



INITIATIVE ON  
Agroecology



# **Agroecological Initiative Project WP1**

Individual report on vision to action for Senegal.

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## Introduction

In Senegal, a multi-stakeholder coalition called "**Dynamique pour une Transition Agroécologique au Sénégal**" (DyTAES) was created in 2019, bringing together NGOs, Farmers' Organisations, research institutions and local elected representatives. DyTAES' mission is to promote the agroecological transition in Senegal through research, advocacy, awareness-raising, experience-sharing and support for territories in transition. Since 2021, DyTAES has been rolling out its activities across the country by setting up "**Dynamiques pour une Transition Agroécologique Locale**" (DyTAEL) in various areas of Senegal. Set up in June 2022, the Fatick DyTAEL has grown rapidly thanks to the support of successive projects and the dynamism of its members.

The aim of this report is to analyse the methods and results obtained in relation to the visioning, development of transition pathways and work plans at the ALL in the department of Fatick in Senegal. The latter was chosen because it corresponds to the scale of action of the DYTAEL on the one hand, but also because it was the cradle of the activities of an EU Desira project, called FAIRSAHEL, which has made it possible since the end of 2021 to consolidate thinking on the AE transition in the territory. The report also covers the activities carried out under the EI Initiative since March of this year. There have been many original activities.

## Description of activities

The process developed for the vision, transition pathways and workplan is summarised in Table 1. As mentioned in the introduction, several other projects have also contributed to the agro-ecological transition in West Africa, particularly the DESIRA FairSahel project (agro-ecological intensification for farm resilience in the Sahel), , one of whose fields was the Fatick département. This project enabled the vision to be structured from the end of 2021. Part of this process resulted in the creation of DYTAEL, which is supported by local stakeholders. Its composition and role will be analysed in this report. The year 2023 saw a further consolidation of the actions developed by this coalition, in particular by making elected representatives and members of civil society more aware of the need for an AE transition in the region and of the importance of DYTAEL.

*Table 1 Summary of activities carried out in the Fatick ALL (FAIR project - 2021 and 2022) and I AE (2023)*

<b>Project and activities</b>	<b>Who took part</b>	<b>Output</b>
<b>FAIR project</b>		
November-December 2021: 2 weeks of scenario building + Identification of transition paths	Local experts, resource persons, FAIR project members (28 people)	Report
21, 22 and 23 February 2022: DYTAES caravan in Fatick Work on consolidating the development path of the AE transition	Local players involved in the transition (65 people)	Report
<i>June 2022: creation of Fatick DYTAEL</i>		<i>DYTAEL</i>
7 to 9 February 2023: Territorialisation of agro-ecology, working on the relationship between scenarios and AE transition	DYTAEL + resource people who took part in the foresight workshops (30 people)	Report
<b>AE Initiative (CJAIR)</b>		
March 2023: update of the DYTAEL action plan	Extended DYTAEL Technical Committee (20 people)	Updated action plan
10/05/23: Fatick Departmental Development Council	Local elected representatives, DYTAEL members (80 people)	Report

Raise awareness among local elected representatives of the AE transition and the role of DYTAEL, and improve its visibility.		
August 2023: Workshop on collective intelligence and governance of DYTAEL	CT DYTAEL (28 people)	Report
September - December 2023: 4 local development councils to raise the profile of DYTAEL (in conjunction with WP 4)	Local elected representatives, civil society representatives, DYTAEL members (174 people)	Report
November 2023: Agroecology Land and Territorialisation Day	Local elected representatives, civil society representatives, DYTAEL members (86 people)	Report
5-6-7 December 23 Evaluation of the Workplan and governance (in conjunction with WP 5)	DYTAEL TC (32 people)	Report

## Methodological considerations

As part of the DESIRA FAIR project, the vision was promoted through a global participatory approach to the territorialisation of agro-ecological futures (AE). To achieve this, it was decided not to limit ourselves to constructing a single vision of what AE could be in the area, an approach often favoured by planning initiatives, but rather to promote work on the alternative futures of the area as a whole, and then to look at the conditions for developing AE.

In this approach, the territory is a complex object, a system encompassing very different players, numerous and interconnected sectors of activity, and natural and social processes. To understand it, it is therefore necessary to use holistic approaches that encourage the participation of stakeholders from different backgrounds. These players, considered to be 'local experts' on the areas in question, share their knowledge, thus making it possible, through addition and combination, to build a collective intelligence that can lead to reflection on the future and therefore on the present. It was only later, therefore, that an analysis of the compatibility of agro-ecology in future scenarios was carried out, followed by the identification of the levers that could be mobilised for the agro-ecological transition.

Action has been taken primarily through the strengthening of DyTAEL, which aims to promote agro-ecology to ensure the agro-environmental and socio-economic resilience of family farms in the Fatick department. The main methodological stages in the development of the vision are summarised below.

### ***Building scenarios for the future of the Fatick department*** (Bourgeois et al., 2022)

The co-elaboration of exploratory scenarios defined as representations of the future, connected to representations of the present (Bourgeois et al, 2017) first consisted in identifying a list of factors of change. A discussion on their influence and mutual dependence then made it possible to determine among these factors a limited number of 'driving forces' in the future evolution of the territory. Hypotheses on the future state of each of these driving forces were produced by the experts in the course of a collective brainstorming session. Different images of the future have been created by combining these different hypotheses in a coherent way. The aim, therefore, is not to determine the future of Fatick, but to explore possible trajectories in order to gain a better understanding of how the region might evolve.

This methodology differs from strategic planning in that it considers not only that the future is undetermined and multifaceted, and that stakeholders can influence the trajectory of future development, but also that there are fields of action in the present that can be mobilised beyond conventional strategic planning using a single vision of the future as the objective to be achieved.

### ***Assessment of future scenarios, spatialisation of scenarios***

To prepare for the territorialisation of agro-ecology in these different futures, a Zonages À Dires d'Acteurs (ZADA) was first carried out in the region, combining statistical data with interviews with local stakeholders. The aim was to spatialise the scenarios, i.e. to show the importance of the territory's internal diversity in terms of possible developments that differ from one area to another.

### ***Construction of the current state of the territory***

The aim was to use the same driving forces as in the scenarios to construct the current state, thereby facilitating the reconnection between the future and the present.

### ***Compatibility of agro-ecology in future scenarios and levers that can be mobilised for the agro-ecological transition*** (Bourgeois et al., 2023)

The agricultural forms compatible with these futures were then identified, along with the place that agroecology could occupy within them. Tipping points were then determined using the triangle of futures method. These are potential changes in stakeholder practices, in a specific thematic field, which may or may not tip the system towards specific scenarios and therefore towards singular AE transition paths. For each scenario, a triangle makes it possible to identify the current dynamics at work in the area, which are pushing towards the realisation of the scenario, and the current obstacles that are limiting or blocking this transformation. The dynamics and obstacles form tensions that are then discussed to highlight tipping points. They constitute a field of action that all local players can seize individually and collectively to shape the future of their area. Together, these different sessions aim to bring together the geographical, technical, economic, organisational and institutional dimensions to devise actions that can accelerate agro-ecological transitions.

In terms of action, the strategy focuses on consolidating the Dytael as a coalition of interest around WT in order to influence public action.

### ***Strengthening the local multi-sector public/SC platform (DYTAEL) around a common mission and values.*** (Piroux, 2023)

Les Dytael is a local network that brings together producers' organisations, NGOs, research institutions, civil society networks, a network of local elected representatives and processing companies, with the aim of promoting the agro-ecological transition in the Fatick department through advocacy, awareness-raising, experience-sharing and support for the transition area. The Dytaels emphasise collective action between the various local players and the need for political dialogue between players who often do not share the same interests.

To strengthen DYTAEL's collective action, a workshop on collective group intelligence was held. Collective intelligence means that a team working together can solve problems more effectively than when its members work in isolation. It is a form of intelligence in which each individual contributes to a collective synergy that makes for greater efficiency and team cohesion. It means creating a state of mind in which the team learns, interacts, shares and grows. The definition of a common mission, embodying values, and the construction of a quality dialogue between members are essential elements in this process.

### ***Workplan consolidation***

Specific support was given to Dytael to back up and complete its work plan in the light of the results obtained during the vision development phase.

### ***Incentive and enrolment strategy***

A strategy to interest and enlist the various stakeholders, and in particular the elected representatives of local authorities (town councils, departmental councils), in the importance of WT and the role of DYTAEL was implemented. To this end, existing formal local governance structures were used (Departmental Development Council under the aegis of the prefect and CLDs, Local Development Councils at district level under the aegis of sub-prefects). In addition, a specific workshop on land governance and the territorialisation of the EA provided an opportunity for debate with local bodies and members of civil society.

The evaluation of this method is positive. In addition to the formal evaluations carried out after each session, which were always very positive, the DYTAEL players explained the results of the foresight to the CDD and CLDs on each occasion, thereby demonstrating their interest in it. The workshop on collective intelligence was particularly well received, as the theme facilitated dialogue between members.

The method used therefore seems original and interesting. It is also being continued with the use of a serious game to fuel the relationships between scenarios and innovations (see report 2 of WP 1). The enrolment strategy has been very beneficial, with a large number of organisations asking to be included in the DYTAEL. Following the workshop on collective intelligence, this involved drawing up a charter of commitment, specifying the values, objectives and precise commitments to which interested organisations had to adhere.

## 3. Results


The results on the vision and its implications for action are analysed.

### The vision

#### Session 1: Scenarios, perception, current state and spatialization

Six scenarios were co-constructed as part of the "FAIR-Sahel" project: Fatick 2.0 (Industrial Hub); Nata ange; Fatick fatigue; Made In Fatick; A private kingdom; Autarky. These are described in the appendix. A discussion was held on the desirability and likelihood of achieving these different scenarios. The synopsis of the present scenario was also produced by the participants (Table 2).

*Table 2 Synopsis of "Fatick today (Bourgeois et al., 2022)*

Synopsis	Illustration (source: Google Images)
<p>In Fatick, in 2023, local authorities with extended powers and limited resources are trying to operate with consultation frameworks at communal and departmental level. Governance is based on transparency, accountability and the participation of all parties, with results that are still partial. Public investment is focused primarily on basic social services (education, health), with some eco-development based on sustainable food systems and responsible tourism, concentrated mainly in the departmental and communal capitals. Private and local players also finance certain public services (education, health).</p> <p>Support services for economic players are partially computerised and run by staff who are more or less available, qualified and committed, depending on the activities/sectors. Decentralised and other support funds exist but are insufficient to ensure comprehensive monitoring, evaluation and training. Some support is targeted at specific beneficiaries and is not accessible to all. Some economic players provide their own mutual support services.</p> <p>The department is supplied by a combination of fossil fuels (oil, gas) and renewable energies (individual and collective solar power, wood for heating), which are not equally accessible to all. Fossil energy production is essentially state-owned, but some is privately operated. The production and distribution of renewable energy relies on a combination of public and private players.</p> <p>A variety of agricultural practices coexist. Some are based on the intensive use of chemical inputs (fertilisers/pesticides) in farming systems that tend to include livestock. In some areas, farming is in transition, combining the rational use of chemical and organic inputs with mechanisation. In general,</p>	

farming equipment is outdated. A few semi-industrial agricultural processing units are in operation, but in some places they are difficult to access, inadequate and defective. There is no non-agricultural industry.	
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Stakeholder-based zoning was carried out in the Fatick department to capture socio-spatial diversity (Piroux and Dièye, 2022). This approach also makes it possible to spatialise the scenarios within this zoning. The aim is to raise awareness of the spatial and social disparities that could influence the future of the different zones and lead to unbalanced territorial development. The scenarios were spatialised by the participants as follows:

Scenarios	Location
Nata'ange	2, 3
Fatick Tired	2, 3, 4 and 5
Autarky	4, 5
Private kingdom	1
Made in Fatick	1, 2, 3, 4

Session 2: Compatibility of agro-ecology in future scenarios and levers that can be mobilised for the agro-ecological transition (Bourgeois et al., 2023)

In order to characterise agroecology in the different futures, the forms it could take were imagined by the participants during the workshops. The results are shown in Appendix 3. Collective reflections have made it possible to rethink the territory's present within the territory, based on the identification of tipping points. These are also described in appendix 4. They are structured around the following themes: governance, public investment, renewable energy, resource management, access to inputs and the promotion of agro-ecological practices.

Levers for initiating a department-wide transition were then identified across the board. Shown in Figure 1, these agroecological levers were structured according to several components: production, product processing and consumption. These proposals fed into the Fatick DYTAEL action plan.

In the field of agro-ecological production, challenges are emerging at several levels, from identifying and networking model producers to supporting local authorities in promoting tried and tested practices. Cross-cutting activities could also be envisaged in this area to guide the Agropole (a regional platform for processing products promoted by the State), such as the promotion of a charter of compliance with mandatory good practice for the companies that are part of it. With regard to the processing of agro-ecological products, advocacy actions were suggested, for example with local authorities to support better links between local producers and processors. Other activities were also proposed, such as the organisation of specific training and the formalisation of contracts. For agro-ecological consumption, activities have been proposed to facilitate links between producers and consumers and to promote local and agro-ecological consumption.



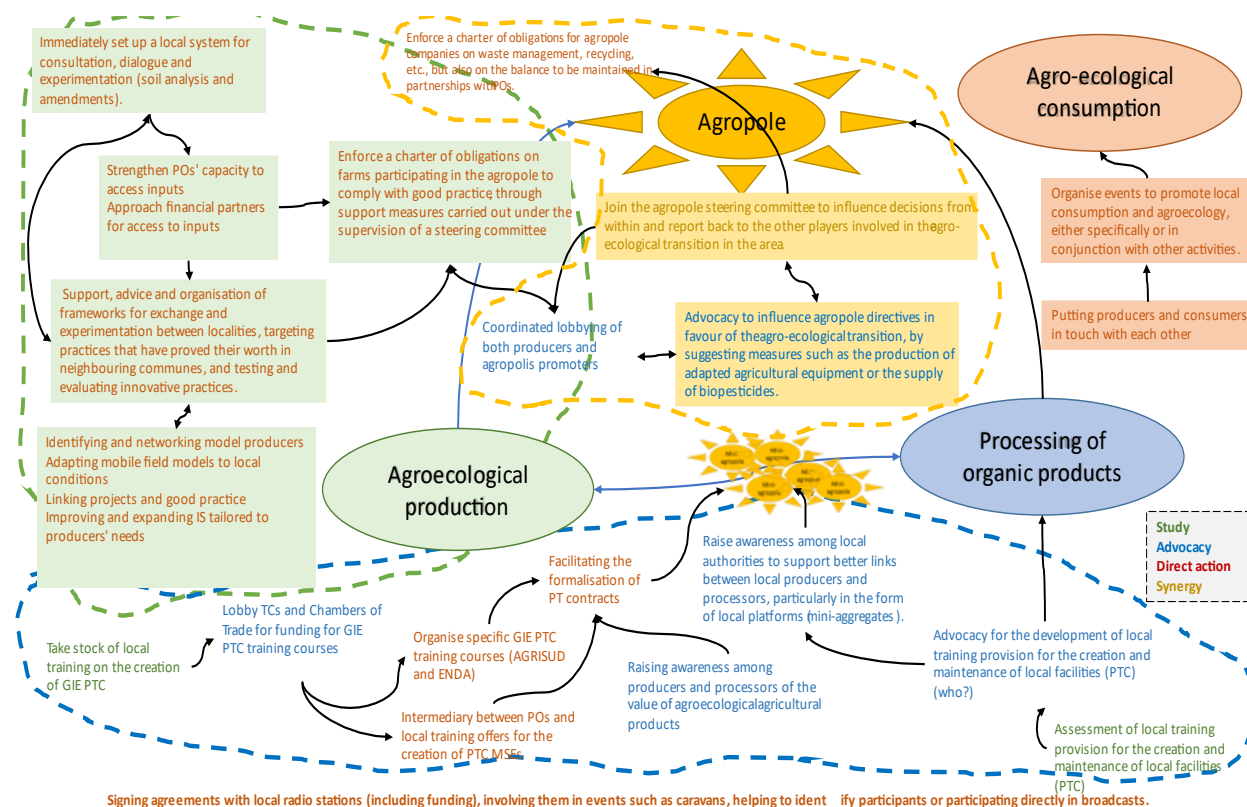


Figure 1 Summary of levers that can be mobilized to develop agroecology in Fatick (Bourgeois et al, 2022)

### The action

As mentioned above, the strategy adopted was to consolidate a dynamic for building a coalition of interest around the TAE in the Department, namely DYTAEL. In political sociology, coalitions of interest are groupings of diverse actors who unite around a specific common objective, in which the actors involved share common interests and set aside their differences on other issues to work together pragmatically to achieve that objective. For example, DYTAEL has not clearly and very specifically defined what an agro-ecological farming system is, and in particular the use or non-use of mineral fertilisers, which is a controversial issue for several organizations. Instead, it has based its strategy on respect for the FAO's main principles of agroecology.

DYTAEL is a very diverse group. Its members come from a variety of backgrounds. A map of the players involved in the various committees (the technical committee, which acts as the steering committee, and the steering committee, which acts as the general assembly) has been drawn up. Table 3 summarises this diversity of stakeholders. Appendix 5 gives a more detailed description of the players on the technical committee and Appendix 6 lists all the players on the two committees, specifying the type of organisation and the preferred scale of intervention.

Table 3 Typology of members of the 2 DYTAEL committees in Fatick.

	NGO	Mixed and women's OP	Research / Training	Local authorities	State technical services	Associate members (radio, tourism, etc.)	Transformers
<b>Steering Committee</b>	9	8	5	17	9	3	2
<b>Technical Committee</b>	5	4	3	5	7	3	0

## Strengthening DYTAEL as a local multi-sector public/SC platform with a shared mission

A specific workshop was held to reinforce DYTAEL's common mission (*building an agro-ecological territory together*). The mission is the organisation's raison d'être and the glue that holds the members of the coalition together. It is a source of value (building together). The principles of action were also consolidated: synergy of actions, pooling of resources, respect for the autonomy of action and free expression of members, horizontal relations between Dytael members, non-substitution of members for Dytael. The workshop also focused on building capacity for dialogue.

All these elements (mission, principles, capacity for dialogue) are an integral part of collective intelligence. Collective group intelligence means that a cooperating team can solve problems more effectively than when its members work in isolation. Collective intelligence therefore creates a state of mind in which the group learns, interacts, shares and enriches itself. The workshop covered the following topics: the basics of communication, intra-personal and interpersonal relations, how to deal with conflict, the learning organisation, the quality of a leader, organisational learning and group dynamics.

In particular, DYTAEL's operating rules and its construction, monitoring and evaluation process were examined in greater depth, thereby strengthening the institutional arrangements. This led to the drafting of a charter of commitment that all Dytael members must sign. It sets out the values, principles of action and commitments that an organisation's membership of Dytael implies.

Various other recommendations, made in relation to the theory of change which was addressed in the same workshop (in relation to WP 5), were formulated: i) Awareness-raising campaign on DYTAES activities within grassroots communities, ii) Sharing of information within organisations after each Dytael activity, iii) Use of more effective communication tools and creation of a logo, iv) Awareness-raising and popularisation of the dynamics at the level of members of Dytael member associations, town halls (CLD), OPs, etc., v) Meeting with the steering committee to discuss and update the objectives, mission, relevance and role of the various committees, vi) Building a database of members and, finally, vii) Setting up income-generating activities in line with Dytael's identity (T-shirt, membership card, etc.).

The formal evaluation carried out after the training showed that Dytael had been strengthened by it, and also highlighted the areas in which it needs to invest to improve its effectiveness.

## Updating the Workplan

The work plan was consolidated on the basis of the results obtained in the vision development phase. The general objective of the plan is to promote agro-ecological practices (technical, organisational and institutional) to ensure the agri-environmental and socio-economic resilience of family farms in the Fatick department.

The main lines of action are as follows:

- To support the Department's decision-makers (local authorities, members of parliament, etc.) and stakeholders in the agro-sylvo-pastoral and fisheries sectors in drawing up and implementing public policies for an agro-ecological transition;
- Supporting the emergence of agro-ecological transition projects at local level by leading local actions (leading multi-stakeholder, cross-sector consultations, co-designing transition plans, supporting experimentation, monitoring and co-assessment);
- Raise awareness among all stakeholders to improve the department's understanding of the need for an agro-ecological transition;
- Sharing experience and establishing and developing strategic alliances within national, sub-regional and international networks;

- Help inform policy decisions and participate in dialogue frameworks at departmental, national, sub-regional and international levels with a view to making regulatory frameworks more favourable to WT.

### Extending the coalition strategy

The coalition strategy was extended under the Initiative by raising awareness of WT and the role played by Dytael among elected representatives and the population. To do this, the existing formal local structures were convened, in particular a Departmental Development Council (CDD) under the aegis of the Prefect of Fatick and 4 Local Development Councils set up at arrondissement level (grouping together several communes) under the aegis of the Sub-Prefect. The discussions were very fruitful and led to a clear increase in the legitimacy of DYTAEL. Finally, a specific workshop on land governance and the territorialisation of the EA, attended by local elected representatives, representatives of civil society and members of DYTAEL, also helped to stimulate debate with local authorities and members of civil society.

### Lists of documents produced by the country team related to Vision-to-action and brief description of their content (any length.)



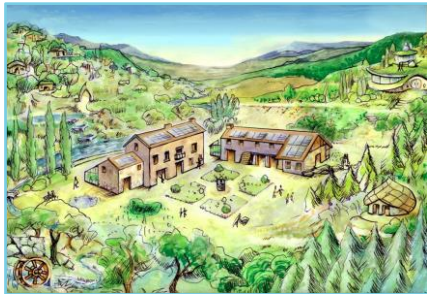
Title of report / document	Type of document *	Authors	Date	Status	Brief description of content
The future of the Fatick department and the role of agro-ecology	Consolidated report of FAIR Project	Robin BOURGEOIS, Astou DIAO CAMARA, Jean-Michel SOURISSEAU, Marc PIRAUX, Dié-Yacine KA, Chloé LESENFANS	February 2022	Final	CO-DEVELOPMENT OF SCENARIOS FOR THE DEPARTMENT OF FATICK IN 2035 (SENEGAL)
Report on the Fatick leg of the DYTAES caravan	Consolidated report of FAIR Project	Project team	February 2022	Final	Work on consolidating the development path of the AE transition
Participation in the Dytael steering committee meeting	Event report	Dytael	May 2023	Final	Summary of discussions on updating the action plan.
Territorialisation of agro-ecological futures in Senegal. Niayes Region and Fatick Department	Consolidated report of FAIR Project	Robin BOURGEOIS, Chloé LESENFANS, Jean-Michel SOURISSEAU, Astou DIAO CAMARA, Marc PIRAUX, Dié-Yacine KA, Mame Cheikh Anta SALL, Finda BAYO DIAKHATE, Ninon SIRDEY	November 2023	Final	Territorialisation of agro-ecology in the scenarios + discussion on the robustness of innovations according to the scenarios
Fatick Departmental Development Council	Event report	Marc Piraux, Mame Blrame Sene	April 2023	Final	Summary of participants' reactions to the AE transition and the role of DYTAEL
Workshop on collective intelligence and governance of DYTAEL	Event report	Marc Piraux	August 2023	Final	Summary of the programme and main conclusions of the workshop on collective intelligence
Reports on local development councils	Event report	Mame Birame Sene, Marc Piraux Banna Mbaye, Dié Yacine Ka, Finda Bayo	December 2023	Draft	Summary (linked to WP 4) of participants' reactions to the AE transition and the role of DYTAEL

Workshop on land governance and the territorialisation of the agro-ecology transition	Consolidated report	Sourriseau JM, Ka DY, Piraux M et al.	December 2023	Final	Summary of workshop discussions on the topic concerned
Mapping of Dytael players and players involved in the EA and Evaluation of the Workplan (in connection with WP 5)	Consolidated report	Marc Piraux, Mousa Ndour and Mame Birame Sene	December 2023	Final	Mapping of Dytael players and players involved in the EA - Summary of workshop discussions on the topic concerned

## Appendices

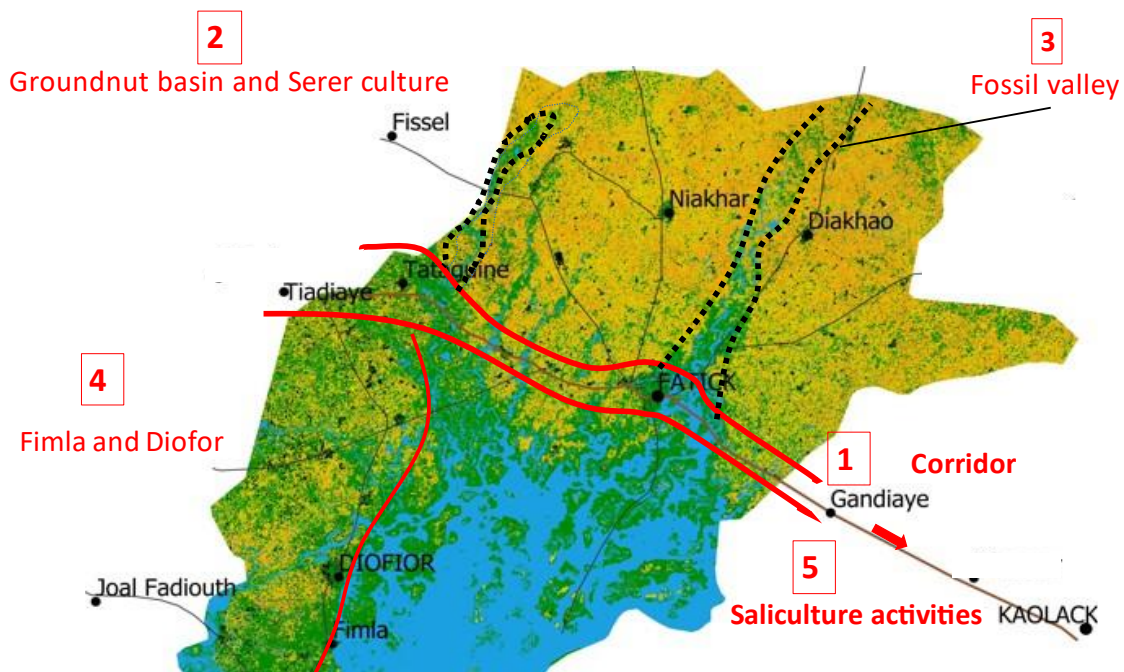
### Appendix 1. Description of scenarios for the Fatick department (Bourgeois et al., 2022)

Scenario	Short summary	Illustration (source: Google Images)
<b>Fatick 2.0 (Industrial Hub)</b>	<p>In Fatick in 2035, the local authorities, with their broadened and well-equipped powers, will operate with consultation frameworks at the communal and departmental levels. Governance is thus based on transparency, accountability and the participation of all parties. Public investment is focused primarily on basic social services (education, health), with an emphasis on children and digital technology. At least 50% of the costs are borne by local players. In a context where oil- and gas-based energy is accessible, abundant and free for everyone, support services for economic players are computerised and accessible to all, supported by a network of available, qualified and committed technicians. They are supported by a network of available, qualified and committed technicians. They have a support fund for the development of activities, enabling monitoring, evaluation and training. All of this enables the region to be industrialised, based on a factory producing standardised products for the national and international markets, as well as the operation of highly efficient agricultural processing units covering the department and accessible to all. These units transform the products of agriculture in transition, combining the rational use of chemical and organic inputs with high-tech mechanisation to produce products "made in Fatick".</p>	
<b>Nataange</b>	<p>In 2035, the department will be powered solely by a combination of renewable energies (wind, solar, water, biomass, etc.) at lower cost, accessible to all, with a dynamic industry, semi-artisanal non-farm production units in each commune, specialising in recycling or processing local products for the local and national market. In addition, a hyper-modernised platform of multifunctional machinery transforms raw agricultural produce into a variety of ready-to-eat end products. Healthy, sustainable agro-ecological farming integrates livestock farming and forestry for organic soil fertilisation. It uses appropriate equipment to reduce drudgery and increase productivity. Governance is based on transparency, accountability and the participation of all parties. Local authorities with extensive and well-equipped powers operate with consultation frameworks at the communal and departmental levels. As a result, at least 50% of public investment is borne by local players, with priority given to basic social services (education, health), with an emphasis on children and digital technology. To this end, support services for economic players are computerised and accessible to all, supported by a network of available, qualified and committed technicians. They are supported by a network of available, qualified and committed technicians. They have a support fund for the development of activities, enabling monitoring, evaluation and training.</p>	
<b>Fatick tired</b>	<p>In 2035, local authorities are fragmented and have few powers. They are influenced by lobbies and exclude people from decision-making by practising all kinds of discrimination. Public investment is therefore directed towards non-productive cultural and sporting activities. Only 5% of public investment is directed towards basic social services, concentrated in the departmental capital. The private sector finances the other sectors, including the supply of energy from a variety of sources (nuclear and fossil), whose inadequacies and shortcomings result in unequal access (socially and spatially). As a result, the use of wood is widespread. Agriculture is based on the exclusive use of chemical inputs (fertilisers/pesticides) in farming systems that are disconnected from livestock farming, with heavy mechanisation and recourse to GMOs. Support services for economic players have an inadequate and poorly managed budget, with a plethora of technicians who are ill-suited to the task and uncommitted, unable to provide either monitoring or training, and supporting sectors that are not priorities. Industries, including those linked to agricultural processing, have disappeared.</p>	

<p><b>Made In Fatick</b></p>	<p>In 2035, governance in Fatick will be based on transparency, accountability and the participation of all parties. Local authorities with extended and well-equipped powers operate with consultation frameworks at the communal and departmental levels. Public investment supports eco-development based on sustainable food systems and interconnected responsible tourism. As a result, the department is powered solely by a combination of renewable energies (wind, solar, water, biomass, etc.) at low cost and accessible to all.</p> <p>The result is a dynamic industry with semi-industrial production units in every commune, specialising in recycling or processing local products for the local and national market.</p> <p>Highly efficient processing units covering the department and accessible to all transform local products (agricultural, fisheries, livestock) into "made in Fatick" products. Healthy, sustainable agro-ecological farming integrates livestock and forestry to fertilise the soil organically. It uses appropriate equipment to reduce drudgery and increase productivity. Support for economic players is then reserved exclusively for the most vulnerable and economically disadvantaged, engaged in green activities. It is financed by taxes on other economic players and solidarity funds.</p>	
<p><b>A private kingdom</b></p>	<p>In 2035, in the Sine, the king imposes his own form of government. Public investment is channelled into non-productive cultural and sporting activities; only 5% is spent on basic social services. Everything is concentrated in the main town. The private sector finances the other sectors and is responsible for supplying energy from a variety of sources (nuclear and fossil), whose shortcomings and deficiencies result in unequal access (socially and spatially). Wood is widely used. In the total absence of support for economic players, the industrial fabric is in disarray and no industrial agricultural transformation is taking place. Agriculture is dual. A minority relies on the exclusive use of chemical inputs (fertilisers/pesticides) in farming systems that are disconnected from livestock farming, with heavy mechanisation and recourse to GMOs. But the majority of farming practices do not use any inputs, fallowing is widespread and the equipment used does not produce high yields.</p>	
<p><b>Autarky</b></p>	<p>In Fatick in 2035, the local authorities have disappeared. The self-responsible population manages itself according to its own procedures, in which public investments are determined by divinatory processes (saltigué and pangol) during "Xoy" (traditional ritual ceremonies). There are no sources of energy other than human and animal. Under these conditions, all the industries have disappeared and the economic players are providing their own mutual support services autonomously, democratically and free of charge, to develop healthy, sustainable agro-ecological agriculture that integrates livestock farming and forestry to fertilise the soil organically. It uses appropriate equipment to reduce the drudgery of work.</p>	

## Appendix 2. Zoning of the department of Fatick.

Figure 2 shows the zoning of the department. A central zone (**zone 1**), more urbanised than the rest of the department, is criss-crossed by communication routes of regional and national importance, dominated by the RN1, which links the 2 major urban centres of Mbour and Kaolack. This corridor is preparing to host major transport infrastructure (train, motorway) and energy infrastructure (oil, gas). It is also home to a large number of agricultural marketing centres. The northern part (**zone 2**) of the department is typical of the artificial landscapes of the groundnut basin: high density, low rainfall, significant degradation of resources (water, soil, tree cover, etc.), traditional cultivation of millet, groundnuts and cowpeas and livestock farming, with diversification into a number of cash crops, notably watermelon and fruit. The ancient fossil valleys allow diversification into market gardening (**zone 3**). The southern zone (**zone 4**), on the other hand, is linked to the Sine Saloum delta, is less populated, more touristic, with more trees and mangrove areas. The more fertile soils and slightly higher rainfall allow for the development of fruit crops. The area, rich in project dynamics, is experiencing strong land speculation and is subject to significant immigration. More acute salinity problems restrict farming activities in zone 5, but salt is also a major source of income (**zone 5**).



Appendix 3: Agroecology status for each alternative future in the Fatick department (Bourgeois et al., 2023)

Scenario	The state of agro-ecology	Illustration (source: Google Images)
<p><b>Fatick 2.0 (Industrial Hub)</b></p>	<p>In 2035, agro-ecology is no longer a dream for the people of Fatick. The departmental development plan introduces appropriate spatial planning for housing, industry, agriculture and leisure. It allocates space for botanical gardens to serve as "green lungs" in all the communes of the department. Environmental education programmes incorporating all aspects of AE are being incorporated into teaching curricula from pre-school to university. Agro-ecological gardens are systematically installed in all schools. A research centre funded entirely by the department carries out local studies focusing on the nutritional security of populations.</p> <p>All run-off water is drained towards the revitalised fossil valleys, where exclusively agroecological market gardening is developed, using water-saving irrigation methods that are mainly solar-powered. All the farmers are part of an umbrella organisation called "Agro-pasteurs 2.0", which has cutting-edge skills in smart technologies and a computerised data platform linked to all the weather, research and national and international market information systems. As a result, digital applications for managing organic matter flows, accessing climate information, advising on best practices and linking up with e-commerce platforms are available to all farmers/pastoralists. Family farming is now mechanised and high-tech, with a focus on precision (weather stations, drones, sensors to analyse the soil and plants, etc.), and soil-less agriculture has developed through the installation of keys and micro table gardens to produce in areas where there is still salt.</p> <p>Improved local species are managed according to an ethical charter for animal production "Made in Fatick", with specialised production objectives (milk, meat, fish products) and highly advanced processing of livestock products and by-products, thanks to craftsmanship, particularly for hides and skins. All the animals are insured (all risks) and each has a personalised health monitoring sheet. "Agropasteurs 2.0" is investing in a modern slaughterhouse that complies with environmental, health and safety standards and uses all waste in an integrated manner.</p>	
<p><b>Nataange</b></p>	<p>In 2035, adapted, competitive and controlled agroecology (Mbey mu sell bu mengoo ak jamano)</p> <p>Responsibility for agriculture/livestock farming/environment/fishing/tourism has been transferred to the various local authorities, which are implementing voluntary AE policies aimed at food self-sufficiency and rational economic development. They use all the latest technologies. There are very restrictive frameworks for enforcing environmental protection.</p> <p>Livestock and agricultural systems respect the principles of agro-ecology and use renewable NRJs. The farms, which are mainly family-run, benefit from agricultural infrastructure and equipment that meet their needs. These economic production methods, based on local knowledge and access to new technologies, maintain good forest cover, quality water resources and soil fertility, while halting the advance of the salt tongue.</p> <p>Transhumance is well organised and complements sedentary fattening farms, with concerted management of organic manure. The integrated development of fish farming is helping to manage fish stocks.</p> <p>Agricultural equipment is designed to be eco-responsible. Support services, including NGOs, are trained in AE and support all eco players in adopting environmentally-friendly practices. Agroecology" certification guarantees the quality of ASPH products.</p> <p>Waste recycling units provide inputs for agriculture and livestock farming (but also for the building and craft industries, etc.).</p>	



<p><b>Fatick tired</b></p>	<p>In 2035, agroecology will be virtually non-existent.</p> <p>The lobbies are exploiting virtually all the land and its inhabitants for the production of biofuels through the intensive and chemical monoculture of <i>Jatropha</i>. All that remains is a small rural population struggling to produce because of a lack of access to land and agricultural equipment... This rural population, left to its own devices, is trying a few agro-ecological practices such as improved fallowing or the introduction of fertilising plants to try to optimise the few resources it has left.</p> <p>Destitute and deprived of any access to healthcare services, this population also strives to ensure the survival of traditional pharmacopoeia through the production of medicinal plants.</p>	
<p><b>Made In Fatick</b></p>	<p>In 2035, agroecology will be supported by ecodesvelopment based on sustainable territorial food systems, interconnected responsible tourism and easier access to land. Agricultural production systems favour agroecology within a dense fabric of diversified family farms that favour associativism and cooperativism. The presence of a large number of animals, backed up by grazing practices, maintains sufficient soil fertility. Farming systems encourage crop rotation and diversity (such as fodder crops) and the use of crop residues and compost, made in particular from organic waste used in the area. Women and young people are valued. The quantity and quality of agricultural infrastructure and equipment are satisfactory, reducing the drudgery of work and increasing productivity.</p> <p>Semi-industrial production units in each commune, specialising in recycling or processing local products for the local, national and international markets. They cover the department and are accessible to all, producing "made in Fatick" products, largely supported by an inclusive system of governance. The professional organisations are dynamic and make it possible to develop local knowledge in these activities and to encourage exchanges between farmers, in a system of local advice. They are also active in ensuring that their members have access to credit in order to strengthen existing activities or promote emerging ones.</p> <p>Efforts are being made to regenerate the tree stock (RNA, planting, etc.). Organic inputs are favoured through an efficient local management system (balance with waste recovery and energy production, etc.) and a genuine policy of promoting local seeds has been put in place.</p> <p>Specific techniques have made it possible to halt salinisation (technical works such as anti-salt dykes and dikes, etc.) and recover salinated land. Local consumption and traditional pharmacopoeia are also encouraged by the many markets.</p>	
<p><b>A private kingdom</b></p>	<p>In 2035, agro-ecology relies on limited levers. Access to land and resources is controlled by the kingdom. Two production systems coexist: i) market-oriented agribusiness and large farms, and ii) self-subsistence farming, with very limited chemical inputs. The soil is very degraded.</p> <p>In this context, a number of agroecological practices are being developed in a scattered manner: rotation systems (groundnut-millet, cowpea-millet) and association systems (millet-cowpea), agroforestry, the use of organic matter from livestock, natural fallow and improved fallow (RNA), with crop parking. Traditional knowledge is used to develop ANR initiatives and other agro-ecological practices.</p> <p>In addition to agriculture, other activities have been developed, notably fishing and salt production.</p>	
<p><b>Autarky</b></p>	<p>Indigenous/confined agroecology.</p> <p>Confined agro-ecology is an AE linked to the choice to withdraw, to self-train, to stay within oneself and to make little use of natural resources. It is based on the symbiosis between nature and man, and the maximum mobilisation of local knowledge, both tangible and intangible; even the supernatural guides APSH practices.</p> <p>All social strata are represented in decision-making bodies. Solidarity in trade and NR management</p> <p>This is also possible because land pressure has disappeared: there is no longer any demand for land, as access to it is free and communal. Farming is organised on a community basis, using extensive agro-ecological systems, with exclusively organic inputs and self-produced through the integration of livestock. Transhumance has disappeared in favour of sedentary agro-pastoralism.</p>	

	<p>Animals are used for fertiliser production and traction. Agricultural produce is healthy, natural and diversified, exclusively for local consumption or trade. Traditional pharmacopoeia is used, along with cutting-edge techniques, using products derived in part from AE agriculture. Waste management is also optimised, as waste is essentially organic and the economy is essentially linked to nature and not commercial.</p>	
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Appendix 4. Table of tipping points identified for the département (Bourgeois et al., 2023)

<b>Governance</b>	
1. Political will to make participatory frameworks work	Extending participatory budgets to all municipalities and the département
2. ability to meet the requirement democratic system of governance	Increasing the voice of local authorities in the regional consultation bodies already in place, in particular village committees
3. operation of conferences in the monitoring of commitments made at meetings and their implementation on the land	Obtaining substantial and stable funding for territorial conferences
	Existence of local dynamics to stimulate a departmental dynamic
<b>Public investment</b>	
1. local and regional authorities' ability to coordinate at local and regional levels departmental public investment in a coherent and harmonised way.	Definition of investment guidance frameworks public funds aligned with development plans (e.g. a protocol or a scheme for the promotion of investment management)
<b>Renewable energy</b>	
1. willingness of local authorities adopt consumption patterns energy from renewable sources renewable	Set an example (like the town of Ndiob) by using renewable energy to power public infrastructures
2. availability and accessibility of kits solar energy as part of a strategy to implementation of incentive schemes designed to encourage people to convert to renewable energy	Training of skilled technicians to implement support systems designed to raise awareness of alternative modes of consumption, and to help people install and use these sustainable energies.
	Local production of solar panel factories
3. ability to target producers meeting the criteria required for biogas production	Technical support for the installation, paying particular attention to compliance with health standards for the disposal of effluent and waste.
<b>Resource management</b>	
1. the capacity of local authorities to ensure the sustainable management of their territory's natural resources.	Integrate SLM (in particular the use of ANR) into CDPs
	Development of village woods (competence transferred) and installation of plant nurseries available to farmers in the communes
	Promoting improved stoves to reduce wood consumption
	Supporting the research sector in promoting innovations in NRM and SLM
2. the ability of local authorities to adapt the forestry code currently in force at national level.	Draw up agreements at participatory workshops involving local leaders and representatives of the Forestry Department

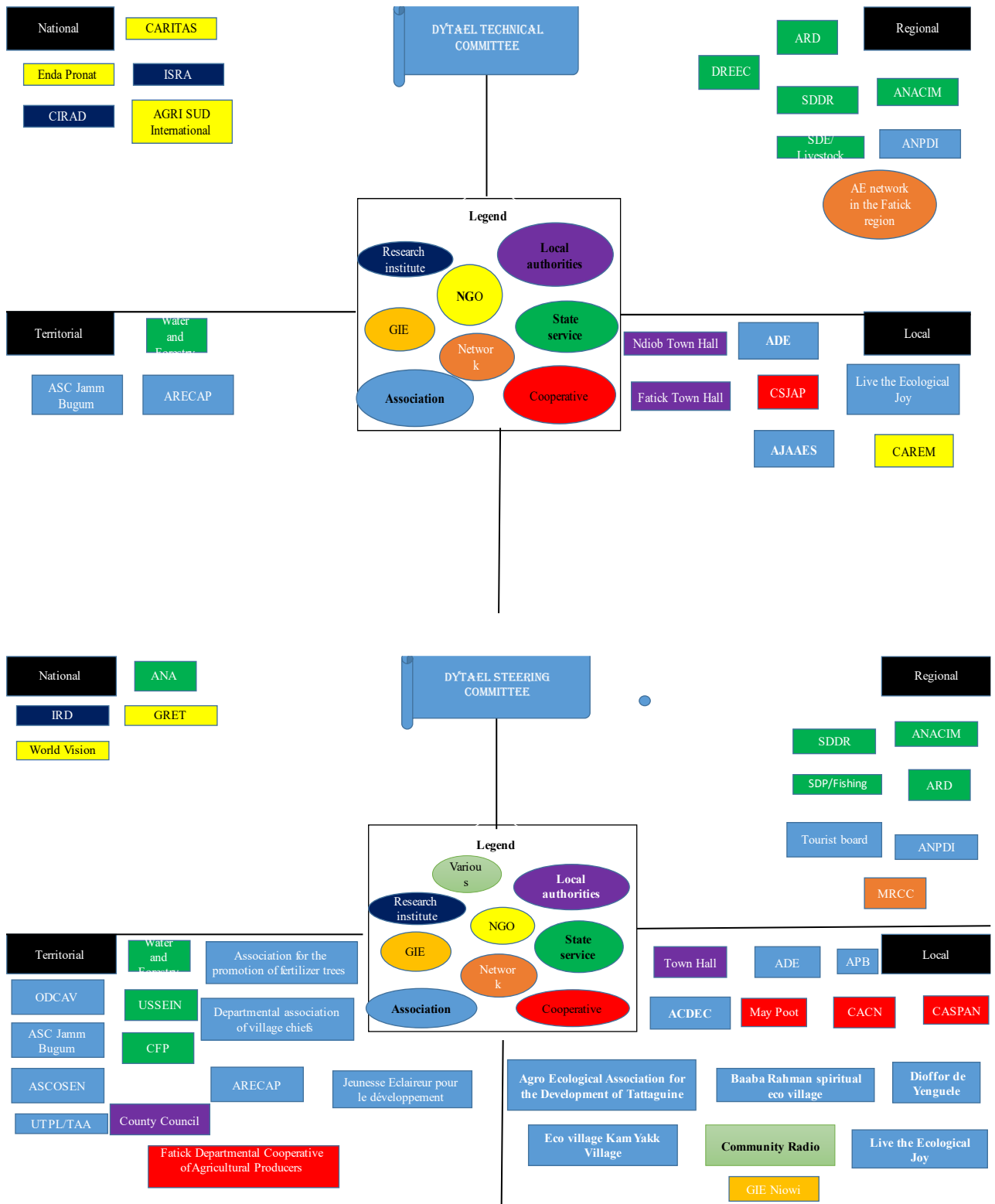
	Harmonise local agreements at inter-municipal level to pool management and control resources
	Train "water and forest" agents and RNA coordinators to enforce the code and raise awareness of good practices.
<b><i>Access to inputs</i></b>	
1. the ability of local elected representatives to support local research into soil analysis in order to determine what amendments are deemed appropriate and necessary.	Strengthen links between research players and producers to encourage the local development of appropriate solutions (e.g. seed production).
2. capacity of local authorities to support POs and cooperatives in accessing inputs	Strengthen POs and cooperatives through training on access to inputs (negotiation) and the production/circulation of farmers' seeds
<b><i>Agroecological practices</i></b>	
1. the capacity of local authorities to deploy measures to raise public awareness of agro-ecological practices	Relying on "model" producers to set up awareness-raising campaigns by demonstrating techniques (e.g. biointrans, composting) in "test" fields or directly on the farm.
2. the ability of local councillors to exchange information between municipalities to encourage the transfer of good practice	Hold exchange and experimentation sessions between localities, targeting practices that have proved their worth in neighbouring municipalities, and test and evaluate innovative practices.
3. potential deployment of a communication plan based on good practice to raise awareness among all producers, including the most remote ones	Use the community radio network to encourage programmes providing information on agro-ecological practices.
	Rely on the departmental branches of the national press and social networks (Whatsapp)

## Appendix 5. Member of the Fatick DYTAEL technical committee

	<b>Territorial collectivity</b>		
Municipality of Fatick	Municipality of Fatick	Local authorities	Environment and management of natural resources, health, population and social action, youth, sports and leisure, culture, education, planning, town and country planning and housing.
Municipality of Ndiob	Municipality of Ndiob	Local authorities	Environment and management of natural resources, health, population and social action, youth, sports and leisure, culture, education, planning, town and country planning and housing.
	<b>Associatons of producers</b>		
ADE	Environmental Ambassadors	Association	Reforestation, Rice growing and Conference
VLJE	Live La Joie Ecologique	Association	Agro-ecology: Environment, Education, Tourism, Climate change, Soil restoration, Deforestation
AJAAES	Youth Agroecological Action Sahel	GIE	Training, Integration, Agro-ecological practices, Horticultural sectors, Processing, Poultry, Building.
J B	Association Jamm Bugum	Association	Education, Environment, Sport, Livestock, Processing of local products, Vulnerable children, Social action and Solidarity.
ARECAP	Regional Association of Goat breeders	Association	Animal health, training, financial support, support for fair participation, Support for processing units
	<b>States agencies</b>		
ANCAR	Agence National de Conseil Agricole et Rural	Decentralised State Technical Service	Development of good agricultural and rural practices (GAP), information and training for producers
ANACIM	National Civil Aviation and Meteorology Agency	Decentralised State Technical Service	Weather and Climate Management
ARD	Regional Development Agency	Decentralised State Technical Service	Planning and Training, Climate Change and Local Economic Development
SDDR	Departmental Rural Development Services	Decentralised State Technical Service	Agriculture - Livestock - Management & Governance
	<b>Others</b>		
CJPAP	Cooperative of Young Agro-Pastoral Producers	COOPERATIVE	Agriculture, livestock farming, trade and processing of local products
ISRA	Senegalese Institute for Agricultural Research	Research Institute	Sustainable production systems, support for family farms and agro-industries, monitoring, foresight, capacity development and partnerships.
Def leng	Def leng	Community radio	culture and education
CIRAD	Centre for International Cooperation in Agricultural Research for Development	Research Institute	Biodiversity, One health, Agro-ecological transitions, Food systems, Climate change

	<b>ONGS</b>		
Enda Pronat	Environnement Developpement Action pour la Protection Naturelle des Terroirs	National NGO	Environment, land tenure, gender, environmental education, resource management and capacity building
CARITAS	CARITAS/Senegal	International NGO	Food safety, waste management, hygiene and sanitation, institutional development
AGRISUD	AGRISUD international	International NGO	Agro-ecology, entrepreneurship, territories and the environment.
ANPDI	National Association Of Integrated Development Programmes	Association	Equitable and inclusive development, sustainable family farming, rural entrepreneurship, strengthening local governance and EA.
CAREM	Coordination of Actions for the Restoration of Mangrove Ecosystems	Local NGO	Reforestation dominating the mangrove, Environment, Agriculture, Literacy, Food security.

## Appendix 6: Typology of organizations on the two DYTAEL committees



## LISTES DES ACRONYMES DU COMITE DE PILOTAGE

**CFP** : Centre de Formation Professionnelle

**CJPAP** : Coopérative des jeunes producteurs agro pastoraux

**CASPAN** : Coopérative Agro-sylvo Pastorale de Niakhar

**ANA** : Agence Nationale de l'aquaculture

**GRET** : Groupe de Recherche et d'Echange Technologique

**UTPL** : Unité de Transformation de Produits Locaux

**TAA** : Transformatrices Agro-Alimentaire

**ADE** : Ambassadeur de l'environnement

**SDDR** : Stratégie de Développement du Secteur Rural

**ODCAV** : Organisme Départementale de Coordination des Activités de Vacances

**ANPDI** : Association Nationale Des Programmes De Développement Intégré

**ANACIM** : Agence Nationale de l'Aviation Civile et de la Météorologie

**CRCR** : Conseil Régional des Coopérations des Ruraux

**May Poot** : Coopérative Agro écologique may poot

**ARD** : Agence Régional pour le Développement

**APB** : Association des Producteurs de Bacoboof

**SDP/ Pêche** : Service Départementale des Pêches

**IRD** : Institut de Recherche pour le Développement

**CACN** : Coopérative des Agriculteurs de la Commune de Ndiob

**ACDEC** : Action Climat pour le Développement de l'Education Citoyenne

**ASCOTEN** : Association des consommateurs du Sénégal

**ARECAP** : Association Régionale des Eleveurs Caprins

**JED** : Jeunesse Eclairer pour le Développement

**APAF** : Association pour la Promotion des Arbres Fertilitaires