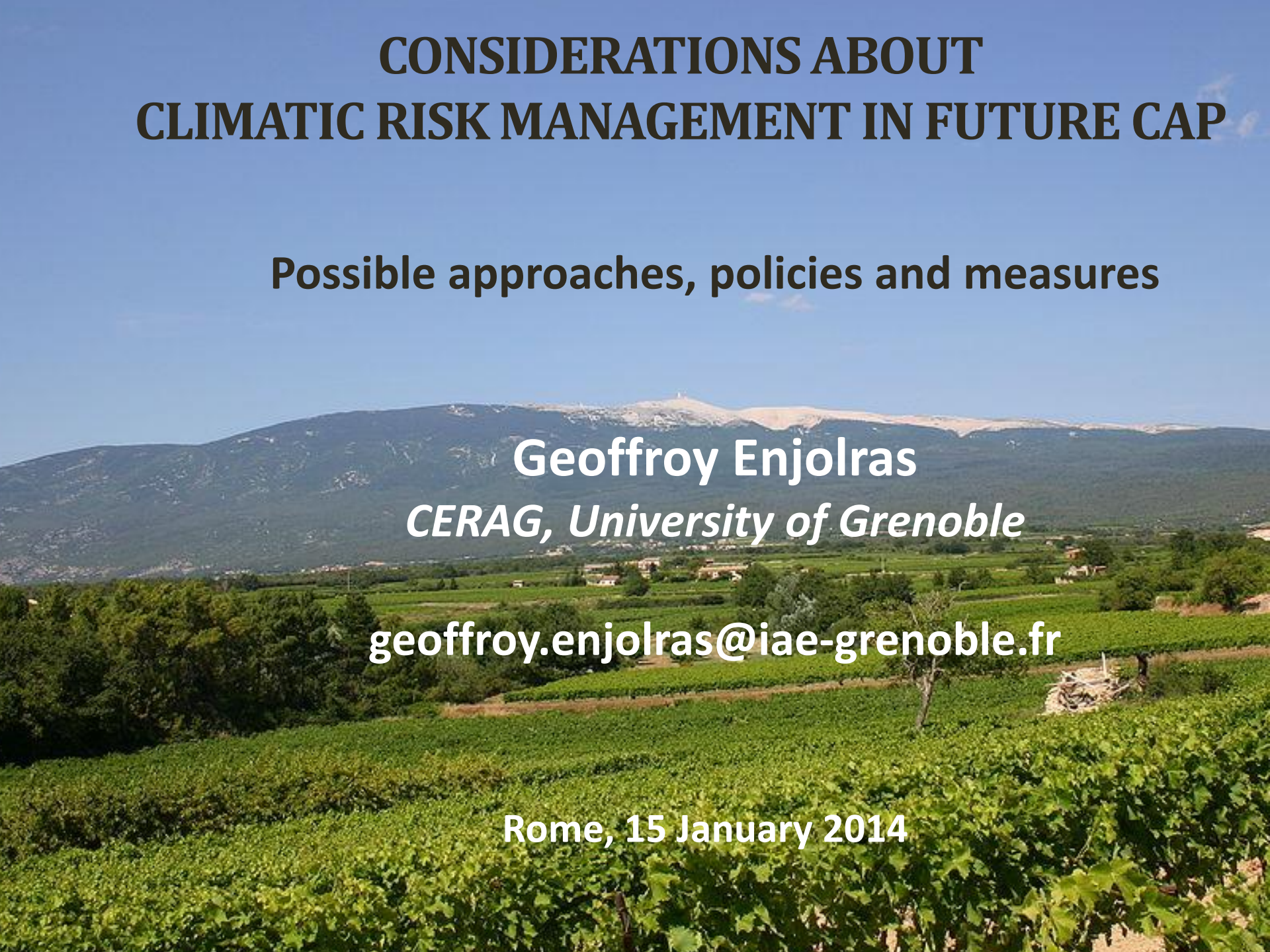
CONSIDERATIONS ABOUT CLIMATIC RISK MANAGEMENT IN FUTURE CAP

Possible approaches, policies and measures



Geoffroy Enjolras

CERAG, University of Grenoble

geoffroy.enjolras@iae-grenoble.fr

Rome, 15 January 2014

Outline

- Stakes related to climatic change in a moving context
- Instruments for hedging risk
- Towards an integrated scheme?

A moving context

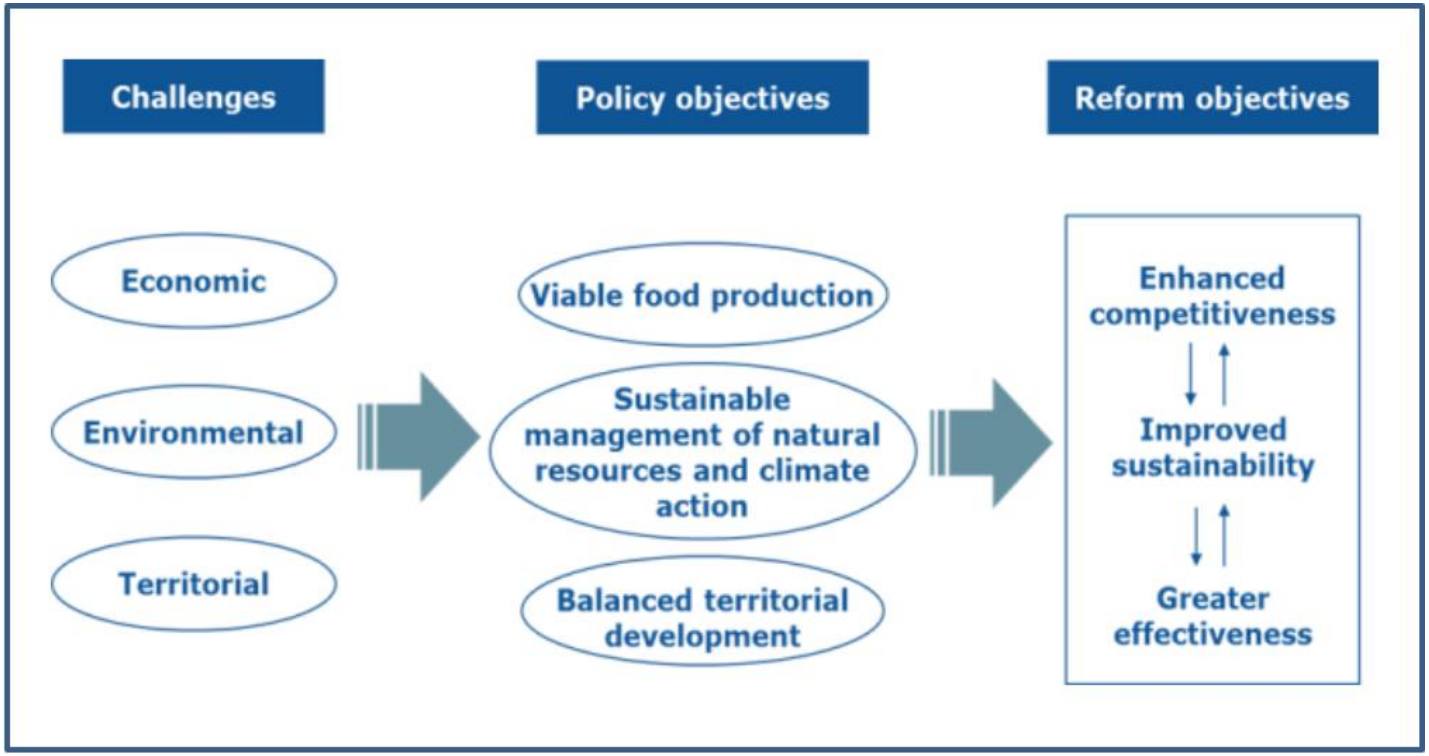
- What is risk?
  - Uncertainty of outcomes
  - Exposition to a chance of injury of loss
- Why is risk important in agriculture?
  - Food self-sufficiency
  - A strategic economic sector
  - A stake for farmers and the society

A moving context

- Climate change leads to
  - New or exacerbated risks
  - Human risks
  - Asset risks
  - Production or yield risks
  - Price risks
  - Financial risks
  - Institutional risks

A moving context

- European policies
  - CAP 2014-2020



A moving context

- Risk management
  - Need for revisited or improved tools
    - Demand from farmers
    - Weaknesses of crop insurance policies
    - Environmental issues with pesticides

Why is climatic risk important?

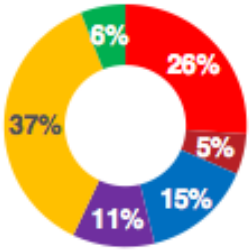
NatCatSERVICE

Natural catastrophes worldwide 2012

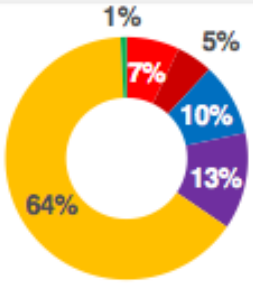
Percentage distribution – ordered by continent

Munich RE

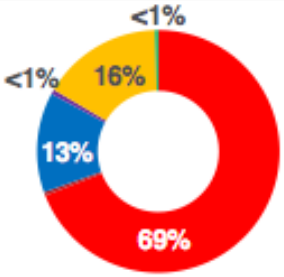
905 Loss events



9,600 Fatalities

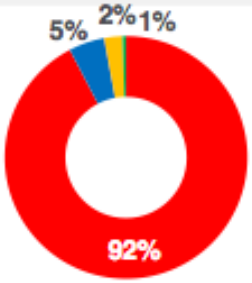


Overall losses* US$ 170bn



*in 2012 values

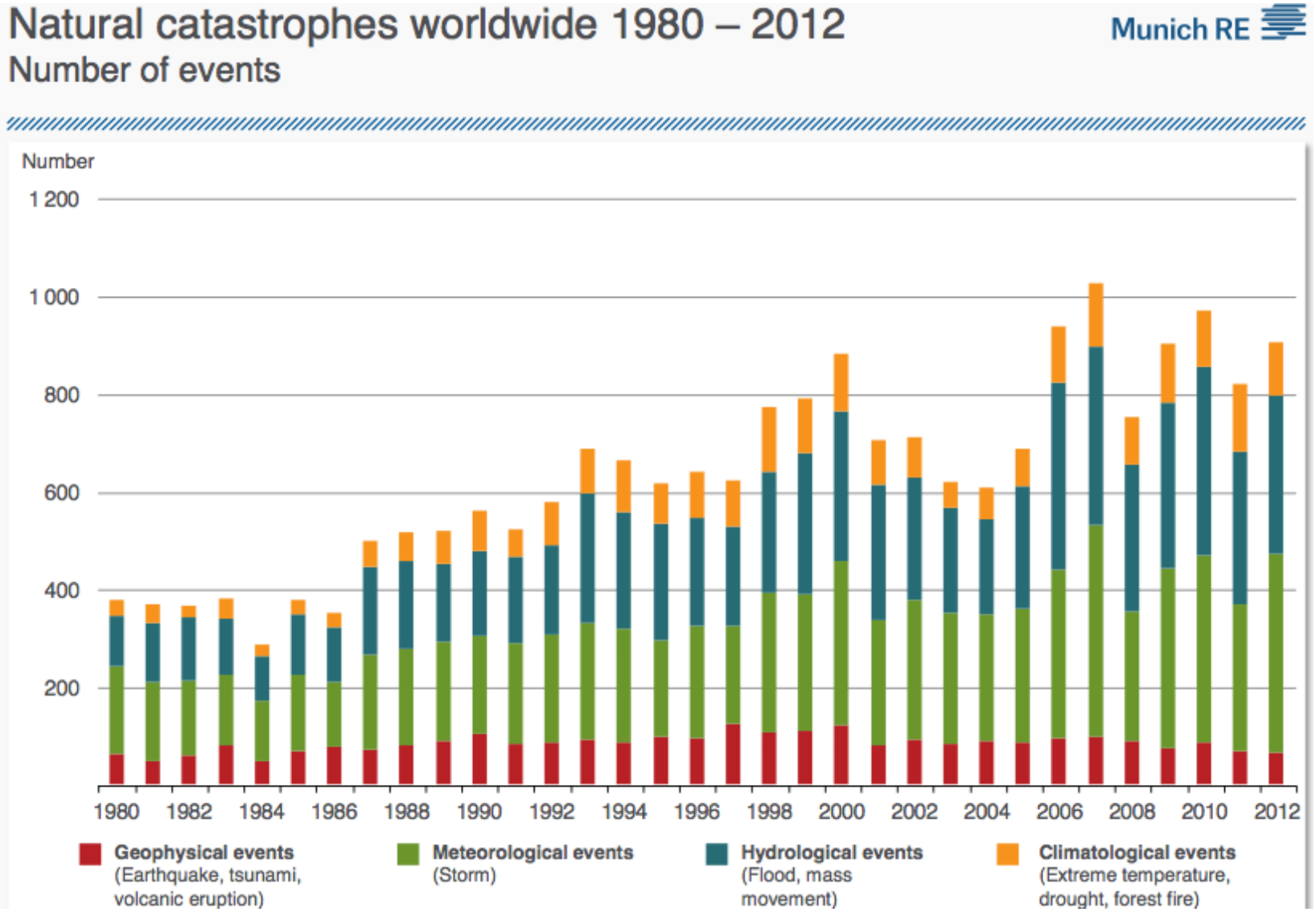
Insured losses* US$ 70bn



*in 2012 values

North America, incl. Central America and Caribbean | South America | Europe | Africa | Asia | Australia/Oceania

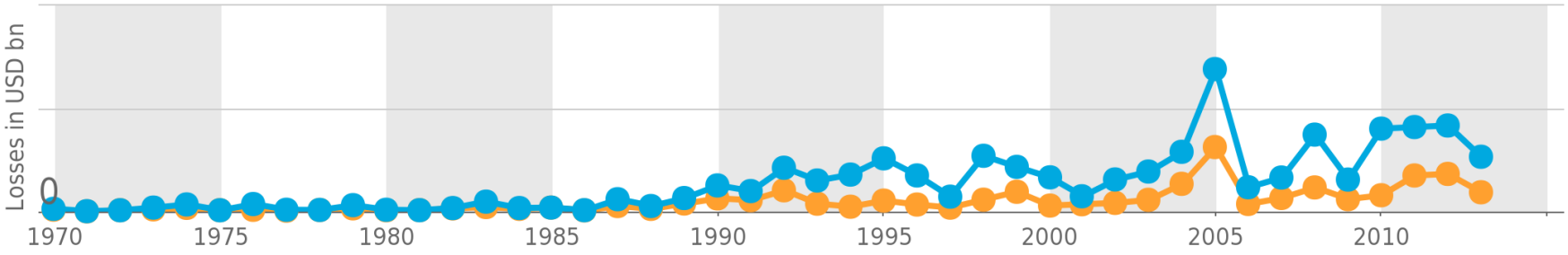
Why is climatic risk important?



Why is climatic risk important?

- Insurance is not enough widespread
  - A positive trend
  - A weak increase

Total vs. insured losses



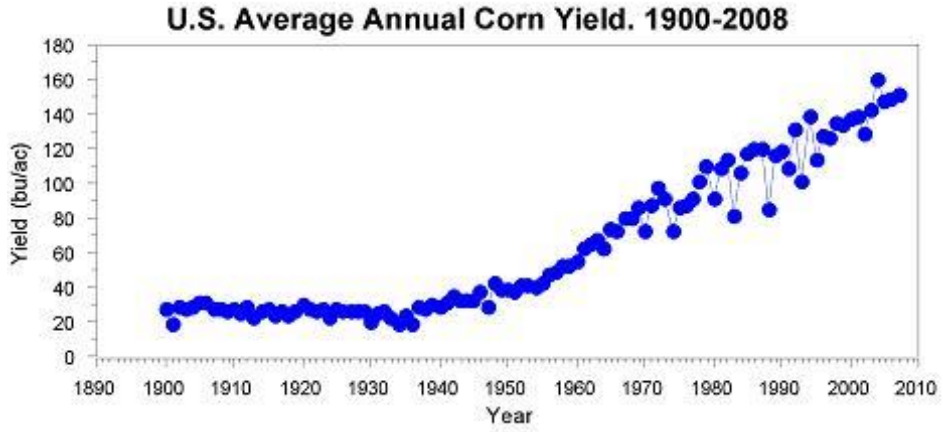
Data set

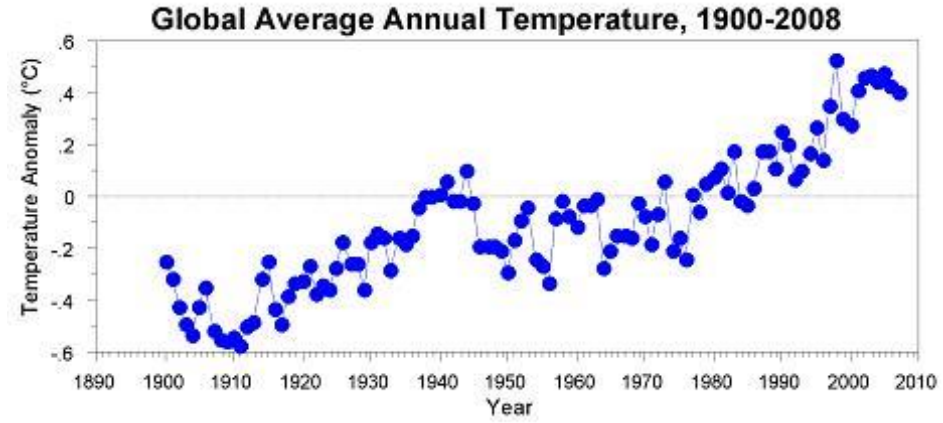
Weather related (insured) Weather related (total)

Source: sigma world insurance database

Why is climatic risk important?

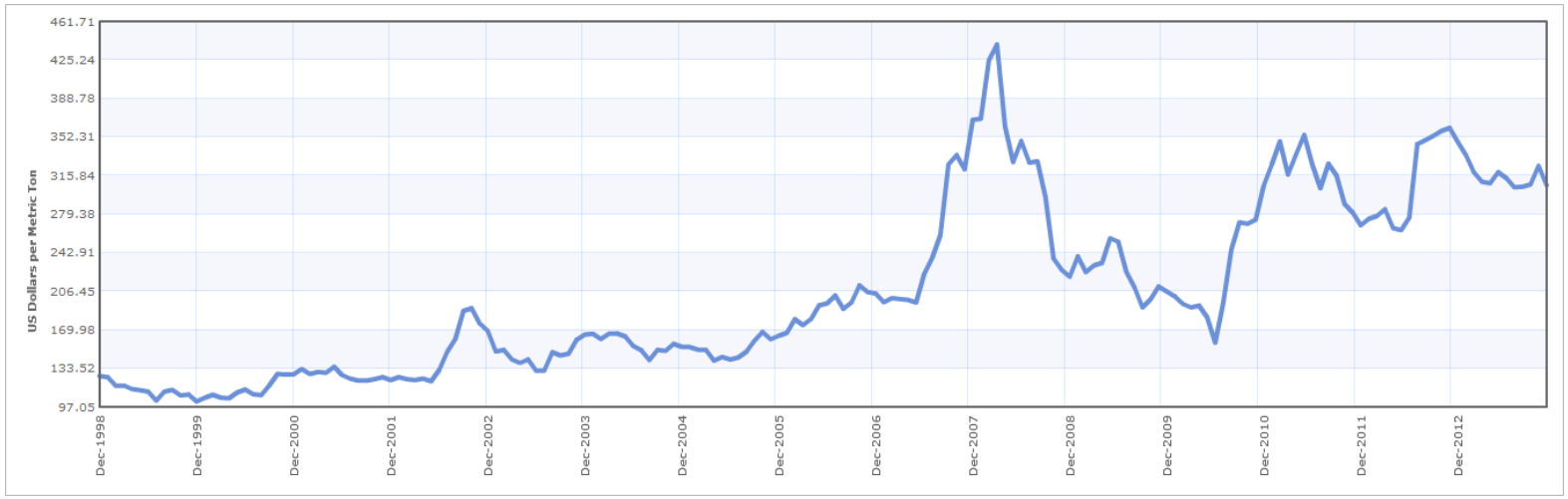
- Farm yields are closely dependent to the climate





Why is climatic risk important?

- At the same time, markets are more volatile
- Example of wheat prices in US markets



European policies

- Changes in EU policies
  - Liberalization policies
    - Price support → Decoupled payments
    - European prices → Global prices
  - Compensation of the liberalization
    - Solidarity funds → Private insurance
      - Crop & Revenue insurance
    - Transfers of competencies to member states

Managing volatility in agriculture

- Managing income volatility
  - Stabilize the farmer's income
  - Prevent high losses

- Two kinds of actions
  - Reduce volatility
  - Protect/Increase return

Managing volatility in agriculture

- Three ways to diversify ‘naturally’ farm income
  - 1. Farm / Off-farm income
  - 2. Specialization
    - Crops, animal, mix…
  - 3. Rotation
    - Cereals, wine-growing…
    - “Green payments”

Managing volatility in agriculture

- Overlook of some technical tools
  - Irrigation
  - Chemical inputs
    - Pesticides
    - Fertilizers

Managing volatility in agriculture

- The boom of financial tools
  - Precautionary savings
  - Spreading sells
  - Insurance: crop, revenue, …
  - Forward and future contracts

Typology of risk management tools

	Technological tools	Financial tools
Influence on yield	Specialization of activities Crop diversification Irrigation Fertilizers Pesticides	EU payments Crop insurance Precautionary savings
Influence on price		Revenue insurance Forward contracts Future contracts Spreading sales

Typology of risk management tools

	Strategy (before the season)	Monitoring (during the season)
Influence on return	EU payments	Fertilizers Insurance profitability
Influence on volatility	Specialization of activities Crop diversification Irrigation Crop insurance Forward contracts Futures contracts Legal form	Pesticides Spreading sales

How are these tools used?

- Contrast Italy  France
  - Different management practices
  - Italy: Large use of risk management tools
    - Stabilization of income!
  - France: More targeted use
    - Risk-enhancing effect… but profitable!
  - Important parameters reducing volatility
    - Large farms
    - Legal form (cooperative companies)
    - Importance of specialization

Which role for crop insurance?

- A recognized financial tool
  - Worldwide use: Italy, Peru, South Africa…
  - Leading countries: USA, Canada, Spain
- A complex implementation
  - No unique system, cf. France
    - Farm equipment (1982, general system)
    - Crop insurance (1964, if “not insurable”)
      - Fay, etc.
    - Crop insurance (2010, if “insurable”)
      - Wine grapes, field crops

Which role for crop insurance?

	France	Italy
Creation of a public insurance system	1964	1974
Transition to a private insurance system	2005-2010	2005
Insured perils	Storms, excess of rain, drought, frost, floods, hail…	
Subsidization rate	Up to 65%	Up to 80%
Scope	20 % of farms	15% of farms

Which role for crop insurance?

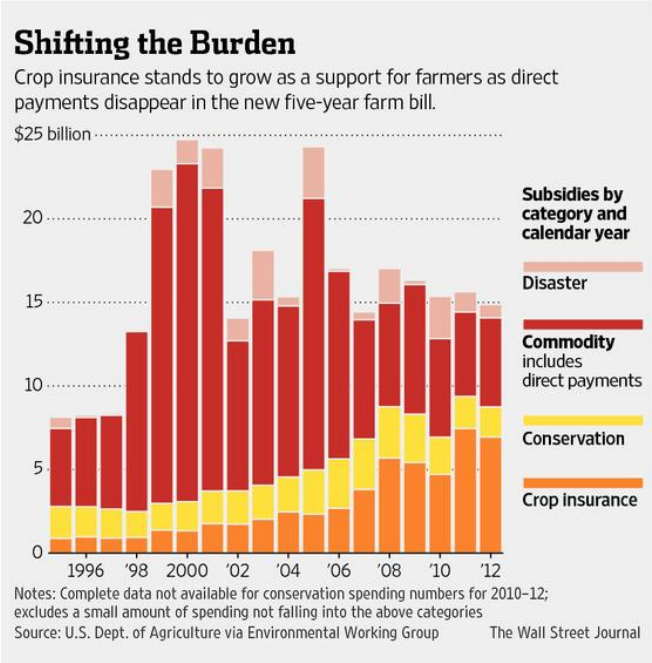
- General principles
  - All risks should be covered in the end
  - Voluntary participation
  - Insured risks cannot receive public funds
  - All plots of an insured crop are insured
  - Financial sustainability
  - Public reinsurance
  - National competence
  - Role specialization
  - Continuous improvement

Which role for crop insurance?

- Spanish system
  - Aim: universal coverage
  - 3 subventions: basis + collective + additional
- Canadian system
  - Based on a minimal guaranteed income
    - Per crop & Per acre
  - Indemnity if real income < guaranteed income
    - Per crop & Per acre

Which role for crop insurance?

- US system
  - New Farm Bill (negotiated right now!)
    - Strengthened crop and revenue insurance
    - Help with out-of-pocket losses
    - Additional assistance to farmers when their revenue or crop prices drop below a certain level



Which role for crop insurance?

- Factors in favor of crop insurance
  - Implication of the governments
  - Tolerance from WTO (green or amber box)
  - Emergence and development of a private market
  - Economic crisis

Which role for crop insurance?

- Challenges to be addressed
  - Adverse selection
    - Insurance is subscribed by the most risky farmers
  - Moral hazard
    - Insured farmers change their behavior
  - Risk of market failure!
  - Definition of the instruments
  - Price

Which role for crop insurance?

- At the EU scale
  - Convergence of crop insurance systems
  - Different practices of risk management
  - Specific demands for crop insurance

- How to manage such differences?

Chemical inputs

- Chemical inputs are widely used in agriculture (more than crop insurance)
  - Pesticides
  - Fertilizers

- Aim
  - Stimulate growth
  - Protect yield

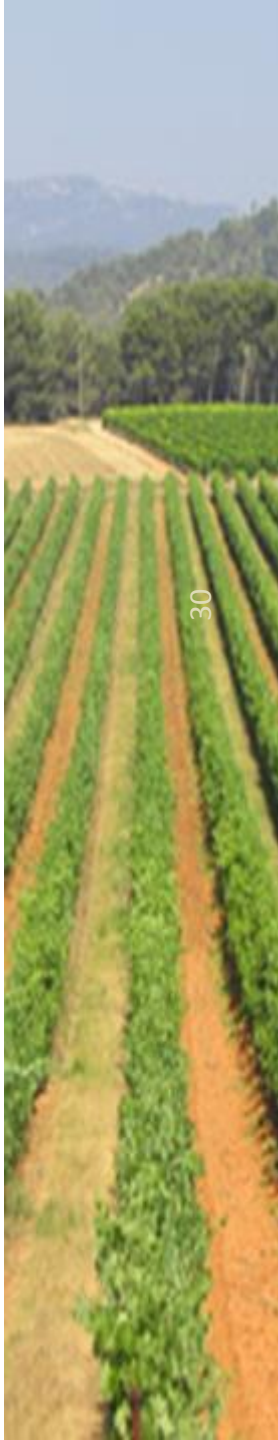
Chemical inputs

- Advantages
  - Flexibility
  - Cost

- They address many issues in terms of sustainable development
  - Environment: *soil and water pollution*
  - Social: *human health*
  - Economic: *production model*

Chemical input use in Europe

Consumption of chemical inputs in EU countries (in kg/ha of cultivated area)	
Netherlands	17,5
Belgium	10,7
Italy	7,6
Greece	6,0
European average	4,5
Germany	4,4
France	4,4
United Kingdom	3,6
Luxembourg	3,1
Spain	2,6



Chemical input use in France

- The demand for inputs
  - Input use ↗ with…
    - Quality of the production
    - Temperature & Precipitations
    - Past use
  - Input use ↘ with…
    - Size of the farm
    - Turnover
  - Factors with no influence on inputs
    - Farmer's education
    - Indebtment

Chemical inputs versus Crop insurance

- Are they complements or substitutes?

- They are rather substitutes…
  but they can be complementary
  - Risk aversion of the farmer
  - Financial wealth of the farm

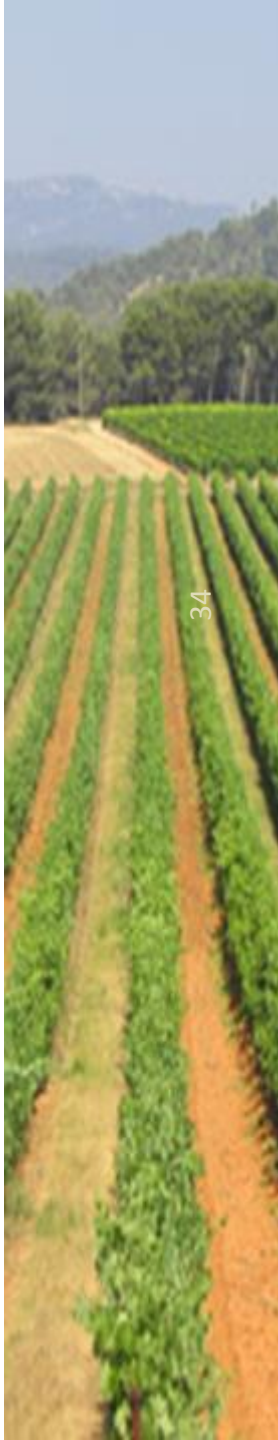
Chemical inputs versus Crop insurance

- What's happening when non insured farms loose most of their production due to a hail storm?

- The case of wine-growing farms in Bourgogne (summer 2013)
  - Wine is an insured crop > No public support
  - The only solution: use chemical inputs…

Chemical input use overdosing

- A behavior which is difficult to measure
  - Taboo subject
  - Individual perception
- Impact of overdosing
  - Sanitary risk both for producers and consumers
  - Economic impact in case of pesticides reduction



Chemical input use overdosing

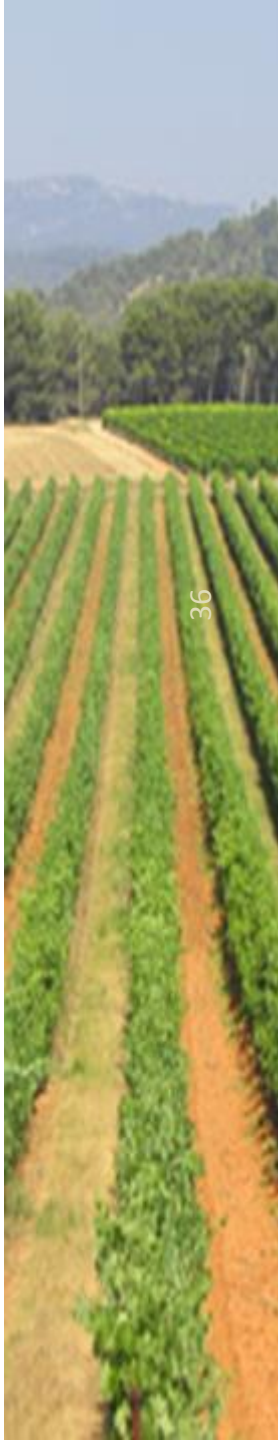
- **54,72% of French farms never overdose their treatments**

- Key variables
  - Production level
  - Available cash-flows
  - ‘Bad’ weather conditions
  - Age of the sprayer

Towards an integrated scheme?

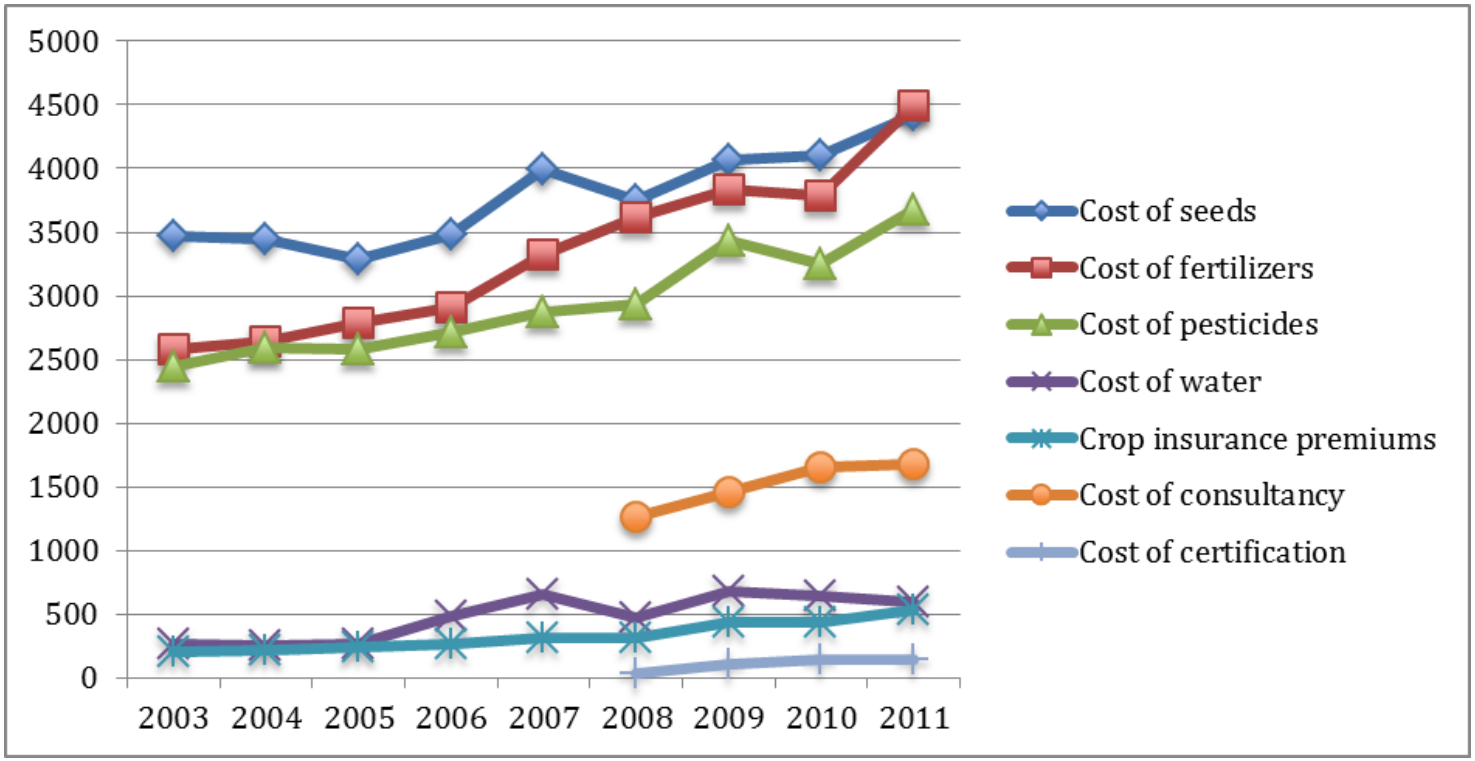
- Different kinds of integration
  - Risk-management strategies
  - Financial coverage strategies

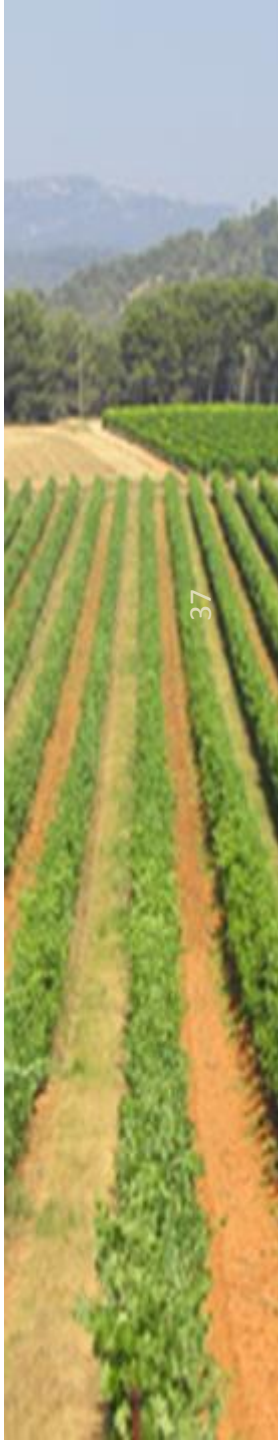
- There is an interest in combining risk management strategies
  - Coverage optimization
  - Benefits from EU payments
  - Rural development
  - Greener impact



Towards an integrated scheme?

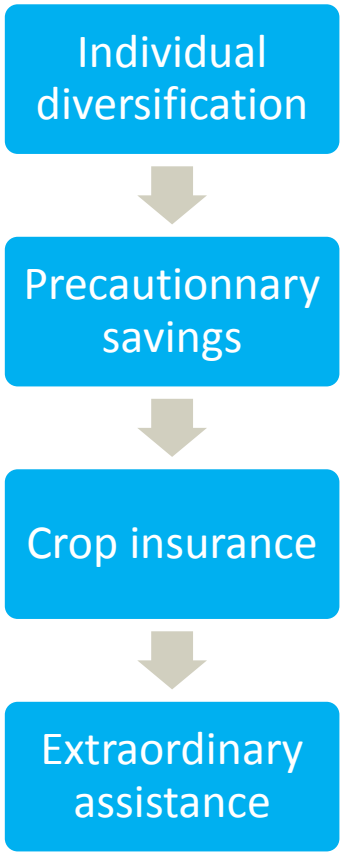
- Evolution of Italian farms expenses for crop production between 2003 and 2011





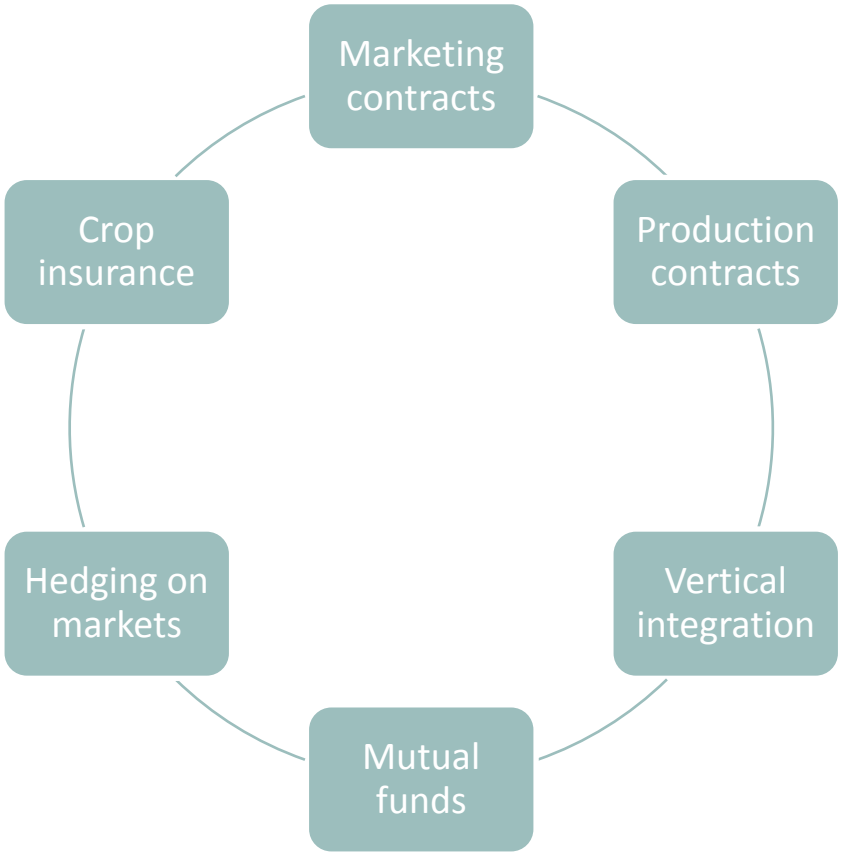
Towards an integrated scheme?

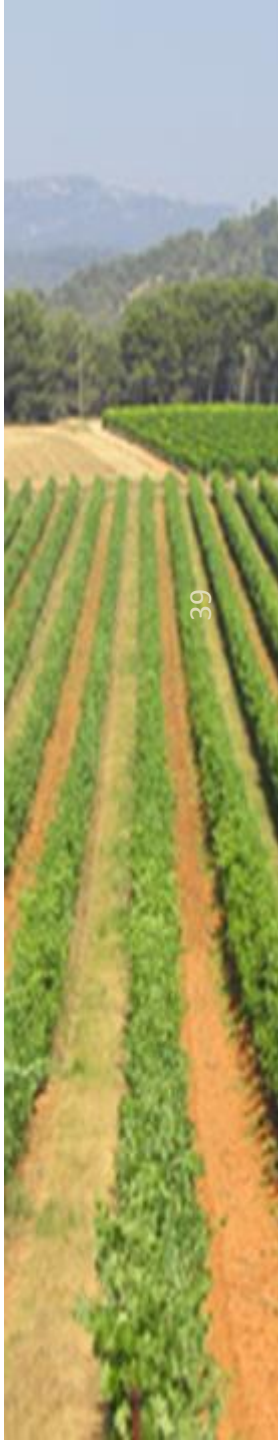
- Compensation schemes



Towards an integrated scheme?

- Risk-sharing strategies





Thank you for your attention!