The French agro-ecological project

Towards a sustainable agriculture to face climate change

Ludovic Larbodièrè
Climate change desk officer
General Directorate for economic and environmental performance

Ministry of Agriculture, agrifood and Forestry
Agriculture in France

- 63 million inhabitants
- 55 million hectares
- 51 % agriculture (2/3 cropland – 1/3 grassland)
- 31 % Forests
- Agriculture = 3,5% of GDP
1- Climate challenges in France
Legal framework

- Law for energetic transition and green growth:

- 40% GHG emissions in 2030 and 75% in 2050 (reference 1990)

+ 32% Renewable energies in energy consumption in 2030

( agriculture = 19% of total emissions in 2013)

- National adaptation strategy: water / pests and diseases / adapted food production in agricultural systems and value chains

- Monitoring:
  - Low carbon strategy and carbon budgets = Sectoral emission ceilings
  - Territorial Climate, air and energy plans: adaptation and mitigation
Lessons learnt from recent studies

- Agriculture will have to face challenges related to climate change in a manner that is context specific;
- Most of practice changes have multiple co-benefits;
- Both territorial and value chain approaches are useful;
- Climate change adaptation and mitigation options do not always ensure more sustainable production:
  - Ex 1: excessive irrigation / scarce water resource
  - Ex 2: dairy intensification / biodiversity loss
  - Ex 3: extensification / carbon leakage

=> Need for policies that support a transition towards a locally relevant, sustainable and productive agriculture
2 – Agroecology for an integrated approach
Common principles despite a great diversity

At the crossroads between agronomy, ecology and social sciences promoting « systemic approaches »

A consistent group of practices to build agricultural production systems relying on ecosystems functions and reduce pressure on the environment and natural resources

A movement at the fringe of the dominant thinking of modernising agriculture, promoting rural development, food sovereignty and environmental friendly agriculture
Core principles of agroecology

- Enhancement of biodiversity in the « agro-ecosystems » (both wild and cultivated)
- Enhancement of biological regulations
- Managing bio- and geochimical cycles (carbon, nitrogen, phosphorus...)

## Strong changes in every technical intervention

### Conventional intensification

- Segregation between agriculture and animal productions
- Fertility brought by fertilizers
- Simplification of cultural successions
- Tendency to monoculture with elite monogenotype
- Pest and disease control by pesticides
- Animal health managed by curative means (antibiotics)

**etc.**

**Simplification – uniformisation Degradation of the agrosystem**

### Agro-ecology

- Association / Integration of animal and crop productions
- Diverse sources of fertility: biomass, manure, compost, legumes crops, etc.
- Diversification of cultural successions
- Diversification / complexification of crops: multicropping, varietal mix, ...
- building up diverse trophic networks
- Ecopathology and etiopathology strategy for animal health

**etc.**

**Complexification - diversification `aggradation` of the agrosystem**

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adapted from M. Griffon 2013
3 - The agro-ecological project for France
A strong political will

- **Dec 2012**: launch by Stephane Le Foll, Minister of Agriculture
- **Oct 2014**: Loi d'avenir

- **8 action plans**:
  - Biogaz and N autonomy
  - Protein crops
  - Organic farming
  - Seeds selection/diversity
  - Beekeeping
  - Pesticides
  - Ecoantibiotics
  - Agroforestry
Art 1 : Definition : « Public policies will promote agroecological production systems, that combine economical, social, environmental and sanitary performances. (...) They contribute to climate change mitigation and adaptation ». 

Art 3 : Creation of farmers interest groups (GIEE) :
→ farmers based innovation (environmental and economical performance)
→ collective dynamics
→ networking with other stakeholders (ie research)
→ dissemination of results

=> Already 275 officially recognized GIEE to date (~ 4000 farmers)
Ambition, governance and approach

Ambition = 50 % of farms committed to agro-ecology in 2025

Governance

- Multi-partner national committee + local committees emerging ;
- National roadmap (participatory approach) ;
- Indicators.

Approach

- Stimulate on-farm innovation and disseminate : bottom-up process - not prescriptive – no one size fits all ;
- Mainstreaming in all national policies ;
- Farm based evaluation tool for farmers.
1 - incentivize new practices / investments

- Greening of direct payments (permanent pastures, crops diversification, ecological focus areas);
- Conditionality criterias (fertilization, cover crops, residues…);
- Coupled support to leguminous plants production;
- Agroenviromental and climate measures (AECM) : towards sustainable systems (crops / mixed farming / livestock production)

  Combination of criterias : nitrogen efficiency, N fixing crops, soil carbon, preservation of permanent pastures, biomass and renewable energy

- Organic production and agroforestry
- Young farmers installation
- Targeted investments on farm (ex. Biogaz, energy efficiency...)
2 - Farm based innovation

Adapt the national framework for agricultural development (professional organisations, technical institutes, civil society and the private sector) to promote agroecology through:

- the farm advisory system
- Applied research
- Calls for projects proposals

« Les trophées de l'agro-écologie »
« The agroecology award »
3 - Farmers education and training

Plan « enseigner à produire autrement »
2014 - 2018 : national action plan on « teaching to produce differently »
More than 700 agricultural schools

=> Reform of agricultural schools diplomas based on systemic and multidisciplinary approach
=> Develop school based demonstrations
=> Increase collaborations with local actors
=> Develop a network of school focal points

New tools
- MOOC on agro-ecology
- Online tool box for farming school teachers on climate change (Educagri Editions)
4 - Diversify genetic selection

Develop new breeds and varieties adapted to environmental and climate challenges

Ex: feed efficiency, resistance to pests and diseases, reduction of emitted pollutants, reduction of inputs, adaptation to a diversity of pedoclimatic situations...

=> new selection criterias for breeds and varieties;
=> include these criterias in the selection schemes.

Ex: recent report from INRA: «Which animal genetics selection to face the challenges of agroecology »
5 - Agroforestry

* Since 2014, specific CAP measure on agroforestry
* Dedicated plan launched on the 17th December 2015
* 5 axis et 23 actions :
  - 1 : Get a better understanding of the diversity of agroforestry systems
  - 2 : Improve the regulatory and legal framework, and increase financial support
  - 3 : Develop advice, education and promote agroforestry
  - 4 : Improve the economic valorisation of agroforestry products in a sustainable manner
  - 5 : Promote cooperation at european and international level

* Steering committee and working groups
Conclusion:

- Agroecology is an innovative approach to address climate change in a sustainable manner.
- Deep change of perspective for all stakeholders (including civil servants): bottom-up, not an instruction, not a recipe.
- Bigger challenge is the ownership at all levels => requires farmers mobilization, wide information and incentives.
- Value-chain approach still needs to be developed.
- Huge scientific and knowledge sharing efforts are still needed (e.g., on natural regulations, practices, systems and socio-economic implications).
- Too recent to be assessed (2014), but a tremendous change of mindset is already obvious.
Agroforestry

Change crops rotations

Towards Forrage autonomy of cattle breeding

Collective training and transfer of knowledge

Organic farming

Biogaz
Thank you for your attention!