

4C Certification of Climate Friendly Coffee and Traceable Coffee Supply Chains

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GHG Calculation for Coffee Supply Chains

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4C Climate Friendly Coffee Certification

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Traceable Coffee Supply Chains

Why climate-friendly coffee? Increasing demand for climate-friendly coffee among consumers and final buyers offers market opportunities for producers

"Climate change-related risks continue to influence our corporate strategy and drive our **efforts toward our GHG reduction target**. We monitor climate change risks, **which include GHG emissions regulation**. All farmers receive Climate-Smart Agriculture training."

J.M. *SMUCKER COMPANY*

"In Vietnam nearly **2,500 farmers were trained to adapt to climate change**. Topics included soil regeneration, irrigation, intercropping, shade trees and pesticide control."

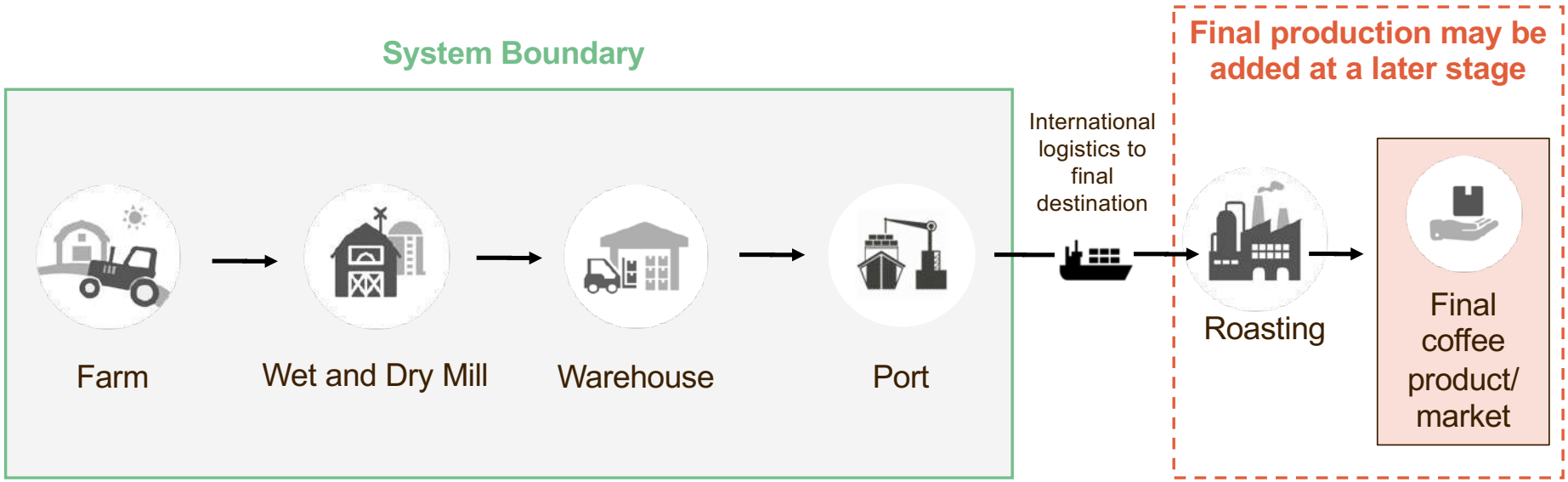
DOUWE EGBERTS

"Agroforestry is proving an important part of the solution for climate change adaptation. **The carbon sequestration of the planted trees helps to further mitigate the footprint of every cup of Nespresso**."

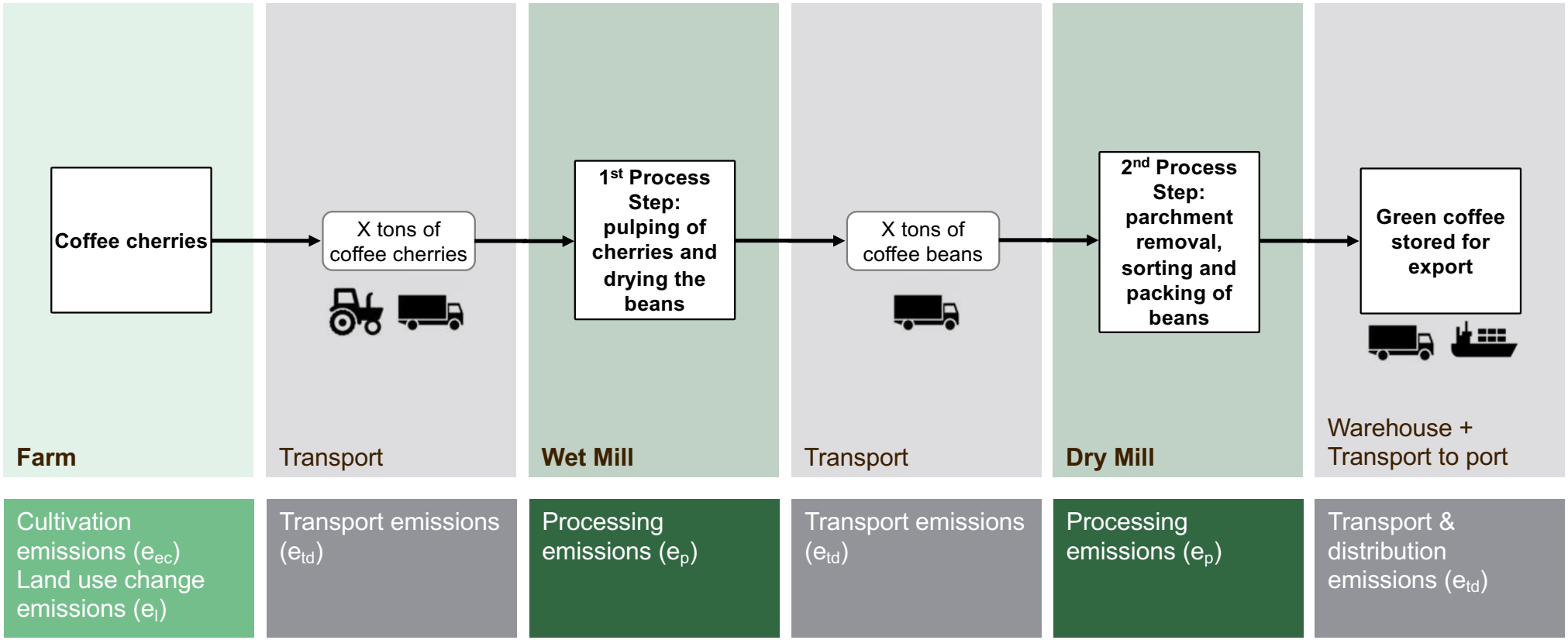
NESPRESSO

Coffee supply chain and greenhouse gas (GHG) calculation

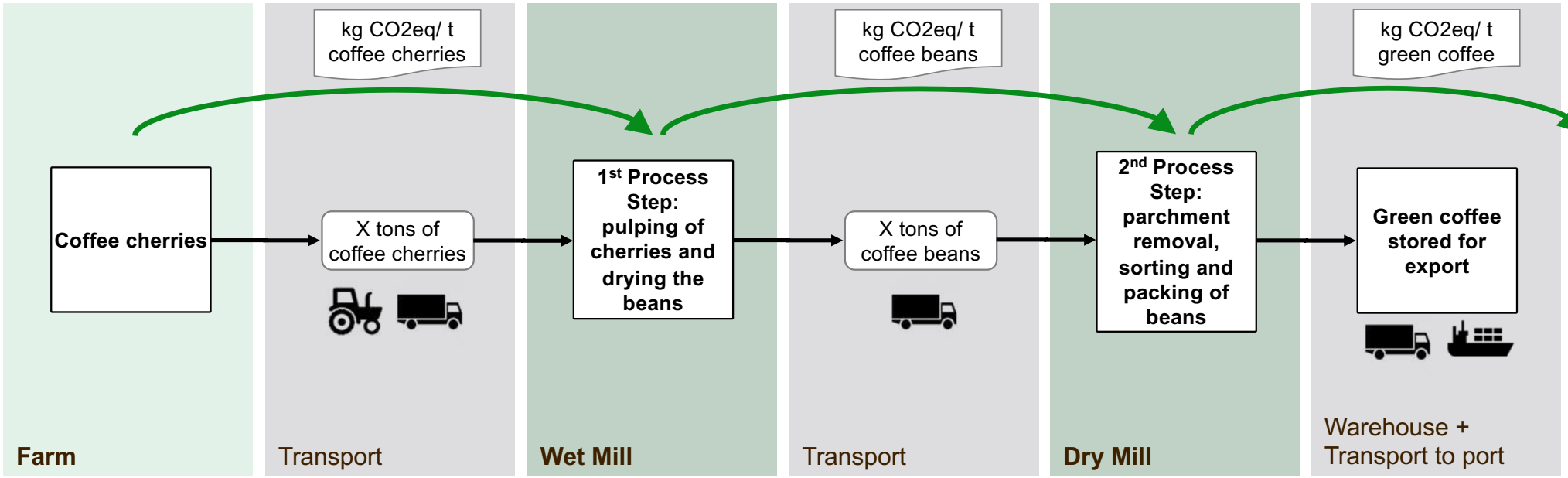
System boundaries for the GHG calculation can be adapted individually for your company



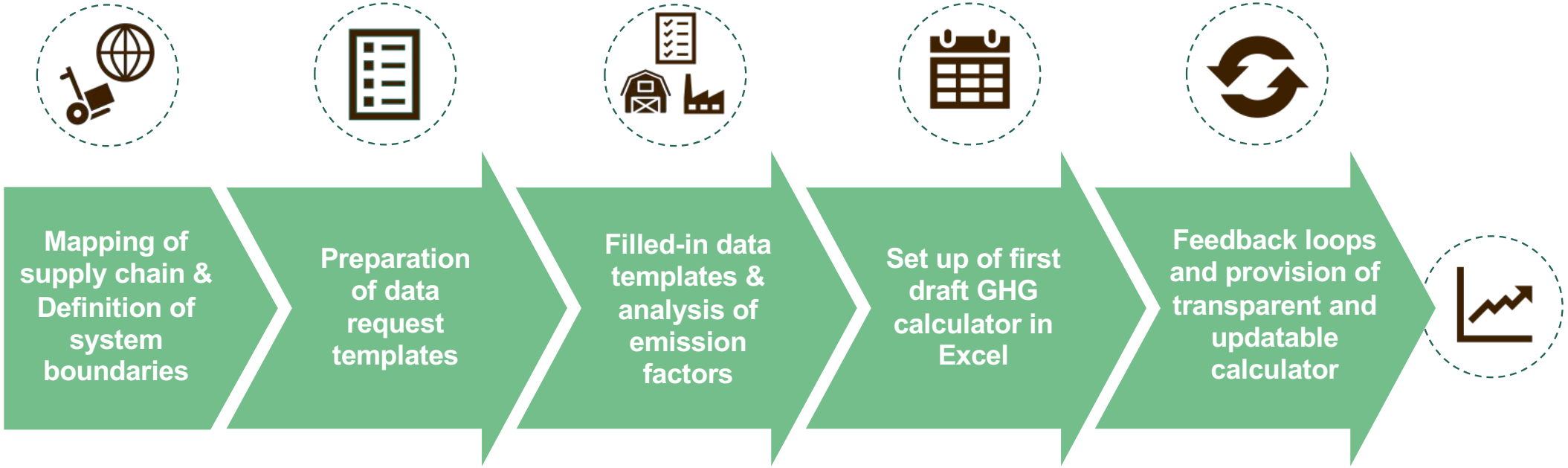
Simplified coffee supply chain and GHG emission categories



Forwarding GHG emissions in the coffee supply chain per kgCO2eq of respective product



Working steps to develop a GHG calculator with interested producers



GHG data request template for coffee farm to be filled in by project partner

A data request template is created for each production step and should be filled-in completely by the company

meo CARBON SOLUTIONS

Farm template

Please fill out all the white cells. Please use information specific for coffee cultivation.

EXAMPLE

Address

Name of farmer	
Geo-coordinates of production unit (central unit)	
Street, Number	
Postal code, City	
Contact person	

Cultivation type

Main product	coffee cherries

Cultivation area

			Source
Area under cultivation		ha	
Rotation period average		year	
Number of smallholders			
Number of plantations			
Average size of smallholder field		ha	
Average size of plantation		ha	

Time period of data input

Initial date		mm/dd/Year
Ending date		mm/dd/Year

Please indicate data collection period. It is suggested, if possible, to consider data of the previous 12 months.

Output

				Source
Yield of coffee cherries		t/Year		
Moisture content		%		
Yield of coffee cherries		t/Year		
Yield per ha		t/Year		
Soil type	low activity clay	← Click for displaying soil type options		
Climatic zone	tropical moist	← Click for displaying soil type options		

Residues/ waste

			Source
Waste water		l/Year	
...			

Inputs

Input material

			Source
Coffee seeds		number/Year	

Processing inputs

			Source
Formic Acids (CH_2O_2)		kg CH_2O_2/Year	
Fresh water		l/Year	
...			

Mineral nitrogen fertilizers

			Source
Calcium ammonium nitrate (CAN)		kgN/Year	
Ammonium sulphate (AS)		kgN/Year	
Ammonium nitrate		kgN/Year	
Urea		kgN/Year	

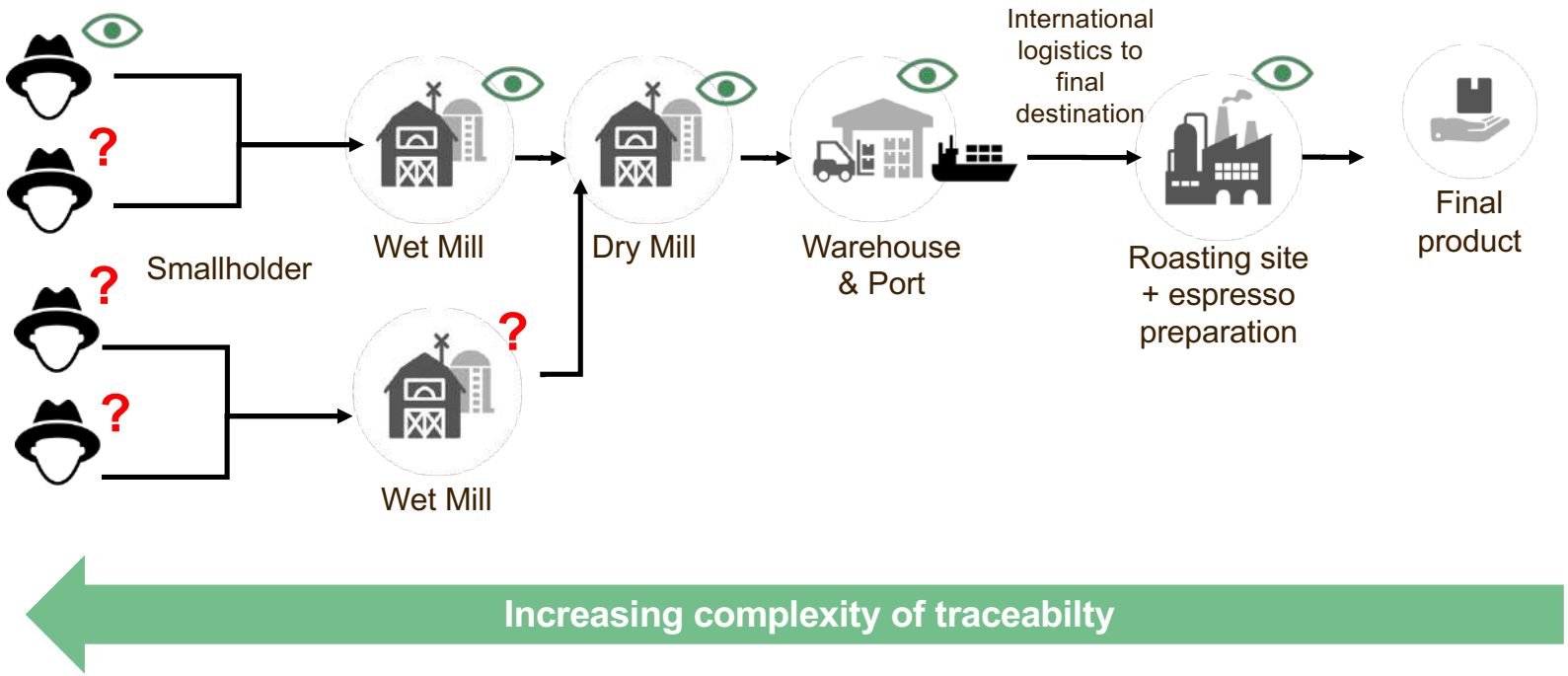
The collected input data is used as basis for the company GHG emission calculation

Integration of 4C Climate Friendly Coffee certification into regular 4C audits

1. 4C certificate prerequisite to use the claim “4C Climate Friendly Coffee”
2. Initial audit to assess status quo of individual coffee production emissions → GHG calculator required
3. Development of improvement plan and definition of measures to reduce GHG emissions and improve agricultural practices → plan approved by auditor or 4C
4. Implementation of improvement measures
5. Verification of compliance with improvement plan in 4C recertification audits

6. 4C Climate Friendly Coffee certification and on-product usage of 4C Climate Friendly Coffee logo

The complexity of traceability is increasing the further one goes back in the coffee supply chain



For traceability documentation three different options can be applied

Option 1:
Paper documentation along the supply chain

Option 2:
Traceability along supply chain using a database

Option 3:
App-based from mill to smallholder

Geo-coordinates and polygons provide first information about traceability and sustainability

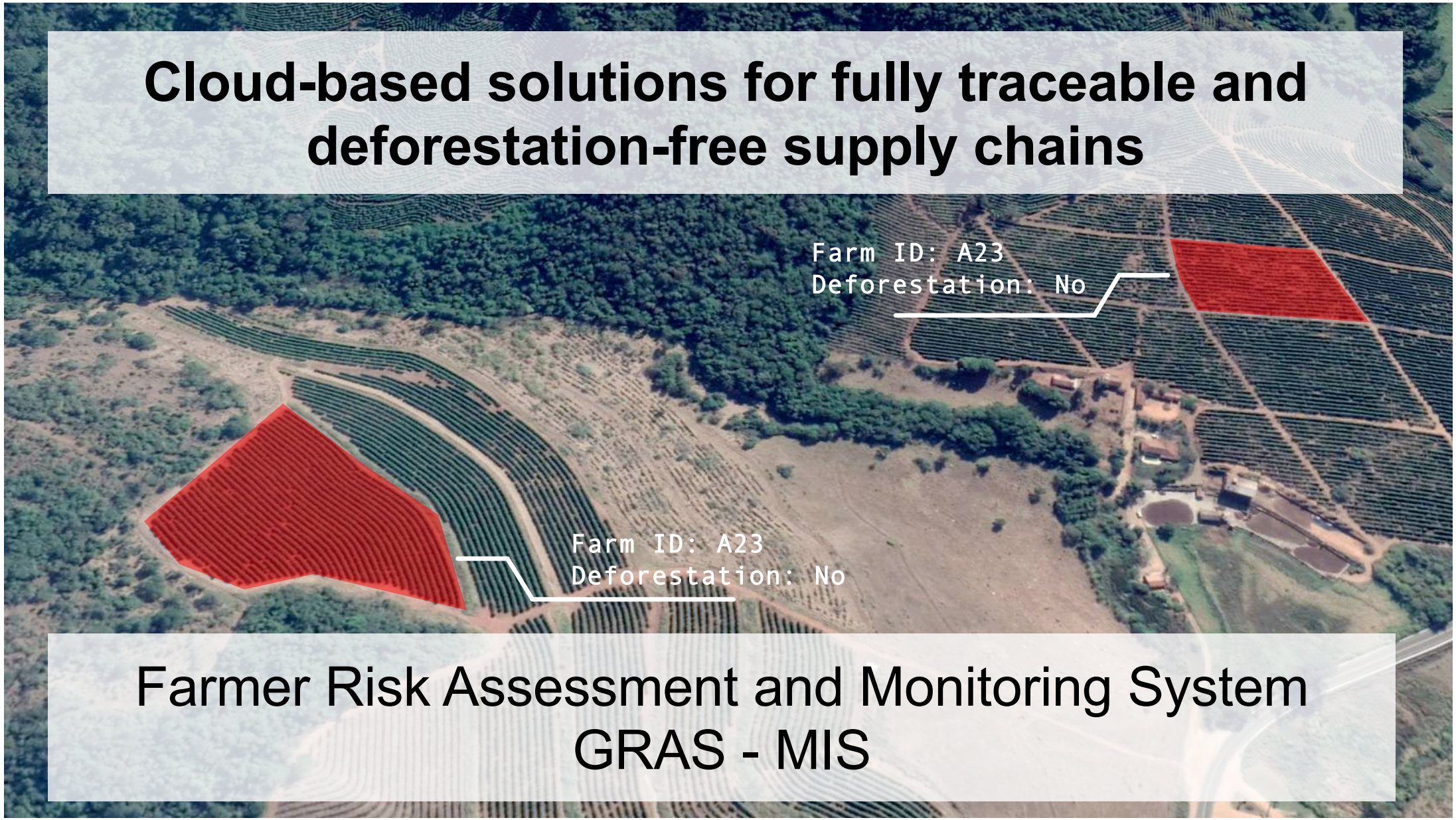
Point coordinates

- Rough estimation of location
- Check deforestation and protected areas within a buffer around the coordinate
- Area size based on questionnaire or other secondary information

Polygons

- Determination of field size
- Identify exact location and shape of fields
- Check deforestation and protected areas within the field polygon
- Yield estimations can be conducted for each field

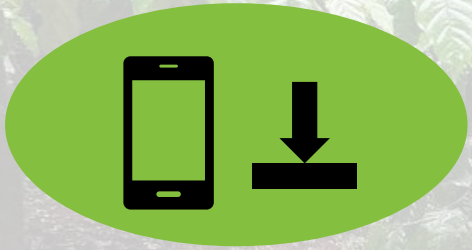
Cloud-based solutions for fully traceable and deforestation-free supply chains



Farmer Risk Assessment and Monitoring System
GRAS - MIS

Implementing smallholder traceability not necessarily requires huge investments

All you need is a smartphone and a user account



Download Apps

Create user account

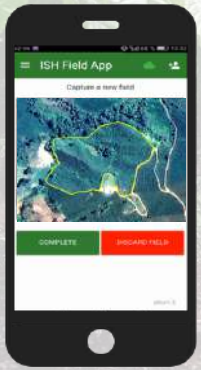
Participate in tutorial

Implement traceability

Traceability systems provide several benefits for users

GRAS MIS offers….

Mapping



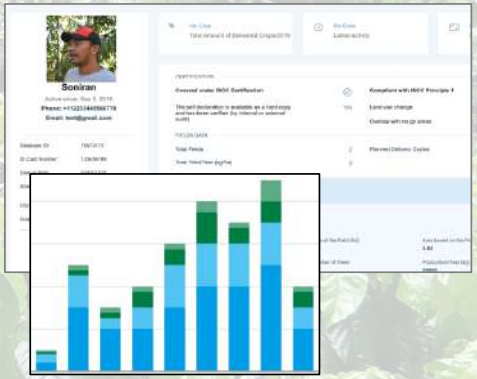
Smallholder App

Integrated Sustainability Assessment

Tracking

Tracking App

Management System (IMS)



...at the same time

Traceability systems are not necessarily isolated solutions and tie users

The GRAS MIS is flexible and allows communication with other systems

- Apps can be adjusted to the user needs

- Data up-and download easily possible

- Integration of algorithms
- Customized analysis and reporting

- Data exchange with customer IT systems

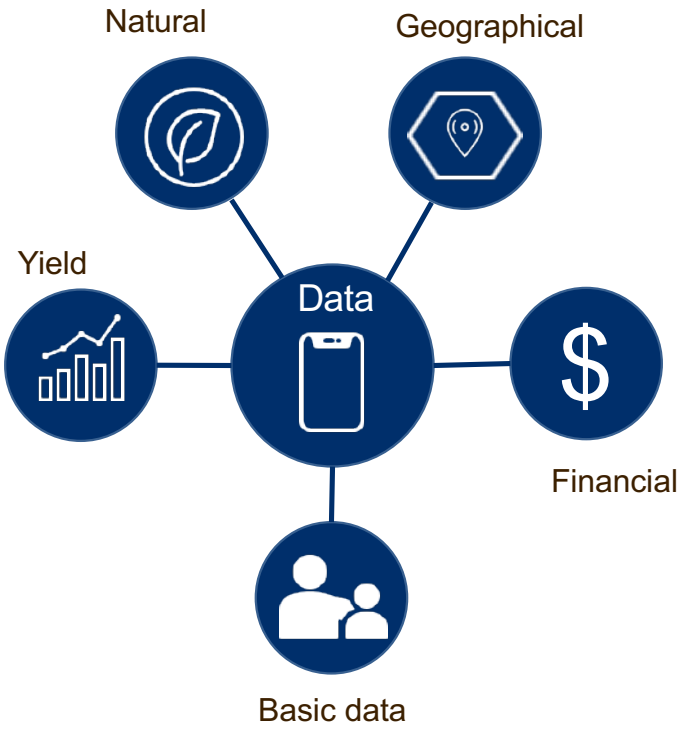
The ISH field app allows to collect data and polygons and to upload them to a database

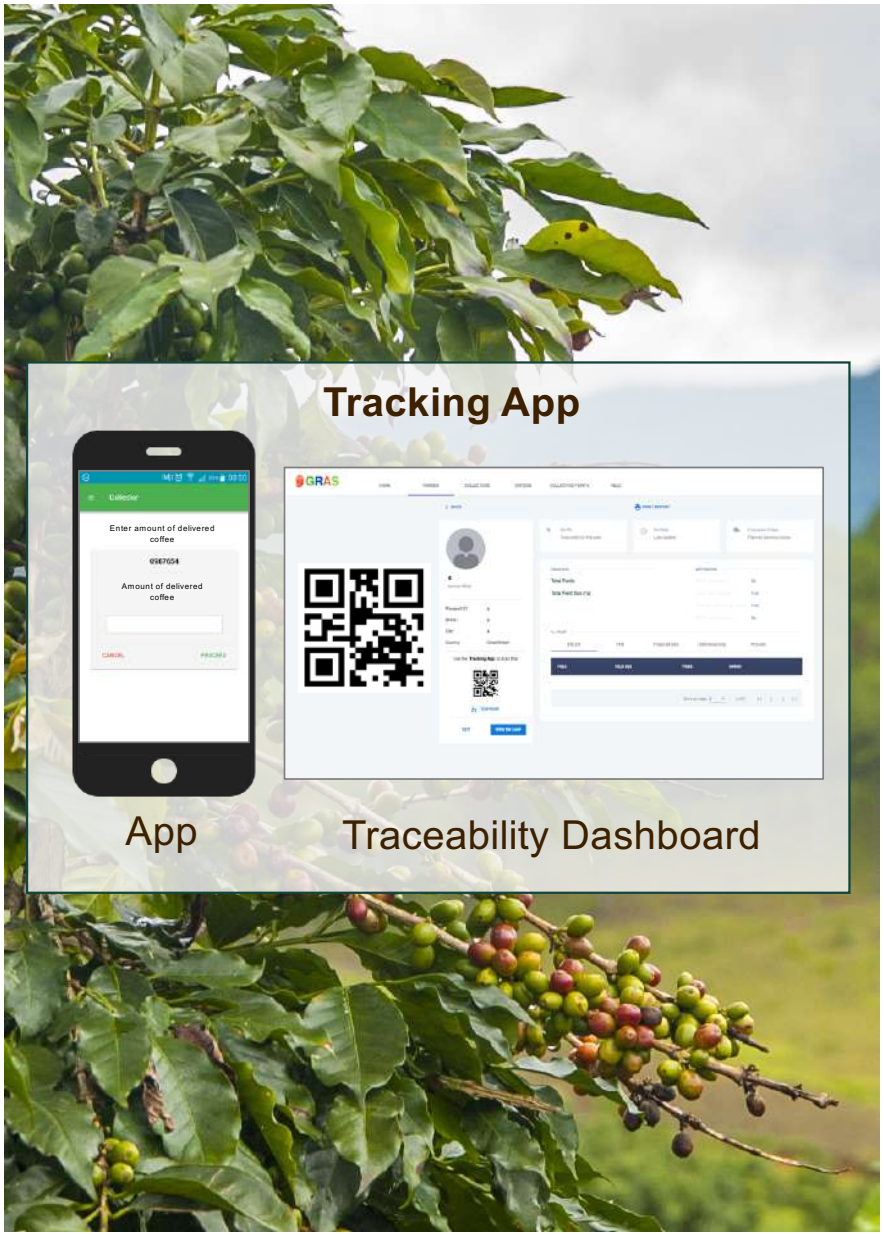
Upload of, e.g.:

- Basic data
- Field outlines

→Automated check against environmental risks

- Field size
- Number of trees
- Yields per month/year
- Chemicals used
- Financial information
- Picture of smallholder
- Picture of documents





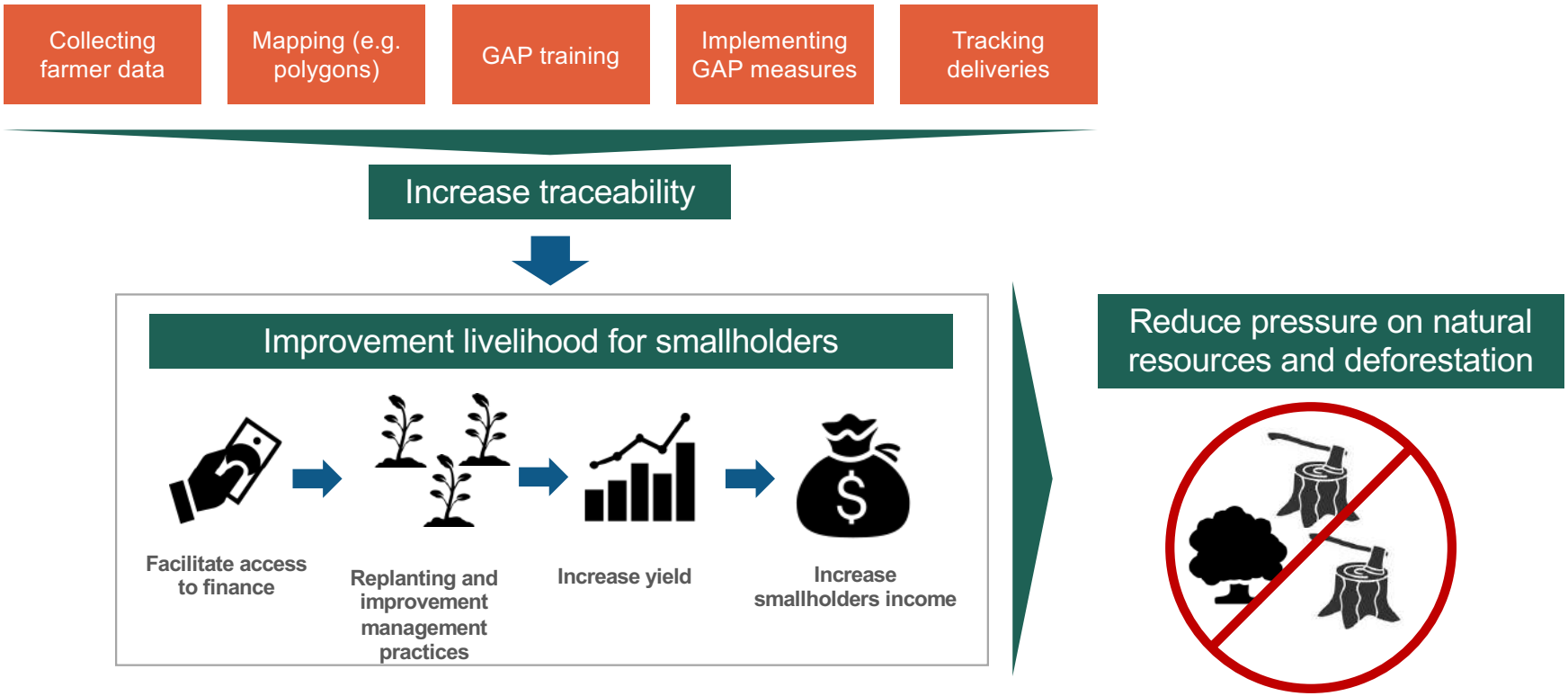
The Tracking App allows to trace coffee back to smallholders

The tracking app allows to:

- **Trace back** coffee to smallholder level
- Identify the **amount of delivered coffee** per smallholder
- Identify **amount sustainable produced coffee** (e.g. check according to environmental criteria)
- Individual **quantities** are **automatically transferred**
- Information is uploaded to the **database** and linked to other smallholder data
- Data will be accessible in a user-friendly **Traceability Dashboard**
- **Monitor** and analyze volumes of coffee
- **Assess** the amount of coffee delivered to the mill
- **Identify** and avoid **frauds**

Fully traceable coffee

Increasing traceability will improve the livelihoods of coffee smallholders and reduce deforestation



Many thanks for your attention!

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