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► **To cite this version:**

Marie-Christine Cormier-Salem. Desirable futures: Perspectives of Joola fisherwomen in Casamance, Senegal. *Futures*, 2024, 162, pp.103435. 10.1016/j.futures.2024.103435 . halshs-04659721

HAL Id: halshs-04659721

<https://shs.hal.science/halshs-04659721>

Submitted on 23 Jul 2024

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Futures

journal homepage: www.elsevier.com/locate/futures

Desirable futures: Perspectives of Joola fisherwomen in Casamance, Senegal

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ARTICLE INFO

Keywords:

Fisherwomen
Heritage
Mangrove
Environmental violence
Resistance
Globalization

ABSTRACT

Since the Rio Convention in 1992, there has been a strong political and ethical imperative to link biodiversity conservation and equity and to promote gender-sensitive policies. However, there has also been a huge gap between these global injunctions and local actions. Mangrove conservation policy is a good illustration of "nature grabbing," which leads to environmental violence. This paper explores the perspectives of the fisherwomen who inhabit the mangroves. It analyzes their struggle to maintain control over mangrove resources and spaces in the face of private or public forces seeking to commodify them in the name of conservation. Based on a corpus of ethnographic data collected over more than 40 years, the paper focuses on the narratives of the oyster fisherwomen in Basse-Casamance, Senegal. It highlights their individual, family, and collective strategies in three time periods: the 1980s, the 2000s and the 020s, demonstrating their resistance over time, defensively or offensively, to the consequences of globalization. The paper shows the ability of the women to preserve their heritage and empower themselves, notably thanks to their self-organization and mutual support. The paper concludes with the scientific uncertainties regarding mangrove dynamics and the conflictual visions on the future of the mangrove socio-ecosystem at diverse scales.

1. Introduction: Context and stakes

Conservation, sustainable use, and equity are the pillars of the three Rio Conventions on climate change, biodiversity, and desertification (1992). From the Aichi Targets (2010) to the Sustainable Development Goals (SDGs) (2015), living in harmony with nature has been a political and ethical imperative. These declarations give special attention to the most vulnerable people, especially women. All of these global strategies make constant reference to Indigenous People and Local Communities (IPLCs) and insist that their knowledge and traditions be recognized and their livelihoods respected. In the framework of the International Platform of Biodiversity and Ecosystem Services (IPBES), Task 4 emphasizes building capacity, strengthening foundations and supporting policy and recommends tools such as "the Nature Future Framework".² These principles of inclusivity, gender-sensitive or gender-responsive policies and equity to reconcile nature conservation and human well-being, are well intended. However, up to now, probably because of a lack of a shared conceptualization and relevant tools, there has been little concrete implementation on the ground.

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² The IPBES Nature Future Framework is a flexible tool to support the development of "scenarios and models of desirable futures for people, nature and mother earth", intended to take into account needs and aspirations of Indigenous People and Local Communities (IPLCs), but also "Mother-Earth-centric scenarios and models" (decision regarding the workplans for objective 4b, IPBES, plenary Session 10, Bonn, August 2023).

<https://doi.org/10.1016/j.futures.2024.103435>

Received 20 November 2023; Received in revised form 10 July 2024; Accepted 11 July 2024

Available online 15 July 2024

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To illustrate the political and ethical challenges at the interface of biodiversity conservation and equity, this paper focuses on the desirable future of "the mangroves," whose definition is debated. Long classified by scientists as a tropical forest in the sea (Rollet, 1981), this is now being recognized as a complex social-ecological system (Dahdouh-Guebas et al., 2021). This includes, in addition to the mangrove forest, surrounding water and mudflats not colonized by mangrove trees, and elements of the mangrove landscape built and managed by local people (rice fields, aquaculture, villages). However, there are still scientific uncertainties and controversial visions about their state and their future. For example, REDD+, the dominant neoliberal perspective on mangroves, prioritizes them as a carbon sequestration sink, which leads to inappropriate policies of reforestation and environmental injustice, notably toward the most vulnerable population, women (Cormier-Salem, 2017). This paper takes a political-ecology approach to explore the notion of a "desirable future" of the mangrove in coastal West Africa from the perspectives of women, whose livelihoods depend on collecting its resources (shellfish, prawn seeds, salt, lime, etc.). The analysis builds upon women's environmental narratives, their resource management practices, and their strategies for living in harmony with the mangrove. It argues that for the fisherwomen, first, the mangrove is a shared common, not a private resource or a public sanctuary; second, as they have a strong attachment to their mangroves, a key component of their territory and heritage, they use the mangroves sustainably; third, having long been invisible and marginalized, the fisherwomen are able to resist over time, defensively or offensively, the consequences of globalization (climate change, green imperialism, nature commodification, dissymmetric market, etc.) and claim recognition for who they are and what they contribute to their families and their community.

The paper is structured as follows. Section 2 introduces the conceptual framework; Section 3, the methods; and in Section 4, case studies highlight the singularity of the Joola women who fish in the mangroves, demonstrating their individual, family and collective strategies in three time periods: the 1980s, the 2000s and the 2020s, and discussing, for each period, the women's ability to resist. Section 5 concludes with a discussion of the women's effective, but fragile, resistance, their heritage claims and, finally, the need to address this issue by developing more holistic, participatory, and inclusive approaches to a desirable future.

2. State of the art regarding the future of mangroves and theoretical scope of this paper

The main argument of the paper is that the mangrove socio-ecosystem (MSES) is complex and there are still scientific uncertainties and conflicting visions about its state and its future. These diverse visions of the mangrove lead to conflicts and injustices, notably towards women. Also, it seems illusory to design the future of mangroves, given that their definition is the subject of debate (forest, coastal wetlands, SES), their dynamism is uncertain depending on the spatial and temporal context (regression or progression), and their legal status is as fluid as the ebb and flow of the tides (public domain, private property, communal territory) (Cormier-Salem, 2006, 2017). While international experts and politicians view mangroves as mere forests and emphasize their importance as sinks for carbon sequestration, thus encouraging vast reforestation campaigns to mitigate climate change, most local populations consider mangroves as their communal territory with multiple values and uses collectively controlled through customary rules. These contrasting representations and tenure regimes lead to conflicts and inequalities. In fact, there is a significant gap between the injunctions issued on a global scale to achieve sustainable development objectives, most often conceived by the "North," and the actions implemented on the ground. This discrepancy is due to conflicting definitions and visions of mangroves, but also a difficulty in articulating scales (global versus local) and temporalities (short-term versus long-term) and designing intervention modalities (top-down versus bottom-up) and solutions adapted to each context (global neoliberal mechanisms versus local governance of the commons) (Cormier-Salem, 2018). Mangrove conservation policies and commodification through financial and institutional mechanisms (green finance, carbon markets, biodiversity offsetting, etc.) lead to environmental injustices such as mangrove grabbing and expropriation by local users, resulting in marginalization, especially of women (Beymer-Farris & Bassett, 2012; Cormier-Salem, 2017). Finally, women in the fishery system have long been invisible. The lack of data, and consequently the risk of unfair management and perverse policies, makes it especially important that women's management of mangroves is better understood (FAO et al., 2012, 2023).

The objective of this paper is to explore fisherwomen's desired future for mangroves. This involves understanding their past and present aspirations, practices and strategies for conserving the MSES. It focuses on the perspectives of the Joola women in Basse-Casamance, Senegal, with a long-term approach to understand their relations to the mangroves, notably the values associated with it, their strategies as oyster fisherwomen and their aspirations for their children and their territorial community. A particular attention will be put on the building of mangroves as heritage, closely linked to the notion of territory and identity (Bassett & Cormier-Salem, 2007).

This paper also investigates the concepts of environmental violence and injustice put forward in three embedded dimensions (Schlosberg, 2007) – distributive, procedural, contextual - with a gender lens. The purpose is to highlight the differential relations and roles of both men and women who inhabit and make their living from the mangrove. Local value systems are rarely taken into account by donors and decision-makers who intend to conserve mangroves, resulting in numerous failures and conflicts, which can be considered as environmental violence (Castañeda Camey et al., 2020). This violence is threefold: loss of use and access rights, exclusion from decision-making, and ignorance of local knowledge and customary rules.

In summary, the paper highlights the impact of public policies and global mechanisms (financial, legal, political) on the IPLCs and the local logics and strategies to reduce the impact of these global threats and risks. Olivier de Sardan (2021) elucidates the revenge of the local, that is the "revenge" of the IPLCs or their resistance. The two terms are used to designate the IPLCs' capacity to adapt and innovate in changing contexts. They denote not a difference in kind, but a difference in degree between defensive and offensive strategies to face the systemic crisis, respectively their resistance or their revenge. Also, the paper questions their resilience or empowerment and more generally the links between diversity and sustainability.

Moreover, the paper analyzes the environmental violence through the designation process of MSES as "natural heritage." The notion

of natural heritage is polysemic and the process of designation is contrasted and often controversial between exogenous and endogenous actors, leading to reluctance, resistance and conflicts. In the frame of our studies conducted in the Global South, three main indicators allow us to consider a natural object as heritage: it is supposed to be (1) inherited from ancestors, (2) collectively designated and managed as a common with a social, symbolic and affective charge, and (3) passed on, intact, modified, or enriched, to the next generations (Cormier-Salem & Roussel 2000; Cormier-Salem et al., 2002). Its transmission through time presupposes ad hoc property regimes or rules of access and use that ensure its preservation. In Africa, according to our previous work (Cormier-Salem et al., 2005; Bassett & Cormier-Salem, 2007), the most important heritage for people is the land. Heritage claims are often territorial and identity-based; they appear in a particular context in the face of "otherness" and the danger of competition, dispossession or degradation. In this paper I will explore the ability of the women to claim their mangrove heritage, to preserve their Joola identity and territory and their struggle to pass it on their children.

There are very few scientific papers on the status of mangroves written from a holistic perspective such as a One Health approach. This approach means taking into account the health of the social-ecological system, encompassing the human and non-human livings and questioning their "positive" and "negative" interactions, or, in other words, their state of harmony or disruption.

Many publications on the future of mangroves put forward planned, plausible and feasible scenarios, but hardly consider a desired or desirable future (Beeston et al., 2023). The success (efficiency, progress) indicators point out consistency with national policies, suitability between goals and planned actions, and engagement of the IPLCs. On this last point, the vision of participation is often limited to information, with no consideration to concertation, negotiation and inclusion to the decision-making process. The diversity of local stakeholders with their worldviews, norms and aspirations is poorly understood and leads to their essentialization (Cormier-Salem, 2014).

3. Methods and data corpus

This paper is based on research carried out over the past forty years in collaboration with international, interdisciplinary and transdisciplinary teams. The aim of this research has been to analyze the perceptions, uses and regimes of governance of mangroves in various contexts and at different scales, from local to international. It builds upon methods at the interface of environmental history, human geography and political ecology. This position privileges a long-term approach, based on varied sources (oral and written) and a decolonized approach, based on the categories, knowledge, norms and narratives of local actors. In this way, the paper questions the ecosystem services framework, which is based on a liberal vision of nature and its commodification, and which rarely finds any corollary in local conceptions. In contrast, my approach to this topic, referring to the IPBES paradigm shift (Pascual et al., 2017), privileges the notions of contributions, co-benefits and values. Therefore, the visions of IPLCs are favored, with a focus on the most vulnerable. The comparison of a wide range of sites, from West Africa to South-East Asia, enables me to highlight the singularity of MSES and the plurality of the values associated to them, both instrumental and relational (Balachander et al., 2022).

This methodological approach is rooted in the history of the relations between mangroves and people along the West-African coast, notably Casamance, in Senegal, dating from the precolonial period to the present. For the precolonial history, the main sources of data derive from the written narratives of Portuguese navigators at the end of the 15^e c. coupled with archeological and linguistic data from scholars such as Bühnen (1992), Linares (1992), Mark (1985) and Cormier-Salem (1999). Ethnographic fieldwork in Casamance, in Senegal was conducted in the framework of CRODT (Oceanographic Research Center of Dakar-Tiaroye) beginning in the 1980s with the first in-depth studies regarding the relations between local people and mangroves and their strategies to face the Sahelian drought. In addition, I have conducted quantitative and qualitative surveys, individual interviews, and forum groups, and participatory workshops (mapping, museology) have been implemented in the frame of interdisciplinary and international projects of research.³ Specific attention has been placed on the know-how and the knowledge, the practices and uses (from extraction to processing and marketing), the instrumental and customary values associated with mangroves, and the logics and strategies of local actors (Cormier-Salem et al., 2010; Sarr et al., 2009, 2016; Sané et al., 2021; Balachander et al., 2022; Chap. 4).

4. Case studies and discussions on women's perspectives

4.1. Introduction of the Basse-Casamance context and the Joola oyster fisherwomen

Basse-Casamance is one of three regions in southern Senegal and is part of the "Pays des Rivières du Sud," a geopolitical and socio-cultural entity stretching from the Saloum islands in Senegal to Sierra Leone (Cormier-Salem, 1999). Its specificity is marked by a Sudano-Guinean climate (1000–1500 mm rainfall on average per year), coastal landscapes dominated by mangrove wetlands, largely converted to rice paddies, and a predominantly Joola population with a strong attachment to the religion of their ancestors. This particularity has resulted in longstanding resistance to all foreign interventions, from colonial agents at the end of the 19th century to the elites and entrepreneurs of northern Senegal, and a long-standing and deep-rooted feeling of marginalization and dispossession that has given rise to claims and conflicts discussed in Section 4.2.2 below (Cormier-Salem, 1993, 1999; Marut, 2013).

³ The data have been collected in projects in partnerships with colleagues from the University of Gaston Berger in Saint Louis du Senegal and University of Assane Seck of Ziguinchor: "Pertinence des Dispositifs de Valorization de la Biodiversité" /BIODIVALLOC (2005–10), the International Joint Laboratory "Patrimoine et Territoire de l'eau"/PATEO (2010–18: museology), Co Benefice of Mangrove Conservation / COMANCO (since 2018)

Rice growing structures the Joola society and dominates the farming and ritual calendar. It is interwoven with many other activities, long considered marginal, such as oyster fishing (Fig. 1). In Basse-Casamance the gender division of labor is not as marked as in other regions of Senegal. Until the 1960s, fishing was often a couple's business. Fishing outings in the mangrove bolongs (tidal channels) were carried out aboard a rowing or sailing canoe, commanded by the head of the family. Alongside his wife, he took part in oyster fishing, which consists of detaching the oysters from the mangrove *Rhizophora* roots. The oysters were then unloaded onto the "yard" to be shucked and processed (Photo 1: an oyster yard in Tendouk territory, Casamance, Senegal). The shells were opened either in a cauldron of boiling water, or directly over the fire. The meat was then dried in the sun and stored in the house above the fireplace, giving it a slightly smoky flavor. The oysters were intended for domestic consumption. Any surplus was exchanged for other products in the village community or sold in local markets. These oyster processing and distribution operations were carried out by women. From the 1980s and up to the present day, the oyster supply chain, from extraction to final destination, remains largely in the hands of women, with the men devoting themselves to catching fish and shrimp in the bolongs and, increasingly, at sea. The issues and consequences of this gender division of labor are elaborated below.

The Joola of Casamance are often considered an "egalitarian" society, or relatively more egalitarian than their Manding neighbors of Moyenne-Casamance or the Pular of Haute-Casamance. Although non-hierarchical and structured around the extended family (clan and lineage), this parity between men and women, between the elderly and the young, is debatable. In fact, the domestic burdens placed on women, the captives of the Baïnouk hut (Linares, 1987), and the transmission of rice-growing land to the eldest married son must be noted.

Rice-growing is the basis of the Joola system. It dominates the landscape, both on uplands and lowlands such as mangroves. *Niankatang* rice (white rice most often eaten boiled with small bolong tilapia carp, more exceptionally with smoked oysters and chicken or pork) is the staple food; it is central to rites and ceremonies (initiation, funerals, weddings, etc.). The eldest married son inherits the rice fields when his father dies. The land belongs to the lineage and cannot, in principle, be sold, except in exceptional cases and after consultation with all the married men in the lineage. Joola women do not take part in land tenure discussions, nor do young unmarried men. Women may farm rice fields belonging to their deceased husbands, or their parents, if there are no male heirs.

Lineage assets include two other very important elements: forests, including palm groves, are the site of initiation rites and provide wine and palm oil. The head of the lineage is the manager; on his death, his eldest son takes over. Mangroves - mangrove forests, bolongs and rivers, and dikes - *ukanka*, the great mother dike and *buit* basins where wet or deep rice fields are found - are key components of the village territory, and the only component on islands. They are managed as common goods, "transappropriated" at clan (village district) or community level with customary rights of access and use; women and men alike benefit from them. The chief of the clan or village is the guarantor of respect for custom (e.g. seasonal prohibitions during the rainy season; declaration of certain areas as off-limits, etc.).

Since French colonization at the end of the 19th century, land tenure has changed radically. With the "pacification" and integration of Casamance into the Senegalese state, followed by independence, mangroves became part of the national domain (1964 law on the national domain). This has led to numerous departures from traditional norms or customs, with instances of land grabbing and privatization to the detriment of mangrove-dependent stakeholders. I will return to this in more detail in the discussion.

4.2. From Past to Future Desirability

In this section, the aim is to highlight the past, present and future "desirability" of mangroves and the articulation between short and long time (to use Braudel, 1949) for three generations of fisherwomen. Their strategies to face the impacts of globalization and other crises are introduced over three periods: 1970s-80s, 1990s-2000s, 2010s-2020s. For each period, I focus respectively on the individual, familial and collective strategies of the fisherwomen. The strategies are not linear or locked into these temporalities. The periodization is schematic with the interweaving and intertwining of timeframes by the women, narratives based on their memories, experiences and perceptions, and what they can or want to say about them. This presentation obviously simplifies the reality of all the women of Basse-Casamance. Nevertheless, the aim is to illustrate women's space and ability for strategic maneuver. The paper argues the fisherwomen are not marginal or weak, but able to adapt and innovate in contexts of multiple environmental and political crises. It shows how they struggle to conserve their access and use rights and maintain their strong relations with the mangroves. For each period, first, the context is presented; second, the women's strategies and aspirations; third, their perspectives and counter-narratives in contrast to the dominant narratives, public or private.

4.2.1. 1970s-1980s: Surviving to cope with the long period of drought

4.2.1.1. The context. The 1970s-1980s was marked by severe drought in the entire Sahel region which resulted in major environmental and agricultural changes in Casamance. The Casamance River functions like an arm of the sea, with salinity levels reaching over 170gr/kg upstream at Goudomp in Moyenne-Casamance in some years, when the average salinity of the sea is 35gr/kg. The hyper-salinization of the land and water, coupled with less than 600 mm of annual precipitation, upended production systems based on rain-fed rice cultivation, which requires at least 1500 mm per year.

According to in-depth surveys conducted in 1984-1987 with fifty-four women in thirteen villages and seventeen women at the SEFCA dock in Ziguinchor, the main challenges for women were two-fold: adapting to the climate crisis and coping with the rural exodus of young people. The emigration of young men and women, who are the main labor force, towards Ziguinchor or Dakar is considered the first driver of the farming system crisis which began in the 1950s with the opening-up of Casamance (road construction,

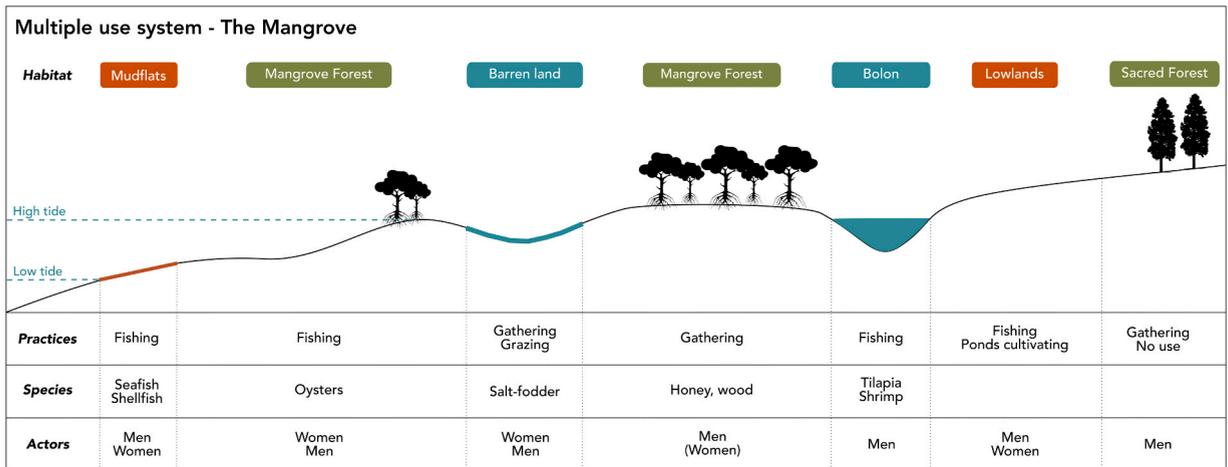


Fig. 1. Multiple Use System of Mangrove, Casamance.



Photo 1. a oysters' yard in Tendouk territory, Casamance, Senegal (©Cormier-Salem, IRD).

urbanization, schooling, etc.). (Cormier-Salem, 1985, 1987, 1992, 1994). The multiple use system of the mangrove allowed Joola fisher-farmers to adapt to this crisis, notably reorganize their farming calendar and reorganize the use of their territories.

4.2.1.2. *Case studies.* Marie-Jeanne⁴ is married to Joseph, a rice farmer, and is the mother of four children (aged 10, 8, 6 and 3). She identifies herself as a farmer, with rice growing as her main activity. She is the one who knows and manages the rice seeds: she owns fifteen varieties with different cycles (long/short), pedo-hydrological requirements and destinations. From June onward, she is in charge of the rice nurseries, then, as soon as the first rains fall in June-July, of transplanting the rice, fertilizing the rice fields and controlling weeds. With her husband, she harvests the paddy from November onwards; she also threshes the bales of paddy, then

⁴ Marie-Jeanne was my Elana's *jatigi* or tutor (Cormier-Salem 1983–87 surveys)

transports and stores them in the granaries. Her husband takes care of the heavy work of repairing the dikes, managing the water, and plowing the rice fields. During the dry season, she borrows her husband's canoe (*busana*) to fish in the mangroves. The oysters she harvests are for home consumption. All year round, her days are busy with various other domestic activities (caring for children, fetching water and wood, preparing meals, housekeeping, laundry, etc.), as well as tending a small vegetable garden.

With the drastic reduction in rainfall, Marie-Jeanne modified her activities, starting with the genetic diversity of her rice. From among her collection of seeds, she chose those she felt were best suited to the environmental conditions, favoring short-cycle seeds that require less water. With the decrease in rainfall and the contraction of the rainy season to four months (July-October) instead of six (June-November), she devoted more time to the exploitation of mangrove oysters, while respecting customary rules of access and use. It is forbidden to go out into the mangrove during the rainy season. However, as soon as the rains ended, she went out into the mangrove two days out of three to fish, and on the third day to extract the oyster meat for processing. The oysters, not intended for family consumption or ceremonies, were kept above the fireplace and sold in urban markets approximately every two months. In addition to their contribution to animal protein and local exchanges with other staples, oysters had become a commodity. Like 90 % of the women interviewed, Marie-Jeanne relied on this activity to ensure her family's survival. With her granaries empty, she had to buy rice on the market. The sale of oysters also enabled her to cover other basic needs, such as clothing, health care, and her children's school fees.

Marie-Jeanne recognized that oyster fishing was hard work and required respect for nature, which she viewed as a gift from God. Thanks to her knowledge and know-how, passed down from mother to daughter, she ensured the reproduction of the mangrove system, the preservation of their land and its resources, from rice varieties to oysters, from rice paddies to mangrove forests and mudflats (Ollier et al., 2023). She took pride in this and hoped that her children would preserve this heritage, the basis of their Joola identity.

4.2.1.3. Discussion: From invisibility to visibility, from marginality to social recognition. During this 1970s-1980s period, according to the dominant narratives (even from scientists in bioecology), women who were involved in oyster "gathering" were poor, weak, and most often older widows without land access. Oyster gathering was presented as a minor activity in comparison with "fishing" practiced by men or rice cultivation. In addition, oyster harvesting was not viewed as a sustainable practice because the women cut and damaged tree roots. They were seen as the main drivers of mangrove degradation. The value-chain (extraction, processing, selling) was purportedly unorganized; it was described as "anarchic" exploitation, an "informal" sector. In contrast to this discourse, from my fieldwork surveys and according to the women's narratives, I see that women were not marginal nor weak. They considered themselves not only working women but "earning" women (Jalais, 2010), very proud of their knowledge, know-how and self-organization of regulations.

Despite the continued invisibility of oyster fisherwomen in a globalized world, these women have managed to challenge their marginal status by asserting their identity and their sustainable use of mangroves (Bennett, 2005; Frangoudes & Gerrard, 2018). Fishing is a sector of activity gendered according to the technique and system (target species, fishing grounds, fishing gear, value-chain, etc.). With a few exceptions such as freediving of Vezo women in Madagascar to fish for sea urchins or in Timor or Indonesia (Burgos & Artaud, 2023), the sea trips, especially of more than one day, whether artisanal or industrial fishing, are carried out by men. Women generally engage only in fishing activities near the shores of lakes, rivers or the sea. They travel on foot or in non-motorized canoes. They fish with traps and holes, targeting small species of fish (*Tilapia* and *Ethmalosis*), shrimp, shellfish and crustaceans. On the other hand, for a long time, they have dominated the processing and distribution of catches. In particular, the fishermen's wives have traditionally been entrusted with determining which part of the catch is for family consumption and which part for redistribution (*ndawal* in Wolof). (Cormier-Salem, 1992; Cormier-Salem et al., 2010; Duffy-Tumasz, 2017).

Since the 1950s, with the development of sea fishing, particularly in tropical areas, and in connection with multiple innovations: technical (motorization of pirogues, distribution of large nets, cold chain); economic (growth of urban markets); and institutional (credit and fishing cooperatives), women often lost their central role at the wharf and became marginalized. Globalization, notably long-distance maritime migrations and exportations, further accentuated this process of marginalization. For example, in Mauritania, Imraguen fishermen now sell mullet fish (*Mugil cephalus*) and, in particular, the precious eggs to make bottarga to Asian or European export companies; women now have little access to this product and have lost one of the few sources of income in a context of strong constraints in the Banc d'Arguin National Park (Boulay & Cormier-Salem, 2012).

The strategies of women in small-scale fisheries are nevertheless varied. In West Africa, it is often women, known as *Mama Benz* (because they circulated in shiny Mercedes, external signs of wealth and power) who have the capital to buy the means of production (canoes, engines, large nets, provision for the fishing campaign, etc.) and make fishermen their quasi-employees, not only in their countries of origin, such as Côte d'Ivoire, but also in the countries of migration of these fishermen (Cormier-Salem, 1992; Chauveau et al., 2000). In Vietnam, too, women dominate distribution, from the landing stage to the auction. Thanks to this cash, they have the capacity to invest either in production by acquiring boats or in other sectors (Cormier-Salem, Van Trai et al., 2017).

Even in India, where fishing is a low-value activity relegated to the poor, "untouchable" castes, and scheduled tribes or *Adivasi*, women are becoming more powerful thanks to globalization. For example, in the Sundarbans, women, who do not have access to the products of the mangrove forest, fish for shrimp fry along the banks of the Ganges and Brahmaputra rivers. With the explosion of shrimp farms since the 1980s, they supply the industrial aquaculture sector and have gained economic and, therefore, social and political power (Jalais, 2010).

Obviously, fishing is a complementary activity to rice cultivation. With the farming system crisis, which continues to this day, it has become increasingly valorized. My study of the oyster industry in the 1980s shows that this activity remained dynamic, albeit threatened by drought and consequently mangrove degradation, and rural exodus; second only to rice farming, it was by no means

marginal. It provided an essential income supplement and a highly valued food supplement, particularly in terms of animal protein. It relied on extensive environmental management, specialized knowledge (in terms of tides, modes of production and reproduction, growth factors and threats, etc.), customary rules of use and access, complex social organization of fisherwomen into "companies" and varied distribution channels, reflecting its economic, cultural and social importance.

Faced with drought, women decided to engage more in oyster fishing to earn money and make their living (and the living of their family) more secure and desirable. It is important to note that women who oyster fish are not responsible for the degradation of the mangrove forest. First, they don't cut the roots of the trees, but pick up the oysters from the roots. The "green" roots are very hard to cut and this would take too long during the favorable period between ebb and flood tides (about three hours). Second, because of their traditional ecological knowledge and sustainable management practices, they avoid damaging the mangrove roots.

Joola fisherwomen acquired a new economic and social status thanks to their adaptative strategies to face crisis and their self-organization. Nevertheless, two points are worth highlighting. How do they refer to themselves, and how is their practice referred to? Surprisingly, unlike in many Latin American countries, there is no specific term to identify them. In Joola language, there are no terms equivalent to Piangueras, women who collect pianguas, *Anadara tuberculosa* in Colombia, or Concheras in Ecuador.

In fact, the designations by "others" are surprising, to say the least: gleaners, pickers, harvesters, collectors, etc. In [FAO et al. \(2023\)](#), women are described as "gleaners" (from A Fent, gender advisor for Gambia p135), which minimizes their work and their contribution to household resources. The very different practices and gear (foraging by hand, diving gear, traps, etc.) lead to the assumption that "women do not fish". Yet, in [IPBES \(Fromentin et al., 2022\)](#), the extraction (or extractive practices) of marine invertebrates like oysters by women is considered "fishing".

Just as women supposedly don't fish, so they wouldn't be expected to be entrepreneurs. The marketplaces they frequent and their involvement in the value-chain has long been considered "informal".⁵ In fact, the Joola women are highly organized, but their business is not entered in the commercial register and is therefore illegal under the tax code. In the absence of "formal" recognition of their industries, they escape the "official" statistics; their mastery of marketing channels and their social and institutional arrangements for enhancing the value of oysters most often are denied. Yet, the oysters have been becoming small-scale commercial products, and Joola women have acquired economic and social status thanks to their oyster industry.

Admittedly, their identity is not fixed, but multiple and flexible. The multiplicity of their activities (rice farming, gardening, wild fruit picking, fishing...) goes a long way to explaining their resilience and their ability to adapt to changes.

4.2.2. 1990s-2000s: Peaceful resistance to environmental and political violence

4.2.2.1. The context. The 1990s-2000s period in Basse-Casamance was characterized by a multifaceted and systemic crisis marked by high climatic variability, accelerated decline in rice cultivation, radicalization of the separatist movement, and the disengagement of the Senegalese state. After more than twenty years of climatic deterioration, Basse-Casamance suffered a financial crisis exacerbated by the liberal logic of structural adjustment plans and the application of exogenous models, both required by the IMF. Food crops such as rice from the Casamance region were sacrificed in favor of broken rice imported from Thailand and cash and export crops such as groundnuts. In this context, there was a strong popular mobilization and the emergence of an independence movement, often led from the diaspora, disappointed with the Senegalese state system ([Marut, 2010](#)). The climatic and financial crisis was worsened by the "civil war." The consequences were profound: accelerated decline in rice-growing with the closure of Casamance, numerous anti-personnel mines in rice fields, and a significant decline in young people's labor in the fields. In December 1982, a peaceful march was organized in Ziguinchor with the Joola mothers at the head of the procession. As a sign of peace, they poured water on the ground to act as a barrier between the Senegalese army and the so-called "rebels," but the march went off the rails, causing casualties and further radicalization. From 1983 on, the survivors of the march, many of them young and unemployed, took refuge in the forests and border areas with Gambia to the north and Guinea-Bissau to the south. Their armed struggle was organized into several rebel groups, driven by strong "anti-Nordist" resentment ([Cormier-Salem, 1993](#)). After a brief ceasefire in 1991, the fight for independence resumed in 1993.

Fisherwomen were hardly ever involved in the power struggles, and generally remained aloof from politics. On the other hand, they mobilized to ward off environmental injustices, which were often perpetrated by actors from outside Casamance. They were in threatened by three types of exogenous interventions: First, the repeated attempts to develop intensive private oyster farming to supply hotels with fresh oysters, with the risk of competition with their dried oyster industry.⁶ Second, the coercive public policies to fight the overexploitation of natural resources and limit oyster fishing, as the cutting of *Rhizophora* roots was considered the main driver of mangrove degradation. In Basse-Casamance, five Marine Protected Areas have been created without taking women's knowledge into account and without involving them in the management committees. Third, the large-scale reforestation campaigns funded by large private companies in the framework of REDD+, such as "Plant your tree" implemented on the ground by the Senegalese ONG Oceanium in 2006 in Basse-Casamance, once again without involving women in the choice of species or transplantation sites and techniques. This program reduced women's access and use rights to reforested areas, as a result of land grabbing and environmental enclosures ([Cormier-Salem & Dieye, & Sane, 2016](#); [Cormier-Salem & Panfili, 2016](#)).

⁵ As soon as the 70s, the "informal" sector has been the subject of an extensive literature in social sciences and economy, criticising its mis-conception, notably from Western outsiders and highlighting its essential economic and social role for the development of populations in the Sub-Saharan Africa (among others scholars, see [Hugon, 2014](#)).

⁶ The shrimp farm, then the oyster farm established along the Katakolousse bolon in the 1980s, is a case in point ([Cormier-Salem, 1992](#)).

4.2.2.2. Case study: Dianghok *fafu*. Resistance to environmental injustice took various forms, analyzed in greater detail in other papers (Cormier-Salem, 2014, 2017, 2018). This section illustrates the family (or *fafu*) strategies from the Dianghok lineage (Cormier-Salem 2016 surveys). To manage or share the risks, the *fafu* has a strategy of diversification among its members (Fig. 2: Genealogy of the Dianghok *fafu*©Cormier-Salem, IRD). Dianghok, the patriarch ancestor, had two sons; the eldest son, Yayoum, having passed away, the second son, Joseph, will inherit the land, followed by his eldest son, Landing, once married. He will be followed by Alassane, a mason in France, if he returns to settle in Diembering, or else Ibou, a moto-taxi driver, when he will start his family in the village. In accordance with the Joola rules of succession, the eldest son is the designated manager of the *fafu* heritage. He has a duty to preserve it by tending the rice paddies and palm groves. He is helped by his brothers and sisters who, if they are unable to work in the rice fields themselves, send him money to pay young people to do the work. Since Landing and his son, Ibou, have converted to Islam, they no longer exploit the palm trees to make wine, but grant other animists and Christian Joola access and use rights to their trees.

Only Elisa, eldest daughter of Joseph and Aniousibe, in her generation, continued the tradition. Elisa's husband, Agustu had health problems, which is why she moved to Landing's *fafu*. She contributed to the *fafu*'s expenses through her work in the mangroves and Landing's four wives are oyster fishers. Oyster fishing is not an alternative or minor activity; it is a critical source of protein and income for the *fafu*, along with the money sent by migrants and the few vegetables sold by Eluma, Landing's wife, who owns a small garden.

Joseph's other seven children left the village to migrate to the city of Dakar, or abroad, to Banjul in Gambia in the case of Aïssatou, and to Switzerland in the case of Binta. They worked as maids, teachers or civil servants. In the next generation, of 13 children, only three remained in the village, Ibou, a brother Ousman, and a sister Awa, an elementary school student. Nevertheless, Awa, when she was not at school, accompanied her aunt Elisa to fish for oysters, ensuring that knowledge is passed on from one generation to the next.

Other than Awa, the last generation women of the *fafu*, except Jean-Pierre and Marie-Rose's daughters, still unmarried, are settled in Dakar or abroad in Morocco. In the two previous years, Asange and Awa returned to work in the rice fields, but this season, they preferred to send cash. Economic diversification inside and outside the farming (mangrove) system and mutual aid within the family, between men and women and between generations, are the main drivers of Joola mangrove system resilience and heritage preservation. Two major trends can be noted: on one hand, the conversion to Islam in the third generation, and on the other, emigration, which went from being seasonal in the 1980s to becoming permanent in most cases, raising questions about the preservation of Joola identity. This issue of identity is discussed below.

4.2.2.3. Discussion: to stay or to go away?. Dominant narratives point out the massive departure of the young people, the risk of identity crisis, and end of the "terroir," insofar as mangrove rice cultivation is manual and depends on the ability to mobilize young people's labor (plowing for men, transplanting for women, harvesting for all). The counternarratives of the women stress their willingness to preserve the Joola system in combining, at the level of the household, diverse activities. Diversification is a key means of resilience and therefore, an important adaptation strategy and affirmation of identity. These innovative strategies are long-term, as the women aim to preserve mangroves as heritage and to pass them on to future generations. As a result, they are able to defend their Joola identity and their mangrove territory in a threatening world.

4.2.2.3.1. Needs and aspirations. The needs and aspirations of Joola women who fish for marine invertebrates are much the same as those of women in Latin America, India and Southeast Asia (Frangoudes & Gerrard, 2018; Fromentin et al., 2022; Freitas et al., 2020). They have the same basic needs, giving priority to food security, health and education. They all aspire to send their children to school. They are clearly aware of the importance of education in gaining access to basic rights and strengthening capacity to acquire financial autonomy and security through salaried work, if possible, in the public sector. On this point, we note possible tensions between, on the one hand, the desire for cultural and social advancement, which often involves emigration abroad, and, on the other, the ability to preserve their identity and pass on their heritage. As underlined in the family and collective strategies, this tension can be resolved in two ways: migration can be temporary, with the young migrant returning to the village to start a family and heritage preservation can be ensured by certain descendants who remain or return to the village, while others support them from a distance.

4.2.2.3.2. From basic needs. In Basse-Casamance, in the 1980s, the sale of surplus oysters was intended to cover basic needs, i.e., for 90 % of the women interviewed, income from oyster sales was used to purchase staple foods, such as rice, no longer sufficiently produced by the household. Next came expenses for clothing, domestic needs (including medicines), children's school fees, and contributions to women's associations and ceremonies. In the systemic crises of the following decades, these needs were heightened, with little change in basic expenditures. Oysters were no longer a safety net to compensate for shortages but became a basic resource.

A fisherwoman's other needs for making oyster work less arduous are gloves and boots (Photo 2), an oyster peeling knife (for removing oyster shells), and access to motorized dug-out canoes. Women, organized into companies or groups of 2–3–4, usually borrow canoes from men, but do not own them. From 1990s, a few of these traditional structures became economic interest groups (EIGs), recognized by the prefectural authorities.

In the present, two key bottlenecks are identified by the fisherwomen: the access to markets and access to information. Although they manage the entire oyster processing chain, most don't have the time or means to travel to sell their products directly. They therefore depend on market intermediaries (*bana-bana*) who set prices and resale conditions. The women are hurt by very low prices, while for urban consumers, oysters have become increasingly unaffordable. Oyster fishers lack local markets or redistribution sites enabling them to earn a better living from their work. The lack of information and training in accounting (access to credit), marketing, etc. is increasingly felt by women, in a context of market expansion and extensive interconnection. More and more projects aim to meet these needs, such as Alimentation Solidaire, which promotes local market sites.

4.2.2.3.3. ...to desirable futures. Women's aspiration for the future is to overcome the multiple threats to their livelihoods, which I refer to as defensive strategy or resistance. They also seek to preserve and enrich their heritage, which I refer to as offensive strategy or

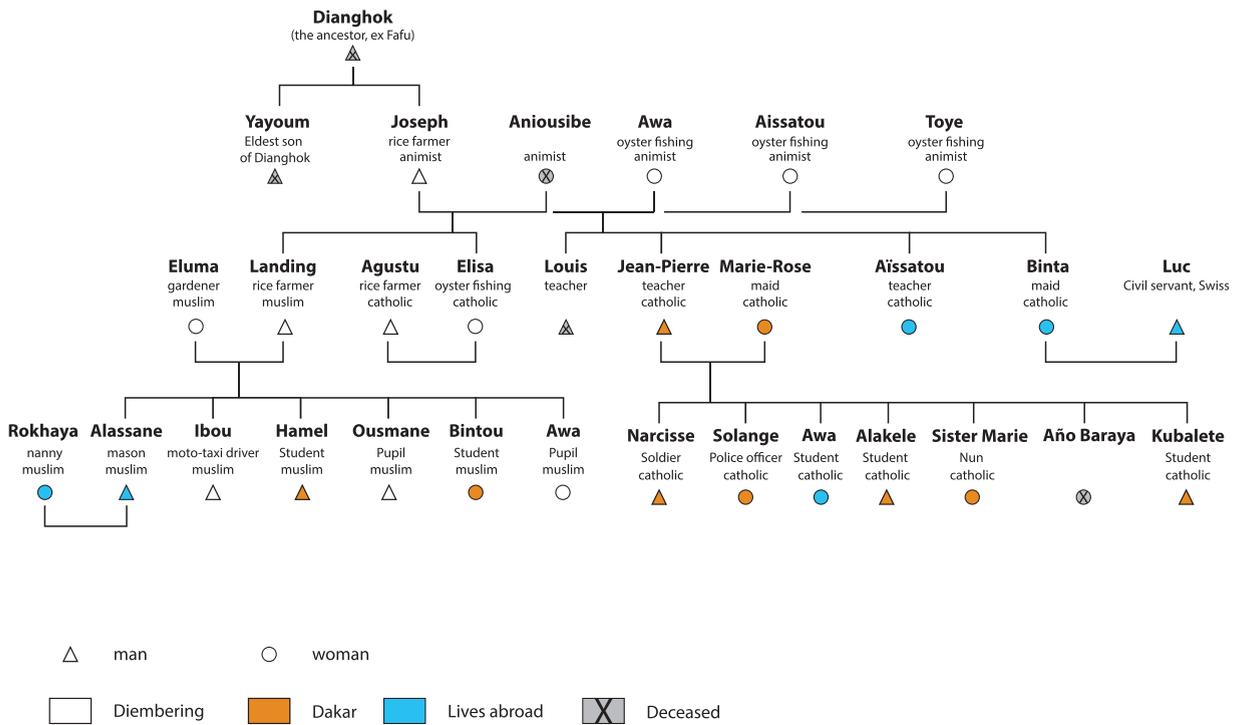
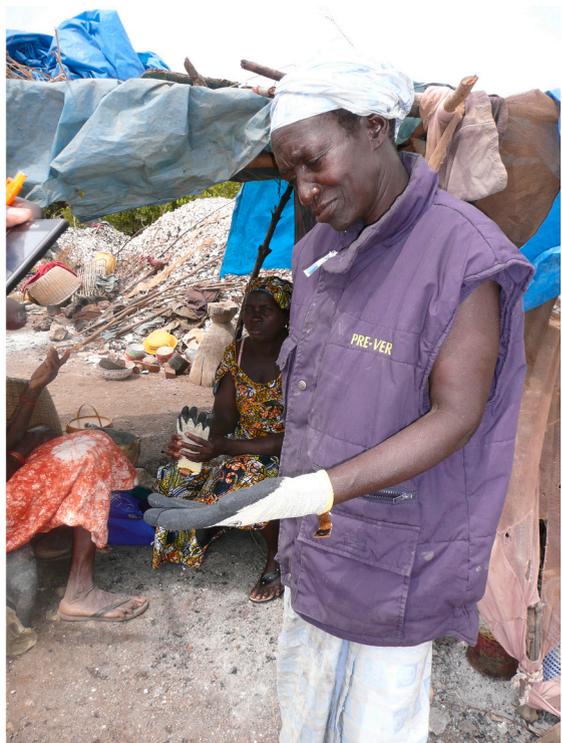


Fig. 2. Genealogy of the Diangkhol *fafu*, Casamance.



(a)



(b)

Photo 2. Fisherwomen: one (left, 2a) with rudimentary hand and foot protection in pieces of cloth, the other (right, 2b) with new gloves (©Cormier-Salem, IRD).

revenge. Confronted by "globalization" including the arrival of new actors and political and religious radicalization, emigration remains the subject of highly contrasting perceptions, ranging from apprehensions to aspirations. On the one hand, the material and immaterial support of the diaspora in Dakar or abroad is what enables the livelihood system to reproduce and survive; on the other hand, it is the main factor in distancing from or even breaking away from the home territory, with the subsequent risk of acculturation, which means loss of culture, knowledge, practices – in a word, of their identity. Previously valued as a rite of passage to adulthood and supported by the household, particularly for young single people, migrations today are perceived as a danger insofar as they become definitive, resulting in frequent failure or even death for those who attempt the "adventure". The return of young people to the village is welcomed.

4.2.2.3.4. The attachment to the mangrove territory, the sense of place. In addition to the food and natural resources extracted from the mangroves, the Joola fisherwomen are very attached to their "milieu," which is their habitat and their home, and they demonstrate a singular and powerful sense of place. I've highlighted the profound changes that have taken place over time with the decline of mangrove rice farming, Islamization and emigration. It's true that broken rice prepared as *cee bu jen* (rice with fish from a sea-fisher prepared with a north-Senegal recipe) has largely replaced *niankatang* as the daily dish; the departure of young men has been joined by the permanent departure to the city and abroad of a growing number of married people; mosques have multiplied. Despite these changes, it seems that the Joola heritage has been preserved in many ways. Women's actions show their ability to resist, if necessary, by modifying certain elements of the multiple-use system and mobilizing other resources. This is illustrated by the transfer of activities from mangrove areas to the uplands, from wet to dry rice fields; using money sent by migrants to hire young people's labor during the rainy season for plowing and transplanting work; the strong syncretism and even, in the face of the threat, the reactivation of traditions, sacred royalty, the resurgence of animist rites, claims to customary rights. The Kawawana Indigenous and Community Heritage Area (ICHA), managed by the Mangagoulak rural community, on the left side of the Casamance River, is an expression of the official recognition of the ancient rights of use and access to the mangroves. It is a major institutional innovation. Officially created in 2004 by a governmental decree, Kawawana is an independent organization that carries out surveillance and ensures compliance with bans (Cormier-Salem, 2014). The (re)valorization of oyster fishing is another expression of recognition of local knowledge, traditions and innovations.

4.2.3. In the 2010-20s, pacification and a plethora of innovative actions, often in competition with one another

4.2.3.1. The context. The last two decades are characterized by a relative return of the rains and a process of "pacification" and openness to the outside world with numerous programs for peace and rebuilding in Casamance, but in a context of global instability that includes coastal erosion and inundation with extreme events, food shortages associated with Covid-19 and the impact of war in Ukraine. The lack of coherence between public policies and coordination between private entrepreneurs results in competition for control of resources (for instance, in Abéné, a village of the north Casamance coast, zircon extraction or pelagic fishing) and tensions between actors. The collective strategies of the fisherwomen are illustrated through the example of the Economic Interest Group (EIG) called Kabegue, located in Diogue, an island in the mouth of the Casamance river and supported by the French association "Alimentation Solidaire" for improving the oyster value-chain.⁷ Adding value to local products can be seen as a significant tool for preserving biodiversity, both biological and cultural. This value added can take various forms, from the recognition of the knowledge and know-how behind local products to the designation of these products by means of quality signs or labels, and also by giving them more economic value on the market (Cormier-Salem & Roussel, 2009). This is the case for mangrove resources (oysters, shellfish, fish, shrimp, honey, salt) (Sarr et al., 2009, 2016; Cormier-Salem et al., 2010).

The sale price of dried oysters is very low compared with the amount of work invested under arduous conditions. Increasing the selling price, tripling the size of oysters thanks to rearing, and doubling the quantity produced by spat collection are the main strategies for adding value to the dried oyster sector. Besides this increase in income, improved drying techniques reduced women's work burdens through time savings.

4.2.3.2. Case study: The economic interest group (EIG) strategies. The EIG Kabegue brings together seventy oyster fisherwomen from the Diogue and Enampore communities. Their main constraints are access to markets, information, and credit. Courageously, they are determined to preserve their oyster-farming identity and communal territory in a very difficult context. In particular, they have to cope with the mass departure of young people and isolation, which means they are heavily dependent on commercial intermediaries to sell their products. They were able to organize themselves and gain recognition as an EIG with a president, a treasurer, and official recognition of their governance and pooled resources; they also enlisted the help of other local actors who had tested new spat collection techniques, such as Moussa S. from Carabane and oyster farmers from French Brittany. The women are proud of their organization and are open to transferring it to other villages in the region. "The Association aims to perpetuate the experimentation carried out since 2018 for the benefit of women farmers, farmers and processors by guaranteeing the provision of a reliable and scalable platform as well as associated services: maintenance, training and support for beneficiaries."

Innovative strategies and mutual support are the key drivers of resilience and sustainability. They now earn a better living, and

⁷ The data are based on one hand, on fieldwork (participatory mapping, participatory museology) carried out as part of the LMI PATEO (2010–18) and in particular program "Citizenship Governance of West-African Coast (Casamance, Bissau-Guinea, Guinea), funded by AFD, coordinated by GRDR, Senegal (2014–18); on the other hand, on interviews and videos with a few women in charge of the Kabegue EIG, realized by Patrick Chevalier, the chair of the association (<https://www.alimentaire-solidaire.org/>).

working conditions are less arduous than before. The women's statements testify to the future they desire for themselves and their communities. "I want this work to continue with this generation and the next." They are also proud to be able to pass on this work and these installations to their children, and they want them to continue these activities, because it's a rewarding job that enables them to earn a living and support their families. "We hope that, when we're old, our children will be able to replace us, that they'll be able to earn a living and be an example to everyone."

Nevertheless, these local initiatives are threatened by other exogenous actions, most often top-down and large-scale. A case in point is the support for the establishment of competing raw or dried oyster industries, in the context of peacebuilding, backed by major international organizations (such as FAO). The Plateforme des Femmes pour la Paix en Casamance (Women's Platform for Peace in Casamance) was created in 2010 on the initiative of two women's associations, Kabonkettor and Usoforal, to unify the various women's associations in the Casamance region, and make women's voices heard in peacebuilding processes. In 2024, it brings together fifteen associations working for peace and social cohesion, for instance, a center to shelter young girls and women victims of violence, as well as associations working for the environment and sustainable development. In particular, the Platform is the local partner of the Fish4ACP project, supported by the FAO. This project aims to set up a more productive and competitive oyster farming value chain in order to empower women. While the objectives are laudable, the means of implementing this project are problematic for women already involved in the industry. No preliminary study has been carried out and Joola fisherwomen have not been consulted. The risks of competition between fresh and processed oysters have not been assessed. The women of EIG Kabégué consider that this project, which is top-down, with many external players (brokers, wholesalers, technicians), risks damaging their traditional activities and marginalizing more localized and vulnerable industries. In this case, the stakes are far from being purely economic.

4.2.3.3. Discussion: The "weapons of the weak". The dominant Northern narratives describe oyster fisherwomen as weak and poor, unorganized, and largely responsible for mangrove overexploitation. Fisherwomen's counternarratives emphasize the inconsistency of environmental policies and, by contrast, their ability to innovate and their power thanks to self-organization and mutual support.

Definitions of power are diverse. They encompass control over a resource to be (re)distributed, as a relation of domination, or a transformative dynamic of emancipation as in empowerment (Allen, 2005). These definitions are not mutually exclusive, but often follow one another or combine, depending on the players involved and the circumstances. In the case of Joola women, the paper adopts a very broad understanding of the notion of power, drawing on feminist perspectives (Larrère 2012; Sze, 2017) and Starhawk (2011) on power and empowerment in three main ways: power-over, power-with and power-within.

What the fisherwomen's strategies teach us first and foremost is that power is not an end in itself. According to Foucher (2005), the fisherwomen in the Casamance are very distant from the diaspora of educated people or "evolved" elites invested in the Independence struggle. They are not involved in political resistance; they do not struggle for domination over others. Nevertheless, they are powerful in the sense that they act and succeed in making visible the invisible, that means claiming who they are (fisherwomen) and what they do (work and earn their living). They are the most vulnerable and affected by the crisis, but having no choice and anticipating, they fight to overcome the difficulties; they must adapt. First, they adopted defensive strategies for diversification in response to drought in the 1970s, and to the systemic crisis in the 1990s, and enabled the Joola system to evolve and reproduce, and hence be resilient. Diversification strategies were critical to their resilience. These included selecting a range of rice seed varieties, extending rice cultivation from lowlands to uplands, adding value to oyster fishing, and emigration. They also adopted offensive strategies of innovation, testing new techniques and practices to overcome potential competition, for instance from commercial oyster farming such as the Katakoulousse farm, which ended in failure due to a lack of mastery of technical and economic conditions. Fisherwomen have been able to retain control over the oyster industry, receiving advice and support to collect spats and grow wild oysters, to improve drying processes, and to gain new and more profitable markets thanks to packaging, traceability, network building and internet connection. The innovative schemes of mangrove-based product certification are opportunities for recognizing their know-how, the quality of their products, and last but not least, their entrepreneurship capabilities.

In spite of the 1964 law on the Public Domain and the building of diverse Forest Reserves and five MPAs in Basse-Casamance, women still have access to bolongs for oyster fishing and respect collectively negotiated access and use rights. Thus, following the official designation of the Kawawana ICHA in 2004, they are now more widely recognized as the managers of the communal territory and as the guardians of the mangroves; their customary rules are respected not only by the Joola fishermen, but also, by "outsiders" (Cormier-Salem, 2017).

Besides their ability to act and resist, their "power-over," fisherwomen are committed to defending their heritage, not only to preserve an income-generating industry, but also to ensure sustainable, equitable and desirable living conditions, and emancipate themselves and their relatives and allies. They have the "power-with" and "within" and even "the power-over," considered as their revenge (Olivier de Sardan, 2021) or the weapons of the weak (Scott, 1985), thanks to their alliances, mutual recognition and support.

According to the surveys conducted in the 1980s, women in some villages were organized into "companies," the equivalent of today's EIGs, in which they shared tasks, products and income. In the company in the Bourombone district, known as Daccord, in the Tendouk village, the women shared the work: the older ones, or those with young children, stayed at the yard or landing stage to process oysters; the younger ones went out every day to fish. The company also managed a "tontine" to meet the needs of certain women, collective ceremonies and mutual aid associations, such as the *kanalen*. This is a traditional Joola care practice for infertile women or those who have lost all their children. These women must make a retreat into the sacred woods; on their return to the *fafu*, large celebrations are organized, at the expense of the women of the company.

This mutual support is still active and extends beyond the *fafu* and the village community. In Ziguinchor, at the SEFCA wharf, there is a large community of refugee women from Guinea-Bissau. The local Casamance women give them access to their territory to fish for

oysters. The two reasons given for this are, first, that these women belong to the same sub-group, the Joola Kassa, who live in the southern part of Basse-Casamance on either side of the border between Senegal and Guinea-Bissau. The second reason is that these women "work hard". That means they know the mangrove – the tides, species, and way of life – and respect it (Davidson, 2009). These examples illustrate the importance of solidarity between generations and between women of different origins who share a sense of duty and responsibility towards the mangrove and acknowledge that in each other.

5. Conclusion

This paper analyzes how women, who inhabit and sustainably use mangroves, are perceived and, above all, how they perceive themselves and their "desirable futures" in a rapidly changing world.

Long considered an anecdotal occupation, targeting subaltern resources (shellfish, salt, honey) in marginal coastal marshlands, the use of mangroves has become an object of serious study, increasingly investigated by social scientists, and it is supported by more and more development and empowerment projects targeting women, aiming to recognize and qualify their knowledge and know-how and to label the sectors they master.

Through the study of women's strategies over three generations in Basse-Casamance, this paper has shown the resilience of fisherwomen to face major challenges of globalization, including climate change, international migration, and global trade. Women have gained financial autonomy as heads of households, guaranteeing not only basic daily expenses but also health care and their children's education, and have therefore become mainstays of their families, acquiring a new economic and social status in their communities. Oyster fishing has gone from being a marginal, invisible activity for elderly women, for want of other less strenuous options, to becoming a recognized, valued, desired and desirable profession.

"They work hard" is an expression that comes up a lot in women's speech. The phrase expresses that theirs is a hard, laborious job, one that requires courage, and one that women are proud of. They don't identify solely as oyster fishers but rather as peasant-fishers, and this multiplicity of activities enables them to manage risks, adapt to global change and innovate, ultimately making the use system more resilient and sustainable. The case studies show the close links between the multiplicity of use systems and sustainability, diversification and resilience, capacity to adapt and organize, and resistance to environmental or socio-political violence.

Mangrove is far from being a mere marketable asset, or, from another point of view, simply a natural reserve. For the local inhabitants, mangrove is their heritage, the basis of their territory (common), their identity reference. Women are strongly attached to this connection, claim it for their use, and try to protect it when it is threatened by public and private actions.

Women are increasingly recognized for who they are and what they do; they manage to maintain control over their territory, to govern it and use it sustainably and equitably according to rules negotiated between them; they now participate in governance at the level of the *fafu* and the local community, organizing themselves and helping each other. Nevertheless, even now, they are rarely kept informed or consulted. Even more rarely are they consulted on the future of the mangroves on a larger scale. This discrepancy between their local influence and policies enacted according to standards and mechanisms devised by actors outside the environment and imposed from outside has perverse effects, resulting in exactions against them.

There is no single narrative regarding the future of the mangroves. Nevertheless, the narratives of women who fish in mangroves, across regions and periods, testify to an astonishing convergence about their needs and aspirations and their ability to act and react, to anticipate and make themselves more powerful. The fact remains, however, that this defensive resistance or offensive revenge is fragile and that there are still many scientific uncertainties concerning mangrove dynamics, the factors driving these dynamics and the effects of interventions not adapted to local contexts. The unbridled pursuit of blue carbon credits by large private companies is a striking manifestation of this, as is the cyclical return of attempts to ban the use of mangroves and turn them into nature reserves. These uncertainties, and even controversy about the policies of mangroves, call for inter- and trans-disciplinary studies that will enable us to co-construct futures that are not only sustainable but also equitable, desired and desirable.

First, I would like to thank all the women who welcomed me and shared their knowledge, and in particular Alimatou Sarr, my Niominka jatigi from Niodior, a powerful woman, a shellfish fisherwoman, who left too soon and inspired me to write this paper.

CRedit authorship contribution statement

Marie-Christine Cormier-Salem: Writing – original draft, Validation, Resources, Methodology, Investigation, Data curation, Conceptualization.

Declaration of Competing Interest

none'.

Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Cormier-Salem Marie-Christine reports financial support was provided by French National Research Institute for Sustainable Development. Cormier-Salem Marie-Christine reports financial support was provided by French National Agency of Research. Cormier-Salem Marie-Christine has patent pending to no. If there are other authors, they declare that they have no known competing

financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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