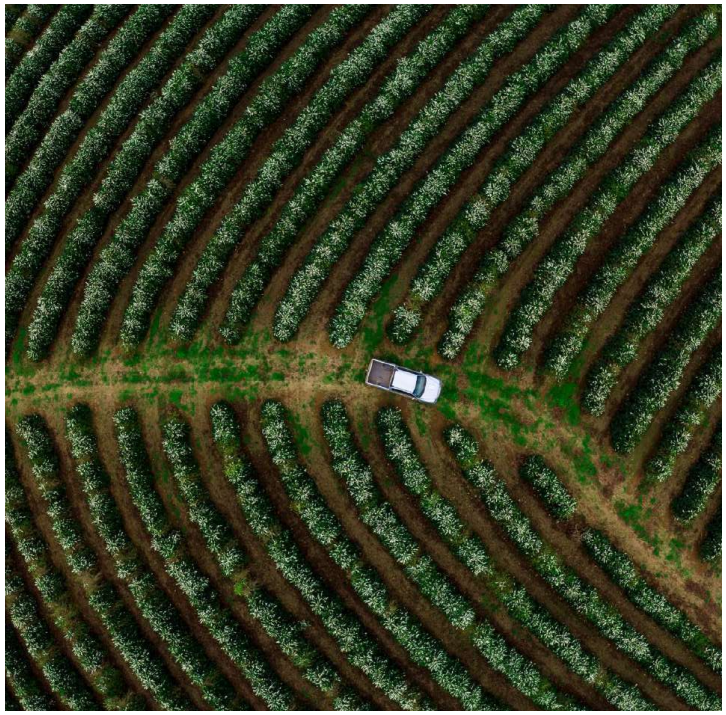

Greenhouse Gas Calculations in Coffee Supply Chains and Climate Friendly Coffee Certification with 4C

4C Online Seminar Series “Sustainable Coffee Day”

Julia Ostrowski
Meo Carbon Solutions GmbH
Cologne, October 15, 2020

Climate change and the impact on coffee production is real!

2°C

Climate

- Extreme weather conditions like droughts and floods
- Temperature raising

Cultivation

- Coffee cultivation areas cut down globally
- Risk of deforestation & biodiversity loss due to upslope movement of coffee farming up the mountains

Pests

- Key coffee pests spread into new coffee cultivation areas

1.5°C

Farmers

- Impact on farmers & workers health and productivity

Source: Image from Java Mountain Coffee (2018)

Stakeholders insist on clear responses and actions by companies

Source: comment from United Nations Website, 31 May 2019; pie chart on global greenhouse gas emissions by economic sector, www.researchgate.net, 2017/09/01; The Guardian, 18. März 2020; Euroshop365, 24. April 2020

Comprehensive climate protection in the coffee sector means detection, reduction and offsetting of carbon emissions

Carbon Footprint Calculation

Identification Core Impacts

Emission Reduction & Avoidance

Compensation

✓ Insetting (own supply chain)

✓ Offsetting (external credits)

Certification & Communication

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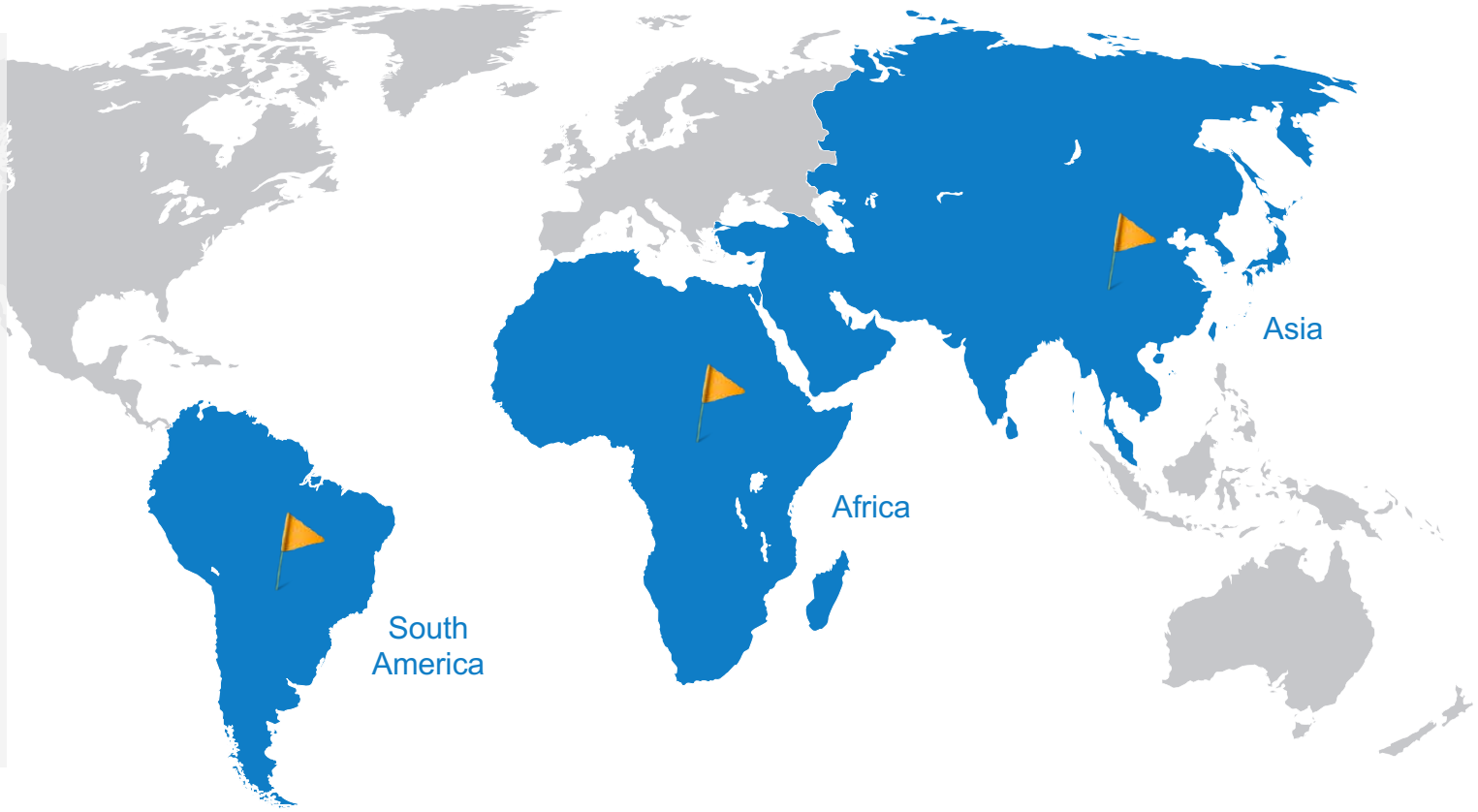
Meo Carbon Solutions in cooperation with 4C is already conducting GHG calculations for coffee producers around the globe

- (Smallholder) Farms & Plantations
- Cooperatives & Agents
- Mills & Factories
- Warehouses & International Ports



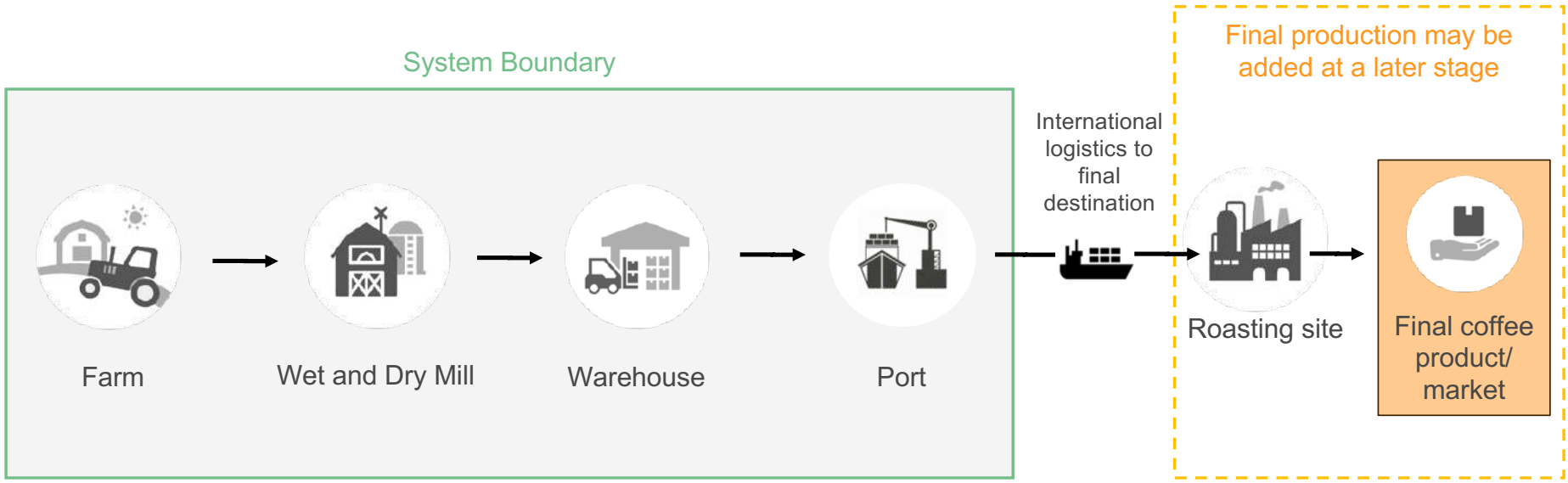
GHG calculations are conducted based on existing methodologies

- Different **standards** around:
  e.g. ISO Standard, GHG protocol, Global Reporting initiative (GRI), Renewable Energy Directive (RED)

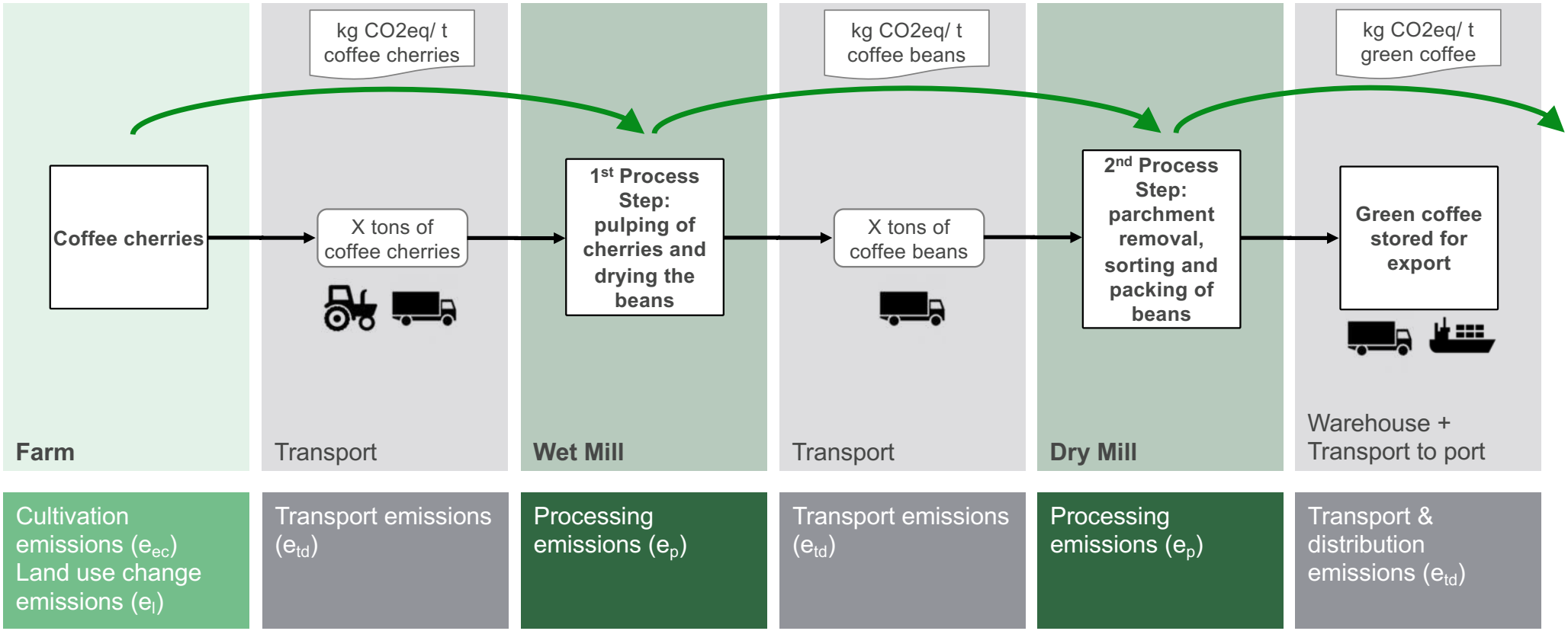
ISO 14067:2018 GREENHOUSE GAS PROTOCOL GRI RED

- **Core features of methodology**
  - Potentially covers entire supply chain from plantation/ SHs, cooperative, mill, warehouse to roasting
  - Including net effects from potential Land Use Change (LUC)
  - Taking into account all GHG relevant inputs (fertilizer, pesticides, process water, diesel, electricity,…)
  - Calculating separate values per production step
  - Allocation to co-products where applicable
  - Provision of fully transparent and documented calculations, updates possible
  - Usable for certification audits

Exemplary international coffee supply chain & definition of system boundary for GHG calculation

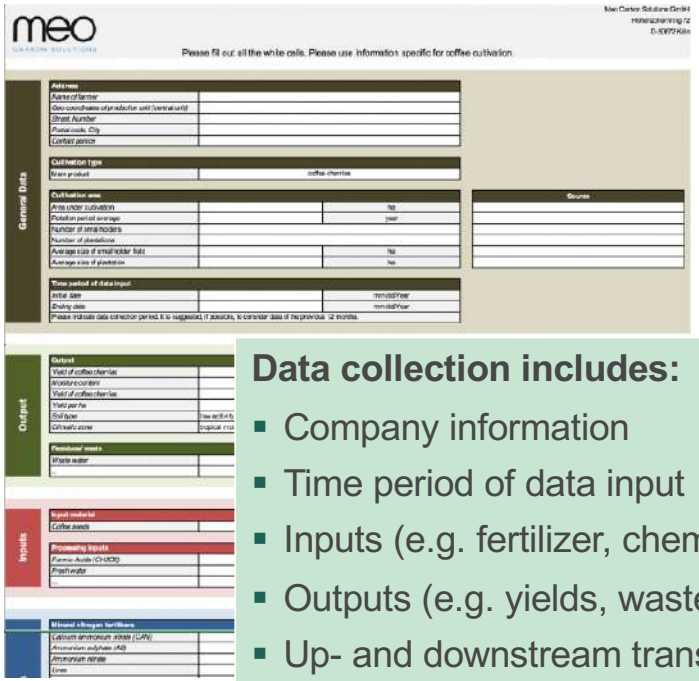


Simplified coffee supply chain, GHG emission categories and forwarding of GHG emissions



Exemplary GHG data request template and GHG calculator for a coffee producer

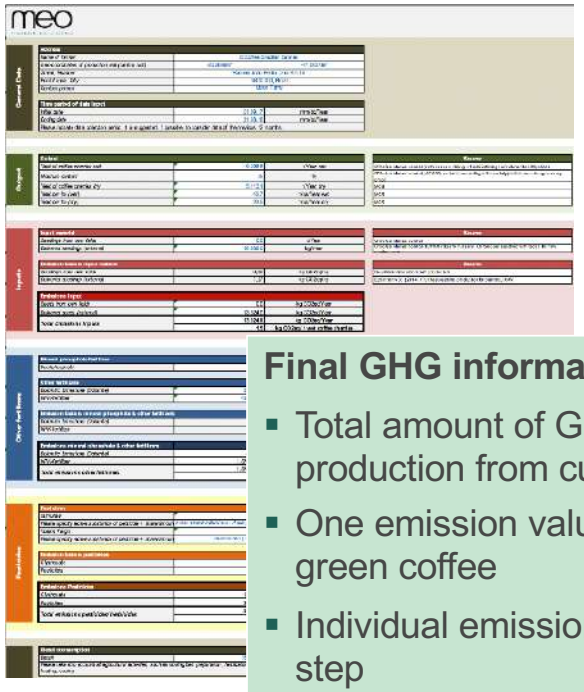
Farm template



Data collection includes:

- Company information
- Time period of data input
- Inputs (e.g. fertilizer, chemicals)
- Outputs (e.g. yields, waste water, residue)
- Up- and downstream transport of
- Energy consumption (e.g. diesel, electricity)

GHG Calculator



Final GHG information:

- Total amount of GHG emissions for coffee production from cultivation to export port
- One emission value in kg CO2eq/ ton green coffee
- Individual emission values per production step
- Reporting of on-field emissions

Data collection options, impact assessments and display of results

Data collection VIA:

1. Paper/Excel-based templates
2. Survey Tool
3. Mobile App

Data collection AT:

- Cooperative/ Agent Group Level
- Sample of Farms
- Individual farm Level

Calculator, web-based platform, etc.

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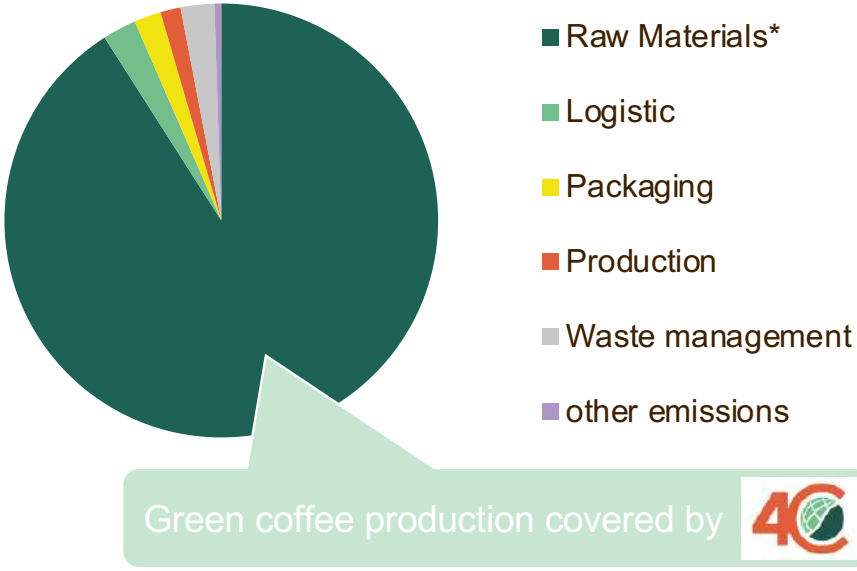
GHG emissions from green coffee production dominate overall emissions



Green coffee production covered by 4C

Source: German Coffee Association, Climate Partner (2020), *raw materials include production material, packaging material and process inputs


4C is a pathway to sustainable coffee supply chains
23 countries with 1 million ha covered
Nearly 400,000 farmers are producing 4C coffee
Four out of five 4C coffee producers are smallholders
1.6 million tons of green coffee certified
Independent 3rd party audits
Use remote sensing to verify land use change
Innovative and cost efficient solutions
Major brand owners and traders are sourcing 4C coffee
Effective Improvement Plans for impact on the ground
Sustainability projects in the coffee sector
* data as of 31st December, 2019

4C Climate Friendly Coffee certification

1. 4C certificate prerequisite
2. Initial audit to verify baseline calculation
3. Improvement plan and reduction measures
   → Approval by 4C auditor or 4C
4. Implementation of improvement measures
5. Verification of compliance with improvement plan to reduce GHG emissions in 4C recertification audits

6. 4C Climate Friendly Coffee certification and on-product logo use
7. Offsetting to become “climate neutral”

Carbon footprint calculation and support of a company's carbon neutrality aspirations with 4C

- Greenhouse gas (GHG) emissions calculation of the whole supply chain
- Introduction of mitigation measures and monitoring of GHG reduction

GHG emission add-on to the 4C certification program:

4C CLIMATE FRIENDLY COFFEE

1. **Mapping of supply chain & definition of system boundaries**
2. **Preparation of data request templates**
3. **Analysis of filled-in data templates & of emission factors**
4. **Set up of first draft GHG calculator in Excel**
5. **Feedback loops and provision of transparent and updatable calculator**
6. **Development of GHG insetting and offsetting options**

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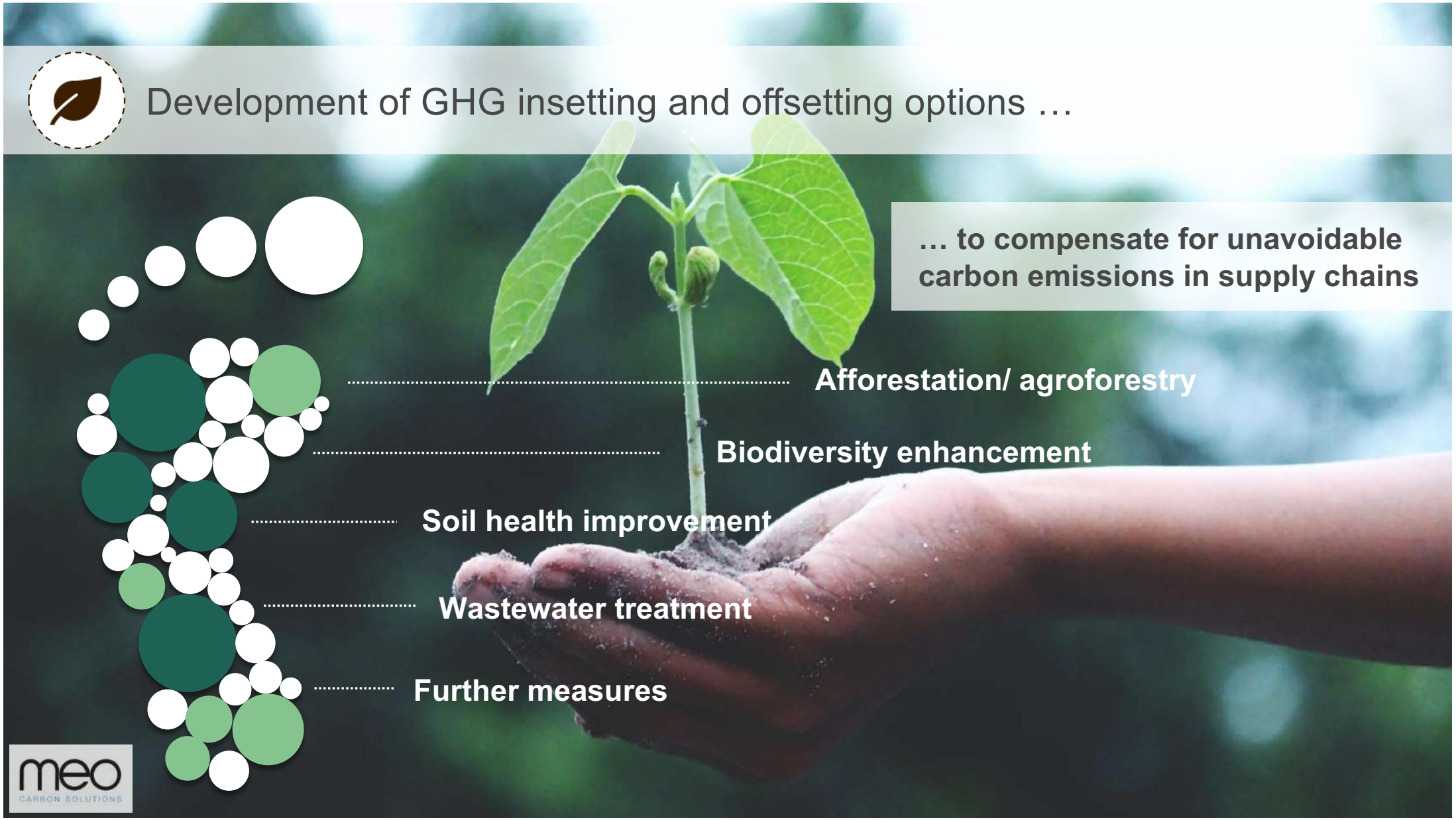
Development of GHG insetting and offsetting options …



… to compensate for unavoidable carbon emissions in supply chains

- **Afforestation/ agroforestry**
- **Biodiversity enhancement**
- **Soil health improvement**
- **Wastewater treatment**
- **Further measures**

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Climate friendly solutions for the coffee supply chain with 4C and MCS

1. Calculate emissions
2. Reduce emissions
3. Implement In/Offsetting projects
4. Communicate Carbon Neutrality

CLIMATE FRIENDLY COFFEE

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Many thanks for your attention!

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