



**NATAE**  
North African Transition  
to AgroEcology

# International Research School – Agroecology, value chains and food system transitions ENSA, October 25–29, 2026

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# 1. General Presentation

The Research School "Agroecology, Value Chains, and Sociotechnical Transitions of Food Systems" is organised by the NATAE research team of the National Higher School of Agronomy (ENSA), with participation from members of the NATAE project consortium representing various national and international partner institutions. It is conceived as a scientific, educational, and collaborative forum aimed at enhancing the analytical and operational capacities of researchers and doctoral candidates engaged in the study of agroecological transitions. This partnership and international dimension seek to foster the exchange of experiences, interdisciplinary dialogue, and the development of sustainable scientific collaborations addressing the challenges of transforming agricultural and food systems.

The School is founded on a central observation: agricultural and food system transformations cannot be understood solely through production practices, technical innovations, or isolated economic outcomes. They must be comprehended as complex processes embedded within value chains, territories, institutions, markets, power relations, and knowledge systems.

In a context marked by climate change, natural resource degradation, food insecurity, territorial inequalities, and the weakening of conventional agricultural models, agroecology emerges as a promising pathway towards sustainability. However, it is neither reducible to a catalogue of practices nor a uniform technical alternative. Rather, it constitutes a framework for analysis and transformation that enables critical examination of the relationships between ecological environments, economic organisations, social dynamics, institutional arrangements, and innovation trajectories.

The originality of this Research School lies in proposing an integrative approach through agroecology, value chains, and the sociotechnical perspective. This intersection allows moving beyond a strictly agronomic or technicist interpretation of the transition. It invites analysis of the concrete conditions under which agroecological innovations emerge, circulate, consolidate, or, conversely, encounter lock-ins. These lock-ins may relate to market standards, advisory systems, infrastructures, consumption habits, public regulations, professional representations, or actor relationships.

The ambition of the Research School is thus to train participants in a systemic understanding of the agroecological transition by equipping them with tools to analyse value chains as spaces of coordination, power, innovation, and territorial value creation. It also aims to create a collective space for scientific dialogue among researchers, doctoral candidates, and experts of the NATAE consortium around the methodological, theoretical, and operational challenges linked to food system transitions.

## 2. Justification and Scientific Challenges

Agroecological transitions are often presented as necessary responses to the limitations of conventional agricultural and food systems. Yet, their implementation frequently remains partial, fragile, or marginal. This situation is largely explained by the existence of sociotechnical lock-ins, that is, relatively stable configurations of actors, technologies, rules, knowledge, and representations that hinder the adoption of new models.

An agroecological practice may be technically sound but remain little disseminated if it is incompatible with the requirements of a buyer, the standards of a specification, collection infrastructures, processing habits, financing mechanisms, or consumer expectations. Conversely, some innovations can become powerful levers when they fit into favourable collective arrangements, differentiated markets, coherent public policies, or territorial cooperation dynamics.



This is why the analysis of value chains is essential. It enables tracking products, flows, economic relationships, forms of coordination, and value distribution from production to consumption. However, this analysis must be enriched by the sociotechnical approach, which interrogates formal and informal rules, knowledge, instruments, technologies, interests, conflicts, and alliances that structure actors' practices.

The Research School is part of a reflection on the conditions for agroecological transition of agricultural and food systems, paying particular attention to the economic, organisational, and territorial dimensions of value chains. It addresses three complementary scientific challenges.

- The first challenge concerns the agroecological transition itself: it aims to understand why certain agroecological innovations, despite their environmental and social benefits, struggle to spread and scale up. The Research School thus proposes an analysis of the sociotechnical lock-ins that slow these transitions, as well as the conditions likely to promote their unlocking.
- The second challenge focuses on value chains and the economic dynamics of sectors. The objective is to analyse how the creation, circulation, and distribution of value influence innovation trajectories, actors' technical choices, and the economic viability of agroecological transitions. This reflection notably relies on approaches mapping actors, flows, technologies, and economic relationships within value chains.
- The third challenge concerns territorial governance and the modalities of articulation between scientific production, collective action, and food system transformation. The Research School aims here to train participants in systemic and participatory diagnostic methods capable of identifying both barriers and levers of change, while fostering the co-construction of action research proposals and the development of territorial roadmaps.

### 3. Objectives of the Research School

The general objective of the Research School is to strengthen the capacities of researchers and doctoral candidates to analyse agroecological transitions through the lens of value chains and the sociotechnical approach. It aims to enable them to better understand the conditions of emergence, diffusion, blockage, or transformation of agroecological innovations in agricultural and food systems.

More specifically, the School seeks to impart conceptual and methodological tools to analyse agroecological value chains, actor networks, and associated sociotechnical systems. It also aims to develop participants' ability to identify levers for territorial value creation, detect options for unlocking innovation, and formulate action research proposals adapted to local realities.

The School will also pursue an objective of interdisciplinary dialogue. Agroecological transitions cannot be understood from a single discipline. They require connecting agronomy, economics, sociology, political science, geography, management sciences, and innovation studies. By bringing together participants from these fields, the Research School aspires to create a space for mutual learning and the construction of common research questions.

Specific Objective	Developed Competence	Educational Illustration
Understand agroecology as a systemic framework	Connect ecological, economic, social, and institutional issues	Introductory lectures and discussion of controversies.



Analyse a value chain	Identify actors, flows, technologies, rules, and coordination mechanisms	Mapping workshops and sector case studies.
Identify sociotechnical lock-ins	Understand mechanisms stabilising existing systems	Analysis of rules, practices, and power relations.
Identify unlocking levers	Formulate avenues for technical, organisational, market, or institutional innovation	Matrix of barriers and levers derived from fieldwork.
Build an action research approach (optional)	Transform a diagnosis into a protocol, project, or roadmap	Final action research design workshop.

## 4. Conceptual Positioning

The Research School is based on three structuring concepts that will be progressively and integratively developed throughout the training.

The first concept is agroecology. It will be approached both as a field of practices and as a scientific and political paradigm that enables consideration of the sustainability of food systems. This approach encourages moving beyond the simplistic opposition between conventional and alternative agriculture to analyse concrete transformation trajectories, trade-offs, controversies, and the viability conditions of agroecological models.

The second concept is the sociotechnical approach. This considers that innovation is never solely a matter of technical objects or agronomic performance. It depends on a set of actors, rules, markets, knowledge, infrastructures, and representations that form a system. This approach allows analysis of why certain changes are hindered by self-reinforcing mechanisms, but also how niches of innovation can emerge, connect to networks of actors, and progressively contribute to the transformation of dominant regimes.

The third concept is the value chain. It will be used not only as a descriptive tool for the stages from production to consumption but also as an analytical framework for economic, social, and institutional relationships. Attention will focus on the modalities of value creation and distribution, forms of coordination among actors, power asymmetries, quality standards, market mechanisms, and the links between agroecological innovation and territorial valorisation.

Concept	Operational definition for the Research School	Analytical question
Agroecology	A systemic framework combining agricultural practices, ecological principles, social justice, economic sustainability, and resource governance.	How can more sustainable food systems be developed without reducing the transition to a single technical dimension?
Sociotechnical system	A set of actors, technologies, rules, knowledge, norms, and relationships that structure practices and innovation trajectories.	What mechanisms stabilise the current system, and what levers can enable its evolution?
Value chain	All actors, activities, flows, relationships, and coordination mechanisms involved in the production, processing, distribution, and consumption of a product.	How do interactions between links promote or hinder agroecological innovations?

## 5. Pedagogical Approach

The pedagogical approach of the Research School is founded on a straightforward principle: learning to analyse a transition by actively engaging in it. The training will integrate framing lectures, scientific discussions, methodological workshops, role-playing exercises, case studies, field immersion, and co-construction sessions. This progression will enable participants to advance from a conceptual understanding of agroecological transitions to producing a shared diagnosis and an action-research proposal.

The methodological core of the school will be a five-step sociotechnical diagnostic process. Participants will first learn to delineate a study system, then map actors, technologies, and relationships. Subsequently, they will analyse the practices, rules, knowledge, and representations that guide action. The field visit will enable them to identify barriers and levers of innovation in concrete contexts. Finally, they will be encouraged to share and discuss their diagnosis to develop a scientific and operational roadmap.

This active pedagogy will promote collective learning. Participants will not merely be recipients of knowledge but producers of analyses. They will be placed in situations akin to those encountered in action-research projects: problem definition, scope construction, actor surveys, discussion of results, arbitration between options, formulation of recommendations, and development of collaborative projects.

Pedagogical modality	Role in training	Expected output
Thematic lectures	Establish conceptual foundations and open scientific controversies	Common analytical framework.
Practical workshops	Implement sociotechnical diagnostic tools	Maps, matrices, and analytical grids.
Role-playing and simulations	Understand actor logics, informal rules, and power relations	Interview guides and analysis of action drivers.
Field visits	Confront concepts with the realities of value chains and territories	Empirical diagnosis of barriers and levers.
Final co-construction	Transform learning into projects and recommendations	Scientific roadmap or action research protocol.

## 6. Proposed Programme

The programme is structured over five days following a logical progression, from establishing a common language to the collective production of a roadmap. Each day corresponds to a step in the sociotechnical diagnosis and combines theoretical input with practical exercises.

Day	Main theme	Step of the sociotechnical diagnosis	Expected educational outcome
Day 1	Agroecology: concepts, controversies, and system delimitation	Delimit the system to be studied	Formulation of a complex problem and definition of an analytical scope.
Day 2	Value chains and networks: mapping actors and technologies	Map existing actors and technologies	Map of actors, flows, dominant and alternative technologies.



Day 3	Practices, rules, and knowledge: understanding action drivers	Understand actors and determinants of their practices	Analysis of formal, normative, and cognitive rules guiding action.
Day 4	Field: cross-sectional analysis of barriers and levers of innovation	Characterise barriers and levers at the actor level	Matrix of lock-ins, opportunities, and unlocking pathways.
Day 5	Feedback: co-construction and roadmaps	Sharing the diagnosis with stakeholders	Action research proposal and collective roadmap

## 6.1 Day 1: Agroecology – concepts, controversies, and system boundaries

The first day will establish the conceptual foundation of the Research School. It will provide a historical and critical overview of agroecology, from the limitations of productivist models to contemporary approaches to sustainable food systems. Debates will focus on tensions between intensification, sustainability, social justice, food sovereignty, climate adaptation, and economic valorisation.

The day will also introduce the sociotechnical approach through a central question: why does innovation stall even when its benefits appear evident? Participants will then engage in a system delimitation workshop. Using a case study, they will formulate a complex problem, define spatial and sectoral boundaries, and identify exogenous factors influencing system dynamics.

## 6.2 Day 2: Value chains, actor networks, and technologies

The second day will focus on the value chain as a strategic object of analysis. Participants will learn to identify actors involved in production, collection, processing, distribution, consumption, governance, research, and advisory services. They will analyse economic and logistical flows, coordination modalities, and forms of value-added distribution.

Special attention will be given to revealing technologies, that is, technical or organisational artefacts that crystallise tensions, interests, norms, and power relations within a system. The afternoon workshop will guide participants to produce a mapping of the actor network, identify dominant and alternative technologies, and prepare for an in-depth analysis of practices.

## 6.3 Day 3: Practices, rules, knowledge, and drivers of action

The third day will seek to understand what motivates actors to act. Lectures will cover different categories of rules guiding practices: regulatory rules such as laws, standards, and specifications; normative rules related to responsibilities, professional obligations, or social expectations; cognitive rules associated with beliefs, paradigms, knowledge, and representations of possibility.

Participants will also analyse power relations, alliances, conflicts, and asymmetries structuring agricultural and food value chains. Through role-playing and interview simulations, they will learn to uncover implicit rules, perceived constraints, divergent interests, and conditions for the acceptability of agroecological innovations.

## 6.4 Day 4: Field immersion and analysis of barriers and levers

The fourth day will be devoted to immersion in a farm, value chain, or territorial initiative engaged in an agroecological trajectory. Participants will meet producers, processors, advisors, representatives of professional organisations, public actors, or market actors. They will observe



practices, coordination mechanisms, material constraints, quality standards, forms of valorisation, and encountered difficulties.

The afternoon will be dedicated to transforming observations into analysis. Groups will construct a matrix of barriers and levers by distinguishing technical, economic, institutional, cognitive, organisational, and market lock-ins. They will also identify innovation niches, potential alliances, mobilisable territorial resources, and unlocking pathways.

## 6.5 Day 5: Feedback, co-construction, and roadmaps

The final day will be dedicated to consolidating the learnings and transforming them into action-research proposals. Participants will develop projects based on the diagnosis conducted. These proposals must articulate a scientific problem, a transformation hypothesis, actors to mobilise, levers of action, a method of investigation or support, and expected outcomes.

Projects will be presented as concise feedback and discussed collectively. This debate will simulate sharing a diagnosis with stakeholders and allow testing the robustness of analyses. The closing of the school will result in a scientific roadmap identifying prospects for collaboration, publication, action-research, or institutional valorisation.

## 7. Target Audience and Scientific Facilitation

The Research School aims to establish an international forum for scientific exchange, training, and co-construction around the challenges of agroecological transition and transformations of food systems.

The Research School primarily targets researchers, teacher-researchers, doctoral candidates, and early-career scientists working on agroecology, food systems, agricultural value chains, territorial innovations, agricultural economics, rural sociology, natural resource governance, or food public policies. It may also welcome practitioners involved in supporting transitions to foster dialogue between scientific production and field action.

Scientific facilitation should rely on a multidisciplinary team combining expertise in agronomy, agroecology, agricultural and agri-food economics, innovation sociology, sociotechnical system analysis, territorial governance, and food policies. This plurality of expertise is essential to account for the complexity of transitions and to avoid sectoral perspectives.

Participant profile	Expected contribution	Benefit for the school
National and international researchers and teacher-researchers	Theoretical contributions, critical perspectives, field comparisons	Scientific consolidation of diagnoses
National and international doctoral candidates and early-career researchers	Emerging questions, field materials, methodological openness	Dynamics of learning and collective production
Practitioners and support actors	Operational knowledge of value chains and constraints	Anchoring analyses in the realities of action
National and international experts	Perspective framing, methodological guidance, feedback from experience	Broadening references and collaboration prospects

## 8. Expected Results

At the conclusion of the Research School, participants will have an enhanced understanding of value chain models likely to support agroecology, as well as the sociotechnical systems that enable or constrain them. They will have acquired tools to analyse actor networks, technologies, institutional rules, practices, and knowledge influencing innovation trajectories.

A key outcome will be mastery of a five-step diagnostic approach, from system delimitation to sharing the diagnosis with stakeholders. This approach can be applied in research fields, doctoral projects, innovation support mechanisms, or action-research programmes.

The school should also foster collective production. This may take the form of a policy brief, a shared research protocol, a methodological note, a scientific roadmap, or a collaborative project framework. The goal is not only to train individuals but to cultivate a reflective community capable of producing knowledge useful for transforming food systems.

Expected result	Nature of the result	Usefulness for participants
In-depth understanding of agroecological value chains	Conceptual and analytical	Better situate innovations within their economic and social environments
Mastery of sociotechnical diagnostic tools	Methodological	Identify barriers, levers, actors, rules, and key technologies
Production of a collective diagnosis	Pedagogical and operational	Learn to build a shared analysis from a concrete case
Development of action research proposals	Scientific and strategic	Transform analyses into projects, protocols, or recommendations
Establishment of an interdisciplinary network	Institutional and collaborative	Foster cooperation, publications, and future projects

## 9. Added Value and Originality of the Research School

The added value of this Research School lies in its positioning at the interface between theory, method, and action. It does not merely present agroecology as a set of principles or practices. Instead, it proposes to analyse the concrete conditions of its implementation within real value chains, shaped by interests, norms, power relations, economic constraints, and territorial opportunities.

Its originality also stems from the emphasis placed on lock-ins and unlocking processes. Rather than viewing the transition as a simple dissemination of best practices, the Research School treats it as a conflictual, negotiated, and situated process. It thus enables participants to understand why certain changes fail, why others succeed, and how research can support credible and sustainable transformations.

Finally, the Research School is distinguished by its focus on co-construction. Participants will be trained not only to diagnose but also to report, discuss, and transform their diagnoses into actionable roadmaps. This aspect is crucial because agroecological transitions cannot be imposed externally; they are developed through collective learning, institutional compromises, local experiments, and alliances among researchers, economic actors, professional organisations, local authorities, and citizens.

