

# Concluding conference of the KASSA project

Brussels

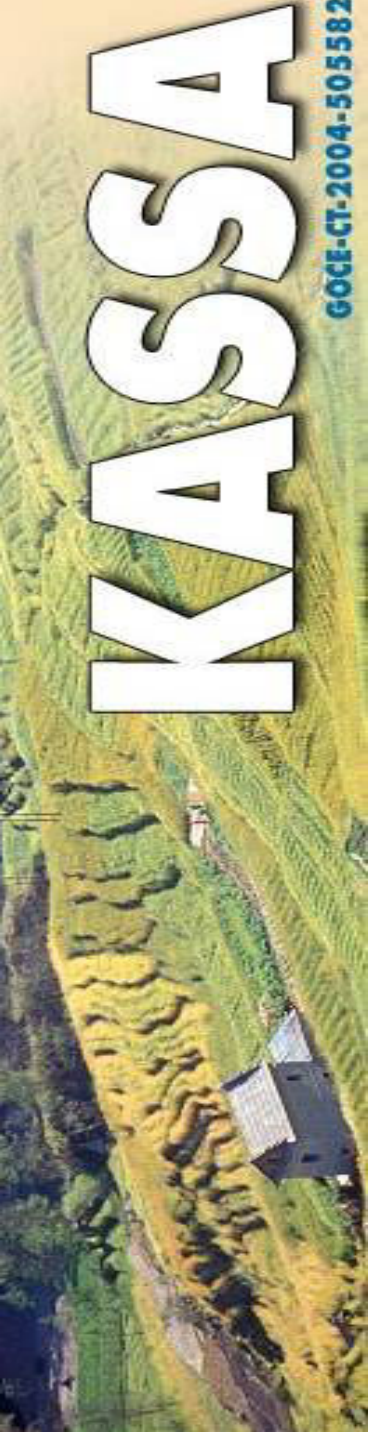
20-21 February 2006

## **Prospects for conservation agriculture in the European platform**

Stéphane de Tourdonnet

INRA – UMR Agronomy Paris Grignon

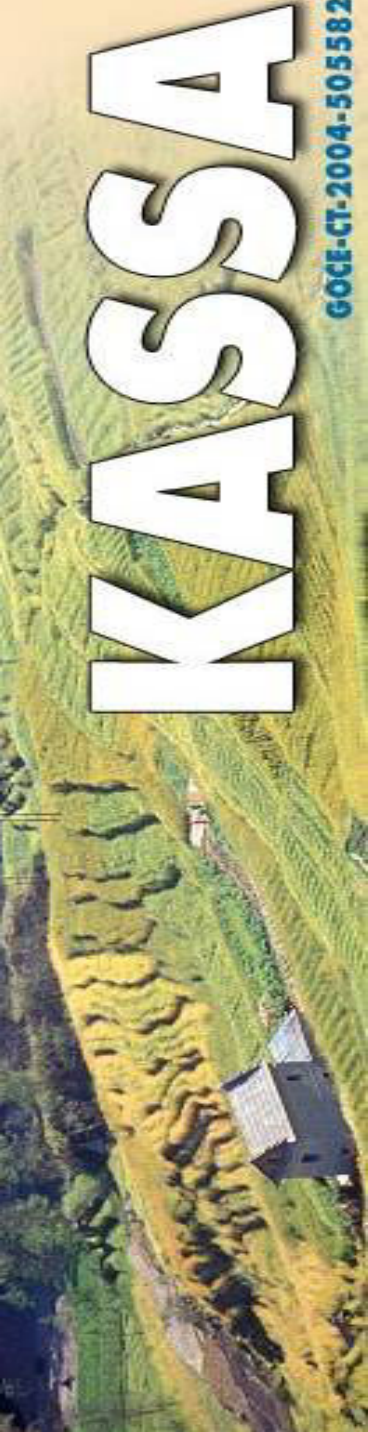




# Prospects for CA in the European platform

*CA in Europe : an innovation process*

- Risks / Benefits of CA :
  - from farmers' point of view
  - from society point of view
- Consequences of risks / benefits on the innovation process
- Research strategy and proposals
- Conclusion



# Risks / Benefits of CA from farmers' point of view

- Areas under no ploughing are increasing in Europe because RT / DS meet two main farmers expectations:
  - Costs reduction (machinery, fuel)
  - Labour saving / organisation / drudgery
- This trend is likely to accelerate in the coming years because:
  - Fuel costs are increasing
  - Farm sizes are increasing
  - Need for increasing competitiveness
- Conversion to RT / DS leads to 3 types of risks for farmers :
  - Technical
  - Economical
  - Sociological

# Technical risks

- Main technical risks:
  - Machinery use / adaptation
  - Weeds control
  - Pests (slugs, mice) and diseases management
  - Soil structure and its consequences (humidity, temperature , root penetration...)
  - Crop residue, cover crops and rotation management
- CA induces thorough changes in the functioning of the cropping system, leading to **revise the whole management process**



## Economical risks

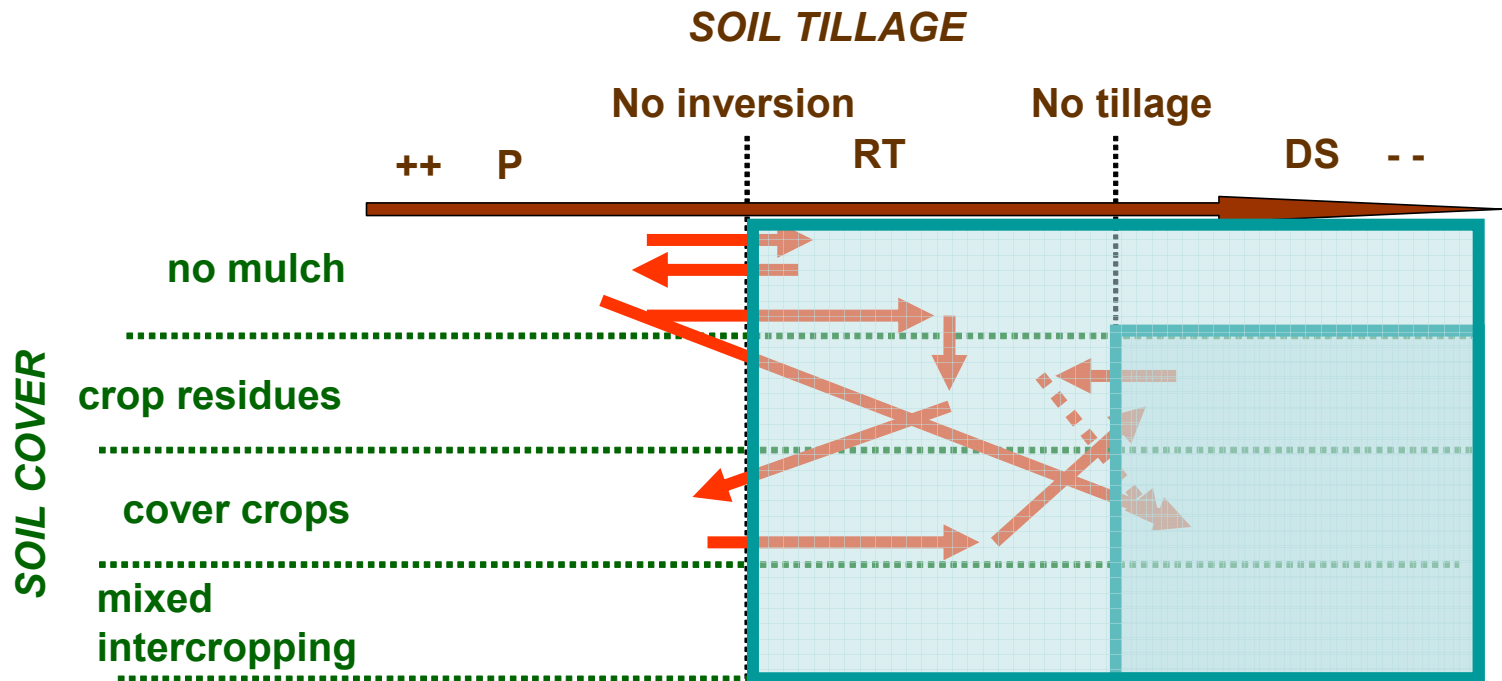
- Main economical risks:
  - Specific machinery is expensive to afford / to adapt
  - Generally, yields do not increase (and may decrease)
  - Costs may not be reduced (offset by pesticides, cover crops, fertilisers...)
- High financial risk during the transition period because:
  - Some positive aspects supposed to appear several years after the conversion
  - Farmers have to acquire new know-how

## Sociological risks

- Giving up ploughing represents a cultural revolution because it is considered as a symbolic and a basic practice in European agriculture
- Farmers who practice CA may be marginalized:
  - Of the neighbourhood
  - Of the extension services (difficulty for extensionists to answer farmers' requests)
- Key role of farmers' networks → membership feeling

## Consequences of the risks/benefits for farmers

- Risks + no evident short term benefits + no strong crisis → 'step by step' process
- CA adoption vs CA adaptation: CA is a learning process
- What is CA in a step by step process ?





# Risks / Benefits from society point of view

## **Benefits**

- *Erosion mitigation*
- *Water conservation*
- *SOM conservation*
- *Nutrient pollution*
- *Biodiversity (including landscape)*
- *Climate change*
  - *Greenhouse gas*
  - *Resilience*
- *Rural development*
  - *Dynamism of innovation system*
  - *Pluri-activity*
  - *Leading role, identity of farmers*

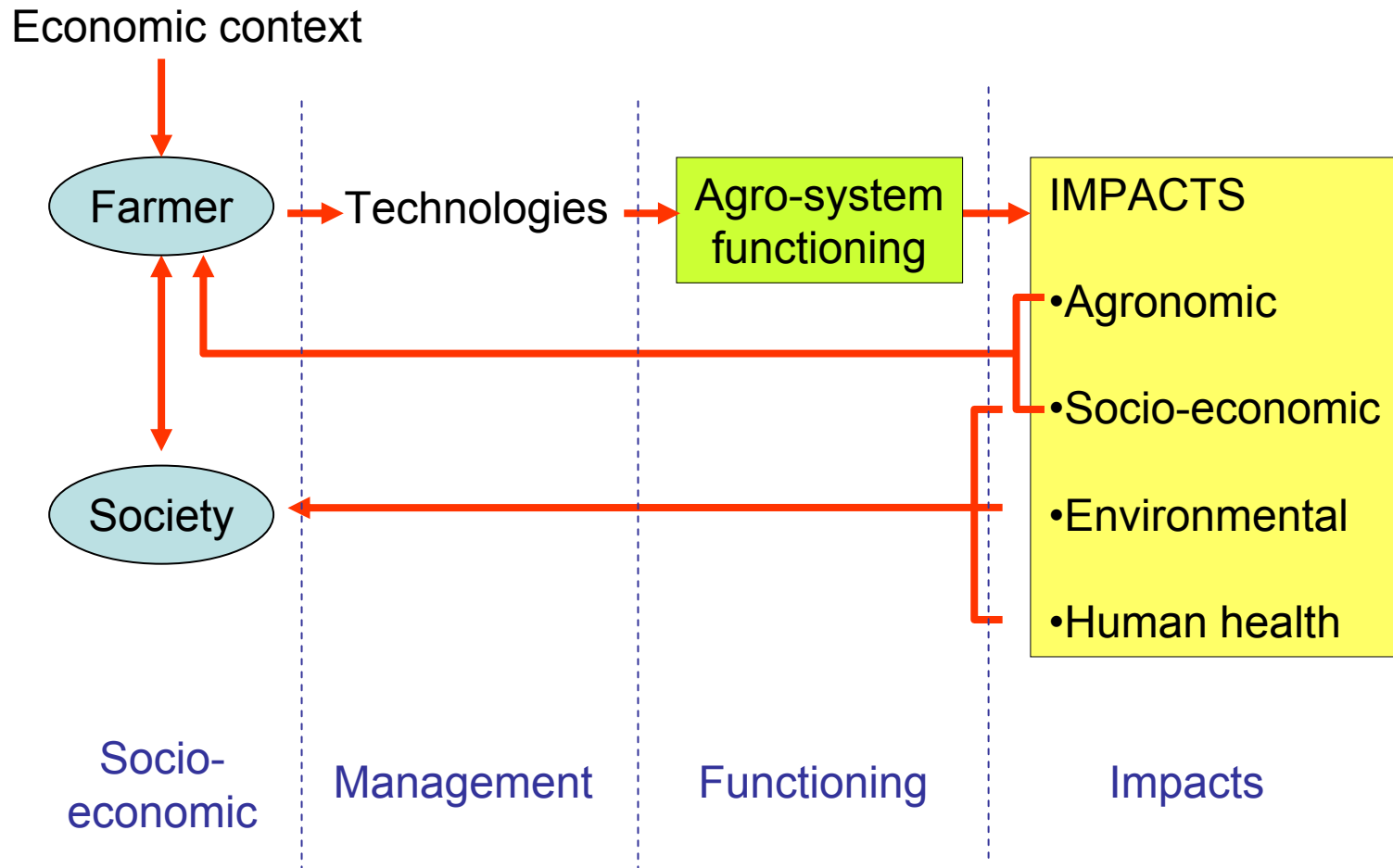
Trade-off  
↔

## **Risks**

- *Pesticides pollution*
  - *Food quality ? (mycotoxins, ...)*
  - *NxO emission*
  - *Employment*
- 
- Multifunctionality
  - Hotly debated but very little documented
  - Cover crops play a crucial role on the agronomic and environmental impacts
  - Impact assessment needs up-scaling and long term approaches



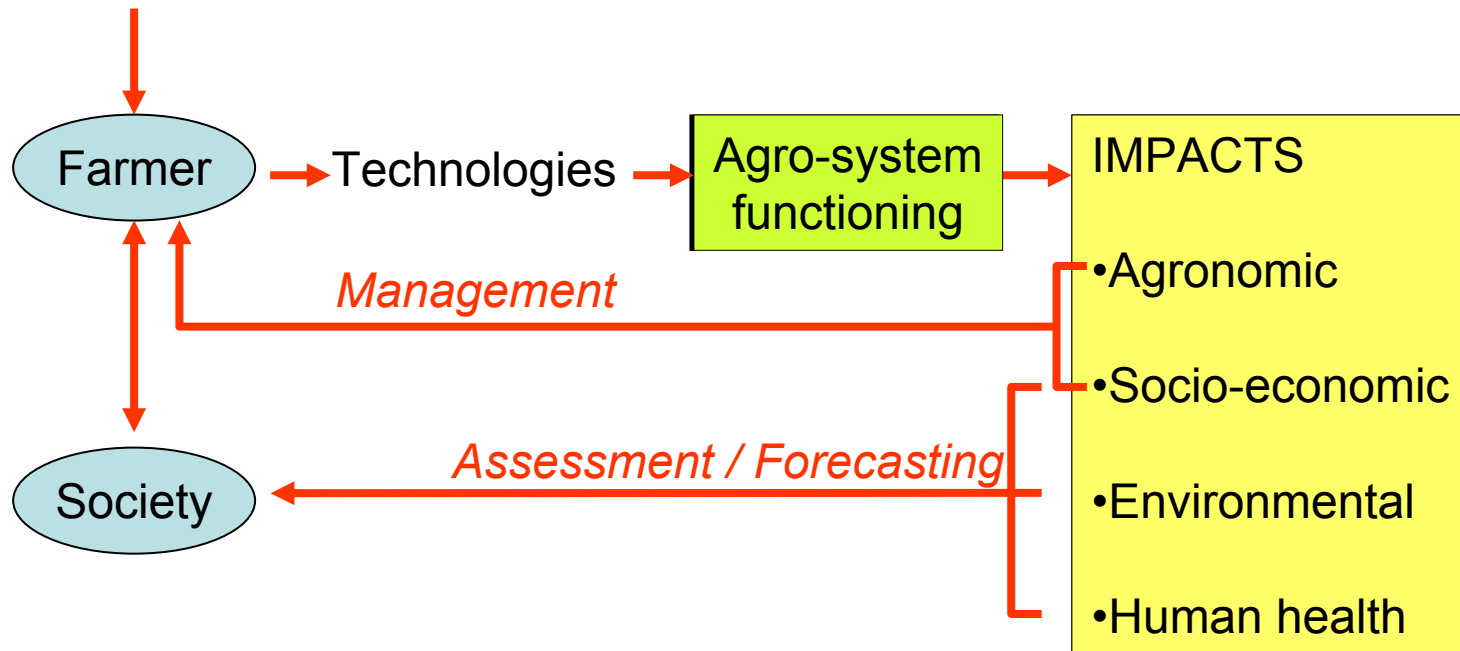
## The innovation process



## Research gaps

Policy

Economic context



# Research strategy

For an efficient research strategy, we need :

1. to link together management and impact assessment because:
  - Impacts depend on the technology development
  - Efficient CA development needs impact assessment (agronomic + economic + environmental) → suitable indicators for monitoring and DSS
2. to study the system functioning because it is the only mean to make this link → Integrative approach, Multi disciplinarity
3. Global / Local researches because functioning (interactions) is very sensitive to local specificity
4. Short / Long term researches (experiments, models)
5. Partnership (multi-stakeholders platforms...)



# Research proposals

- **Low inputs CA** (pesticides, nitrogen)
  - Integrated weeds and pests management
  - Cover crops and rotation
  - Breeding → cash crops + cover crops
  - Development of joint CA and Organic Farming systems
- **Conservation / improvement of soil quality**
  - Soil quality indicators
  - Dynamic of SOM in the long-term time period and C sequestration
  - Soil biological activity (including roots) and its effects on soil structure, nutrient turnover ...
  - Integrated nutrient management and conservation of soil fertility
  - Erosion mitigation
- **Management of biodiversity**
  - Impacts of CA on biodiversity
  - Impacts of biodiversity on the management process

# Research proposals

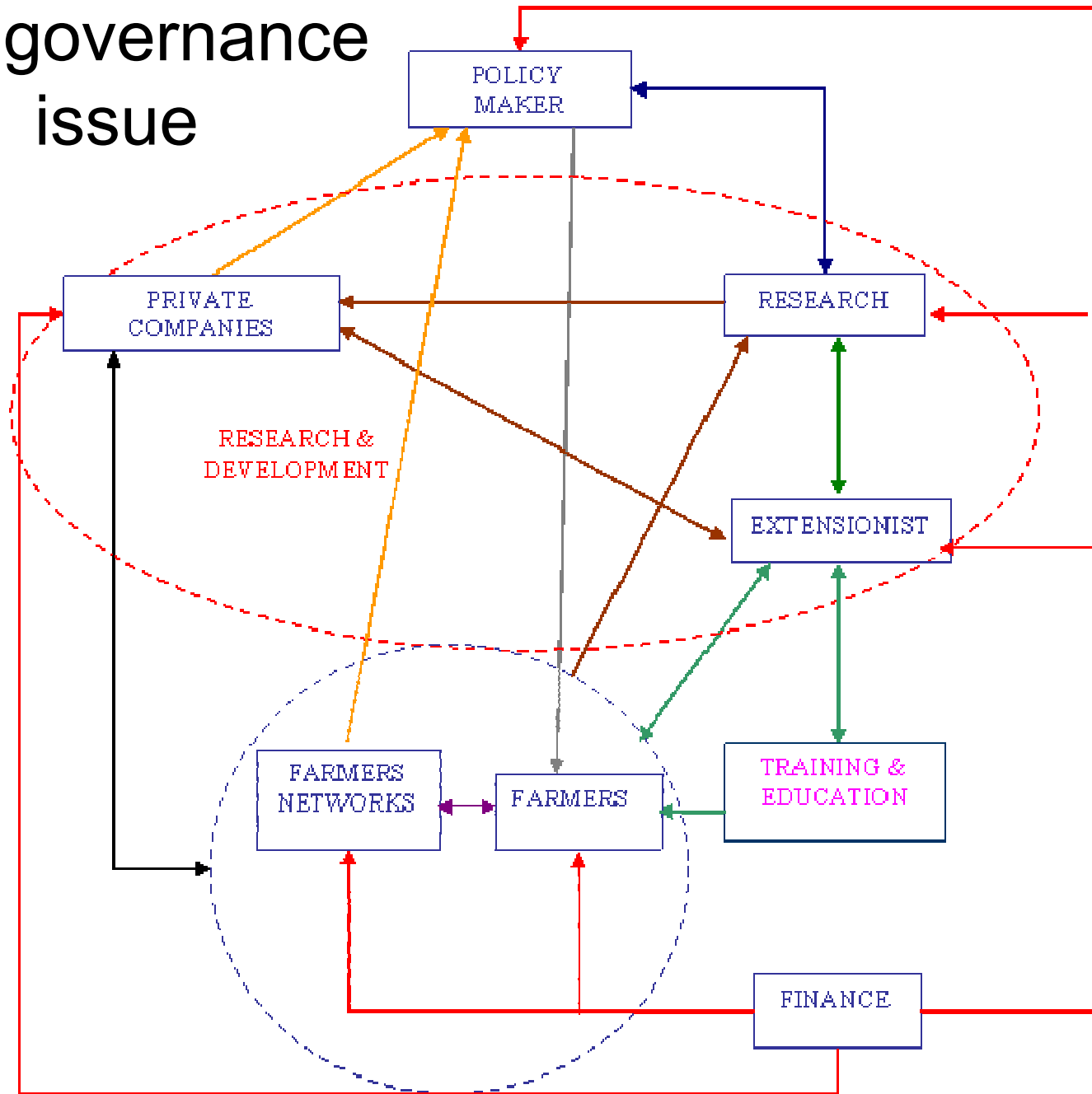
- **Water management**
  - Water efficiency and availability
  - Flooding mitigation
- **Implementation and propagation of CA**
  - Development of new machinery
  - Profitability : market conditions, savings, investments, transition
  - Suitability : biophysical and **sociological** conditions
  - Appropriate local and global policy
  - Propagation of CA: knowledge transfer, support for farmers initiatives, advisory services
- **Food quality and health**
  - Pesticides use and behaviour
  - Mycotoxins in preharvest contamination of crops
  - Reducing the uptake of heavy metals and organic pollutants into crops, animals

## Conclusions

- Process toward CA is **already on-going** in Europe
- **Package transfer seems difficult** to succeed:
  - ‘know-how’ is site specific
  - ‘know-why’ is likely generic but it is a black box
- Need for linking:
  - socio-technical development to impact assessment
  - generic to site specific research
  - **more understanding of the system functioning**
- **Knowledge generation and sharing** is the key point to help ensure that CA will contribute to objectives of sustainable development → research, education, training, exchange of experiences...
- To succeed in this learning process, there is a **strong need for partnership** → new governance ?



## The governance issue



[Back to Menu](#)

An aerial photograph of a terraced hillside, likely a vineyard, with a small building visible on the left side. The terraces are arranged in a series of steps down the slope, and the vegetation appears to be green and yellow, suggesting a mix of crops or different stages of growth.

# KASSA

GOCE-CT-2004-505582

**THANK YOU  
FOR YOUR ATTENTION**