Strengthening Sustainable Supply Chains for Smallholders

GRAS Global Risk Assessment Services
2020
Why is it important to have a closer look into smallholder production?

- Important producer group in agricultural sectors
- Direct economic pressure and low adaptation capacity
- Limited market and financial access
- Inadequate agricultural practices and low yields

Low yields  Growing demand  Pressure on natural resources and deforestation
Low incomes  Expansion of production areas
Climate change

Smallholder expansion into peatlands on the rise
The smallholder integration into sustainable supply chains reduces the pressure on natural resources.

Increase traceability

- Collecting farmer data
- Mapping (e.g. polygons)
- GAP training
- Implementing GAP measures
- Tracking deliveries

Improvement of livelihood for smallholders

- Facilitate access to finance
- Replanting and improvement of management practices
- Increase yield and product quality leading to price premiums
- Increase smallholders income and resilience against hazards

Reduce pressure on natural resources and deforestation
The key for traceability is mapping smallholder fields and tracking of delivery information
Cloud-based solutions for fully traceable and deforestation-free supply chains

Farmer Risk Assessment and Monitoring System
GRAS - IMS
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.

The GRAS Traceability System (IMS) offers...

- **Mapping**
  - Smallholder App

- **Integrated Sustainability Assessment**

- **Tracking**
  - Tracking App

- **Management System (IMS)**

...at the same time.
Mapping is required by many sectors and goes along with manifold benefits.

Mapping = Identification of farmer fields

ISCC requires polygon mapping for independent smallholder certification.

End-users often ask for polygons of smallholders and want to avoid sourcing from suppliers linked to deforestation, fires and biodiversity loss.

However, especially for smallholders, mapping is complex and time-consuming.

Although mapping is time-consuming it provides manifold benefits.
Mapping allows to identify whether smallholders are compliant with sustainability criteria.
There are different options for mapping: Collecting addresses, point coordinates and polygons
Addresses and point coordinates are often inaccurate and located at wrong locations

**Point coordinates** could be shifted

**Addresses** could refer to the village center

Coordinate located 1 km from the actual field

Fields located in the sea?

Different options for mapping

- **Addresses**
- **Point coordinates**
- **Polygons**
Therefore, the collection of field polygons is essential.
Different technologies are available for polygon mapping - Expert mapping with GPS device

- **GPS devices** are expensive and often not available
- **GPS data collection** requires a certain amount of **experience**
- **Mapping results** could be **erroneous / corrupt**
- **Link between field and farmer** has to be added **manually**
- **GIS knowledge** required to correct errors → Often not available
- **Experts are expensive and rare**
- **Data correction is time-consuming**

**Mapping only possible through experts → expensive**
Different technologies are available for polygon mapping – GRAS Smallholder App

Collect field outlines and additional data

- GRAS Smallholder App
- Visualization

Mapping can be conducted by non-experts

- Environmental
- Geodata
- Performance
- Basic
- Pictures

State-of-the-art data collection
Secure data upload to the cloud
Customizable according to user’s needs

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The use of the GRAS Smallholder App also allows to collect additional data and pictures.

- **Identify problems and implement measures**
  - **Collect farmer data**
    - Edit farmer
      - Additional data
        - Years of experience: 20
        - Number of dependents: 2
        - Has employees: 1
          - Number of employees: 2
        - Income from farming per year
        - Secondary income per year
        - Expenses per year
    - Edit field data
      - taw: 6751119_B672
      - Kind of land rights certificate: SHM
      - Number of trees: 200
      - Year of planting: 2020
      - Yield (kg)
        - Yield (kg)
  - **Take pictures**
    - Facilities
    - Diseases
Farmer fields collected through the App automatically undergo environmental risk assessments.

Protected areas
Deforestation
Peatlands
Fires
Others…

Integrated Sustainability Assessments
Tracking:
The Tracking App allows to trace crops back to smallholder fields

- Identify the amount of delivered crops per smallholder
- Register entire delivery tours and data at the recipient (e.g. mill)
- Collect information on farmers’ delivery cycles
- Acts as smallholder IMS

Fully traceable supply chains
The GRAS IMS allows the...

- Visualization of collected data
- Analysis of farmer data
- Identification of gaps, required trainings and peer learning
- Monitoring and performance improvement
### Field Information

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Plant/Crop</td>
<td>Palm Oil</td>
</tr>
<tr>
<td>Area of the Field (ha)</td>
<td>4</td>
</tr>
<tr>
<td>Area based on the Polygon (ha)</td>
<td>3.82</td>
</tr>
<tr>
<td>Year of Planting</td>
<td>1997</td>
</tr>
<tr>
<td>Number of Trees</td>
<td>600</td>
</tr>
<tr>
<td>Production/Year (kg)</td>
<td>68400</td>
</tr>
<tr>
<td>Owner of the Field</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Access Basic Data

- **Database ID:** 76573173
- **ID Card Number:** 123456789
- **Date of Birth:** 03/01/1978
- **Street:** SIDO MUKTI RT 004/0001
- **City:** Sido Mukti
- **Country:** Indonesia

### Uploaded Pictures

- [Image: Sonira](image)

### QR Codes for Farmer Identification

- [QR Code: 69567523911](image)

### Check of Environmental Criteria

- **Covered under ISCC Certification:** Yes
- **Compliant with ISCC Principle 1:**
  - Land use change: No
  - Overlap with no go areas: No

### Field Data

- **Total Amount of Delivered Crops/2019:**
  - No Crop
  - No Date
  - Latest activity

- **Total Field Size (ha):** 6.26

- **Latest Activity:**
  - Time: 68400
  - Date: 1997
The GRAS IMS also enables constant monitoring

- **Fires**
  - Fire data updated on a daily basis and alert

- **Land Use Change**
  - Sustainability monitoring: land use change detection
Traceability systems are not necessarily isolated solutions and tie users

The GRAS IMS 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 tool will be further developed in future

Possible extension options are...

- Scorecards
- Payment system
- Weather information
- Market information
Many thanks for your attention!

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