



# Food security in Sub-Saharan Africa: A Fresh Look on Agricultural Mechanisation

How adapted financial products can make a difference

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Presentation of the study and its results

Consultative Meeting on a Mechanization Strategy:  
New models for sustainable agricultural mechanization in sub-Saharan Africa

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# The study combines the perspectives from both agricultural and financial sector

More than 200  
theoretical and  
empirical studies



About 40 qualitative  
interviews with  
experts worldwide

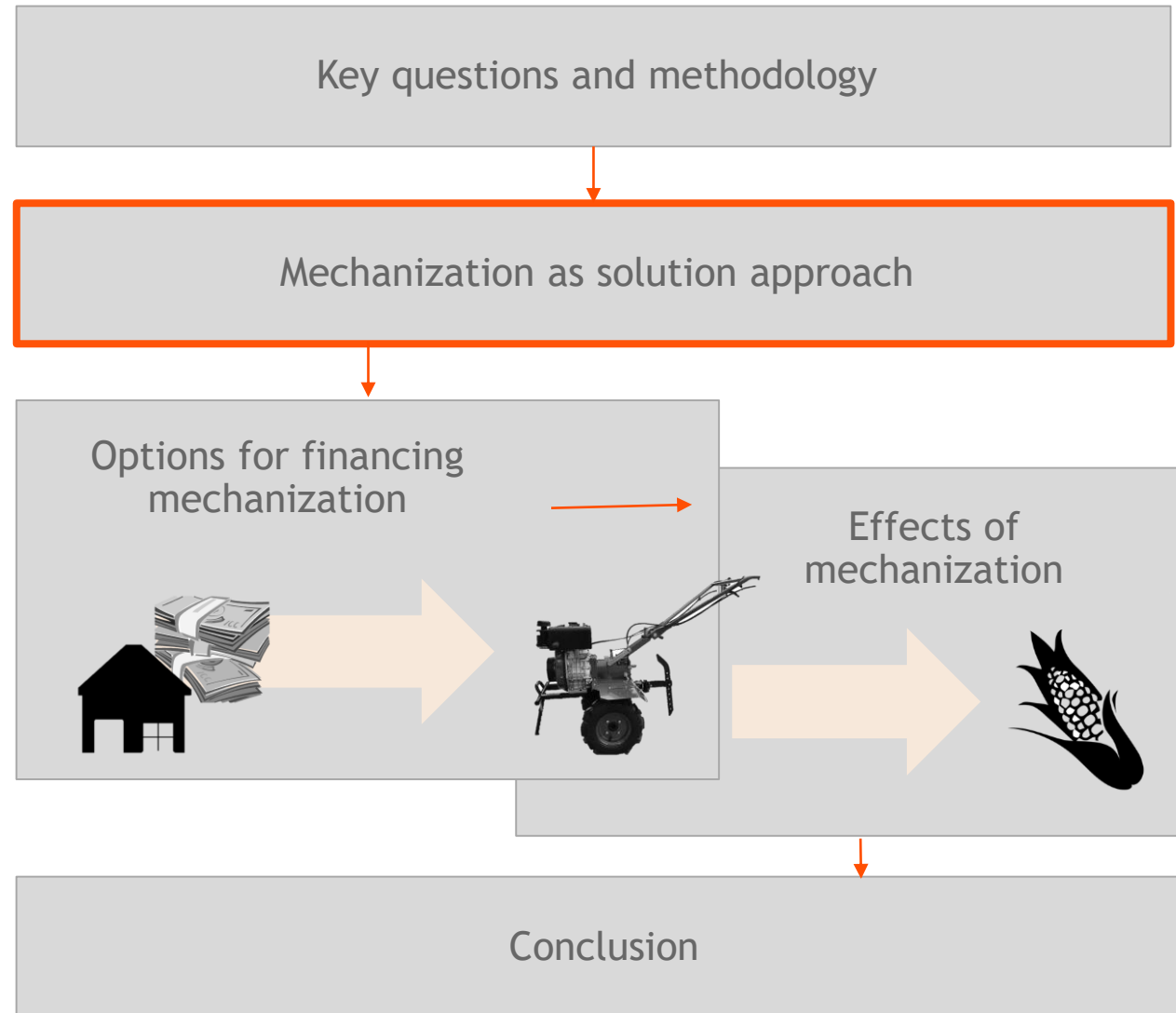


Intense revision  
process and feedback  
loops with experts






Numerous case  
studies



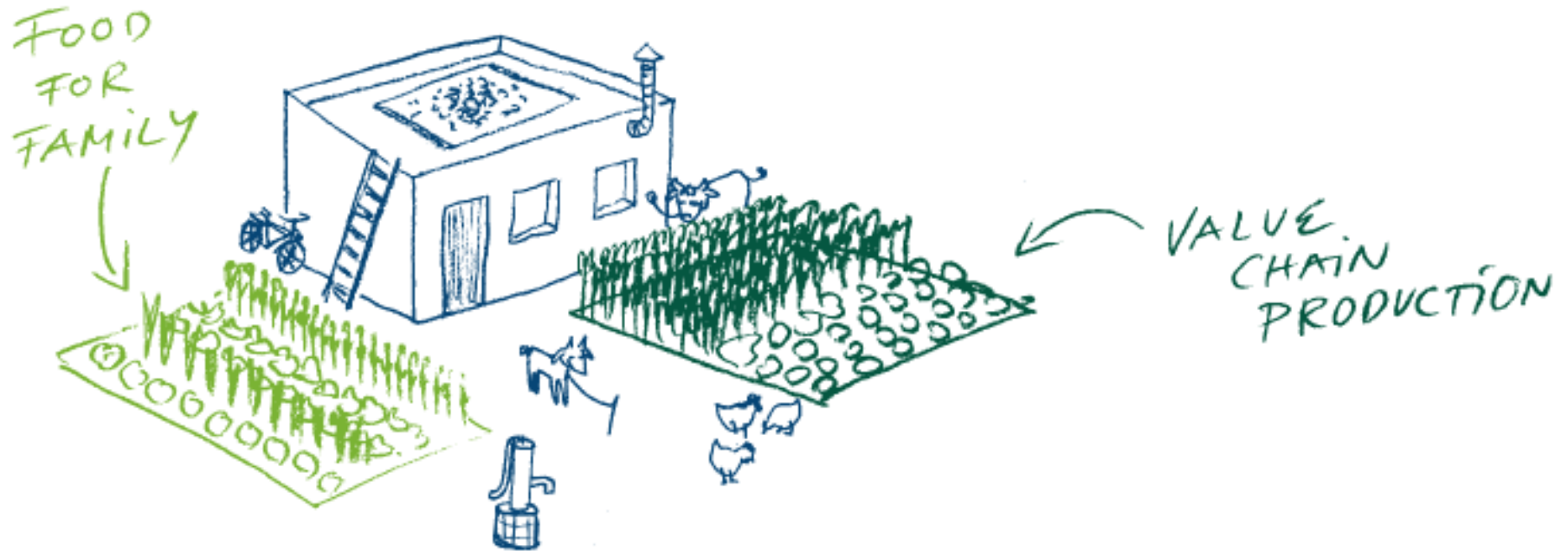
# Agenda



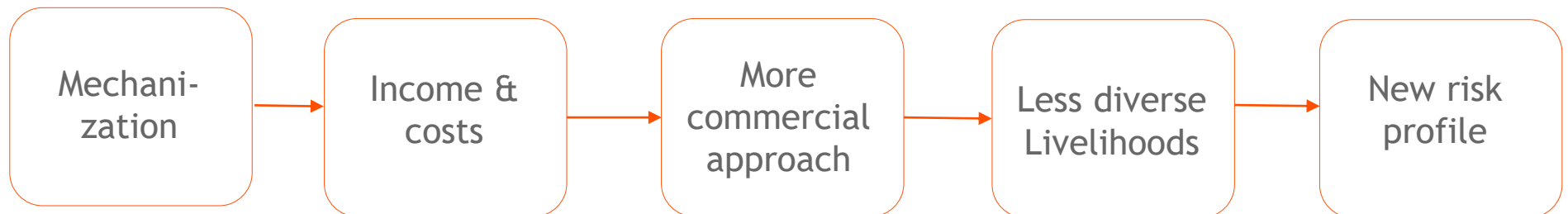
# The whole value chain offers mechanization opportunities in different intensities

|           |                                  | Value Chain  |            |         |   |
|-----------|----------------------------------|--|------------|---------|---|
|           |                                  | Production   | Processing | Storage | Transport   |
| Intensity | High: Large motorized machines   |   |            |         |    |
|           | Medium: small motorized machines |   |            |         |   |
|           | Medium: Draught animals          |  |            |         |   |
|           | Low                              |  |            |         |  |

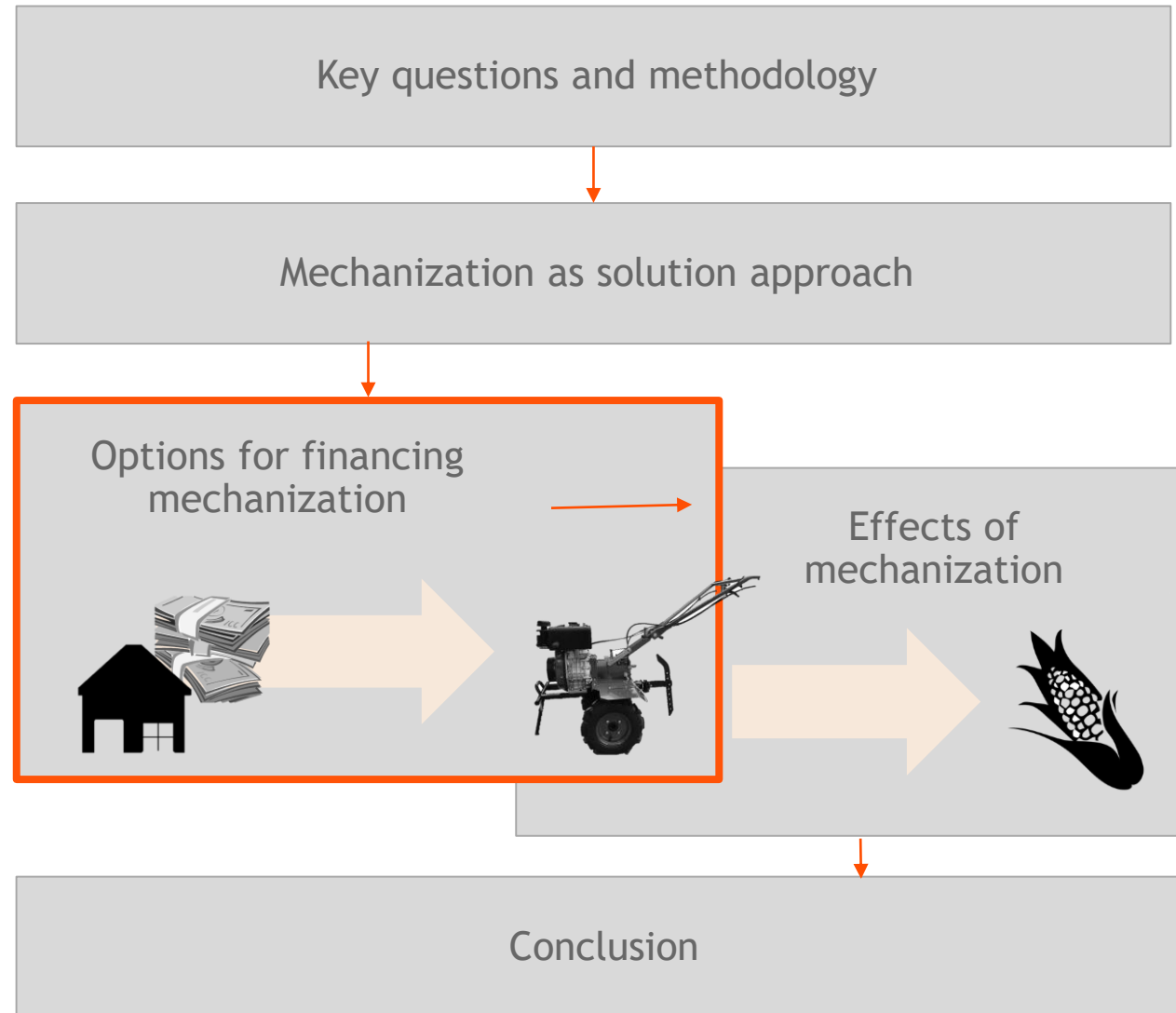
For smallholder farmers (majority in SSA),  
mechanization changes the production patterns.



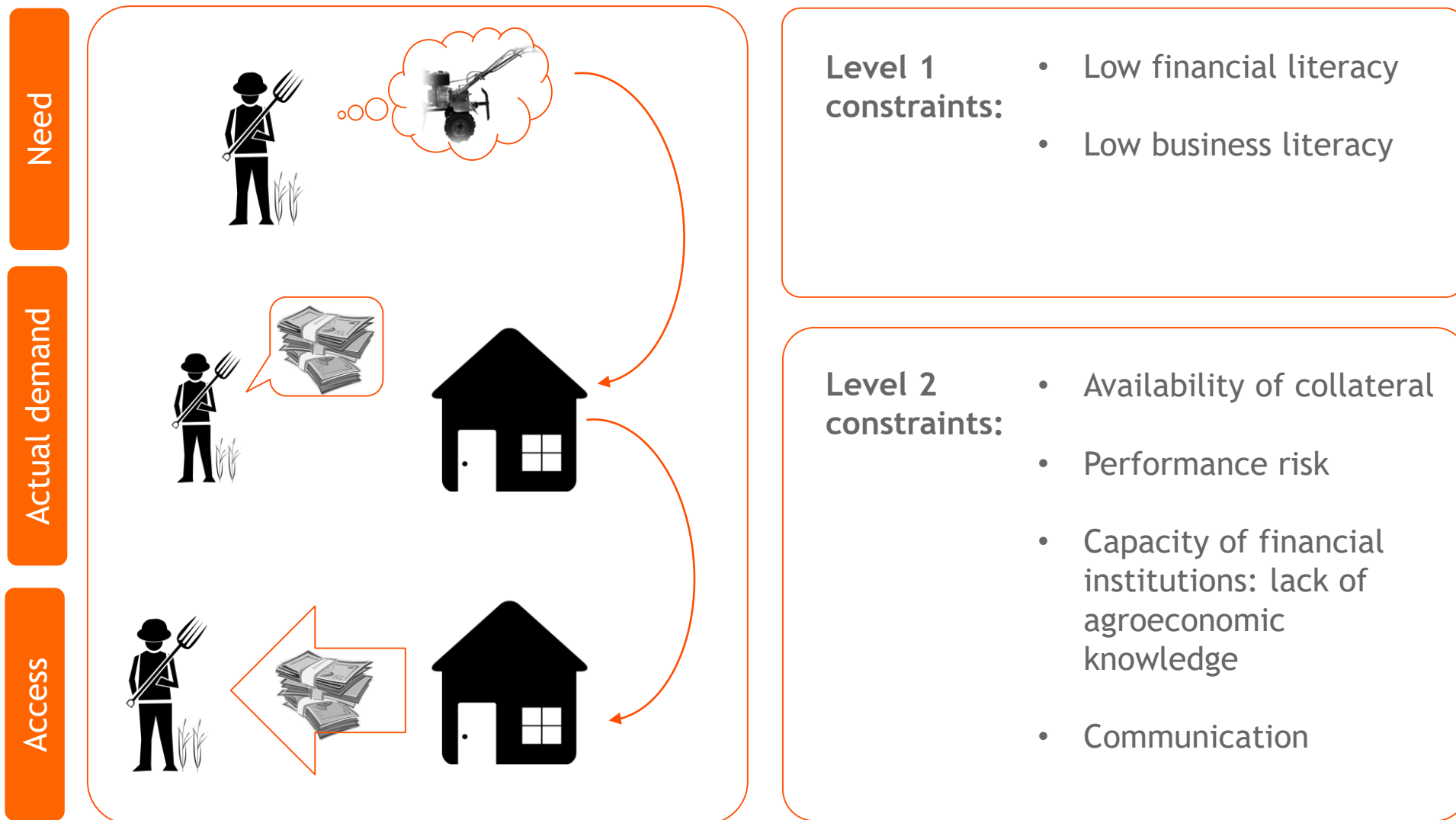
Mixed Livelihoods ensure risk management



# Agenda

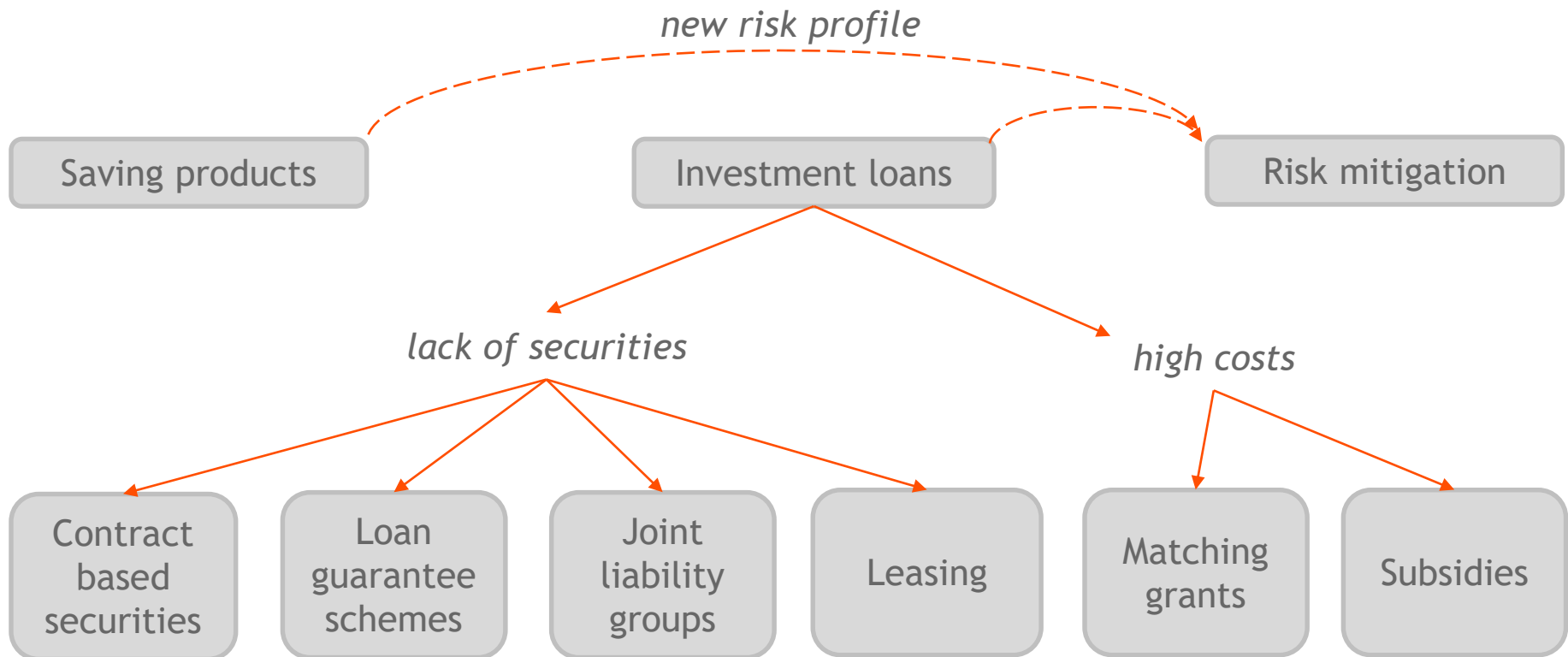


# Constraints in accessing financial services for mechanization exist on two levels





# Different financial products can finance mechanization



# Case Study: myAgro - Targeted savings with innovative distribution channels

What?



Non-profit Organization, active in Mali und Senegal

Sells agricultural products with *layaway* system:

How?



Local vendors sell *scratch-cards* worth \$1 - \$50

Farmers text the code to an indicated number to lay away their savings to their myAgro account  
myAgro delivers high quality seeds, fertilizer and (small) tools

The service includes financial training and transport

Effects?




Local and confidential way of saving

Timely delivery

High quality

Correct application

# Alternative business models are more important for social impact than financial products itself

|               | Private Ownership            | Joint Ownership  | External Ownership and Joint Usage  |   |
|---------------|------------------------------|--|---|---|
|               | Private                      | Machinery ring   | Service Providers   | Outgrower Schemes   |
| Example       |                              |  |  |  |
| Farmers...    | ...buy own equipment         | ...pool resources  | ...hire services  | ...receive machinery or service by aggregator                                       |
| Advantages    | No competition for machinery | Access to funds for machinery  | No need to purchase / maintain machines   | Availability of appropriate machines  |
| Disadvantages | High cost                    | Competition for machinery during short crop operation periods                      |   | Dependency on aggregator  |

# Case Study: CUMA - machinery ring in Benin

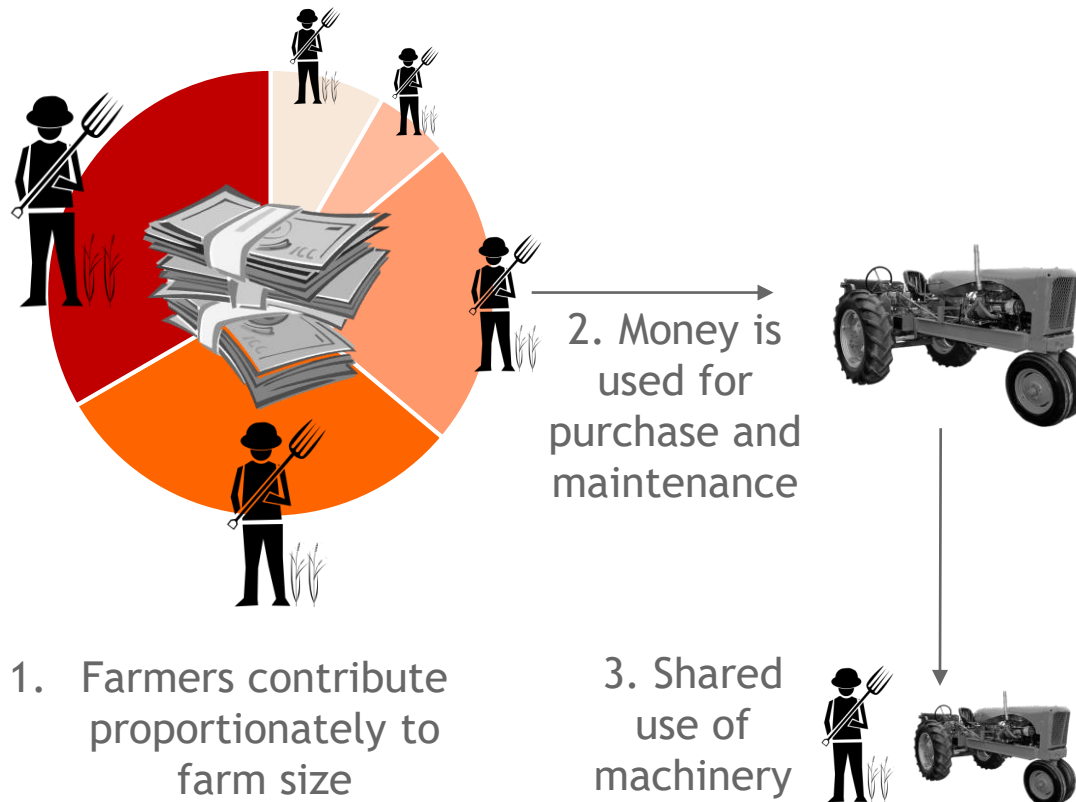
What?



Coopérative d'Utilisation de Matériel Agricole in Benin

Cooperative to purchase and share machinery

How?



Effects?

Increase of cultivated area



Market-focus and specialization

Additional labour for subsequent tasks



# Case Study: Hello Tractor - innovative tractor-hiring in Nigeria

What?

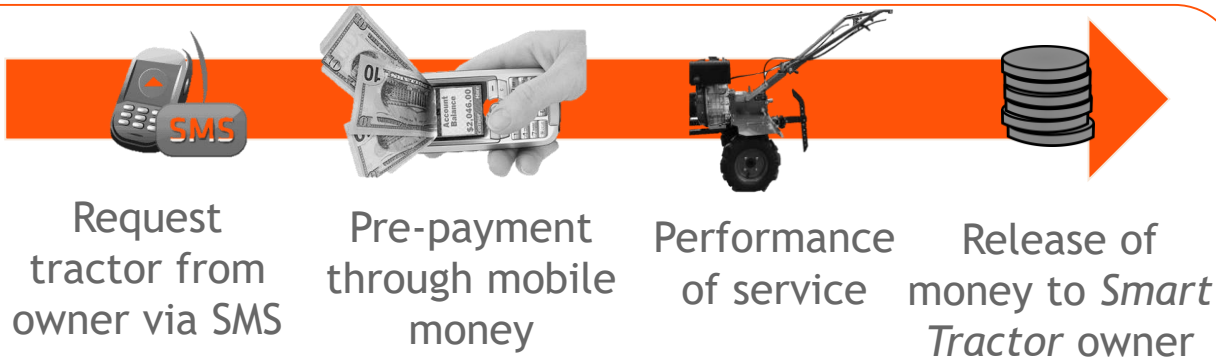


hello tractor

Social Enterprise in Nigeria

Provides tractor hiring services

How?



Source:  
<http://www.hellotractor.com/>,  
<http://www.mymarketing.it/dblog/articolo.asp?articolo=1278>

Effects?

Bulk purchasing allows to save money compared to single purchases

Women benefit from anonymity

# Case Study: NWK Agri Services - outgrower scheme in Zambia

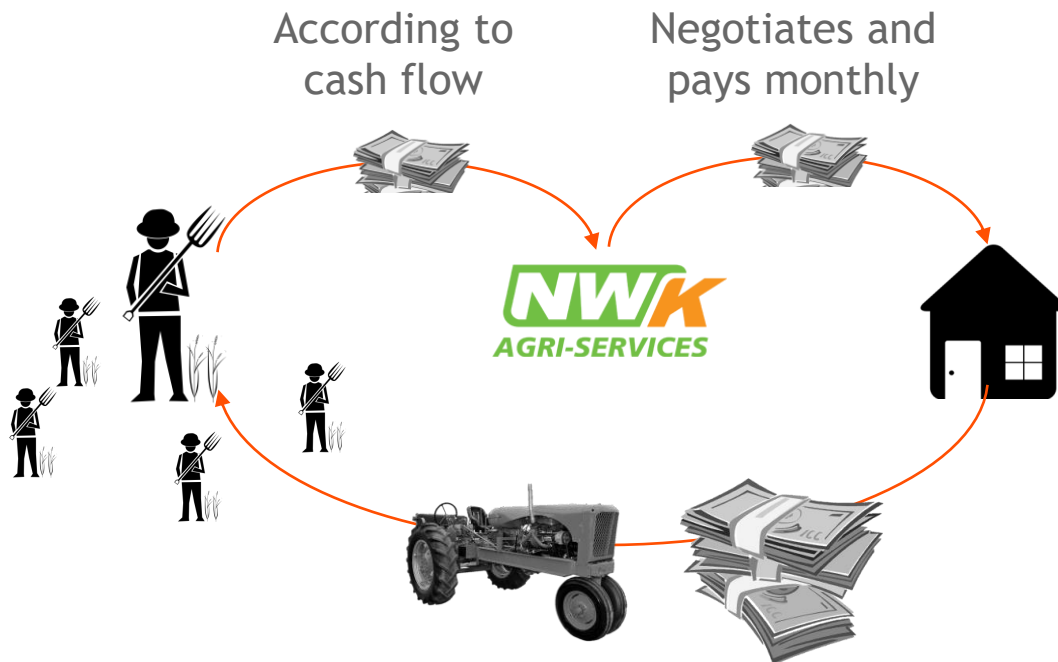
What?



Agribusiness company in Zambia

Acts as intermediary between farmers and banks

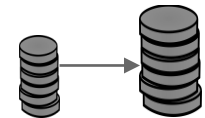
How?



<http://nwkzambia.com/index.php/mechanization/>

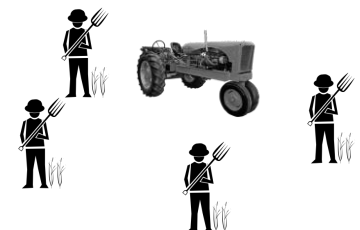
Effects?

Increased income



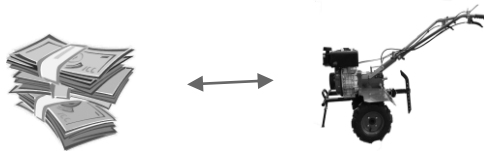
Less vulnerable to shocks

Supply to peripheral farmers

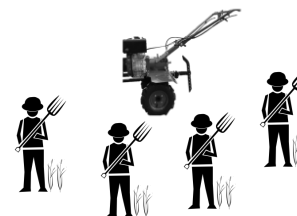


# The shared usage and ownership models are a solution to central obstacles of mechanization for smallholders

- ✓ Make (financing of) mechanization economically viable



- ✓ Enable purchase and maintenance of mechanization tools to be done jointly

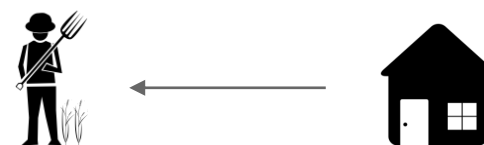


## Alternative ownership models...

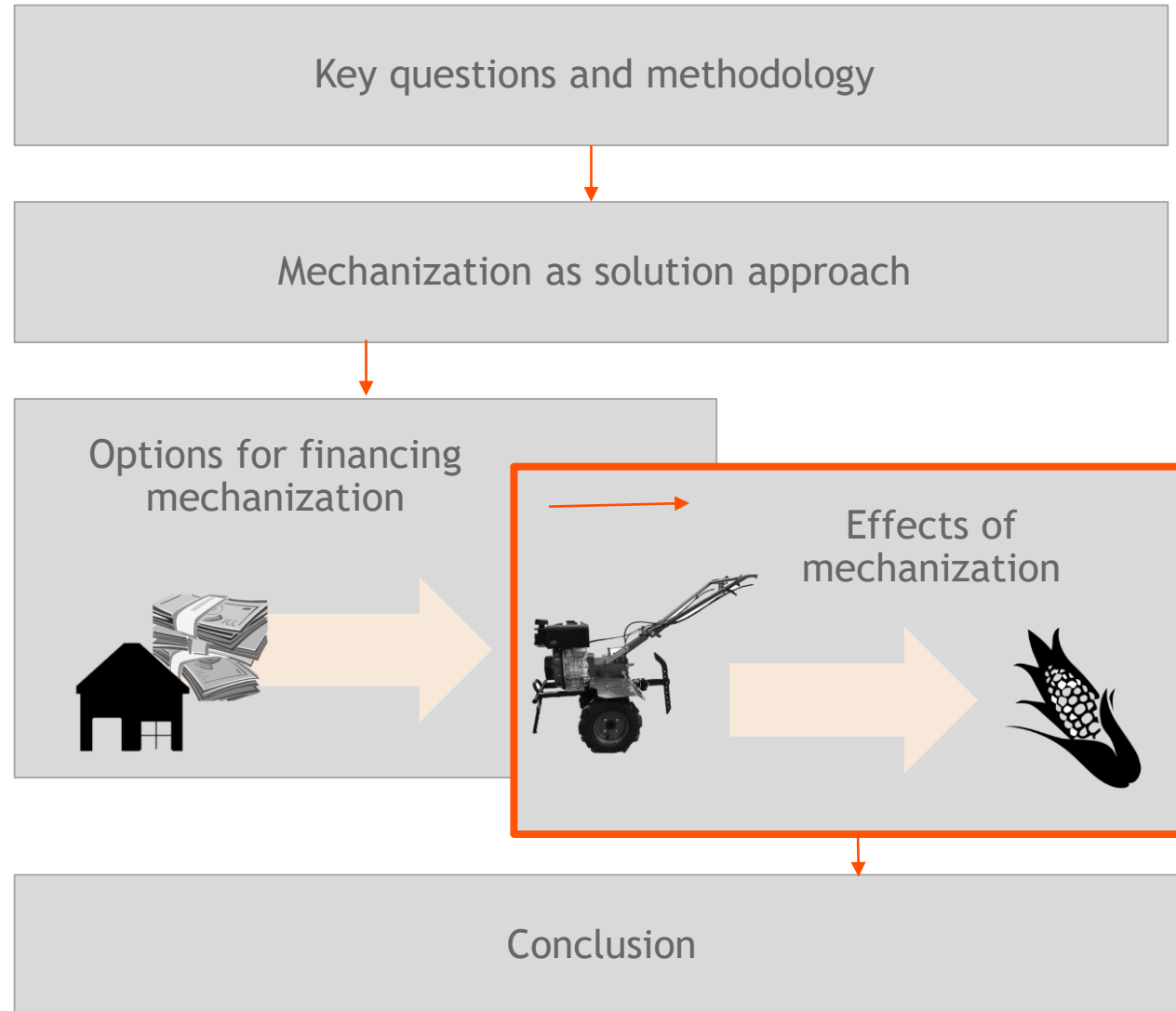
- ✓ Improve usage of tools:
  - Training
  - Service by specialized operator



- ✓ Enable financial institutions access to smallholder farmers



# Agenda





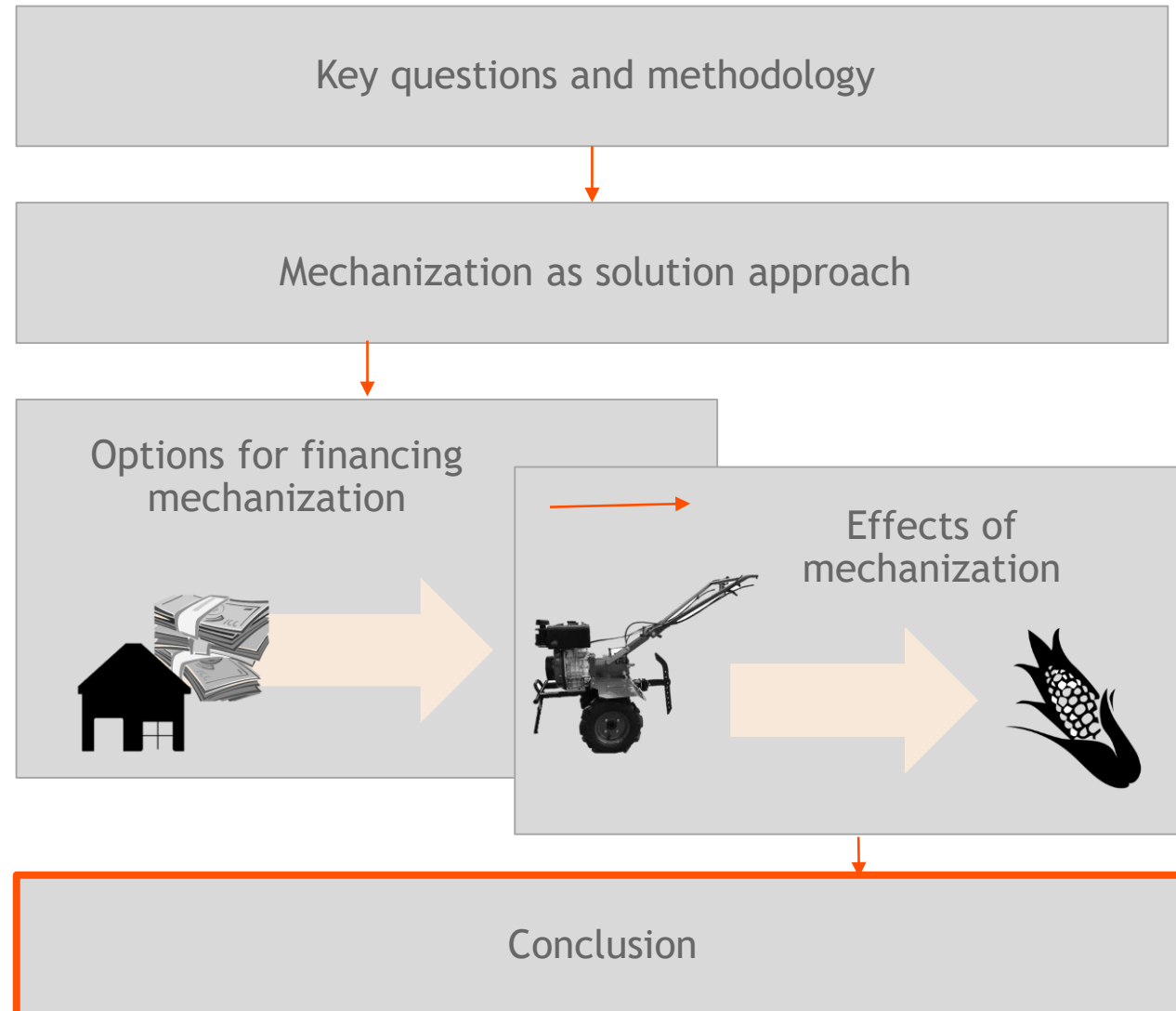
# Effects on people and land (I)

|                                       |   | Positive effects  | Negative effects  |
|---------------------------------------|---|---|---|
| Improvement in the quality of life... | ...is a major driver and effect of mechanization            | <ul style="list-style-type: none"><li>• Less hard manual labor</li><li>• Better health condition</li></ul>          |   |
| Productivity of labour and land       | ... may increase directly or indirectly                     | <ul style="list-style-type: none"><li>• Machinery increases productivity</li></ul>                                  |   |
| Income and employment effects...      | ... depend on the type of mechanization and can be negative | <ul style="list-style-type: none"><li>• Decrease of Food Loss</li><li>• Good conditions: increased income</li></ul> | <ul style="list-style-type: none"><li>• Decrease of income because of high operational costs</li><li>• Decrease of labor demand (Substitution: labor → capital)</li></ul> |

## Effects on people and land (II)

|                                |  | Positive effects   | Negative effects  |
|--------------------------------|--|--|---|
| Mechanization effects on women | ... are crucial, but hard to predict                                 | <ul style="list-style-type: none"><li>• Decrease of hard manual labor</li></ul>  | <ul style="list-style-type: none"><li>• Loss of income and bargaining power</li></ul>   |
| Social structures...           | ... can become more unequal with respect to income and land          | <ul style="list-style-type: none"><li>• Small and medium intensity of mechanization:<br/>Decrease of income inequality</li></ul> | <ul style="list-style-type: none"><li>• Intense mechanization:<br/>danger of land-grabbing</li></ul>                                    |
| Agro-ecological effects        | ... are ambiguous and depend on the mechanization tool and intensity |  | <ul style="list-style-type: none"><li>• Loss of biodiversity</li><li>• Expansion of agricultural area to important ecosystems</li></ul> |

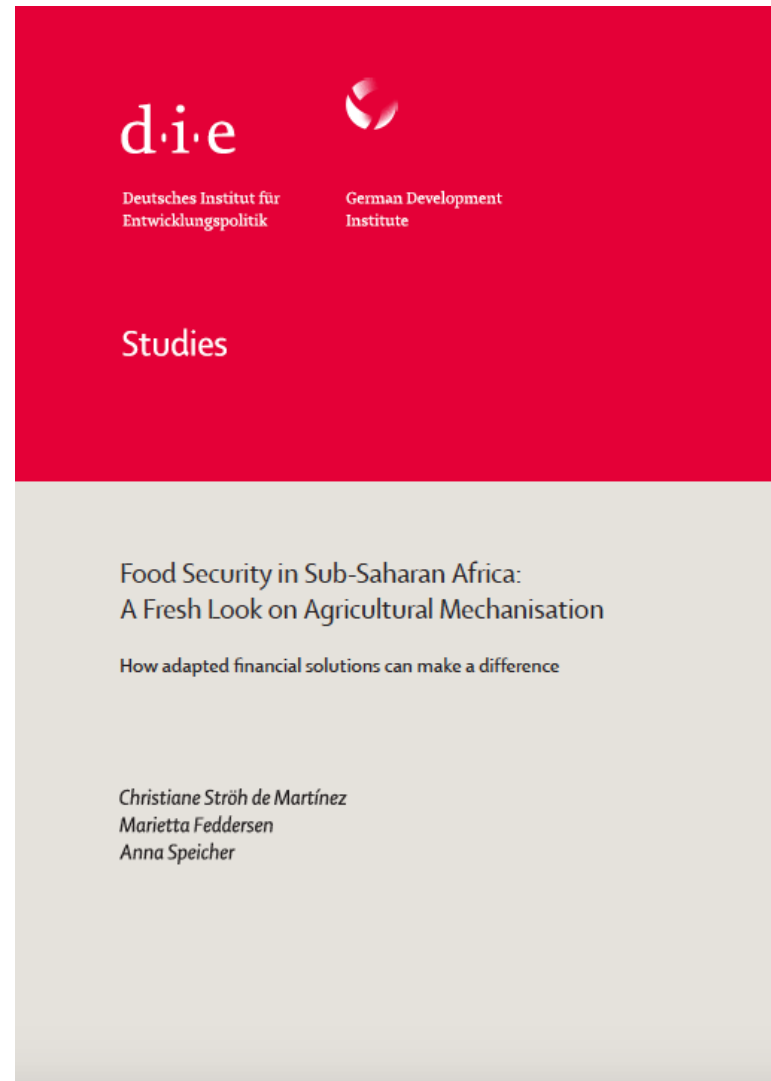
# Agenda



1. **Adaptation of technology** is central with respect to
  - Size and output of the farm
  - Context such as soil, availability of land, labor, etc.
2. Only **demand-driven and profitable mechanization** has sustainable positive effects. This requires viable business models and risk management.
3. Mechanization with technologies of low intensity is feasible at farm level; Mechanization with higher intensity is only accessible and financeable through **shared ownership and usage models** (for smallholders).
4. Financing needs of all involved actors have to be considered (not only farmers, but also machinery rings, service providers, aggregators).
5. Mechanization is necessary and will lead to **structural change** in the long run.

We hope we made you curious to read the study!

joyn  
coop



Grateful for your attention!



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