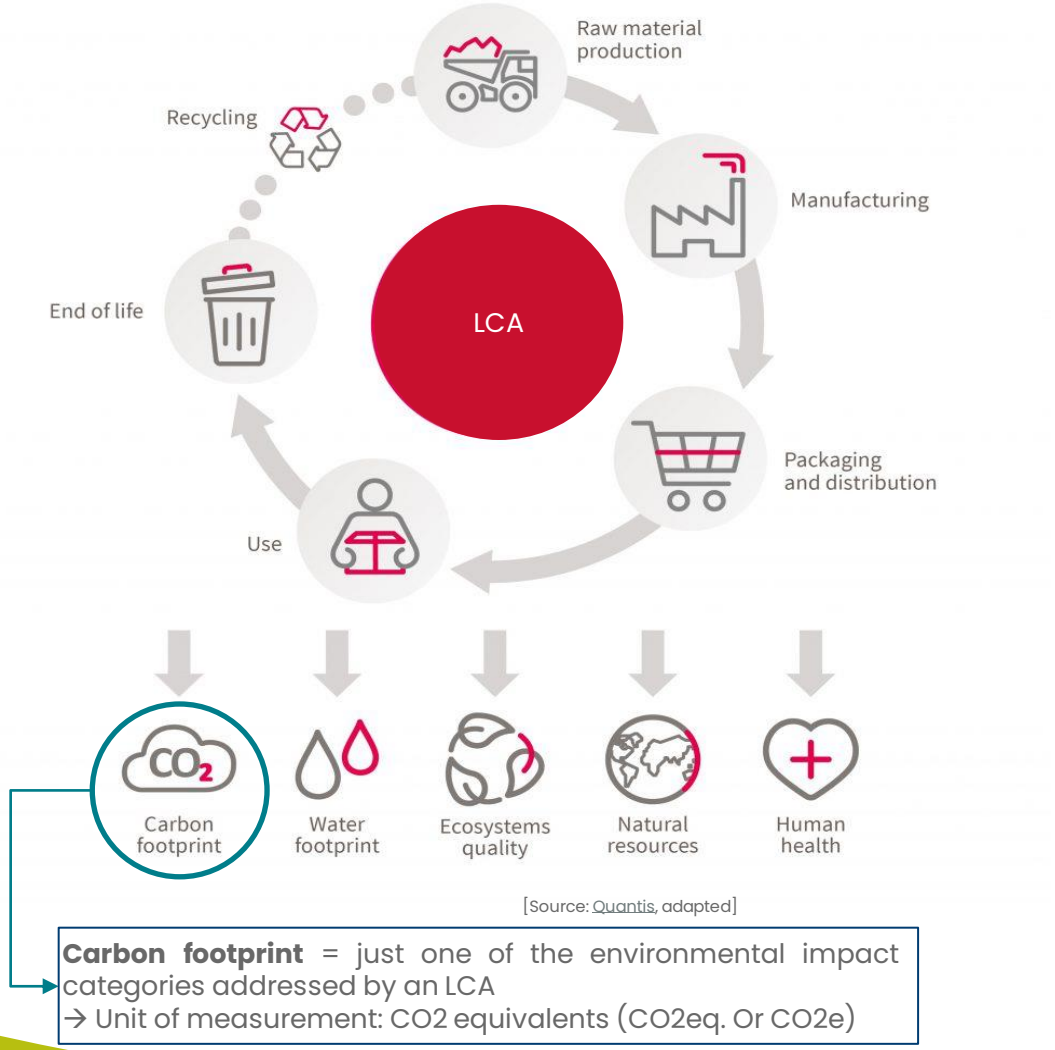
Che cos'è l'analisi del ciclo di vita (LCA)?



[Source: Quantis, adapted]

Carbon footprint = just one of the environmental impact categories addressed by an LCA
→ Unit of measurement: CO2 equivalents (CO2eq. Or CO2e)

- Holistic approach: **considers the whole life cycle** of e.g., a product or company.
- LCA is seen as the most comprehensive, robust and **internationally standardized** method to quantify environmental impacts.
- LCA **includes carbon footprint, but also other environmental impacts** can be quantified (e.g., water footprint, land footprint)

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Esistono chiari standard e linee guida LCA per calcolare l'impronta C

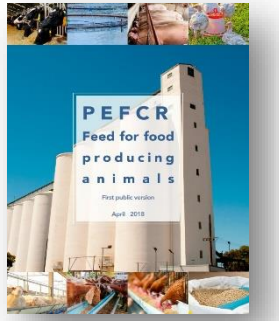
ISO 14040/14044: LCA principles

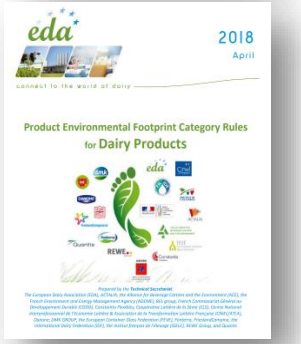
ISO 14067: Carbon footprint

→ ISO requirements set rules on how to perform an LCA, the steps involved. No technical requirements

Product Environmental Footprint Category Rules (PEFCR)

- → Established by the European Commission, aims to harmonize product environmental footprinting
- → Technical requirements for LCA
- → Guidances developed for specific product categories, o.a. Animal Feed and Dairy.





Corporate standard for GHGs

- → Calculation rules for GHG accounting at organizational level
- → Classifies Scope 1, 2 and 3 GHG emissions
- → Science Based Targets initiative follows the GHG protocol

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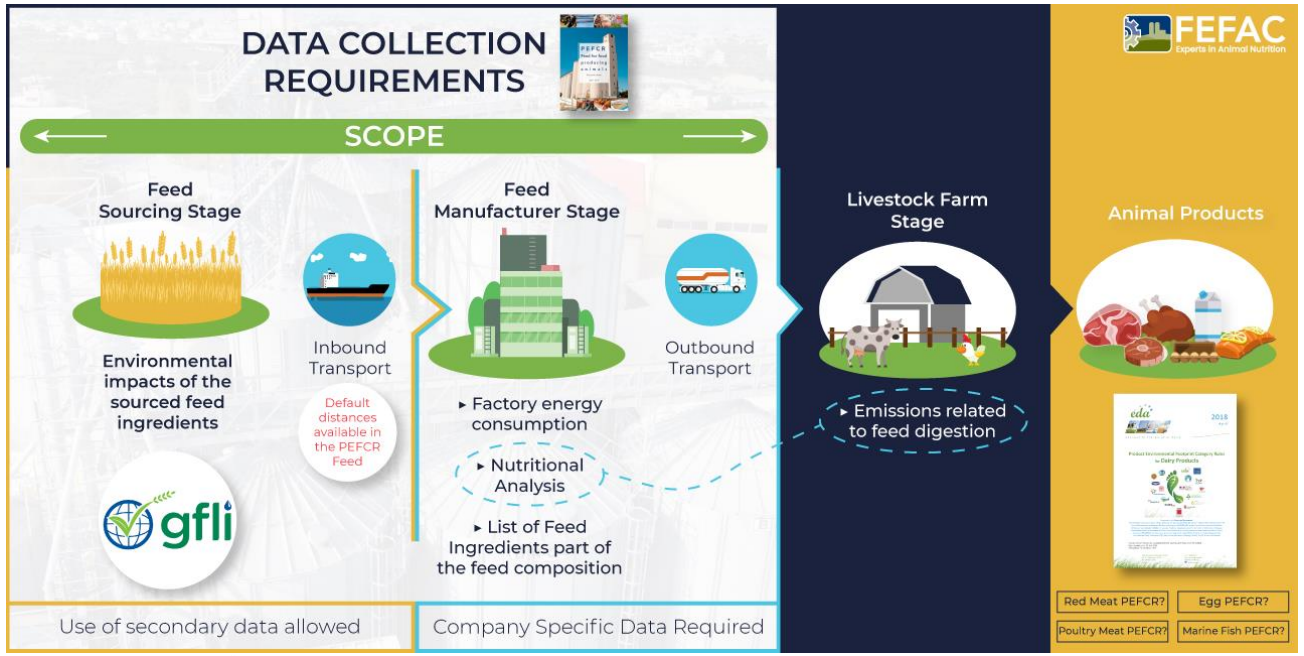
Calcolo dell'impronta delle materie prime, mangimi e prodotti di origine animale

Il GFLI (Global Feed LCA institute) fornisce il principale database per gli ingredienti dei mangimi

PEFCR Feed ingredients and feed PEFCR Animal products



CO2 footprint to take into account

- Youngstock at start
- Feed
- Enteric methane
- Manure emissions
- Energy
- Farm operations, other

Databases used for footprint ingredients:

gfli Global Metrics for Sustainable Feed · Agri-footprint a Blonk solution · ecoinvent · AGRIBALYSE · WORLD FOOD LCA DATABASE

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Impronta di carbonio delle materie prime e dei mangimi

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Impronta degli ingredienti dei mangimi

Il trasporto degli ingredienti al mangimificio deve essere calcolato separatamente

Included
Fuel use
Energy use
N, P, K Fertilizer use
Organic fertilizer
Lime use
Soil improvers
Pesticides
Irrigation water
Seed use
Packaging

Source: GLFI methodology and project guidelines
https://globalfeedlca.org/gfli-database/methodology-scope/

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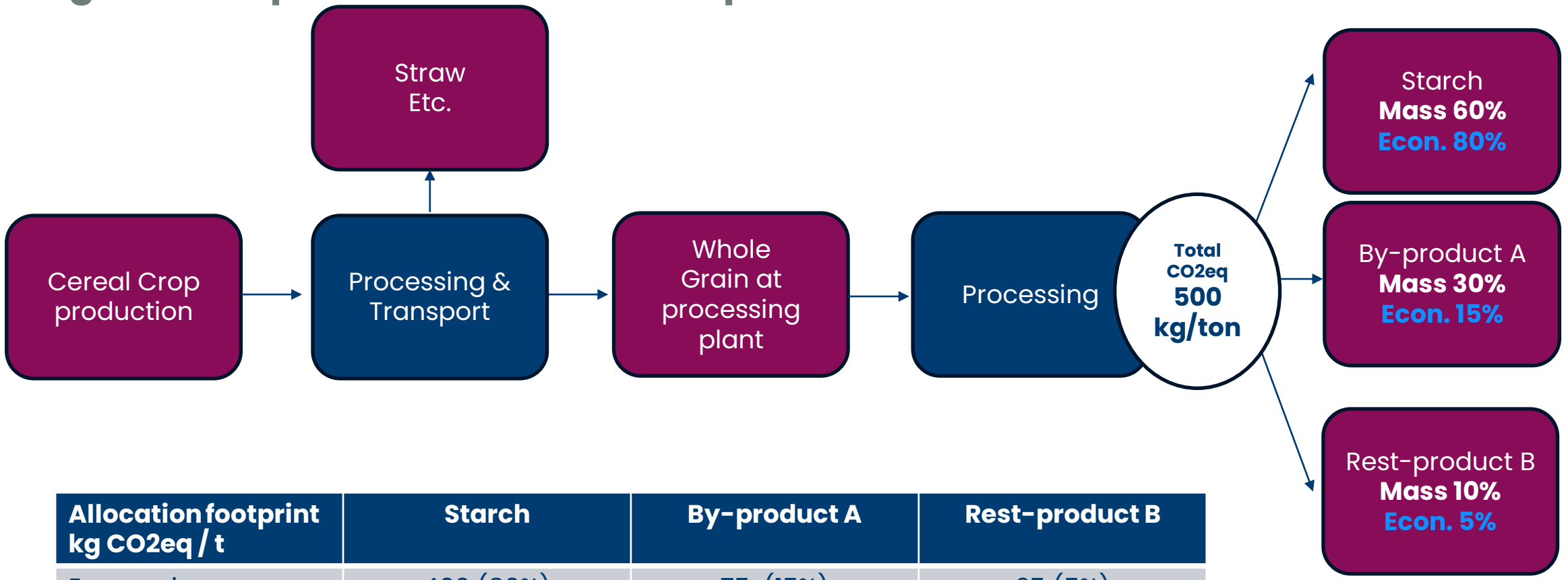
L'allocazione economica è vantaggiosa per i sottoprodotti

In generale, porta a una minore impronta di carbonio



Allocation footprint kg CO2eq / t	Starch	By-product A	Rest-product B
Economic,	400 (80%)	75 (15%)	25 (5%)
Mass	300 (60%)	150 (30%)	50 (10%)

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Che cos'è il Land Use Change?

Transformation of land cover from one purpose to another can result in GHG emissions (e.g. deforestation).

Examples:

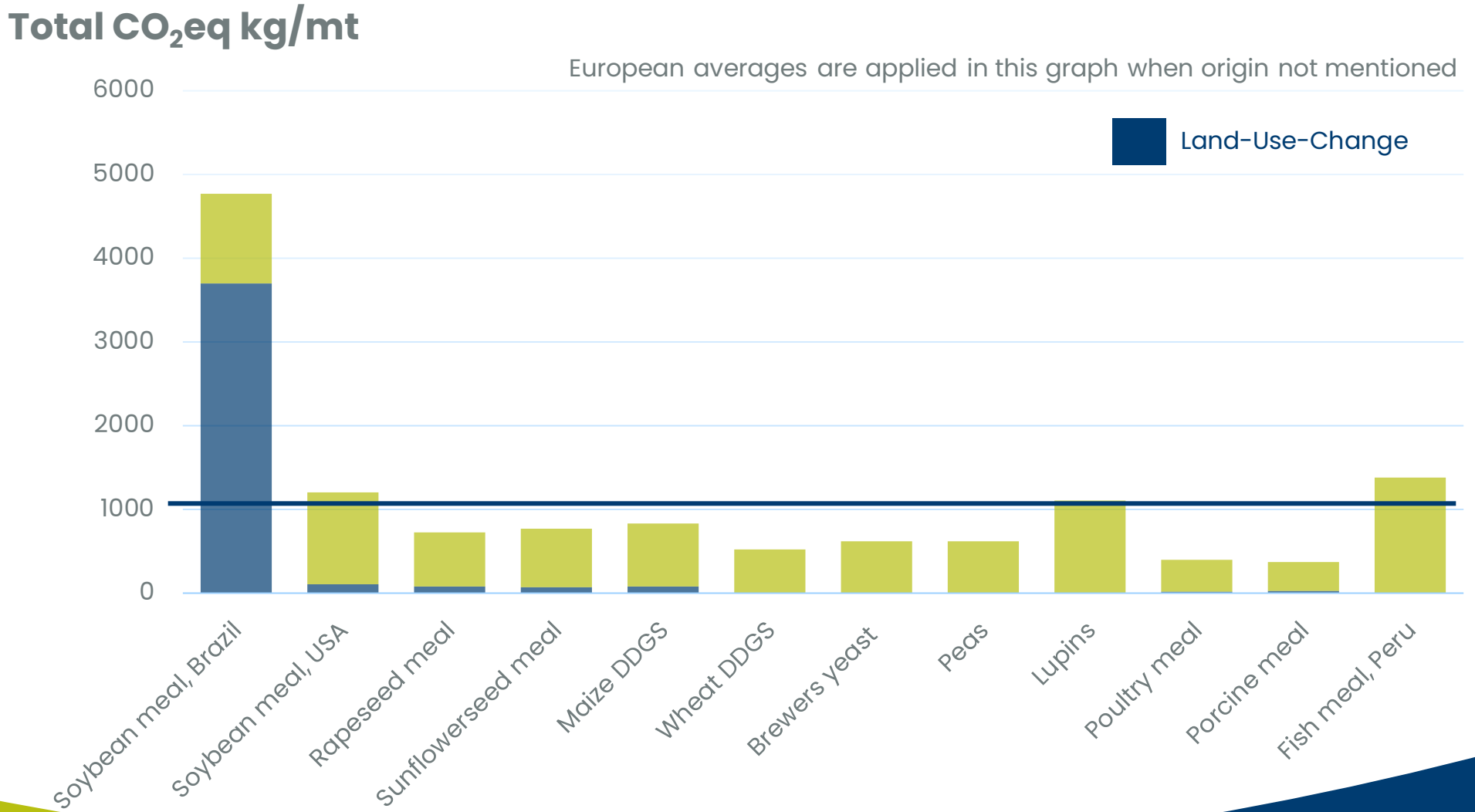
- Forest to cropland
- Grassland to cropland
- Cropland to perennial

Standardized calculation method: PAS-2050

- Covers direct Land Use Change (dLUC)
- **20 year amortization period**

(Example: emissions due to 1 ha deforested area in 2010 are equally divided over the next 20 years, after 2030 the land is deforestation free).

Impronta di carbonio delle fonti proteiche



Source:
MyFeedPrint, Nutreco
Based on GFLI, AgriFootprint, EcoInvent, Agribalyse

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Verso una dieta a bassa impronta di carbonio

Protein sources

- Replace soybean- and palm-derived ingredients with high LUC!
- Rapeseed meal
- Sunflowerseed meal
- DDGS
- Processed animal protein (PAP)
- Soybean-derived products with low LUC (origin US, Europe, certified soy>20y)

Energy sources

- Animal fats/oils
- Former foodstuffs
- dry rest- and by-products
- Liquid, high-moist rest- and by-products from the food industry

Majority of those feedstuffs will be of EU origin and are rest-, by-products food industry

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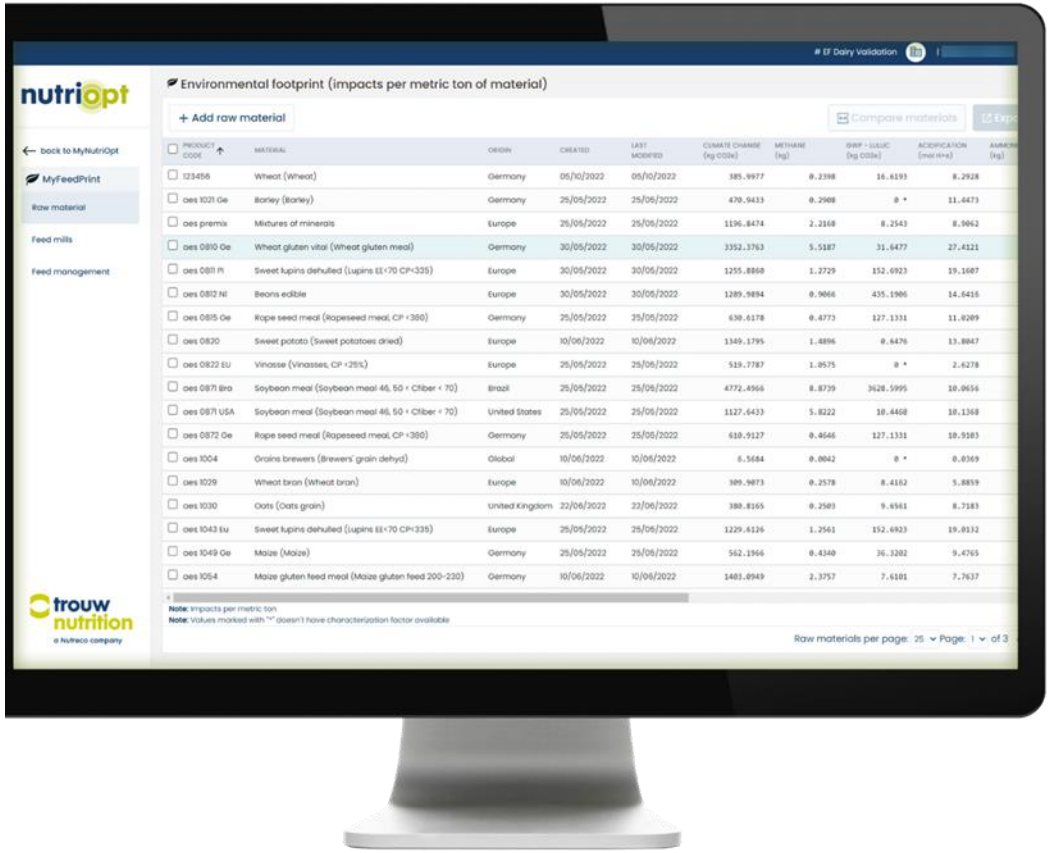
Cos'altro dobbiamo usare per calcolare l'impronta di CO2eq dei mangimi?



CO2eq **Ingredients** +

CO2eq **Transport Ingredients** +

CO2eq **Feed processing** +

CO2eq **Packaging (if relevant)** +

CO2eq **Transport Feed**

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C'è altro da considerare dal punto di vista della sostenibilità

Quali sono gli altri indicatori chiave per un'alimentazione sostenibile?

- **Carbon footprint** (and land-use change)
- **% Deforestation-free** (soy, palm)
- **% Rest- + by-products and former foodstuffs**
- Also to ‘large’ extend related to ‘human non-edible’
- **% Ingredients or ‘regional’ origin** (NB: not per se more sustainable)
- **Land-use** (related to competition with land for food production)

Impronta di carbonio dei prodotti di origine animale

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Calcola l'impronta ambientale con strumenti facili da usare

Ingredients

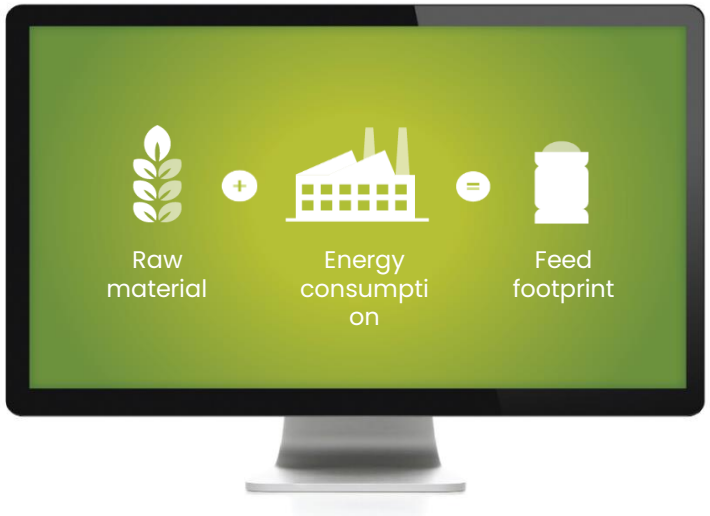
Transport

Feed mill

Livestock farms

Animal products

MyFeedPrint



MyMilkPrint

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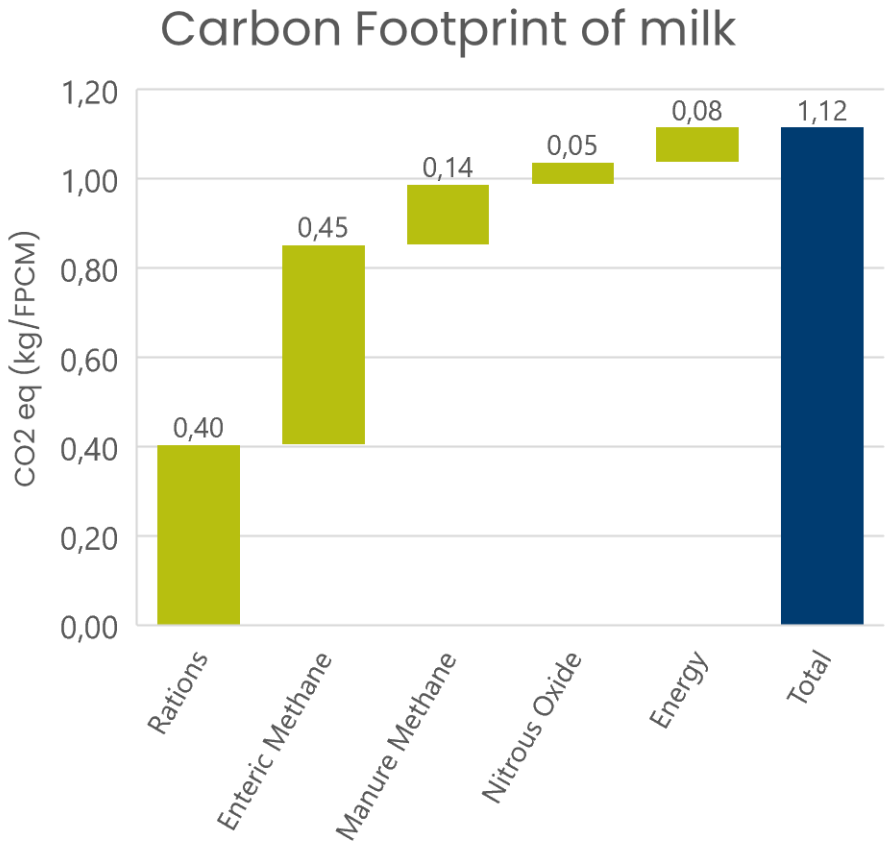
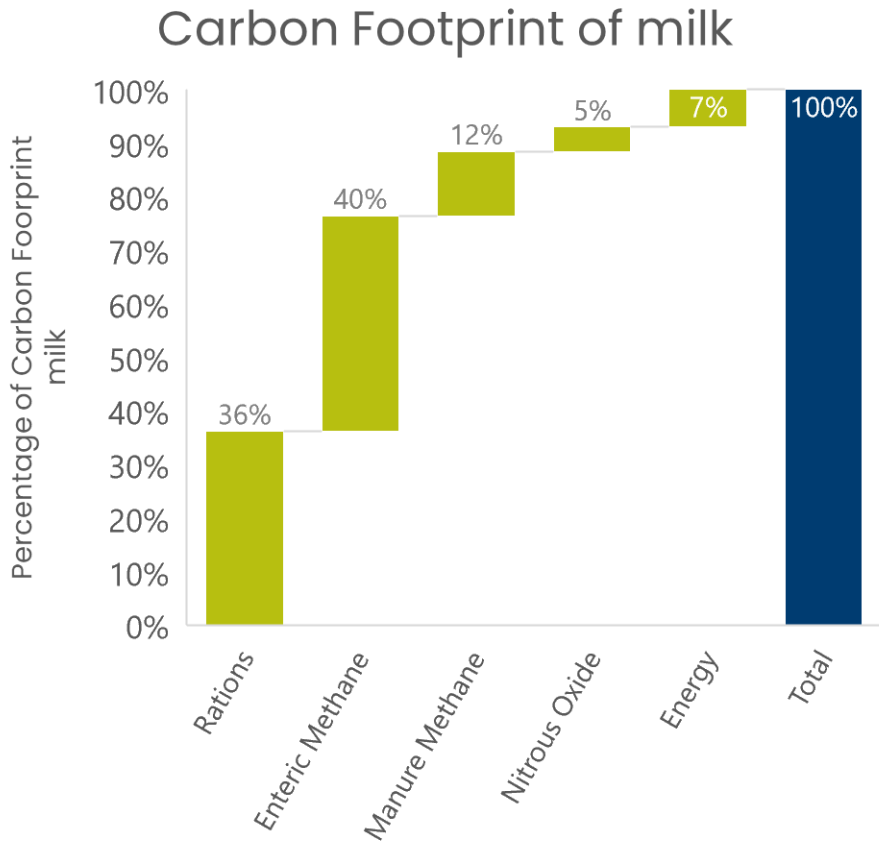
Da cosa è composta l'impronta di carbonio per kg FPCM?

Esempio su aziende di vacche da olandesi come riferimento





Source: Trouw Nutrition MyMilkPrint

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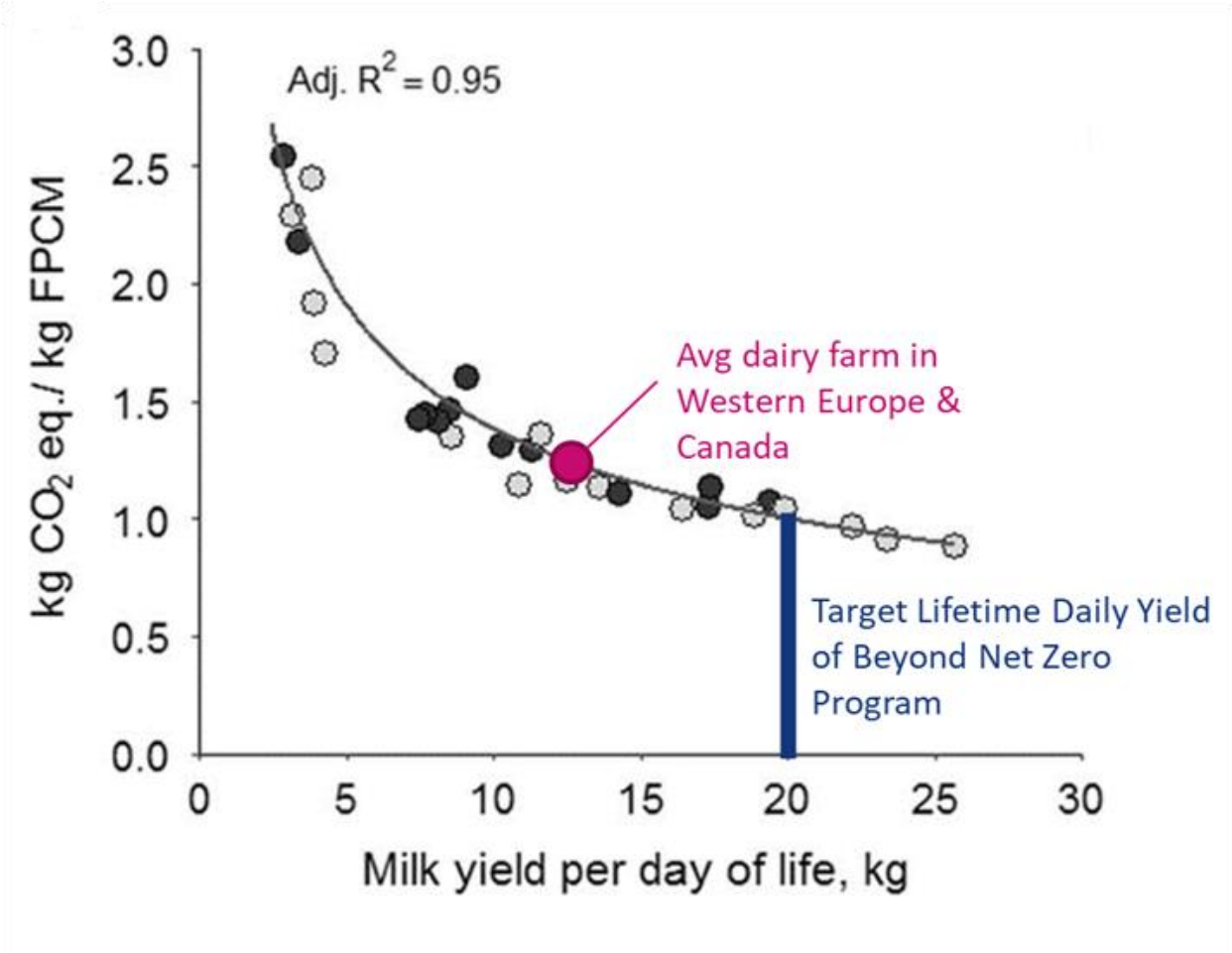
La produzione di latte/giorno considerando tutta la carriera produttiva della vacca da latte (LDY)

La produttività ha un forte impatto sull'impronta di carbonio / kg di latte



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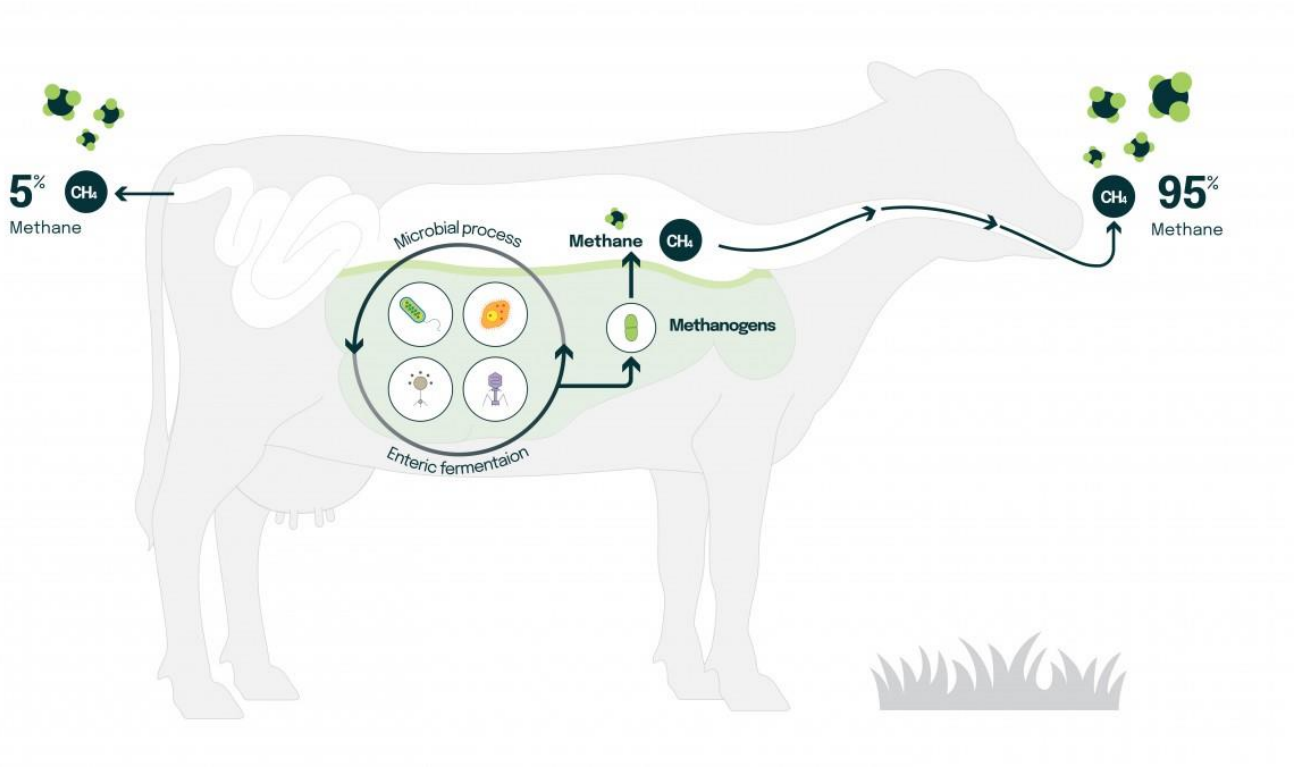
Modi per ridurre l'emissione di metano enterico nei ruminanti
L'uso di additivi può migliorare significativamente la CO2eq del latte



Source: New Zealand GHG Centre

https://www.nzagrc.org.nz/domestic/methane-research-programme/the-science-of-methane/

ANIMAL & FEED MANAGEMENT

- Feed processing
- Genetic selection
- Improving animal health
- Improving pasture management
- Increasing feeding level
- Increasing forage quality
- Optimizing temperature
- TMR feeding

DIET FORMULATION

- By-products
- Decreasing forage-to-concentrate ratios
- Minerals and salts
- Oils and fats
- Oilseeds
- Increasing protein
- Tanniferous forages
- Urea

RUMEN MANIPULATION

- Additives
- Defaunation
- Electron sinks

Source: Arndt *et al.*, 2022

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Il percorso verso il latte a basso impatto ambientale

SHORT TERM

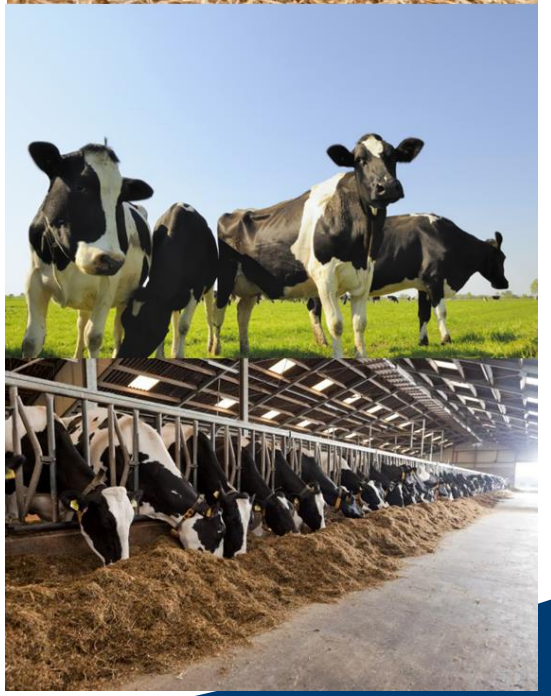
- Impact of compound feed/ blend
- Ration formulation
- Forage quality
- CH4 reducing additives

MEDIUM TERM

- Decrease culling rates
- Improvements in fertility
- Improvement in milk yield/ constituents
- Improve feed efficiency

LONG TERM

- Decrease AFC
- Reduce replacement rates
- Increase LDY



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Che cosa potrebbe portare all'agricoltore?

	Baseline	Earlier Calving	2 more lactations	Forage quality	Low CFP Feed	CH4 Reducing Additives	Biogas	In total
% reduction in carbon footprint	AFC: 25.5 RR: 30% Milk Yield: 9500	6%	5% (combined= 9%)	3%	9%	11%	10%	**35-40%**
kg CO2eq/kg milk	**1.08**	1.01	1.01	0.98	0.89	0.81	0.73	**0.73**
Net value €/ cow/ year	-	€ 125	€ 210	€ 230	p.m.	p.m.	p.m.	**€ 565**

Source: Trouw Nutrition LCA model for milk

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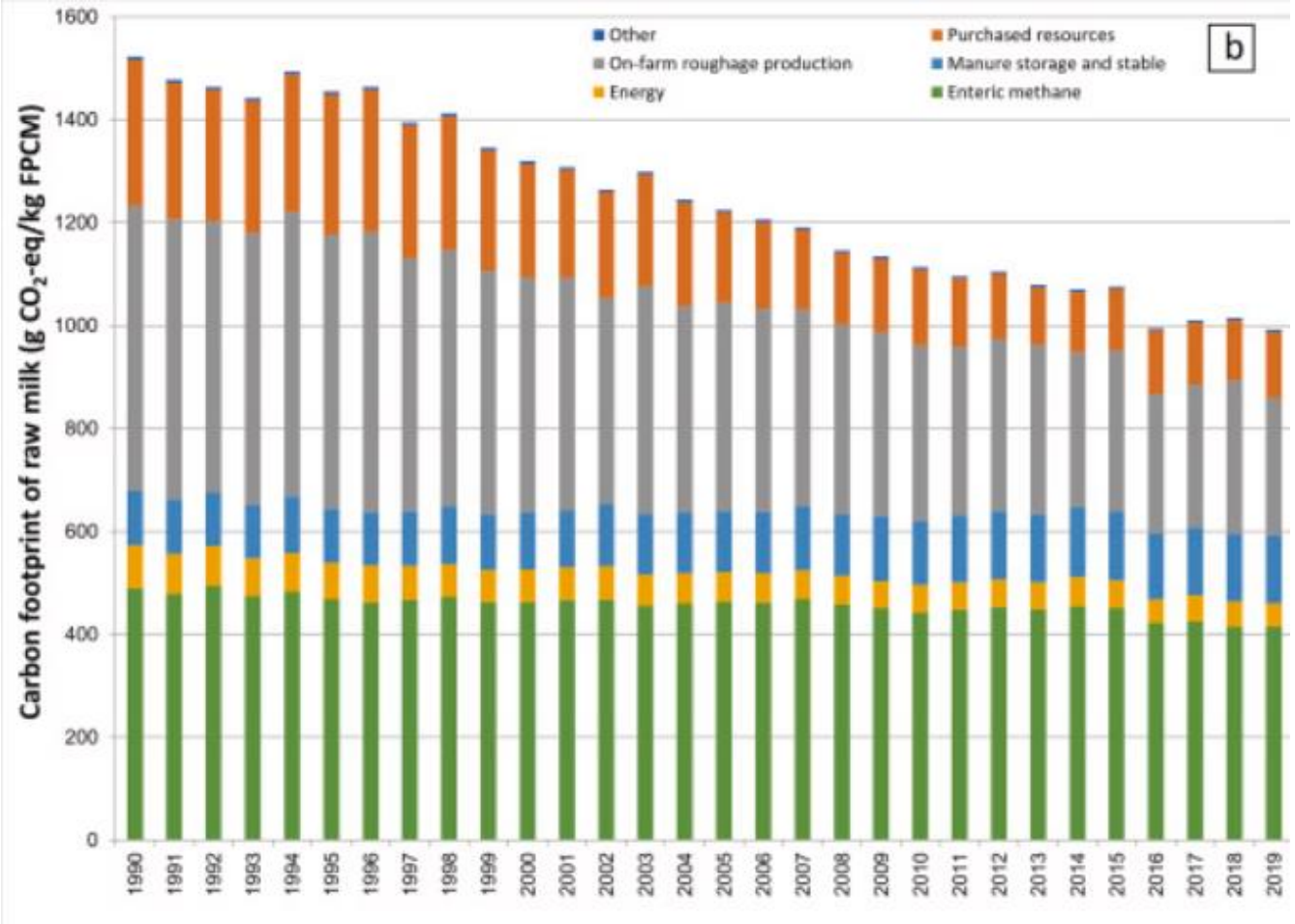
L'impronta di carbonio del latte è stata ridotta di circa il 35% dal 1990 al 2019

Obiettivi raggiunti nell'allevamento di vacche da latte in Olanda



Excludes land-use change (approx. 150g CO2eq/kg FPCM)

Hospers *et al.*, 2022

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La produttività delle aziende da latte in Olanda è migliorata significativamente nel periodo 1990-2019

Table 1. Development of main farm characteristics of an average Dutch dairy farm between 1990 and 2019 (CBS, 2022a; van Bruggen et al., 2021; van Bruggen and Gosseling, 2019, 2020; Wageningen UR, 2022).

	1990	1995	2000	2005	2010	2015	2019
Total farm size (ha) [a]	20.8	25.1	29.6	35.7	43.9	49.4	52
Milk production (kg/cow/year)	6003	6580	7416	7568	8030	8277	8807
Number of cows	40.6	45.6	51.0	60.9	74.7	88.8	97.0
Replacement rate (%)	42	42	32	30	28	25	29
Compound feed efficiency (kg DMI [b]/100kg milk)	29.9	32.3	25	24.5	22.1	22.2	23.4

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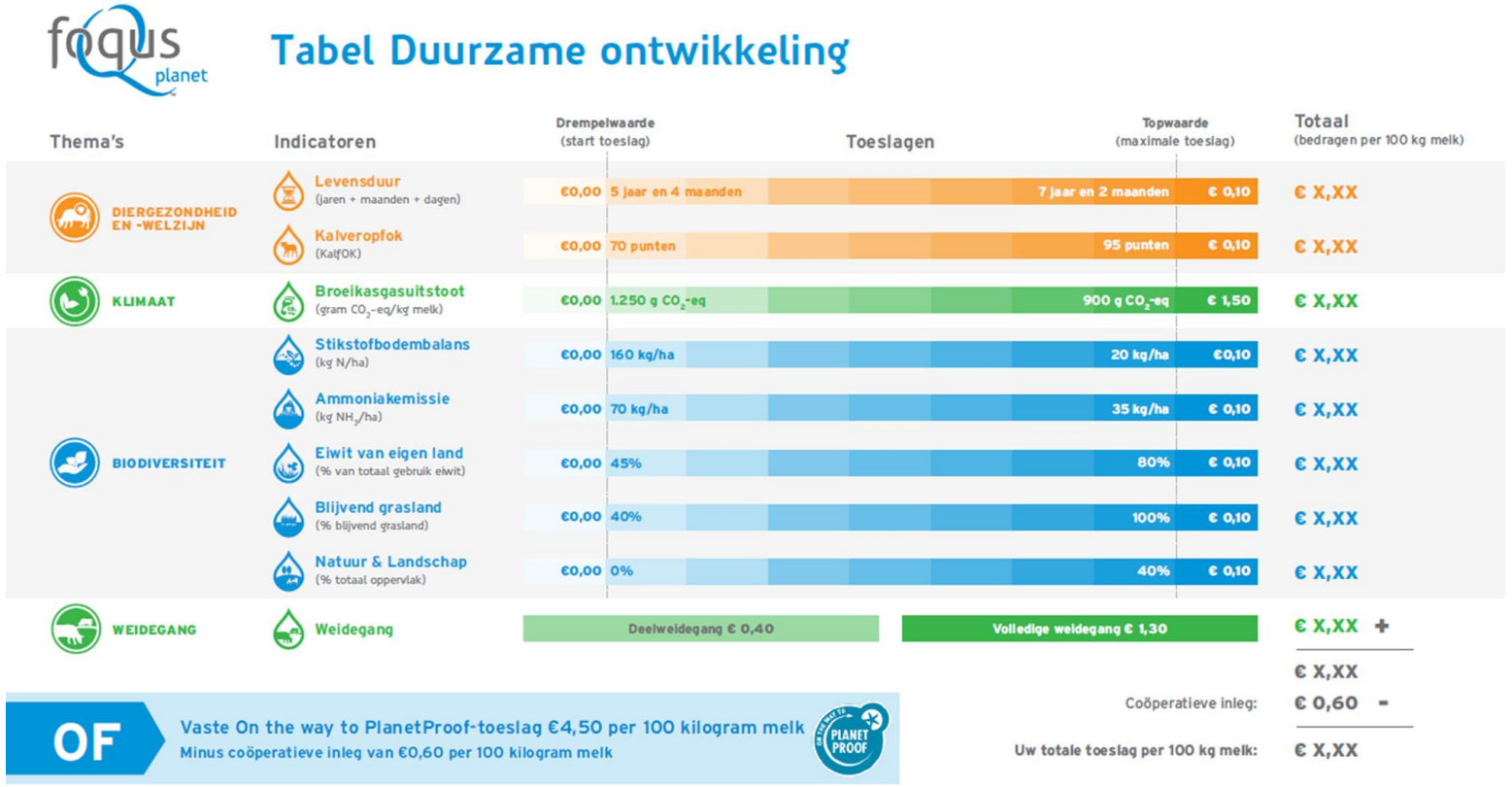
Premiare i produttori di latte per l'agricoltura sostenibile

Regime di pagamento per la sostenibilità Frisia Campina



Max. extra payment for carbon footprint reduction will be 1.50 euro/100 kg milk if farmers decrease the footprint / kg milk from 1.25 kg CO2eq to 0.9 kg CO2eg

Conclusioni

- I governi, i rivenditori, le aziende di trasformazione alimentare si sono impegnati a ridurre le emissioni di CO2eq
- Ridurre l'impronta di carbonio diventerà una necessità per operare nel settore
- L'impronta carbonica dei mangimi e dei prodotti animali può essere significativamente ridotta
- Preparati, possiamo aiutarti noi
- Tutti insieme per un pianeta migliore