

COST Action CA21134 (TOPAGRI) · Cross-country synthesis on co-creation practices

Co-designing territorial strategies for agroecological crop protection: workshops, trajectories and lessons from the Sustainable Agroecological Systems of the ACPI network

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About this report. Prepared under a COST Virtual Mobility Grant, this synthesis draws on the documents of the ACPI network and of the ACROPICS project (2024–2026), numbered S1–S12. It offers a general assessment based on the interpretations of the author, and on the interpretations of online discussions with SAS actors and ACROPICS/TOPAGRI members.

Summary. The Agroecological Crop Protection Initiative (ACPI) is an international network created in 2022; ACROPICS, its first research contract, gave it four years of staff exchanges around the support and valorisation of Sustainable Agroecological Systems (SAS), i.e. existing territorial initiatives that had already created value from agroecology. In these territories the project combined two instruments meant to dialogue: workshops to co-design territorial strategies with a real-time impact-pathway method (ASIRPAr), and a common characterisation of agroecological transition (TAPE level 1). Co-design took various forms – complete workshop sequences with stakeholders, diagnosis-based adaptations of strategies, and strategies derived from technical partnerships, etc. This document reports main activities observed at the SAS, documented difficulties and hypotheses about what shaped the co-design and innovation activities. It confronts the network’s initial definition of SAS with what the territories showed. It also compares ACROPICS with a few other initiatives that include place-based co-innovation initiatives. Three lessons come from this work: the difficulty of arranging a smooth process combining assessment, discussion and design; the importance of who convenes (and influences) what is co-designed; the under-resourced infrastructure of co-design observed everywhere, which the MSCA structure could not strengthen enough to avoid weaknesses of each place-based diagnosis/co-design/co-innovation plan.

1. The ACPI, ACROPICS and the Sustainable Agroecological Systems

The ACPI was launched in 2022 and now networks more than 50 experts and organisations from 35 countries. It promotes preventive and regulatory approaches to crop protection and stresses the territorial, collective and organisational dimensions of innovation. Its annual workshops are held with the European Research Alliance “Towards a Chemical Pesticide-Free Agriculture”, which frames zero pesticides as a research paradigm (Jacquet et al., 2022), and with COST Action TOPAGRI; the European Partnership AGROECOLOGY joined them in Berlin in 2026. The ACPI is a permanent network; ACROPICS, its first research contract, funds actions at scale for four years (2024-2027). ACROPICS (Horizon Europe Marie Skłodowska-Curie Staff Exchanges) associates 15 organisations from 13 countries and plans 360 person-months of exchange.

Three founding hypotheses – pesticide reduction requires an ambition shared along the value chain, innovation must fit local conditions, and change combines push and pull through markets, rules and advice – led to the definition of SAS as “protective innovation spaces”: place-based food-chain pilots located in a clearly delineated area, involving a value-chain-wide network of actors leading a common initiative large enough to be a proof of concept, having already implemented a way to create added value from their agroecological approach, reliably connected with a research and innovation organisation, represented in the consortium by one of their actors, representing a diversity of systems and combining technological, ecological, organisational, social and institutional innovations. The first objective is to co-design with each SAS a strategy towards a sharp reduction of chemical inputs and higher sustainability, involving all relevant actors of the area and value chain.



Figure 1. A Sustainable Agroecological System as conceived in ACROPICS: a delineated area, the whole value chain and a collective process (ACROPICS project, 2023).

The SAS idea targets two separations that limit pesticide reduction capacities. One runs along the value chain: lock-ins are built across breeding, advice, processing, retail and regulation (Vanloqueren & Baret, 2009; Meynard et al., 2018), and the concentration of power among a few firms shapes who bears the risk of change and who captures its value (Clapp, 2021). The other runs across places: agroecological practices are tied to local ecologies, markets and cultures and spread through horizontal networks (Mier y Terán Giménez Cacho et al., 2018), and territories are increasingly treated as the level at which farming, food and biodiversity are governed together (Wezel et al., 2016). SAS should cross these two dimensions. ACROPICS did not assemble new groups around a research question: it chose territories *a priori* meeting the SAS definition, and connected them through staff exchange. It aims at setting and testing roadmaps coupling diagnosis of sustainability, **co-design** which sets agendas and priorities, and **co-creation** which produces solutions (Klerkx et al., 2010).

2. The approach: co-designing strategies and assessing transitions

2.1 Co-designing strategies with real-time impact pathways

ASIRPart (ASIRPA Real Time) is presented by its designers, the INRAE-LISIS team, as a real-time and formative impact-assessment framework: societal impact is not measured at the end of a research and innovation process but guides it, by envisioning desired futures and anticipating, iteratively, the pathways to reach them. It adapts to co-innovation an approach to the impact pathways of research developed at INRAE (Joly et al., 2015; Matt et al., 2017). SAS members use the impact pathway as a reflective tool to build the vision of a common future and the path to reach it, considering concrete achievements and the other stakeholders that need to be involved; the pathway links co-created solutions, the leverage points needed to implement and scale them (Meadows, 1999) and expected transformations in five poles: production, uses, markets, policies and knowledge. A facilitator's guide (April 2025) organises three workshops – collective vision of the territory in the future; transformations, solutions and leverage points on a timeline; action plans with coordinator, budget and deadline – with revision during the second part of the project. Holding the workshops was left to each SAS, with support on request. Among participatory design approaches, ASIRPart is a strategic one; designing cropping and protection systems with farmers relies instead on iterative cycles of prototyping and on-farm testing (Berthet et al., 2016), which ACROPICS placed in its testing and demonstration activities.

2.2 Characterising transition with TAPE (level 1)

The network co-selected the **FAO Tool for Agroecology Performance Evaluation** (Mottet et al., 2020), the only one of 14 multidimensional methods reviewed that met four of five criteria (Darmaun et al., 2023), and used its first level, the characterisation of agroecological transition (**CAET**). Each farm is scored on the ten elements of agroecology (Wezel et al., 2020) through 36 indices (FAO, 2019); the CAET is the mean of element scores, overall and across the five elements operating mainly at farm level and the five operating mainly at community level. The network's baseline classes farms below 40% as conventional and above 70% as agroecological, and imposed unmodified templates to allow comparison across SAS. The two instruments were meant to meet: the CAET would give each SAS a shared picture of its farms on which visions and leverage points could be discussed, and ASIRPart would translate that picture into transformations (later assessed in terms of their effects). Both were taught step by step, from online training in 2024 to field and train-the-trainer sessions in 2025 and a joint review in Berlin in 2026. Several SAS also collected TAPE level-2 data but these data are still under analysis and are not considered in this report.

3. How the approach materialised in the SAS

3.1 Nine trajectories in four modalities

Table 1 summarises, for the nine SAS that effectively co-designed a place-based strategy, how co-design proceeded, what the strategies focus on, the farms characterised and the main achievements. The material available to the network is uneven (Section 4.2), so the table describes pathways rather than judging them.

Table 1. Co-design pathways, strategy focus, characterisation of transition (mean CAET) and achievements in the nine SAS (2024–2026)

SAS	Co-design pathway	Strategy focus
GDT · Himachal Pradesh, India [S2, S4, S7]	Complete ASIRPart sequence (Sept–Nov 2024, 24–30 participants) with university and NGO co-facilitation	Processing centres, fair-price outlets, natural farming; costed plan 2025–2029
CNFPC · Himachal Pradesh, India [S2, S5, S7]	Complete sequence (Sept–Nov 2024, 20–38 participants)	Low-cost input machinery, certification, apple marketing yard
DyT · Fatick, Senegal [S2, S7, S10, S12]	Foresight within the departmental agroecology platform (2024): assessment, ideotyping, backcasting	Twelve transformation areas, from participatory budgets to producer–processor chains
CASA · Basse-Casamance, Senegal [S2, S10]	Platform building (2025): regional expert group, ideotyping, launch with >100 people from 74 organisations	Shared, illustrated vision of the territory
CAP42 · Andean Patagonia, Argentina [S2, S7, S9]	Bio-input workshops (2024–25); first ASIRPart workshop (Nov 2025); territorial diagnosis and open workshops (2026)	Bio-inputs, peer learning, guarantee system, actor articulation; 54-action plan
OGC · Maule, Chile [S6, S7]	Diagnosis of family farms (2024), public seminar, futures workshop launching the organic growers' SAS in 2024–2025	Preliminary strategies from a shared diagnosis, bio-inputs
ALM · Almería, Spain [S2, S7, S11]	Large grower meetings (2025) led by a biocontrol company with two cooperatives	Nursery-to-market biocontrol; relaxed cosmetic standards
BioPROD · Colibași, Romania [S2, S5, S7]	Joint problem analysis; thematic workshops on biocontrol and valorisation (2025, 70–80 participants)	Barley strips, greenhouse biocontrol, processing unit
ODE · Odemira, Portugal [S2, S7]	Demonstration trials with three berry companies	Breeding, ecological corridors, water saving

A – Complete workshop sequences with producer companies (GDT, CNFPC). In the two Indian SAS the method was applied completely and quickly, thanks to a three-week mission of the LISIS team and co-facilitation by the partner university and an NGO. Participants (farmers, producer-company staff, state representatives) produced action plans centred on the economic infrastructure of producer companies (processing, outlets, certification, input machinery) more than on pest regulation, consistent with an advanced natural-farming starting point. Assessments reported more farms at the highest certification level, market premiums and lower input costs; buyers took little part.

B – Territorial foresight within multi-actor platforms (DyT, CASA). The Senegalese processes are the longest and most sequenced and reach the widest range of actors (farmer organisations, NGOs, local authorities,

consumers, research). They followed the platforms' rhythm and the research partners' toolbox (ideotyping, backcasting – Robinson, 1990) rather than ASIRPart, and reframed crop protection within governance, livelihoods and heritage. In Fatick, an assessment of transition preceded the design of the pathway, and co-creation produced a goat-milk chain in which producers, processors and school canteens agreed on a price. In Basse-Casamance, co-design first had to create the collective it would rely on.

C – Diagnosis-first adaptations (CAP42, OGC). In Argentinian Patagonia and Chile, strategies were first drafted by the research partner and strategy workshops came later, after other entry points: practical bio-input workshops and a foresight workshop in the Comarca Andina, a diagnosis of family farms and a set of public seminars and workshops in Maule. The two territories illustrate how an entry organisation positions a SAS within its system. The Comarca Andina, shaped by successive waves of settlers (Swiss colonists, hop growers, the counter-culture of the 1970s, organic pioneers) hosts an export-oriented berry cooperative of some 160 members alongside the agroecological collectives that the SAS, coordinated by the national research institute, brings together around local markets and a participatory guarantee system; in Maule, the initial entry point was a private agroecology R&D centre advising organic fruit and vine growers, in a liberal, export-oriented farming system. Then a second related SAS emerged from a family-agriculture-oriented small-scale cooperative connected to the academic local coordinator. Staff exchange in 2026 added to CAP42 and OGC a territorial diagnosis (>50 interviews; comparison of >20 bio-input initiatives). They revealed that existing structures overlap but rarely coordinate, and that collective buying seems to work while collective selling does not.

D – Strategies derived from technical partnerships (ALM, BioPROD, ODE). In the three European SAS, co-creation with growers is real and sometimes large (biocontrol protocols spreading across nurseries and nearly eliminating treatments in tomato, barley strips against aphids, drone-based protection, ecological corridors that require growers to suspend insecticides) but co-design takes the form of an R&D agenda negotiated by the organisation that leads it: a biocontrol company, a cooperative with its university partner, a research institute with berry companies. Their histories seem to explain the form: in Almería, the district's shift to biological control followed the 2007 pesticide-residue crisis on exported vegetables, and the biofactory that represents the SAS works through cooperatives, nurseries, public research and the regional government to keep more than 26,000 hectares under biological control for European retail chains demanding zero-residue guarantees (Acebedo et al., 2022); in Odemira, thirty years of irrigation and foreign investment turned a traditional area into an export enclave of berries, where a distribution firm, a producer organisation and the national institute cooperate on varieties and climate adaptation for national supermarket chains and export. Territorial visioning and actors beyond production seem to remain less engaged, and retailers' requirements appear as obstacles rather than negotiated.

3.2 Transition profiles across the network, and their link with co-design

Across the 539 farms of the network baseline, the transition score was 57%, close to the farm (55%) and community (58%) scores: most farms are in transition. All elements scored above 50% except synergies (38%). Profiles differ: in Almería and Colibaşi farm-level elements lie far below community-level ones; in the Indian SAS farm elements are ahead; in Fatick, Maule and the Comarca Andina the opposite holds. The weakest elements point to different priorities: knowledge sharing in India, diversity and circular economy in Almería, recycling in Patagonia and Maule, synergies almost everywhere. The assessment teams concluded that farm-level elements drive transition and community-level ones complete it. The dialogue between assessment and co-design remained limited. Strategies were requested before the TAPE assessments were available (sustainability assessments were initially planned to produce a baseline to which future assessments would be compared), SAS did not always have preliminary diagnosis data, and processes followed by the local coordinating teams were variable. Hence, the sequence between assessments, discussions and design largely

varied among SAS. Several strategies nonetheless target the weakest elements – ecological infrastructures in Almería, barley strips in Colibaşi, farm-made bio-inputs where recycling lags (CAP42, OGC, etc.) and SAS workshop reports suggest that lead teams' knowledge anticipated the TAPE assessment.

4. Feedback and discussion

4.1 Shared patterns

Three configurations emerge. **Technical co-creation led by research or companies** (Almería, Colibaşi, Odemira) engages growers intensively around trials, in systems at the lower end of the transition gradient. **Producer organisations with facilitated strategy workshops** (India, later CAP42), in advanced systems, produce action plans centred on certification, inputs and market infrastructure and rely on brokers and guarantee systems through which actors define sustainability themselves (Klerkx and Leeuwis, 2009; Loconto and Hatanaka, 2018). **Territorial platforms using foresight** (Senegal) reach the broadest range of actors. Across configurations, participants mostly proposed solutions they could build themselves – infrastructure, certification, inputs, trials – and seldom institutional levers; the Senegalese platforms are the exception. Read through the efficiency–substitution–redesign grid (Hill and MacRae, 1996), the strategies lean on substitution and efficiency; redesign appears mainly at plot or field-margin level, while rotations and landscape-scale coordination of protection are rarely made explicit, although integrated pest management puts prevention first (Deguine et al., 2021). Of the 22 innovations surveyed and described in the network, 18 are technological.

A preliminary reading of strategies against transition scores by the author suggests that relations to biological control vary along the gradient: where transition is least advanced, biocontrol products are expected to behave like pesticides; in intermediate situations actors are open to biocontrol within diversification; in the most advanced systems commercial products are criticised as costly and as a new dependency, while conservation biocontrol is practised without being named. A demand the project had not anticipated appeared in at least four SAS: local production of bio-inputs, with strong needs for know-how and standardisation. Interests converge on input autonomy and recognition of agroecological value, and diverge on self-provided versus commercial inputs, collective versus individual marketing, customized standards versus retailers' requirements, and farmland versus real-estate and tourism pressures. In terms of practical organization of co-design, a common pattern was observed. It held better where co-design was grafted onto existing arenas and calendars (a platform's committees, producer-company boards) than where producers were asked to add meetings in the busy season.

4.2 Difficulties observed

Local facilitation was only partly funded. Staff exchanges fund researchers' travel; the flat-rate research and networking costs attached to each mobility were used to co-finance part of the local effort or to start it, but they do not pay the people who convene actors and follow up decisions. The rest came from the SAS member organisations' own means, so that the collective and facilitation effort was substantial in some SAS and minimal in others. The need for local co-financing itself weighed on which organisations could engage, and on what. Half of the SAS answering the 2025 self-assessment asked for support on the method (S8); in the most fragile territories, collective structures rest on a few people holding several roles at once. Not all the SAS could produce their place-based strategy in time.

An unstable co-design sequence. The network did not plan a systematic support of the co-design process and workshop, both to leave a fair level of decision power to the SAS organisations and because it was not logistically feasible for a small coordination team to lead repeated workshops in all the SAS. Complete workshop sequences took place in two SAS, platform foresight in two, diagnosis-first adaptations in two, and no strategy-workshop series (under a form planned by the network) in three (sometimes because a process

similar to the expected one was ongoing or recently finished); TAPE baselines exist for seven of the nine. Processes were documented very unevenly, so that the network can hardly compare the depth of participation, transfer lessons in real time or show that its central objective was met – and this report may understate what happened in some SAS. Overall, the theoretical common strategy of all SAS corresponded in practice to a mosaic of a range of processes adapted to each place, which produced rich feedback (revealing patterns, leading to sharing tools and method, etc.) but also a heterogeneity of results or observations that make their global presentation and synthesis difficult, hence decreasing the communication capacity of the network.

Key levers lie beyond the SAS. Workshops and studies named public procurement bypassing producer companies, cosmetic standards set by retailers, land markets, suspended national programmes and the missing legal route for small-scale bio-inputs. Without arenas involving regime actors, strategies stall at this point, as analyses of socio-technical lock-in predict (Geels, 2002; Meynard et al., 2018), including for Senegalese vegetable production over a century (Gaillard et al., 2025).

4.3 Hypotheses on what actually shaped co-design

Other observations are open to interpretation and are presented as hypotheses for the consultations, with their limits; the adaptations they would justify are listed in Section 5.2.

H1 – The intensity of co-design followed researcher mobility. Complete sequences took place where the LISIS team was seconded, the longest foresight where a CIRAD researcher spent more than six months, the densest territorial account during a four-month exchange – consistent with the view that innovation brokers must be embedded locally (Klerkx et al., 2009). *Limit:* correlation is not causality, and mobility also built lasting capacities.

H2 – Access through one entry organisation filtered actors and agendas. Leverage points follow the core competences of the entry organisation, and participants were recruited through its networks. When a dedicated study widened the circle in CAP42 to the regulator, the province and food companies, it surfaced issues absent from the strategy. Facilitators shape whose voices are heard (Neef and Neubert, 2011). *Limit:* entry organisations provide the trust without which no workshop happens.

H3 – Territorial boundaries were constructed during the process. The unit “SAS” covers a cooperative, producer companies, a greenhouse district, a department and a region, and it moved as groups joined and new platforms were created. The geographical perimeter of the SAS was found much fuzzier than initially expected. *Limit:* this may simply have been a biased view in the initial design of the network, as researchers in social science define a territory as a socially constructed space that is appropriated, delimited, and given meaning by human groups through social interactions, power dynamics, and cultural practices.

H4 – The tools framed what counted. Templates and transition scores worked as boundary objects, stable enough to circulate between research teams, SAS and the funder and loose enough to be used very differently (Star and Griesemer, 1989); the CAET makes SAS comparable at the cost of their specificities and says little about value distribution along the chain. Leverage points mostly concerned what participants could deliver themselves, although the reflective use of the impact pathway asks members to identify the other stakeholders to involve. *Limit:* the tools also opened new questions, such as the balance between farm and community elements.

H5 – Co-design spread, co-creation beyond producers is still rare. Visions and priorities were set almost everywhere; tangible solutions created with actors beyond researchers and producers remain rare, the Fatick canteen chain and the emerging engagement of a restaurant network in Chile being the clearest cases. *Limit:* several processes are too recent to judge.

H6 – Written strategies and territorial work were partly decoupled. Formal documents produced for a funder can remain loosely coupled with practice (Meyer and Rowan, 1977): the richest territorial plans – the Fatick platform’s documents, the CAP42 action plan – live outside the strategy templates. *Limit:* templates also started reflection where none was explicit.

4.4 The SAS definition in the light of co-design and assessment

Table 2 confronts the definition of the description of action (Section 1) with what co-design, assessment and the CAP42 diagnosis revealed.

Table 2. The SAS definition (ACROPICS description of action) and observations across the nine SAS

Criterion	Definition	What was observed
Delineated area	Located in a clearly delineated geographic area	Units range from a cooperative to a region and moved over time; membership stays open; administrative borders cut across CAP42
Value-chain-wide network	Connected actors along the food chain leading a common initiative	Chain actors existed in most territories, but co-design mobilised mostly producers, advisers, NGOs and researchers; buyers, retailers and processors rarely took part
Prior value creation	A way to create added value from the agroecological approach already implemented	Present but uneven – certification and outlets, a common retailer, biocontrol markets, a guarantee system; collective selling rarely organised
Link with research	Reliable connections with an R&I organisation	The strongest criterion: research partners convened most processes and produced the assessments
Representation	Represented in the consortium by one of their actors	Held by design; the member organisation also acted as entry point and paced activity (H2)
Diversity of systems	Cash crops, vegetables, fruits, greenhouses or mixes	Achieved, from rainfed smallholdings to greenhouse districts – which makes common grids harder to interpret
Combination of innovations	Technological, ecological, organisational, social, institutional	Mostly technological and plot-level ecological; organisational and institutional innovations rarer, in producer companies and platforms
<i>Not in the definition: an institutional owner of the issue</i>	–	Where a body with a mandate to convene chain actors and public authorities existed – the Fatick platform, the Comarca’s structures – co-design reached the most actors

Complementing and challenging the definition. Two dimensions emerge from this experience and from conceptual work under way in the network: an explicit ambition to redesign crop protection, shared along the chain rather than stated by a lead team, and connection to other territories through comparable, co-defined evidence – TAPE produced comparable profiles, whereas co-design processes could hardly be compared. The protection a SAS offers can be read through the shielding, nurturing and empowering functions of protective spaces (Smith and Raven, 2012): where SAS absorbed the risks of change, this rested on arrangements beyond the workshops (certification, outlets, a price agreement, a guarantee system). Four readings question the definition’s assumptions. *Agronomic:* an “agroecological approach” says nothing of the depth of change, so a definition could name the levers a SAS commits to and a direct measure of pesticide use. *Participatory:* a pilot is framed in project time, whereas the collectives that carry change live in their own arenas and calendars. *Pragmatist:* selection turned into constitution – platforms were created, groups joined – so a SAS is less an entity to be selected than a public forming around a problematic situation (Dewey, 1927). *Organisational:* a meta-organisation, whose members are organisations (Ahrne and Brunsson, 2005), reaches territories through one member with competence and the producers’ trust but seldom with the mandate to convene buyers, regulators or public bodies – the competence–mandate gap that INTERLUDE identified for agricultural advisers (Navarrete et al., 2024). What was achieved remains substantial: most SAS used their research link to open co-design, several produced visions or plans shared by dozens of actors, the assessment produced comparable profiles, and one territory has a documented diagnosis others can reuse.

4.5 ACROPICS among comparable programmes

Three neighbouring programmes organise cooperation in territories around pesticide reduction with different instruments (Table 3). **BE CREATIVE** (PPR “Cultiver et Protéger Autrement”, 2021-2026) practises research by design in nine French territories chosen where researchers already worked with a local institution carrying the issue (a water syndicate, a regional park, a metropolis) in an iterative loop of understanding, creating and

evaluating. **INTERLUDE** (Écophyto II+, 2020-2024) co-designed in four vegetable-growing territories thirteen prototypes of coupled innovations (a known agroecological lever paired with the coordination its adoption requires) (Meynard et al., 2017) after a five-step socio-technical diagnosis shared with BE CREATIVE (Casagrande et al., 2023), and classified them by depth of redesign and level of governance (Navarrete et al., 2024). The **European Partnership AGROECOLOGY** (2024-2033) funds projects, runs a network of 55 living labs and research infrastructures admitted on criteria, and is building a monitoring framework with five components (production practices, economic relationships, societal engagement and values, political frameworks, knowledge and education) with self-assessment tools for living labs (Rastorgueva et al., 2025).

Table 3. ACROPICS and three neighbouring programmes (programme documents, September 2026; S12)

	ACROPICS	BE CREATIVE	INTERLUDE	AGROECOLOGY Partnership
Instrument	Staff exchanges, 360 person-months, 15 organisations, 13 countries	Research project, ≈€3 M, 15 teams	Applied project, €295 k, 6 partners	Co-funded partnership, ≈€300 M, 111 partners; 3 calls, 38 projects
Territorial unit	12 SAS in 10 countries: existing initiatives with prior value creation and a research link	9 French territories with a local institution owning the issue	4 vegetable basins: situated actors sharing a concern	55 living labs and infrastructures admitted on criteria
Entry point	Territorial vision of agroecological crop protection	Pesticide-free territory as explicit aim	A precise pest problem and a locked agroecological lever	Agroecological transition (13 principles)
Diagnosis	Farm characterisation (CAET)	Socio-technical and flow diagnoses before design	Five-step socio-technical diagnosis before workshops	Monitoring framework under construction; self-assessment
Design output	Visions, leverage points, action plans	Scenarios and territorial prototypes	13 prototypes of coupled innovations, typology redesign × governance	Project-specific co-creation in living labs
Facilitation	Partly funded (networking costs of mobilities) plus SAS organisations' own means	INRAE facilitators, dedicated coordinator	Carried by researchers; 'change agents' lack mandate and training	Living labs as long-term, nationally funded infrastructure
Evidence	Common baseline, 539 farms; 22 innovation described; pesticide use in TAPE level 2 for several SAS (not analysed here)	Multi-scale evaluation, pesticide-sales mapping	Expert-based evaluation	Impact of living labs a research need

Three lessons follow. Both French projects place a diagnosis of actors and lock-ins before design and reach the conclusion of Section 4.2 by another route: nearly all barriers met by farmers are repercussions of barriers met by other actors of the agrifood system (Navarrete et al., 2024). INTERLUDE explains why local facilitation is hard to hand over: advisers have the competence but not the mandate to address buyers or public authorities, territorial bodies the reverse. Hence researchers carried it, and the project calls for a new profession of 'change agents' funded in the long term. Its prototypes were designed without certainty of implementation, and BE CREATIVE evaluates territories where change is still a scenario; ACROPICS, by contrast, selected initiatives that had already supposedly created value, assessed innovations in use, and holds the only common quantitative baseline across territories. Read together, the five poles of ASIRPart and the CAET cover the Partnership's five components almost term for term, provided that workshops leave records usable as monitoring of change processes.

5. Conclusions and recommendations

5.1 Three interconnected lessons, and supporting findings

- **Lesson 1 – Assess, discuss, then design.** The two instruments (ASIRPart and TAPE) mostly ran in parallel; the effort and time spent on diagnosis before design were insufficient in ACROPICS, or at least not related enough or not impacting enough on the co-design process.
- **Lesson 2 – Facilitation and records are the under-resourced infrastructure of co-design.** MSCA Mobilities paid for part of the effort; the rest depended on SAS organisations' own means, with very uneven results, and processes were documented unevenly.
- **Lesson 3 – Who convenes decides what is co-designed.** Outputs followed the convening organization: action plans with producer companies, visions on platforms, R&D agendas in technical partnerships. Chain

actors existed in most territories but were seldom in the room; entry organisations had competence and trust, rarely the mandate to invite buyers, regulators and public bodies.

Supporting findings. SAS met the project's definition only in part, and the definition gains from adding a shared ambition, comparable evidence and an institutional owner of the territorial issue. The characterisation of transition produced the network's most comparable evidence (means from 48% to 65% in the SAS covered, synergies lagging everywhere). On crop protection specifically, strategies favour substitution and efficiency and the weakest CAET element gathers the levers related to conservation biological control, natural pest regulation and prophylaxis. SAS revealed demands a product-centred agenda misses: local bio-inputs, conservation biocontrol practised without being named, water-management-related issues. How mobility, entry organisations, boundaries, tools and reporting shaped co-design (H1–H6) remains to be discussed.

5.2 Recommendations

They are addressed to the ACPI network, which will carry them beyond ACROPICS, and to the COST Action.

- **Constitute before designing:** a future SAS network selection should be based on a socio-technical diagnosis of actors and lock-ins in each candidate SAS (the five-step protocol of INTERLUDE and BE CREATIVE; the CAP42 study as a template), an actor map and explicit boundaries, and the identification of (an) organization(s) with the mandate to convene chain actors and public bodies.
- **Name the levers and measure the target:** revise strategies as coupled innovations: set a reduced number of levers subject to co-innovation. For each lever, specify the coordination it requires and the actor who carries it; characterize the co-innovation challenge by depth of redesign and level of governance (and pair transition scores with the TAPE level-2 indicators of pesticide use and exposure across all SAS).
- **Resource facilitation and record processes:** fund local facilitation as a professional role alongside staff exchanges, co-facilitate with two organisations of different types, graft co-design onto existing arenas and calendars, and keep a light shared record of every workshop (date, method, participants by category, decisions) in the network repository.
- **For the COST Action:** treat territorial co-design as a condition of pesticide-reduction pathways; record in national syntheses how place-based collective agroecological crop protection initiatives are operated and who has the mandate to convene chain and regulatory actors; document to what extent a pesticide-use indicator accompanies transition assessments, and how co-design outputs distribute by depth of redesign and level of governance.

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Sources

- S1 ACROPICS description of the action, Part B (2023).
 S2 SAS strategy templates (December 2024) and deliverable D1.1 v2, co-designed SAS strategies (2025).
 S3 ASIRPart facilitator's guide (INRAE-LISIS, April 2025) and workshop outlines.
 S4 GDT ASIRPart workshop report, Nauni University (November 2024).
 S5 ACROPICS Mid-term meeting report D7.5 and partner reports (Bucharest, May 2025).
 S6 UCM activity reports (Chile, December 2024, 2025).
 S7 ACROPICS WP4 deliverables D4.1, D4.2 (TAPE baselines, 2025) and D4.3 (innovation assessments); cross-SAS analyses presented in Berlin (June 2026).
 S8 ACROPICS Deliverable D5.3, SAS self-assessment (June 2025).

S9 CAP42 territorial diagnosis, comparison of bio-input initiatives and action plan (INRAE–INTA, 2026).
S10 ACROPICS Deliverable D1.2, characterisation of SAS innovations and transitions, and SAS description data (2025).
S11 Official mobility records (2024–2025), SAS activity records, newsletter #2.
S12 Zagreb 2024 and Berlin 2026 workshop materials; websites of the ACPI, the European Partnership AGROECOLOGY, TSARA and DyTAES; for Section 4.5, the BE CREATIVE website and HAL collection, the INTERLUDE final report (2024) and the Partnership’s strategic agenda (2023) – consulted 14–15 September 2026.

6. References

- Acebedo MM, Diáñez F, Santos M (2022) Almería’s green pest management revolution: an opportunity that arose from a food safety alert. *Agronomy* 12(3):619. doi:10.3390/agronomy12030619
- Ahrne G, Brunsson N (2005) Organizations and meta-organizations. *Scandinavian Journal of Management* 21(4):429–449. doi:10.1016/j.scaman.2005.09.005
- Álvarez VE, El Mujtar VA, Cardozo AG, et al. (2025) Unveiling agroecological transitions in Northern Patagonia: a comparative typology approach. *Frontiers in Agronomy* 7:1657083. doi:10.3389/fagro.2025.1657083
- Berthet ET, Barnaud C, Girard N, Labatut J, Martin G (2016) How to foster agroecological innovations? A comparison of participatory design methods. *Journal of Environmental Planning and Management* 59(2):280–301. doi:10.1080/09640568.2015.1009627
- Casagrande M, Belmin R, Boulestreau Y, Le Bail M, Navarrete M, Meynard J-M (2023) *Guide méthodologique pour le diagnostic des freins et leviers sociotechniques aux processus d’innovation dans des systèmes agri-alimentaires*. Paris: INRAE. doi:10.17180/w78m-dn95
- Clapp J (2021) The problem with growing corporate concentration and power in the global food system. *Nature Food* 2(6):404–408. doi:10.1038/s43016-021-00297-7
- Darmaun M, Chevallier T, Hossard L, et al. (2023) Multidimensional and multiscale assessment of agroecological transitions. A review. *International Journal of Agricultural Sustainability* 21(1):2193028. doi:10.1080/14735903.2023.2193028
- Deguine J-P, Aubertot J-N, Flor RJ, et al. (2021) Integrated pest management: good intentions, hard realities. A review. *Agronomy for Sustainable Development* 41:38. doi:10.1007/s13593-021-00689-w
- Dewey J (1927) *The Public and Its Problems*. New York: Henry Holt.
- Duru M, Therond O, Fares M (2015) Designing agroecological transitions; a review. *Agronomy for Sustainable Development* 35:1237–1257. doi:10.1007/s13593-015-0318-x
- FAO (2019) *TAPE – Tool for Agroecology Performance Evaluation: process of development and guidelines for application. Test version*. Rome: FAO.
- Gaillard B, Turnheim B, Belmin R, Loconto A (2025) Socio-technical lock-in as alignment process: tracing the joint development of pesticide dependency and vegetable production in Senegal (1900–2024). *Environmental Innovation and Societal Transitions* 56:100997. doi:10.1016/j.eist.2025.100997
- Geels FW (2002) Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. *Research Policy* 31:1257–1274. doi:10.1016/S0048-7333(02)00062-8
- Hill SB, MacRae RJ (1996) Conceptual framework for the transition from conventional to sustainable agriculture. *Journal of Sustainable Agriculture* 7(1):81–87. doi:10.1300/J064v07n01_07
- Jacquet F, Jeuffroy M-H, Jouan J, et al. (2022) Pesticide-free agriculture as a new paradigm for research. *Agronomy for Sustainable Development* 42:8. doi:10.1007/s13593-021-00742-8
- Joly P-B, Gaunand A, Colinet L, Larédo P, Lemarié S, Matt M (2015) ASIRPA: a comprehensive theory-based approach to assessing the societal impacts of a research organization. *Research Evaluation* 24(4):440–453. doi:10.1093/reseval/rvv015
- Klerkx L, Aarts N, Leeuwis C (2010) Adaptive management in agricultural innovation systems: the interactions between innovation networks and their environment. *Agricultural Systems* 103:390–400. doi:10.1016/j.agry.2010.03.012
- Klerkx L, Hall A, Leeuwis C (2009) Strengthening agricultural innovation capacity: are innovation brokers the answer? *International Journal of Agricultural Resources, Governance and Ecology* 8(5/6):409–438. doi:10.1504/IJARGE.2009.032643
- Klerkx L, Leeuwis C (2009) Establishment and embedding of innovation brokers at different innovation system levels: insights from the Dutch agricultural sector. *Technological Forecasting and Social Change* 76:849–860. doi:10.1016/j.techfore.2008.10.001
- Loconto A, Hatanaka M (2018) Participatory guarantee systems: alternative ways of defining, measuring, and assessing ‘sustainability’. *Sociologia Ruralis* 58(2):412–432. doi:10.1111/soru.12187
- Matt M, Gaunand A, Joly P-B, Colinet L (2017) Opening the black box of impact – ideal-type impact pathways in a public agricultural research organization. *Research Policy* 46(1):207–218. doi:10.1016/j.respol.2016.09.016
- McPhee C, Bancercz M, Mambrini-Doudet M, et al. (2021) The defining characteristics of agroecosystem living labs. *Sustainability* 13(4):1718. doi:10.3390/su13041718
- Meadows D (1999) *Leverage Points: Places to Intervene in a System*. Hartland, VT: The Sustainability Institute.
- Meyer JW, Rowan B (1977) Institutionalized organizations: formal structure as myth and ceremony. *American Journal of Sociology* 83(2):340–363. doi:10.1086/226550
- Meynard J-M, Charrier F, Fares M, et al. (2018) Socio-technical lock-in hinders crop diversification in France. *Agronomy for Sustainable Development* 38:54. doi:10.1007/s13593-018-0535-1
- Meynard J-M, Jeuffroy M-H, Le Bail M, Lefèvre A, Magrini M-B, Michon C (2017) Designing coupled innovations for the sustainability transition of agrifood systems. *Agricultural Systems* 157:330–339. doi:10.1016/j.agry.2016.08.002
- Mier y Terán Giménez Cacho M, Giraldo OF, Aldasoro M, et al. (2018) Bringing agroecology to scale: key drivers and emblematic cases. *Agroecology and Sustainable Food Systems* 42(6):637–665. doi:10.1080/21683565.2018.1443313
- Mottet A, Bicksler A, Lucantoni D, et al. (2020) Assessing transitions to sustainable agricultural and food systems: a Tool for Agroecology Performance Evaluation (TAPE). *Frontiers in Sustainable Food Systems* 4:579154. doi:10.3389/fsufs.2020.579154
- Navarrete M, Casagrande M, Angeon V, et al. (2024) Construire des innovations couplées à l’échelle des territoires pour soutenir la réduction de l’usage des produits phytosanitaires en production maraîchère. *Innovations Agronomiques* 96:40–57. doi:10.17180/ciag-2024-vol96-art04
- Neef A, Neubert D (2011) Stakeholder participation in agricultural research projects: a conceptual framework for reflection and decision-making. *Agriculture and Human Values* 28:179–194. doi:10.1007/s10460-010-9272-z
- Rastorgueva N, Bassignana CF, Angarita E, et al. (2025) Agroecological Living Labs as entry points for transition towards sustainable food systems: a novel framework for the evaluation of living labs at different scales. *Agroecology and Sustainable Food Systems* 50(1):130–163. doi:10.1080/21683565.2025.2477215
- Robinson JB (1990) Futures under glass: a recipe for people who hate to predict. *Futures* 22(8):820–842. doi:10.1016/0016-3287(90)90018-D
- Smith A, Raven R (2012) What is protective space? Reconsidering niches in transitions to sustainability. *Research Policy* 41(6):1025–1036. doi:10.1016/j.respol.2011.12.012
- Star SL, Griesemer JR (1989) Institutional ecology, ‘translations’ and boundary objects: amateurs and professionals in Berkeley’s Museum of Vertebrate Zoology, 1907–39. *Social Studies of Science* 19(3):387–420. doi:10.1177/030631289019003001
- Stone TF, Alami S, Bach JL, et al. (2025) Agroecology Living Labs to transform food systems: a critical review at the science-policy-society nexus in Europe. *Agroecology and Sustainable Food Systems* 50(6):1271–1312. doi:10.1080/21683565.2025.2560915
- Vanloqueren G, Baret PV (2009) How agricultural research systems shape a technological regime that develops genetic engineering but locks out agroecological innovations. *Research Policy* 38:971–983. doi:10.1016/j.respol.2009.02.008
- Wezel A, Brives H, Casagrande M, et al. (2016) Agroecology territories: places for sustainable agricultural and food systems and biodiversity conservation. *Agroecology and Sustainable Food Systems* 40(2):132–144. doi:10.1080/21683565.2015.1115799
- Wezel A, Herren BG, Bezner Kerr R, et al. (2020) Agroecological principles and elements and their implications for transitioning to sustainable food systems. A review. *Agronomy for Sustainable Development* 40:40. doi:10.1007/s13593-020-00646-z