

GENDER ISSUES IN DRYLAND AREAS

*Women as key stakeholders
in combating desertification*



Les dossiers thématiques du CSFD Issue 13

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French Scientific Committee on Desertification

The creation in 1997 of the French Scientific Committee on Desertification (CSFD) has met two concerns of the Ministries in charge of the United Nations Convention to Combat Desertification. First, CSFD is striving to involve the French scientific community specialized on issues concerning desertification, land degradation, and development of arid, semiarid and subhumid areas in generating knowledge as well as guiding and advising policymakers and stakeholders associated in this combat. Its other aim is to strengthen the position of this French community within the global context. In order to meet such expectations, CSFD aims to be a driving force regarding analysis and assessment, prediction and monitoring, information and promotion. Within French delegations, CSFD also takes part in the various statutory meetings of organs of the United Nations Convention to Combat Desertification: Conference of the Parties (CoP), Committee on Science and Technology (CST) and the Committee for the Review of the Implementation of the Convention. It also participates in meetings of European and international scope. It puts forward recommendations on the development of drylands in relation with civil society and the media, while cooperating with the DesertNet International (DNI) network.

CSFD includes a score of members and a President, who are appointed *intuitu personae* by the French Ministry of Higher Education, Research and Innovation, and come from various specialties of the main relevant institutions and universities. CSFD is managed and hosted by the Agropolis International Association that represents, in the French city of Montpellier and Languedoc-Roussillon region, a large scientific community specialised in agriculture, food and environment of tropical and Mediterranean countries. The Committee acts as an independent advisory organ with no decisionmaking powers or legal status. Its operating budget is financed by contributions from the French Ministry for Europe and Foreign Affairs, the Ministry for the Ecological and Inclusive Transition, as well as the French Development Agency. CSFD members participate voluntarily in its activities, as a contribution from the French Ministry of Higher Education, Research and Innovation.

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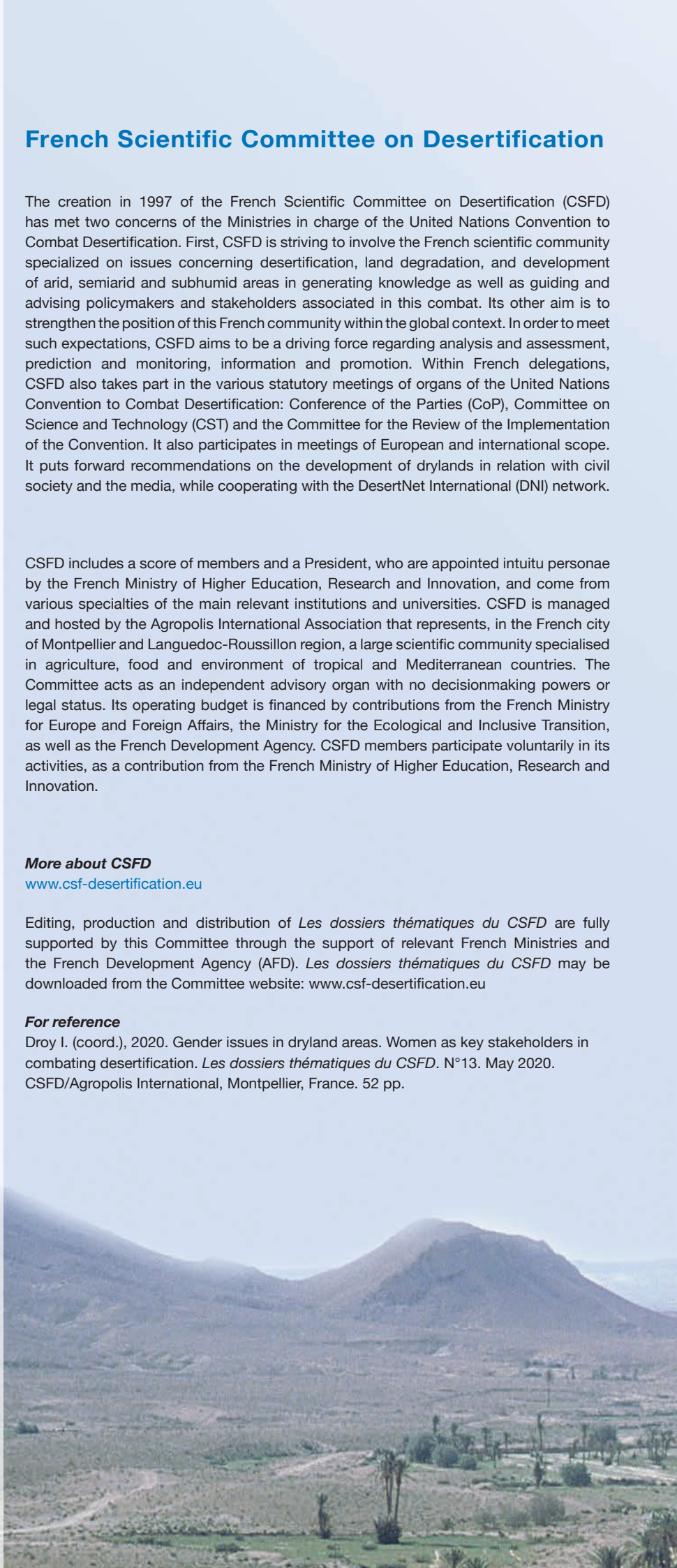
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Foreword

Man kind is now confronted with an issue of worldwide concern, i.e. desertification, which is both a natural phenomenon and a process induced by human activities. Our planet and natural ecosystems have never been so degraded by our presence. Long considered as a local problem, desertification is now a global issue of concern to all of us, including scientists, decision makers, citizens from both developed and developing countries. Within this setting, it is urgent to boost the awareness of civil society to convince it to get involved. People must first be given the elements necessary to better understand the desertification phenomenon and the concerns. Everyone should have access to relevant scientific knowledge in a readily understandable language and format.

Within this scope, the French Scientific Committee on Desertification (CSFD) has decided to launch a series entitled *Les dossiers thématiques du CSFD*, which is designed to provide sound scientific information on desertification, its implications and stakes. This series is intended for policy makers and advisers from developed and developing countries, in addition to the general public and scientific journalists involved in development and the environment. It also aims at providing teachers, trainers and trainees with additional

information on various associated disciplinary fields. Lastly, it endeavors to help disseminate knowledge on the combat against desertification, land degradation, and poverty to stakeholders such as representatives of professional, nongovernmental, and international solidarity organisations.

These *Dossiers* are devoted to different themes such as global public goods, remote sensing, wind erosion, agroecology, pastoralism, etc., in order to take stock of current knowledge on these various subjects. The goal is also to outline debates around new ideas and concepts, including controversial issues; to expound widely used methodologies and results derived from a number of projects; and lastly to supply operational and academic references, addresses and useful websites.

These *Dossiers* are to be broadly circulated, especially within the countries most affected by desertification, by email, through our website, and in print. Your feedback and suggestions will be much appreciated! Editing, production and distribution of *Les dossiers thématiques du CSFD* are fully supported by this Committee thanks to the support of relevant French Ministries and AFD (French Development Agency). The opinions expressed in these reports are endorsed by the Committee.

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Preamble

The United Nations—through four international conferences held from 1975 to 1995—has highlighted that gender equality and women's empowerment are an essential precondition for meeting the daunting social and environmental challenges we face today. At the 4th World Conference on Women held in Beijing in 1995, the 189 participating countries adopted a Platform for Action to foster equality in various fields (human rights, education, resource access, health, political participation, etc.). The implementation of this agenda is regularly reviewed, as it was in 2015 at the CSW59/Beijing+20 Conference.

Interactions between land degradation and climate change are among the most disquieting environmental challenges* and substantial research has highlighted the impact of these changes on the livelihoods of people in dryland areas, including increased food insecurity and degraded living conditions for highly vulnerable communities. Women—due to their unequal rights—are markedly impacted by these often harsh changes, which primarily affect the poorest people and those with scant resources to adapt to them.

Yet women have an essential role in production and domestic spheres in dryland areas, particularly in family farming, which is recognized as being crucial for the food and nutritional security of communities. Women on average carry out around 40% of the agricultural work, but it often exceeds 50% in some sub-Saharan African countries such as Cameroon, Zambia and Nigeria**.

Women are involved in all agricultural sectors (crop and livestock production, fisheries, aquaculture and forestry) while also having an essential role in producing food to feed their families. But gender inequality nevertheless persists. Women have limited and often uncertain access to resources (land, livestock, irrigation water, equipment) and opportunities (training, financial services)**. They perform essential—yet socially and economically undervalued—household and economic tasks, including domestic work and non-market activities (fetching water and firewood, meal preparation, child and elderly care). This work is essential but often not accounted for in statistical reports*** since it is not recognized or remunerated,

▼ **Pastoralism in Morocco.** A shepherdess and her sheep
G. Michon © IRD

* IPCC, 2019, *Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystem*.

** FAO, 2011. The state of food and agriculture. Women in agriculture: closing the gender gap for development.

*** Ilahi N. 2000. The intra-household allocation of time and tasks: what have we learnt from the empirical literature? Policy Research Report on Gender and Development, *Working Paper Series* No. 13. Washington, DC, World Bank.



despite the heavy burden this work represents in terms of both time and effort. Women's work time is often longer than that of men yet their responsibilities are increasing with the rising proportion of female-headed households and due to changes in family structures, but also to male labour migration in some regions—a trend that is increasing with the degradation of natural resources. Meanwhile women's voices are not being heard, nor their rights defended, because of the lack of women's representation in organizations, associations and decision-making and power bodies.

Reducing social and gender inequality would enable women to actively strengthen their role as stakeholders in combating desertification. The Sustainable Development Goals defined for 2030 focus specifically—through SDG 5—on women's empowerment. Moreover, the three Rio Conventions, including the United Nations Convention to Combat Desertification, outlined action plans that take into account these gender issues, whose importance in rural dryland areas is now recognized. The need for enhanced women's empowerment was also reiterated in the recent Climate Change and Land report

of the Intergovernmental Panel on Climate Change (IPCC, August 2019), stressing that “empowering women can bring synergies and co-benefits to household food security and sustainable land management.”

Women in rural dryland areas must be granted land and associated rights, as well as access to all tangible and intangible resources to which men are entitled. We could readily transform the lives of millions of households and make communities stronger, more resilient and stable by empowering women and girls who depend on land use to sustain their livelihoods and families, but also by reducing social inequality, including gender inequality.

MONIQUE BARBUT

Former Executive Secretary of the United Nations Convention to Combat Desertification







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▲ **Solidarity between three generations – three women returning to the village in the evening at a quick pace.**
One carries firewood, the other pruned branches for fodder and the third water. Municipality of Dantiandou, Niger.
© M. Loireau, 2010

Introduction

Desertification affects the living conditions of rural communities in dryland areas. The primary impact on the most vulnerable populations is increased food insecurity linked to the decline in agricultural production yields and the decrease in available resources due to biodiversity deterioration. Livelihoods* consequently change and then alternative more or less sustainable solutions must be found to cope with these altered resources. Yet one of the fundamental elements of the economic and social organization of rural societies involves differentiation of rights, activities and responsibilities based on gender and other social dimensions (ethnicity, status, religion, etc.). **The impacts of land degradation and desertification hence**

partly differ according to whether you are a woman or man, elder or youth, or member of a particular social group.

As women have less access rights to material resources (land, material, credit), but also intangible resources (consideration, representation in decision-making bodies, level of education) compared to men, they have a narrower range of options available to cope with the consequences of land degradation and desertification. Moreover, when resource pressure skyrockets, women's rights are often the first to be eroded because they are more precarious.

* Terms defined in the glossary (page 52) appear in blue and are underlined in the text.



▲ **Farm work in the Moroccan High Atlas mountains.**
Young girls in the fields during barley harvesting.
O. Barrière © IRD



▲ **Cereal pounding in Senegal.**
Pounding of dry cereals harvested by women from a family in the village of Damantan, Kédougou region, eastern Senegal.
J. Piquet © IRD

In this restrictive setting, women's stakeholder capacity is expressed in many ways in the form of individual or collective initiatives at different scales. **It is essential to understand and recognize these assets so as to be able to incorporate them in responses geared towards restoring degraded lands or mitigating desertification through sustainable land management.**

This *Dossier* does not aim to provide a comprehensive picture of gender inequality in dryland areas. It takes a close look at gender relationships among people living

in rural areas (excluding urban areas) whose [livelihoods](#) are closely linked to the state of the ecosystem, particularly the soil, and plant and animal biodiversity, which underpin the various activities (agriculture/livestock/pastoralism/fisheries). The illustrative examples presented are mainly from Africa (Sahel and North Africa) due to the high future demographic weight of these regions and their vulnerability to climate change. But these problems are also acute elsewhere, particularly in South Asia, which could be the focus of a future *Dossier*.



Status of women and men in dryland rural societies

THE IMPORTANCE OF GENDER IN AGRARIAN SYSTEMS

The introduction of gender-sensitive analysis (i.e. gender relations, see Focus below) with regard to agricultural and pastoral production systems, and agrarian systems in a broader sense, is based on recognition of the 'specific' role that women have in these systems. Reflections on this issue under way since the 1970s encompass several disciplines ranging from economics to anthropology. While gender-differentiated

roles are defined both symbolically and through the sexual division of labour and distinct types of production, this distribution is by no means fixed. Moreover, many ethnographic studies have showcased the universal nature of this gender division of labour (including domestic work), but also its variations between societies, its trends and transformations over time, while illustrating the roles assigned to women and men as social constructs (Mead, 1935; Balandier, 1974; Meillassoux, 1975; Beneria and Sen, 1981).

→ FOCUS | Gender – a social science concept

Gender refers to socially constructed relationships between women and men beyond their biological differences. Considering the notion of 'gender' rather than 'sex' reveals how societies have relied on biological differences, particularly those related to reproduction, to build distinct social roles between women and men, which are often marked by inequality. Values related to the masculine gender are systematically promoted to a greater extent than those related to the feminine gender, although these values may vary between societies. Women hence generally shoulder most of the tasks in the domestic sphere, which is devoted to social reproduction (e.g. cooking, child- and elder-care).

For further information: Beneria *et al.*, 2015; Bereni *et al.*, 2012; Bisilliat and Verschuur, 2000; Locoh, 2007; Verschuur *et al.*, 2014.
Genre en action: www.genreenaction.net
BRIDGE (Institute of Development Studies): www.bridge.ids.ac.uk



▲ Preparation of a millet pancake, Benin. C. Duos © IRD

This variety of situations illustrates that **labour organization is not founded on the respective physical capacities of men and women from a naturalistic viewpoint. Instead, it is the outcome of complex interactions, involving a diverse range of family models, technico-economic changes and power relations within society.** A technical change, better market promotion or other circumstances may thus prompt men to be interested in a so-called 'feminine' activity, which highlights the relative plasticity of these standards. For example, in West Africa, market gardening—which may be viewed as replicating women's home gardens while being geared towards meeting family subsistence needs—may initially be conducted mainly by women, but the activity is sometimes soon taken over by men once it becomes profitable.

▼ Agricultural work in Niger
F. Boyer © IRD



→ FOCUS | **Gender mainstreaming according to the French Ministry for Europe and Foreign Affairs (MEAE)**

“Gender mainstreaming calls into question the processes whereby hierarchies are formed between people according to gender and the discrimination that ensues. The way roles, responsibilities, tasks and resources are divided between women and men is a source of inequality and limits women’s ability to enjoy their basic rights. Gender mainstreaming defends universal basic rights and equal access to the law, it aims to ensure equal rights to both women and men as well as a fair distribution of resources and responsibilities between them.

This methodology’s approach starts with a comparative analysis of women’s and men’s statuses and encourages better consideration of inequality in France’s external action. It helps identify and break down feminine and masculine stereotypes as well as the social and economic norms that underpin the relations between both sexes and contribute to perpetuating gender inequality. It also highlights power relationships and inequality between women and men and the subsequent repercussions on their abilities and opportunities to participate in development.”

According to MEAE, 2018. France’s International Strategy on Gender Equality (2018-2022), p. 15.



▲ **Women in a Fulani camp in Niger – handicrafts and childcare.** © I. Droy

→ FOCUS | **A family farm in West Africa**

There are examples of family-based production organization in several rural societies in sub-Saharan Africa, although the models are diversified and evolving as a result of sociodemographic, economic and cultural change. For example, among the Senufo people in Mali, this organization is founded on an agricultural production unit (so-called ‘family farm’ or ‘family’), consisting of several sometimes polygamous households, with everyone often residing in the same concession under the authority of a unit head, who organizes the production and distribution of resources. Some of the so-called ‘collective fields’ in these units are cultivated under the direction of the family head, but all members of the family labour force must reserve working days to carry out the cultivation tasks. In Mali’s cotton-growing zone, these collective fields are used for growing cotton and cereals (millet sorghum, maize), which are stored in collective granaries to supply the concession according to specific rules.

In many societies, there is also another field category, i.e. individual fields, that are located within the concession or household land area. These may be cultivated by the household head, but also by single women or young men. Crops harvested from these fields are self-consumed or sold—they serve for women, especially, to fulfil their family or community obligations, e.g. for ceremonies. Women may also sell these crops to cover some of their children’s expenses. Commercial crops (cotton, groundnuts) are sometimes also grown in individual fields. The income generated by these individual fields may be used by young single men to build up a small capital to enable them to marry. In these societies, there is no family ‘common pot’, i.e. pooling of resources is limited to certain areas and the distribution of responsibilities is fairly coded (who pays what in the family).

For further information: Bidou and Droy, 2017.



▲ **Field work, Niger.** © M. Loireau

IDENTIFYING, NAMING AND MEASURING WOMEN'S ACTIVITIES

There are still many dominant trends despite the diversity of situations. **Women are largely responsible for managing tasks in the domestic sphere:** water and firewood gathering, meal preparation, routine housekeeping, child- and elder-care activities. **Otherwise, for other activities, women are often assigned to socially and economically undervalued work. Yet their role in agricultural production is essential and on average they account for around 40% of all agriculture work**, according to FAO estimates, while exceeding 50% in some sub-Saharan African countries such as Cameroon, Zambia and Nigeria (FAO, 2011, p. 24). The situations vary across societies and agrarian systems—not only is participation as family labour in agricultural work heterogeneous, but there are also marked differences in empowerment and responsibility with regard to how the activities are conducted, which can be extended as in some regions in sub-Saharan Africa (e.g. in Ashanti communities in

Ghana or Fon communities in Benin). Moreover, these situations are often not steadfast either and there may be substantial changes.

Measuring women's activities is often difficult because they are relatively invisible in statistical and rural surveys. Women's food production activities on individual plots are perceived by men and institutions as an extension of nurturing activities related to their status, which has also contributed to the devaluation of their vital role in agricultural production. Statistical surveys are often limited to interviews with the household or farm head, while they take very little account of non-market economic activities (including subsistence agricultural production) and domestic activities. This results in incomplete and partial information on women's work (including domestic tasks), activities and income. However, some survey mechanisms (see adjacent Focus) highlight the respective contributions of family members in terms of time spent and type of activity (Droy, 2014).



▲ **Family agriculture, Tunisia.** Weeding and gathering plants for fodder in market-gardening areas in the Kettana Oasis.
C. Lamontagne © IRD

→ FOCUS | Time-use surveys to gain greater insight into women's activities

The development of time-use surveys was one of the recommendations of the 1995 Beijing World Conference on Women. This type of survey provides accurate information on the time allocations of all individuals in a household, thus highlighting the work of certain categories of the population (especially women and children) previously masked by inappropriate concepts, definitions and measurement methods. **These surveys reveal the extent of tasks carried out by women, but which are not accounted for by other statistical mechanisms (agricultural censuses or poverty surveys).**



▲ Drawing well water with a goatskin bag, Dantiandou, Niger. © I. Droy

This tool has made it possible to assess the time spent on unpaid economic activities, such as water or fuel collection (firewood), which is particularly high in dryland areas. It has also enabled assessment of the time devoted to domestic activities such as meal preparation or childcare.

Women's total working time is often longer than men's, but the allocation varies between market and non-market activities, with women having a larger share in non-market activities. Time-use analysis also highlights the constraints associated with this gender distribution: women's mobility is more limited at fixed times due to multiple constraints, and they have less time to spend on social or leisure activities. **This time constraint must be taken into account when introducing technical or organizational innovations: activities that are too time-consuming would be appropriate barring a reduction in women's workload.**

For further information: UN, 2005; Blackden and Wodon, 2006.



▲ Gathering grass for fodder in the undergrowth in an agricultural plot, Zarat oasis, southern Tunisia. C. Lamontagne © IRD



▲ Access to water in rural areas in Haiti. P. Gazin © IRD



▲ Transporting millet, Burkina Faso. J.P. Guengant © IRD



→ FOCUS | Multiple changing activities: the case of West African women

In West Africa, in addition to agricultural activities in family fields and domestic tasks, **women develop many activities to diversify their income sources**. Depending on the available opportunities, they may gather food, process products (shea butter, *nééré* mustard), do small-scale business or work as agricultural employees. Rearing and selling small ruminants (goats, sheep) also account for a significant part of their income, while also generating funds to help them get through the [lean season](#) or cover unforeseen expenses. Rearing, especially of small ruminants, has an increasingly important role, even in societies that had not previously practised this activity. In pastoral societies, such as amongst the Fulani, women also own cattle, which are incorporated in the family herd, but they retain ownership. Most importantly, they process and sell milk, which allows them to cover some family expenses.

Women's activities are also linked to their lifecycle and status, often leaving them with little time for their own activities. It is common for daughters-in-law to do most of the domestic work even when they have young children. When their sons get married, they in turn are able to delegate these tasks to their daughters-in-law and devote more time to their economic activities. Hence, **within the same social group, women's situation is also linked to their marital status, age, the gender of their children and their rank as wives in polygamous societies**.

For further information: Kuhn, 1997; Floquet, 2007; Droy *et al.*, 2014.



GENDERED ACCESS TO RESOURCES

Access rights to resources, land, livestock and harvested produce are different for men and women. **These differences could be partially explained by kinship relationships.** **Family structures** are still marked by **patrilineal** or **matrilineal filiation** principles, often with complex combinations, which determine the transmission of land and even property rights: e.g. in Sereer communities in Senegal, this system is referred to as ‘bilinear’ because some property is transmitted via the maternal line (from the maternal uncle to his nephews) and others through the paternal line. Rights of access to land, water and trees are therefore linked to whether or not the person belongs to a larger group (e.g. those considered as being the first pioneers of a place) and to the ways that rights are transmitted to the family. ‘Bundles of rights’ are therefore formed, some of which are clearly identifiable, such as the right of herders to

graze their livestock on rangelands and on stubble in fields after harvests, or the right of women to harvest shea nuts in men’s land estates, or the right of usufruct on cultivated land. In some cases, the ownership of trees and land are even separated, i.e. trees can be inherited, sold or pledged without the land on which they grow.

In addition to these modes of resource rights transmission, **another rule prevails in family structures regarding the location where wives will reside after marriage.** The most common is patrilocalty when the young wife resides in the husband’s parents’ village, but there are also cases of matrilocality, where the husband moves to his wife’s village. However, current family dynamics linked to sociodemographic, cultural and economic changes are leading to the diversification of family models, although hierarchies linked to gender or sibling status are still prevalent (Barou, 2017).



▲ A bride's canopy on a camel, Sudan. B. Faye © CIRAD

◀ Background photo, left: selling milk in Chad. Wives of Fulani herders in a market, Hadjer Lamis region. M. Donna © IRD

◀ Top thumbnail: women going fishing near Guéguéré, southern Burkina Faso. © M. Loireau, February 2019

◀ Bottom thumbnail: women selling dried fish, Mali. © M. Loireau

◀ Adjacent right: a potter in Burkina Faso. © I. Droy

→ FOCUS | Complex resource rights in lineage societies

In different societies, including those where matrilinearity is still present in the transmission of land (e.g. amongst the Akan ethnic groups in Ghana, Côte d'Ivoire, Togo and Benin), **patrilocality dominates and social and political power remains vested in men.** Intra-family inequality is based on the prominence of the decision-making power of men/elders, who have privileged rights of access to and control over resources, thus leaving relatively little leeway for women and juveniles, but there are considerable variations according to the context and society.

As many studies have shown, in this organization, **women do not have control over land, except in specific situations of individualization of property rights through the purchase of land or inheritance.** Women may, however, have access to certain fields for their own crops within the family estate or the husband's [lineage](#), but these rights are limited to temporary use and depend on their marital status. **Separation or widowhood is therefore synonymous with land insecurity.**

For further information: Colin, 2004; Hillenkamp, 2011; Hallward-Driemeier and Hasan, 2012.



▲ **Argan groves in Morocco.** A shepherdess and her goat herd in a field of argan trees. The argan tree also serves as pasture and provides fodder for about 2 million ruminants. G. Michon © IRD

Family-based production and consumption organization is often complex, with spheres that only partially overlap—sometimes with separate production and residence units and 'kitchens'. In this setting, a completely theoretical model of a unitary egalitarian household with resource pooling and allocation according to individual needs is impossible to apply. **The forms of resource allocation, obligations and decision-making power are indeed more complex, with marked variations according to cultural areas, sometimes very far from the unitary model and often involving budget separation.**

An analysis of activities and the distribution of roles and obligations (granary management, feeding children, payment of school and health fees), as well as their changes in a restrictive sociodemographic and ecological context, partially explains the factors underlying food insecurity alongside other socioeconomic factors at different scales (markets, agricultural policies, insecurity, etc.).

There are also often relatively marked gaps between social norms, as stated by community representatives and individuals themselves, and their practical implementation. These gaps vary according to socioeconomic developments and husband-wife negotiations that take place outside of the social scene.



◀ **Examination of a newborn baby the day after birth, Benin.** N. Fievet © IRD

Gender issues in dryland areas
Women as key stakeholders in combating desertification

HUMAN DEVELOPMENT, GENDER AND RESOURCE PRESSURE INDICATORS – CLOSE LINKS

2000-2015: a mixed MDG record for dryland areas

As early as 2000, the United Nations (UN) defined eight Millennium Development Goals (MDGs) for a 15 year period. By 2015, they aimed to halve global poverty, reduce child and maternal mortality, as well as hunger and diseases (HIV/AIDS, malaria, etc.), halve the number of people without access to drinking water and sanitation, protect the environment and create a global partnership for development. Goal 3 was devoted to promoting gender equality and women's empowerment as a necessary condition for development. Focusing efforts on specific objectives has yielded major results in some areas, such as reducing child mortality.

The findings of the 2015 MDG assessment were mixed with regard to drylands (United Nations, 2015). Extreme poverty has been reduced, but the vast majority of the population still lives below the poverty line. **The gender inequality reduction results vary greatly between fields and countries.** Significant progress has been made in access to primary education, with a sharp increase in girls' access to school. In some countries, women's participation in political life has substantially improved, such as in Senegal, where the National Assembly has been almost equally gender balanced since a law was passed in 2012.

Under-five mortality has been significantly reduced outside conflict areas. However, according to the UNICEF 'The Changing Face of Malnutrition' flagship report (2019), globally, one in three children is not growing well due to malnutrition (undernutrition, hidden hunger and overweight). Chronic child malnutrition (stunting) is still very high, and has even worsened in some African countries, particularly in rural areas. Invisible or hidden hunger, which results from inadequate nutrition and vitamin and micronutrient deficiencies, is particularly high in sub-Saharan Africa and South Asia (IFPRI, 2014; Grebmer *et al.*, 2014; UNICEF, 2019), often affecting more than a third of children under 5 years old, sometimes with irreversible impacts on their physical and cognitive development. **Chronic malnutrition is due to multiple factors, but the links between poverty, women's low level of education and their lack of empowerment with the prevalence of child malnutrition have been**

demonstrated (Lemke and Bellows, 2016). The food insecurity context is often linked to natural disasters (floods, cyclones, droughts) that affect agricultural production, but **also to conflicts, which cause food crises** (FSIN, 2019) that specifically affect women and children.



▲ Preparation of a cowpea stew, Senegal. T. Chevallier © IRD

▼ Improving the first weaning food: a necessity to prevent malnutrition in young children. B. Maire © IRD



Women's reproductive health has improved with the reduction of maternal mortality through improved health facilities. But human rights are still largely disregarded in some societies, especially in West Africa (Guinea, Mali) and East Africa (Somalia, Eritrea, Sudan), where the rate of female genital mutilation has only slightly declined, with serious impacts on women's physical and psychological health*. **Access to birth control is often insufficient; social (husband or family) and religious pressures thwart progress in this area and undermine women's right to control their own bodies. Moreover, early marriages and pregnancies remain widespread, although family patterns are changing rapidly** (Antoine and Marcoux, 2014).

It is crucial to no longer sidestep the demographic issue in dryland areas with fragile natural resources. For example, in Niger, the population increased from 7 million in 1988 to 20.6 million in 2017 according to the *Institut national de la statistique* (INS, Niamey). Eighty percent of the country is very rural, with activity systems closely linked to pastoral and agropastoral resources. With a fertility rate that still exceeds 7 children per woman and a young population (more than half of whom are under 15 years old), Niger faces the dual challenge of sustainable resource management under high anthropogenic pressure and of youth employment, where the prospects are bleak**. **The demographic issue is certainly complex, but it closely overlaps with**

* For statistics on the prevalence of different forms of female genital mutilation, see the websites of the World Health Organization (WHO) and the United Nations Population Fund (UNFPA): www.who.int/reproductivehealth/topics/fgm/prevalence/fr/; www.unfpa.org

** For more details by country, see the UNFPA website: www.unfpa.org/fr/data/world-population



▲ Apprentices in uniform in a sewing workshop. Togo.
P. Rheault © IRD



◀ Nigerien students from Dan Dicko Dankoulodo University of Maradi (UDDM) in graduation attire for an MSc degree in agronomy. From left to right, Rahilatou Moussa Tchoffo, valedictorian, Zouera Bomborou, then Rachida Moussa, 2nd in her class. Rahilatou and Rachida will start thesis research on water.
Maradi, Niger.
© M. Loireau, January 2019

▼ Preventive public health campaign. Poster to raise awareness on combating excision, Burkina Faso. M.-N. Favier © IRD



women's status—tensions that emerged in several countries, such as Mali in 2009 over the revision of the family code, reflect the power, or even resurgence, of conservative movements that are against equal gender rights, with women being relegated a minor social status.



2016-2030: an SDG focused on women

The UN subsequently set 17 Sustainable Development Goals (SDGs) for the 2016-2030 period to replace the MDGs—the latter have a universal scope and are more politically focused.

Each SDG comes with targets to be implemented by 2030. **SDG 5 was specifically devoted to the gender**

inequality issue*: “Achieve gender equality and empower all women and girls.”** Gender equality targets are set in other SDGs such as that focused on health: “Ensure healthy lives and promote wellbeing for all at all ages” (SDG 3), and that on education: “Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” (SDG 4).

Combating desertification is part of SDG 15: “Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.” **These objectives should be carefully combined when implementing actions, i.e. carry out initiatives to preserve or restore the environment while ensuring gender equality.**

*** For political reasons, there was no agreement on the use of the term gender to refer to socially constructed roles in the SDGs.



◀ **Nigerien doctoral student, Khadidia Yéro Souley, on land-use changes in western Niger: impact on the water cycle.**

She currently works at AGRHYMET and as an expert in sustainable land management projects and assessment of land restoration operations. © Maud Loireau, 2010

▼ Poster promoting girls' education in Benin. C. Lissalde © IRD



Social and environmental change – gender-differentiated impacts

Land degradation does not affect the activities and living standards of women and men in the same way because of their different roles in agricultural production and resource management. In the areas studied in this *Dossier*, desertification affects societies whose vulnerability is linked to multiple interacting economic, social, political and security factors, thus giving rise to a so-called ‘vulnerability syndrome’* linked to global change.

LAND PRESSURE AND INSTITUTIONAL CHANGES

With increased land and population pressure and the individualization and commodification of land—replacing **lineage** land management—the most precarious land-use rights are sometimes the first to disappear, after which **women and youth are deprived of land access, and thus to a key production resource in rural areas** (Verschuur, 2011; Monimart, 2011).

Public policies (registration, security) can disrupt local land rules and in some cases contradict forms of intra-family management of land resources and cause tensions within families. Moreover, **family structures** have been subject to major upheavals for several decades, with a diversification of models and an increase in the share of single-parent households headed by women (Barou, 2017). **In rural areas, this insecurity regarding land access rights is one of the reasons for women’s impoverishment, combined with other inequalities in customary or legally-binding rights**, such as the family code, whose application is often variable.

Land pressure also comes from abroad. In recent years, several governments of poor dryland countries have accepted the principle of the acquisition of large tracts of agricultural land by foreign financial or industrial groups, e.g. Mali,

* By the syndromes approach (Lüdeke *et al.*, 2004), it is possible to synergistically combine different vulnerability scales, ranging from individual vulnerability (individuals, households) to that of certain social groups, then to that of a territory or country, in turn facilitating definition of a characteristic vulnerability profile.



▼ Women and children sifting through soil extracted by men in a now abandoned gold mine in the hope of extracting more gold dust, Bondigui municipality, southern Burkina Faso. © Maud Loireau, 2019

→ EXAMPLE | Loss of land access and defeminization of agriculture in Niger

In southern Niger, near Maradi, in a densely populated region where land pressure is high with recurrent livelihood crises, **defeminization of agriculture is underway through the confinement of women under the pressure of radical Islam. This new social order has been instrumental in halting women's agricultural activities by excluding them from land access. This loss of autonomy and resources has further impoverished women, while their social burdens and obligations remain:** diversification into other activities is limited, and most men are unable to meet their family's basic needs (food and non-food); the social situation is particularly critical since nearly half of children under 5 years old in this part of Niger suffer from chronic malnutrition.



▲ A festive day in Sina Kwara, Niger. M.L. Sabrié © IRD

Some projects are striving to reverse this trend through collaborations with associations and imams to apply Muslim law, which in some cases has helped avoid this loss of women's usufruct of land by including them in successions (which is not provided for under the lineage rules). Even if the distribution is unequal between boys and girls, this at least allows girls to have secure access to a minimum amount of land.

For further information: Diarra and Monimart, 2006.

Ethiopia and Sudan, to name but a few** (Nicolas, 2014). There is much debate on this land-grabbing issue, particularly on the impact of the reduction of available land area on family farming and/or livestock farming. The impacts on women's rights are equally negative, since they are generally the least secure. **Moreover, women are often excluded from negotiations on land transfer 'compensation' and are thus disadvantaged.**

** See the Land Matrix Initiative website which monitors large-scale land investments worldwide: <http://landmatrix.org>

→ FOCUS | Access to irrigation water – a recognized but overlooked economic right

Gender equality regarding economic rights is enshrined in national legislation in many countries such as Niger. However, in practice, these rights are seldom respected, including access to irrigation water for agriculture, which is essential in dryland areas. The results of a case study of two irrigated rice fields in Niger revealed **the mechanisms of marginalization, or even exclusion, of women from land and irrigation water, despite the reaffirmation that gender mainstreaming is crucial in reducing poverty and food insecurity.**

Women's access to developed plots is primarily very restricted because male household heads are privileged. Moreover, for the few women who do have a field plot, water access is particularly constraining in cropping areas with technical and organizational problems, where it is necessary to irrigate at night and monitor water towers in a power struggle with neighbours. Difficulties of access to labour and inputs also penalize them and their margins are very low. Finally, despite the prohibition on hereditary succession or sale, the plots are handed down between men in the family, while women are excluded from inheritance according to customary rules, contrary to the legislation in force.

Source: Alou *et al.*, 2015.

For further information on the impacts of gender discrimination on family agriculture: Hiilenkamp, 2011; Croppenstedt *et al.*, 2013; Guétat *et al.*, 2014.



▲ Irrigation system in Tunisia. The gravitational irrigation technique consists of watering the crops via surface runoff.

J. Champion © IRD



▲ Agricultural work in the Aït Bouguemez valley in Morocco. Irrigated farming products (cereals and fodder) are mainly targeted to feed families in this valley. L. Auclair © IRD

DECREASED ACCESS TO RESOURCES FOR WOMEN

Land pressure has also led to the reduction of fallows (in area and duration) and uncultivated areas ('bush'), where women are often active gathering fruit, plants, bark or roots that are used in food preparations (including during the [lean season](#)) or pharmacopoeia, or they sometimes even sell these products. Luxereau (2003, p. 78) points out that, "when harvesting and gathering activities are carried out by sedentary populations, they are often considered as essentially feminine and marginal production activities relative to cereal production, but the products become essential during lean periods." **However, with ecological and social change, women are no longer the only ones interested in these plants and male household heads are also picking them to be marketed.**

In a study conducted in southwestern Burkina Faso, Fourgeau (2002) highlighted the impacts of reducing fallows on women's activities. **With the loss of plant gathering resources in uncultivated areas, women must find new activities to fulfil their family responsibilities** (provision of condiments or participation in covering certain household expenses). There has also been a decrease in crop plant diversity (crop diversity, market gardens, millet, etc.) due to changes in production systems. The introduction of seeds engineered via agricultural research, with genetic homogenization and the loss of certain traits such as photoperiodism (for millet/sorghum), has a negative impact on family food security in terms of food quantity and diversity.

→ FOCUS | Oases – unique systems requiring resource and knowledge protection

Oasis systems are varied, but all of them depend on access to groundwater in highly arid regions. These environments are often affected by desertification, both because of global environmental change and of exploitation methods that alter water resources. Yet the rural economy of the Sahara oases is based on diversified family farming where date palm trees play an important role. Many oasis product processing activities are carried out by women, but the decline in resources—in a context of high population growth and changing consumption patterns—has made these products less attractive. This situation is leading to pauperization of the population, with a marked impact on women who are less mobile than men. In several oases, such as Figuig in Morocco, initiatives to support craft activities such as weaving (organization of marketing through fairs or new circuits) have prompted renewed interest in techniques that marshal long-standing knowledge, while boosting income and cultural identity. **The development of geographical indications for these local products, which respect traditional know-how, has made it possible to support—via commercial outlets and prices—an approach to enhance and preserve the biological and cultural diversity of these areas threatened by globalization.**

For further information:

Centre d'Actions et de Réalisations Internationales | (CARI), an association that supports local development stakeholders in dryland areas, particularly in oases, in combating desertification: www.cariassociation.org

On geographical indications: AFD/FFEM, 2010.

▼ Women's cooperative in Zammour: barley sorting. Tunisia.
C. Lamontagne© IRD



Gender issues in dryland areas
Women as key stakeholders in combating desertification

▼ Packaging of products from an oasis in Tunisia. © M. Loireau



MIGRATION – MAJOR SOCIODEMOGRAPHIC CHANGE

In many dryland countries, particularly in the Sahelo-Sudanian region, migration dynamics are a long-standing trend and current incomes generated by this mobility are vital for national economies. Attention has often been focused on long-term migration, especially to Europe or agricultural colonization migration—such as the Mossi migration within Burkina Faso—to newly cultivated areas or neighbouring countries (Sautter, 1980).

Short-term migration, also known as temporary migration (3-6 months), is also widespread in rural Sahelo-Sudanian areas. These migrations are an integral part of the activity system (especially since colonization and due to the need generate income to pay taxes). They are linked to the agricultural calendar: during the dry season, many men leave the villages after harvest for several months to find work, **which places women in a pivotal role with increased family responsibilities**

(subsistence, child- and elder-care). These temporary migrants may look for an activity in the city or go to neighbouring countries on relatively established routes, i.e. with local stopovers. They return home for the agricultural work that starts in the rainy season. These migrations make it possible to supplement incomes in conditions under which the possibilities for diversifying local activities are highly limited and where there are wide variations in agricultural and agropastoral activities due to climatic hazards, economic and security shocks (Lallou and Delaunay, 2015). **Environmental degradation leads to the loss of livelihoods and increases pressure on migration dynamics.**

In many regions, temporary migration is also now a way for married or unmarried women to obtain paid work, often in cities, thus enabling them to contribute to family expenses or build up a marriage trousseau for young girls. **The feminization of migration is being observed in cases of short- or long-term or international migration.**

→ FOCUS | Migration and vulnerability

In Dantiandou, Niger, although human migration is a long-standing phenomenon, its scale has become unprecedented in recent decades due to population growth, terroir saturation and successive food crises. The observed decrease in food stocks from one year to the next has several causes: in addition to fluctuations in production due to climatic hazards, there is the problem of soil fertility degradation, earlier crop sales or the fact that farmers sometimes have to pledge part of their harvest to repay debts contracted during the previous [lean season](#).

In these conditions, it is sometimes most of the active men in a village community who migrate. Due to the agricultural crisis in Niger, most men now have to be temporarily mobile, and this no longer only involves single men, because it is essential for everyone to search for income abroad. Most of these men are involved in small-scale trade, which requires start-up funds, and it is common for them to sell millet or small ruminants to finance the launch. But this commitment of assets is risky in a situation of high family financial and food insecurity, especially since the migration context has also changed with the emergence of political and security unrest affecting the destination countries. However, this means that women, children and elders are left back on the farm for more than 6 months. They have to cope with the shortage of food supplies from family production at an increasingly early age—men are often unable to return in time for the first physically demanding work of the season, such as ploughing. **The quest for income through migration comes at the price of increased family vulnerability and significant impacts on local business systems.**

Source: Bidou and Droy, 2017.
For further information: Mounkaïla, 2002; Hesse *et al.*, 2013.



▼ Migrants. Niger. Travellers (probably daily migrants) on the road between Baado and Illela.
F. Boyer © IRD

STAKEHOLDER BEHAVIOUR REGARDING CHANGES IN RESOURCE DISTRIBUTION

Development interventions are also instrumental in changing gender relations. There are many examples where ‘gender-blind’ development projects have contributed to women’s loss of autonomy. But

stakeholder behaviours are sometimes complex and women have a surprising ability to develop strategies to cope with changes in resource management conditions, as shown in the example below concerning a jatropha fuel production project in Mali to supply mills and generators in villages.

→ EXAMPLE | **Who benefits from jatropha? A project to develop a short agrofuel production chain to reduce fuel poverty in Mali**

Since 2005, the links between energy access and development issues (improving livelihoods through access to electricity and economic development) have generated considerable discussion, particularly regarding possible alternatives to fossil fuels—notably agrofuels—accessible in rural areas. EU-wide commitments to mainstreaming agrofuels into the transport sector considerably heightened interest in this energy source at the time. In developing countries, many projects have been proposed to produce plant-sourced biodiesel or ethanol based on large-scale development of field crops, generally founded on an agroindustrial model, with a particular interest in jatropha (*Jatropha curcas*), a shrub that produces inedible oil seeds. However, the economic results of large-scale jatropha plantations—once described as ‘green gold’—have been quite disappointing and only a few monoculture plantations have been set up, thus limiting the impact of land grabbing.

Meanwhile NGOs have been considering the possibility of developing short agrofuel supply chains on family farms to reduce fuel poverty in rural areas. Cotton growers in Mali’s cotton zone have thus taken advantage of the opportunity offered by jatropha promoters to produce fuel oil as an alternative to diesel in certain rural facilities (generators,

mills, etc.). Jatropha was already present in this region, particularly in hedges since the 1980s when the cotton company had promoted growth of this shrub as an erosion-control measure. But the fruits were not being used due to their toxicity. At that time, women were allowed to harvest jatropha berries free of charge simply by notifying the land owners. Some elderly women made soap from the fruits for family use, but each shell had to be removed manually, which was a very laborious process. But then the family’s soap needs were essentially covered by homemade shea butter soap.

The various jatropha promotion projects provided a strong incentive for farmers to plant new jatropha plantlets grown from local seeds. In three municipalities in the cotton-growing area, the number of plants increased from about 55,000 before the arrival of the promoters in 2008 to more than 420,000 in 2014. Many plantations have been set up as hedges around crop fields. Surveys conducted as part of the JatroRef network revealed that the prospect of generating income was not farmers’ primary motivation. They were found to be mainly interested in jatropha as a means to control soil erosion and address land insecurity issues and these parameters were taken into account when choosing planting sites.



During the same period, the promoters started buying jatropha seed at between FCFA50-150/kg. **Once the jatropha plantations had been set up and a market emerged for this crop, women no longer had free access to the seeds and this activity was taken over by men.** Nevertheless, women were still highly involved in jatropha seed harvesting and postharvest treatment, including shelling, sorting and winnowing.

Meanwhile, the shea market expanded and shea processing companies in the Bobo-Dioulasso region of Burkina Faso extended their supply area to the Sikasso region of Mali. This was an opportunity for women since shea nut collection and shea butter marketing are female activities. In several households, women then sought to get more jatropha seeds to meet their household soap needs, thus enabling them to market their shea butter rather than turning it into soap. The jatropha soap-making technique thus became widely available between 2008 and 2014 and some women were buying jatropha seeds at FCFA120-150/kg.

Household surveys conducted during the 2014 cropping season showed that despite the restricted access to jatropha seeds, women were able to obtain them by negotiating directly

with the family head as remuneration for their harvest and postharvest work, by furtively setting aside part of the seeds gathered when working in the family plantations, or by making arrangements with plantation owners. It is estimated that women ultimately get about 30% of the seeds, but the conditions vary depending on the attitude of the household head. Women thus have two combined objectives, i.e. to meet their household soap needs and to have a personal source of income.

Recently set up plantations are, however, less productive than expected and jatropha promoters are struggling to obtain sufficient raw materials to run their processing units. The available seed supply in the area is likely to increase as the plants mature, but the prospect of a local jatropha-based agrofuel supply chain is still uncertain. These plantations also provide other ecosystem services, such as stabilizing soils that are highly vulnerable to erosion. On the surface, women appear to have lost control of this resource, but in practice they actually reap a significant share of it. **An unexpected impact: promoters of the jatropha oil sector and women will compete for marketing of jatropha seeds.**

For further information: IRAM, 2014
JatroRef Network: <http://jatroref.iram-fr.org>



▲ **Women in the village of Nampena making soap from jatropha oilcake.** 23 January 2014, inauguration of two pure jatropha vegetable oil production units in Yorosso and Koury, in southeastern Mali. © GERES

◀ **Jatropha, a source of agrofuel.** P. Zante © IRD

Women's involvement in combating land degradation

Women's capacity for action, as viewed from an economic standpoint, is also reflected in actions to combat land degradation. They may be oriented towards ex-post land restoration activities or *ex-ante* contributions to biodiversity preservation, such as in value-added uses of forest products. Women are also developing initiatives to improve their livelihoods and offset the negative effects of land degradation.

MITIGATING DEFORESTATION BY REDUCING FUELWOOD CONSUMPTION

Wood is the main domestic fuel source for cooking and lighting in rural and urban tropical dryland areas. This can lead to forest degradation or even deforestation in some areas. There is a considerable degree of uncertainty regarding data on wood as an energy source due to difficulties in measuring wood harvesting rates (Ozer, 2004). In many countries, in the absence of affordable alternatives for most households (gas or

electricity), actions to combat deforestation are carried out in two directions. First, wood resource management with the creation of regulated wood markets (Hautdidier *et al.*, 2004) or plantations devoted to fuelwood production and, secondly, the reduction of consumption by using more efficient combustion equipment such as improved stoves, or alternative fuel products such as plant residue briquettes. Women are involved to different extents in both cases.

With regard to wood resource management, women and their children take care of firewood collection in many rural societies—they generally collect dead wood, often further and further away from their homes, and carry it back on foot, which is a long and arduous task. However, this fuelwood gathering is not always environmentally neutral. In some rare cases, such as in southern Morocco, women cut the lower branches of argan trees to form large piles of wood in front of their house, which is a sign of wealth, but seriously weakens the trees.

▼ Agroforestry in Ethiopia. Poster promoting an agroforest in an Arabica coffee production area. H. De Foresta © IRD



Yet women are seldom decision makers with regard to cutting wood from living trees and making charcoal from managed renewable wood resources or, more frequently, from uncontrolled harvesting. However, the quantities harvested are often greater than the natural forest renewal rate, which is a major (and often the main) deforestation factor in dryland regions.

Regarding fuelwood consumption, considerable work has been undertaken since the 1980s to develop and disseminate stoves that improve calorific efficiency, thereby reducing the amount of wood or charcoal consumed for cooking and the emission of toxic

fumes that are unhealthy for women and household members. These stoves help save on fuelwood and are relatively easy to incorporate in local practices, but their distribution is hampered the lack of public incentive policies. Other innovations such as solar ovens have also been tested but they are harder incorporate in domestic practices.

Plant residue-based fuel alternatives to replace fuelwood or charcoal are promising. They are promoted by local associations, researchers and NGOs, as in the case of the Burkina Faso Biofuel Project underway in Banfora (see below).

→ EXAMPLE | Making fuel from plant residue – an income source for women and effective in combating desertification

In Banfora, Burkina Faso, the NGO *Projets Solidaires* developed the Burkina Faso Biofuel Project, which brings together stakeholders from Burkina Faso (women's associations, craftspeople, research centres) and France (NGO *Projets Solidaires*, researchers). In addition manufacturing and distributing improved stoves, fireplace logs are manufactured from combustible plant waste to replace wood and charcoal in kitchens. Women's associations are well organized in this region, particularly for shea butter processing. The *Munyu des Femmes de la Comoé* association, a project partner, has a membership of 10,000 women.

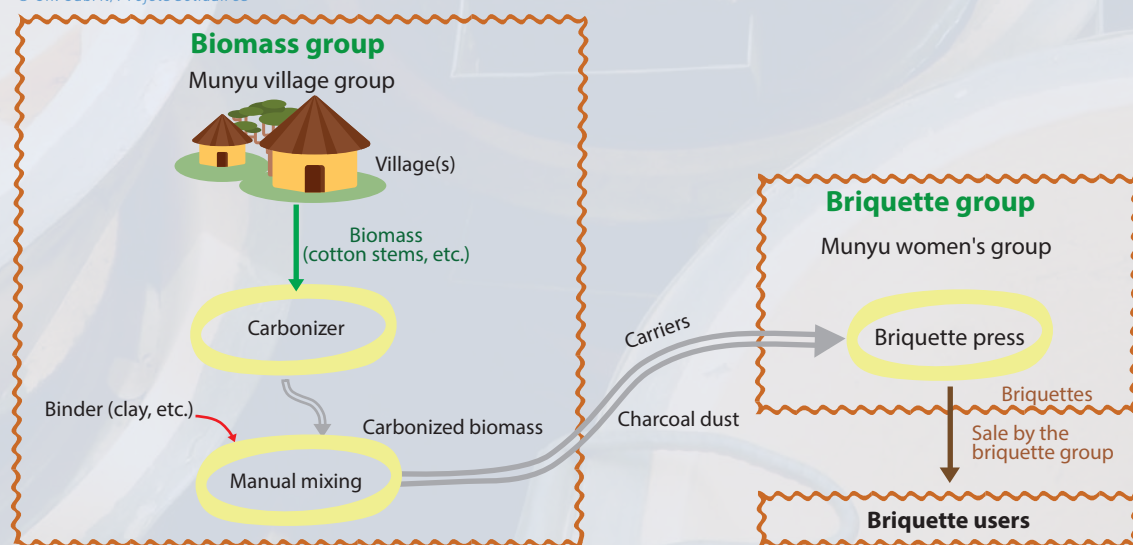
Biofuel is a mixture of biomass not used for other purposes (e.g. cotton stalks or shea cake), a binder (molasses, gum arabic, clay) and water. It is produced according to a manufacturing process involving mixing, pressing and drying. Two sectors are involved:

- carbonized biomass (particularly with cotton stems) for manufacturing briquettes to replace charcoal
- non-carbonized biomass (with shea cake) to make fireplace logs to replace wood.

In 2018, *Projets Solidaires* started a similar project in Senegal which involved manufacturing biofuel from groundnut shell residue.

For further information:
www.projets-solidaires.org/nos-projets/nos-realisations/165-projet-bio-charbon

© Ch. Cabrit/Projets solidaires



MAKING EFFECTIVE USE OF NATURAL RESOURCES AND MAINTAINING ECOSYSTEM DIVERSITY

Innovative projects to make effective energy use of plant biomass are being set up, e.g. the Jacigreen project in Burkina Faso. This project was set up by a young Burkinabe engineer with the aim of generating electricity from a biomethanization platform using water hyacinth—an invasive plant that is harming the proper functioning of the Niger River and other aquatic ecosystems. Hyacinth harvesting thus provides income for women, whose livelihoods are in turn enhanced through electricity generation and the regulation of this invasive species.

Making more effective use of harvested resources (fruit or plants) can promote women's empowerment—as these activities often correspond to tasks they traditionally perform—while preserving the ecosystem from which the resources originate. It is also a means of acquiring and disseminating new product processing and improvement techniques, e.g. manufacturing currently very internationally popular shea butter and argan oil. The preservation, enhancement and regeneration of agroforestry stands (including argan and shea trees), which have an essential role in ecosystem services in dryland areas, can be achieved through the economic development of fruit collection and processing.

► **Manufacturing argan oil, Morocco.** Crushing argan nuts (to extract the kernel) in a women's cooperative. G. Michon © IRD

▼ **Promotion of local rural products, Tunisia.** A women's cooperative in Zammour. Promotion of oasis products (barley, dried figs, beans, chickpeas, seeds, honey, etc.). The products are targeted for local markets but also visitors and tourists. These women regularly promote their products at national fairs. C. Lamontagne © IRD



→ EXAMPLE | Promoting forest products and training women – distillation of aromatic plants in Tunisia

Takrouna region (Kef governorate) in northwestern Tunisia is a forest area with rugged terrain and high soil erosion. Its natural resources are not always developed and utilized in a sustainable and economically optimal way by local communities.

Since 1985, the *Fondation El Kef pour le développement régional* has been carrying out local socioeconomic development and livelihood enhancement (electrification, road construction, housing improvement, etc.) initiatives, several of which are focused specifically on supporting the activities of vulnerable women.

Rosemary, mastic and wild mint are traditionally harvested by women in this region. Since 2009, a project has been under way to support the development of these products through the distillation of rosemary and mastic tree essential oils, which helps improve the value chain.

A first practical training course is focused on resource management: harvesting techniques, plant selection

according to their state of development, and environment-friendly harvesting techniques.

Technical know-how is required for the distillation process, which is carried out in the Community Development Centre. In recent years, around 40 women have thus been trained to master the processes necessary to obtain certified products. In addition to rosemary, the women also distil lavender—a species that was introduced and planted in the area—which has diversified the workshop activities while reducing pressure on local natural resources.



▲ Left. Demonstration of plant cutting. © Hafidha Khadraoui



▲ Right. Plant weighing of plants and *lambic*. © Hafidha Khadraoui

▼ The community centre – a venue for training and community dynamics: water management system and creation of family gardens.

© Hafidha Khadraoui



The innovative educational techniques used for this training have created a demand for interventions in other fields, i.e. mainly for setting up family gardens which, through a rainwater collection system, has generated local jobs and reduced outmigration. Water and soil conservation works are also being introduced in the area to reduce erosion, provide protection against soil degradation while getting the entire community involved in environmental protection.

This form of forest resource use gets populations involved in environmental protection. Women have boosted their technical skills required for distillation and working in the *Groupeement de Développement Agricole de Takrouna*, which has improved their economic situation and empowerment.

The Takrouna development programme is carried out by several national and foreign partners.

Source: Khadraoui Hafidha, Programme Director, *Fondation El Kef pour le développement régional*, Kef, Tunisia.



▲ Water and soil conservation works. © Hafidha Khadraoui

SUPPORTING FAMILY FARMING ORIENTED TERRITORIAL DYNAMICS

Urban growth is under way at different rates in all countries, but everywhere it gives rise to new food supply chains. **Supporting family farm-derived production chains is a way of supporting territorial dynamics, promoting knowledge and practices and improving the livelihoods of rural populations.** In dryland areas, pastoral farming systems maintain and enhance the landscape while contributing to the supply of milk and meat to urban communities.



▲ Mrs. Bah's dairy products (made from local milk and imported milk powder) are sold in Sikasso, Mali. © Christophe Rigourd/IRAM

→ EXAMPLE | Women's role in the mini-dairies of Nariindu in Niger

Women are the first to be affected by changes in local dairy sectors. These changes represent opportunities for them but also a threat of loss of empowerment and of being marginalized or even excluded from these sectors.

In pastoral family units, the work organization is still characterized by a very marked sexual division of labour, but it changes according to the setting. Men are traditionally responsible for livestock management, tending, watering, care and sale, with women having exclusive control over milk (consumption, processing, neighbourhood and market sales, etc.), which is a key resource for household food and nutrition security, while contributing to women's empowerment. Women have long been highly involved in the local dairy sectors, from which they derive regular substantial income, which in turn contributes to their financial self-sufficiency.

The increased urban demand for milk has led to the development of collection and distribution networks and the reorganization of livestock farming systems, which have been heavily impacted by major droughts. In Niger, for example, these systems are now organized in two ways:

1. A conventional extensive farming system with maximum 40-head herds, some of which graze on the outskirts of Niamey while others are transhumant.
2. A semi-intensive farming system in the vicinity of Niamey for milk production with bran and fodder feed supplements for the dairy cows.

In parallel, in the 1970s, State-owned enterprises such as the *Office du lait du Niger* (OLANI) were created to promote local milk production and ensure food security for children and families residing in cities within the framework of food-aid development programmes supported by the World Food Programme, UNICEF, FAO or the World Bank. In the 1980s, the implementation of structural adjustment programmes led to the privatization of most State-owned dairies, which

were sold or transferred to private investors. However, they failed to collect local milk and dealt with competition by resorting massively to milk powder imports. In the 1990s, a more modest model was promoted with the development of small-scale units, such as mini-dairies, which were supported by FAO and implemented by NGOs. The 2007-2008 financial crisis, marked by rising global market agricultural prices, provided a favourable backdrop for the development of local milk sectors, to the detriment of imported milk powder.



▲ A functional literacy session for women involved in the local dairy sector in Niamey. This Nariindu Project activity is geared towards securing women's role in the sector. © Nariindu Project / IRAM-Karkara

Various projects to support the food security of Niamey residents were launched in this setting: the Programme for Livestock and Periurban Agriculture Security (2006-2008) followed by the Nariindu 1 (2012-2017) and Nariindu 2 (2017-2019) Projects. These projects aimed to improve local milk supply to urban centres for the benefit of small periurban

▲ **Background: task sharing in the dairy sector in Mali, a slightly outdated representation?**
(Mini-dairy ex-Danaya Nono Koutiala, Mali). © Christophe Rigourd/IRAM



▲ **Yoghurt production by the women's cooperative of Yanfolila, Mali.** Although there was certainly some staging associated with our visit in this photo, women generally seem to be more aware of hygiene issues than men in mini-dairies. However, improved hygiene practices are still needed (for both women and men) and would extend the shelflife of dairy products. © Christophe Rigourd / IRAM

livestock farmers by setting up milk collection centres managed by livestock farmers. This led to the marketing of 4,000 L/day of milk (Nariindu 2 target), while supplying livestock farmers with complementary feed. These collection centres could generate substantial regular income, and result in women losing control of the dairy sector. Moreover, the projects considered ways of offsetting this income loss by facilitating the creation of income-generating activities for women, with the support of microfinance institutions.

A field analysis revealed very contrasting situations according to collection centres, villages and households. In the oldest milk collection centre in Hamdallaye, women have long since lost their direct access to raw milk and they are now forced to buy it from men. In Kollo, many women farmers still have direct access to raw milk, probably thanks to the steps taken via the Nariindu 1 project. Meanwhile, in the collection area of the centre planned in Namaro, women farmers intend to maintain their direct access to raw milk. Actions are proposed to support them in their project, such as:

- raising the awareness of all livestock farmers on gender and nutrition issues
- the involvement and strengthening of groups of women dairy farmers in the management of the collection centre and their relationship with microfinance institutions
- the creation of a curdled milk processing unit at the collection centre managed by the women dairy farmers
- the involvement of women farmers in the choice of village milk collectors, who play a key role in information exchange, milk collection and livestock feed distribution.

No systematic historical studies have been conducted on this gradual eviction of women from the local dairy sector on the outskirts of Niamey. This trend—which takes different forms depending on the milk collection area—is linked to a range of multiscale factors that are complex to analyse. **It could nevertheless be hypothesized that the establishment of**

public and then private dairy industries has given local milk a market value, which has led men to compete with women in the sale of local milk for over 30 years.



▲ **A chat on women's role in the dairy sector in Niamey.**
© Nariindu Project / IRAM-Karkara

This trend represents a challenge for all projects geared towards supporting local dairy sectors in West Africa, which are currently the focus of renewed interest via the Regional Offensive for the Promotion of Local Milk launched by the Economic Community of West African States (ECOWAS). **It is essential to take research conducted in different contexts into account in order to determine effective support methods so that women can take advantage of the development of the sector while retaining their empowerment regarding milk—a highly symbolic product pastoral farming societies.**

For further information: <http://filieres-lait-niger.iram-fr.org>
On the status of milk for Fulani women: Kuhn, 1997
On dairy sectors in West Africa: Corniaux *et al.*, 2014

SUPPORTING LAND RESTORATION AND REFORESTATION

Many land restoration techniques have been implemented to offset the impacts of the major droughts of the mid-1980s in the Sahel and the ecological crisis facing many dryland areas. **Women are often very involved in this restoration work or in controlling erosion through their labour. Their opinions, interest and knowledge of the environment are underestimated and often overlooked.**

► **Agroecology in Togo.** Construction of a stone bund. Strengthening the bund with vetiver grass helps combat soil erosion and store carbon. T. Chevallier © IRD



→ EXAMPLE | Land restoration projects

An income source for women in Guidimakha, Mauritania

Land preservation and restoration work in Mauritania is decided by local collective management associations (Natural Resources Management Programme, Pro-GRN). This involves setting up firewalls and stone bunds for water and soil conservation. These initiatives serve as productive social safety nets by marshalling local labour paid via funding from municipalities, the State or other partners. Women are closely involved in these annual projects during periods when the men have migrated for seasonal employment or are involved in herd transhumance, which brings in income to meet their household food expenses.

A survey carried out at four sites (Rosier and Traoré, 2011) analysed women's and men's accessibility to this highly labour-intensive work (HIMO), as well as its impact on household incomes and food security. The choice of beneficiaries for

HIMO activities was found to be made without selection, with the majority of people being considered poor. Women's participation varied according to the site, depending on the geographical distance and the type of work, with firewall construction being considered a male activity. The proportion of women involved (stone collection) was higher (exceeding 70%) for stone bund building sites located near villages, although they were gradually facing competition from men who also wanted to benefit from this income-generating activity.

In addition to the contribution to the household food supply, i.e. the main source of income, income from HIMO activities made it possible to settle debts, guarantee further credit, buy animals or (particularly for two women) invest in carts for transport or in protective equipment for a shed. Other impacts were also noted regarding the preservation and restoration of harvesting and grazing resources, thus ensuring the maintenance of animals in the village.

Source: Rosier and Traoré, 2011.





→ EXAMPLE | Land restoration projects

A way for women to access land in Burkina Faso

Through the *Appui pour la promotion des initiatives locales* (APIL) association, women are stakeholders in land restoration initiatives in the central northern region of Burkina Faso. Customary land law excludes women from land access in many localities, despite the fact that the provisions of the 2009 Agrarian and Land Reorganization in Burkina Faso provide universal access to this resource. In some APIL intervention villages, the women's cause has been advocated to customary chiefs in order to convince them to grant women land so that they can contribute to the restoration of lands and make them productive. Plots have been made available to women who have been instructed (on the same basis as men) on water and soil conservation techniques. **Although these lands were sometimes very bare and degraded and apparently unable**

to ensure substantial agricultural production, they have been transformed by women into efficient production areas.

In the light of how successful these women have been, elders, men and youth are working with them to restore the land. The communities—organized in women farmer's and mixed farmer's groups by district—consulted each other on the nature and timing of the restoration work to be carried out. Women's groups in turn worked in synergy with men in the collective and individual fields of women, men and youth to restore even more land. Half moon ditches, stone bunds and *zai* have been built, and at least 175 ha of land have been restored in each village since 2015.

Source: Benzid and Ouedraogo, 2017.



▲ **Women threshing rice, Burkina Faso.** H. Deval © IRD
 ▲ **Moorish girls from southern Mauritania.** Michel Raunet © CIRAD

Organizational dynamics – from village groups to international conventions

Beyond organizations linked to [kinship](#) structures, a diverse range of collective forms prevail in societies that are based on criteria as varied as age group, religious group membership, spatial production activity (agricultural work, marketing, etc.) entities. Women's groups in turn are numerous and varied according to one or more of the above criteria. Like the family group, these organizations contribute to the social network that is renewed and strengthened during social rites, including ceremonies and group activities. **The ability of a person to maintain his/her networks is the social basis for dignity and a form of assurance.** These sometimes powerful networks make it possible to carry out collective actions and ensure mutual assistance when problems arise. Being excluded from them is often the most painful manifestation of poverty*.

* For a gender approach to poverty and deprivation that goes beyond material and monetary aspects, see the research of Nussbaum (2000) and Robeyns (2003).

COLLECTIVE ORGANIZATIONS – MEMBERSHIP IS SOMETIMES BEYOND REACH FOR WOMEN

Collective organization dynamics are closely linked to social organization, but also to the political history of countries that hinder or support these movements. The situation in Latin America thus differs markedly from that in sub-Saharan Africa. New collective organizations have been created at different scales, while often being based on existing forms. **But when these organizations go beyond women's assigned social scope, a proactive dynamic (affirmative action) is necessary to ensure women's empowerment and representation of their specific interests.**

▼ A women's rally, Morocco.

G. Michon © IRD



The advantage of these collective forms is that they may enhance women's decision-making power. They can be a factor of social change, as sometimes is the case in [tontines](#) or fair-trade producers' groups (shea, argan, and other products such as organic cotton and sesame). These organizations—when structured on a regional scale—become major economic stakeholders, which can impact the sector organization and product recognition (geographical indication or other labels). Linkages between environment-friendly production and a fair-trade type organization enhances social and environmental sustainability.

In sub-Saharan Africa, the number of farmers' organizations where women are in majority or even account for the entire membership is increasing, but the visibility of these organizations is more limited than those headed by men. This disparity is partly due to the historical and social conditions in which cooperative organizations have been created. In many regions, these structures have been launched to promote cash crops managed by men, even though women contributed as labourers to the cropping and harvesting activities.

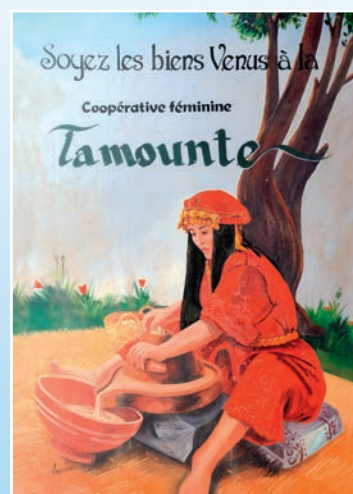
▼ A *tontine* is a traditional credit and mutual aid system. Poster promoting a traditional tontine credit system. A *tontine* is a random collective financing contract for the purchase of a financial asset or property owned by only a portion of the subscribers. A distinction is made between *tontine* investments and associations, i.e. a kind of mutual company operating in Africa. M. Donnat © IRD



▼ Poster of a women's argan oil manufacturing cooperative, Tafraout, Morocco. G. Michon © IRD



▼ Poster promoting local products in Morocco. Here a women's argan oil producing cooperative in Tamounte. G. Michon © IRD



→ FOCUS | Increased involvement of women in collective organizations in sub-Saharan Africa – mixed results

The increase in male migration as a result of climate crises and cereal production deficits in Sahelian areas has boosted the role of women in subsistence farming. The latter are involved in the development of market gardening production and they have formed groups to enhance the promotion of the resulting products. The decentralization of aid channels in the 1990s enabled the growing number of women's organizations to receive capacity-building support from NGOs and projects, in a context where women were encouraged to get organized to access training, inputs, technology and credit. The emergence of women's groups was facilitated by extant associative traditions involving mutual aid for farm work, coverage of social expenditures and skills training.

However, women's organizations that have been formed are heterogeneous in size and function. Their expansion is more marked with regard to market gardening, food processing and microcredit. Their dynamism varies according to seniority and the sociocultural setting. Women's participation in mixed farmers' organizations is limited in patriarchal societies underpinned by a rigorous Islamic tradition where women's mobility outside the household is ill-regarded. **The formation of exclusively women's groups is hence often a necessary step towards women's empowerment. In this configuration, they may express themselves more freely, distance themselves from domestic and marital obligations, while acquiring new skills and a professional identity.**



INNOVATIVE INITIATIVES

Some organizational innovations based on social rules or forms of mutual assistance specific to a company or group succeed in achieving high participant involvement. Two common points are found in the diverse range of initiatives: first, they are in the women's

sphere, especially in societies with high gender segregation (e.g. in Morocco and Tunisia), and second, the technical and economic success of these initiatives leads to a strong sense of dignity and recognition. **This dimension is clearly vital because these women live in societies in which they are in low-valued subordinate positions.**

But the impact of collective action on such groups should not be overestimated. The creation of women's groups by support structures is often accompanied by the promotion of so-called women's activities (crafts, nutrition, livestock fattening, small-scale trade). This does not call into question the underestimation of their role in agricultural production and does not sufficiently address problems associated with their lack of empowerment.

For mixed-gender organizations—as elsewhere in the world—women have more difficulty than men in accessing positions of responsibility. The under-representation of women in decision-making bodies is very marked in federal organizations. The constraints faced by women in accessing key positions stem from discrimination and inequalities that undermine their confidence in their abilities: lower literacy, schooling, technical and managerial training levels than men, a lower economic foundation that does not enable them to cover expenses related to associative responsibilities, limits

◀ **Women in Gaoua, Burkina Faso.** R. Nisin © IRD

▼ **Sale of local products by women, Senegal.** Women's organizations have been set up with the aim of creating economic microcircuits in villages, largely through their work in plantations, and in harvesting and selling plantation products. R. Bally © IRD



their access to the public space, whereas they remain relatively unavailable due to their different family commitments.

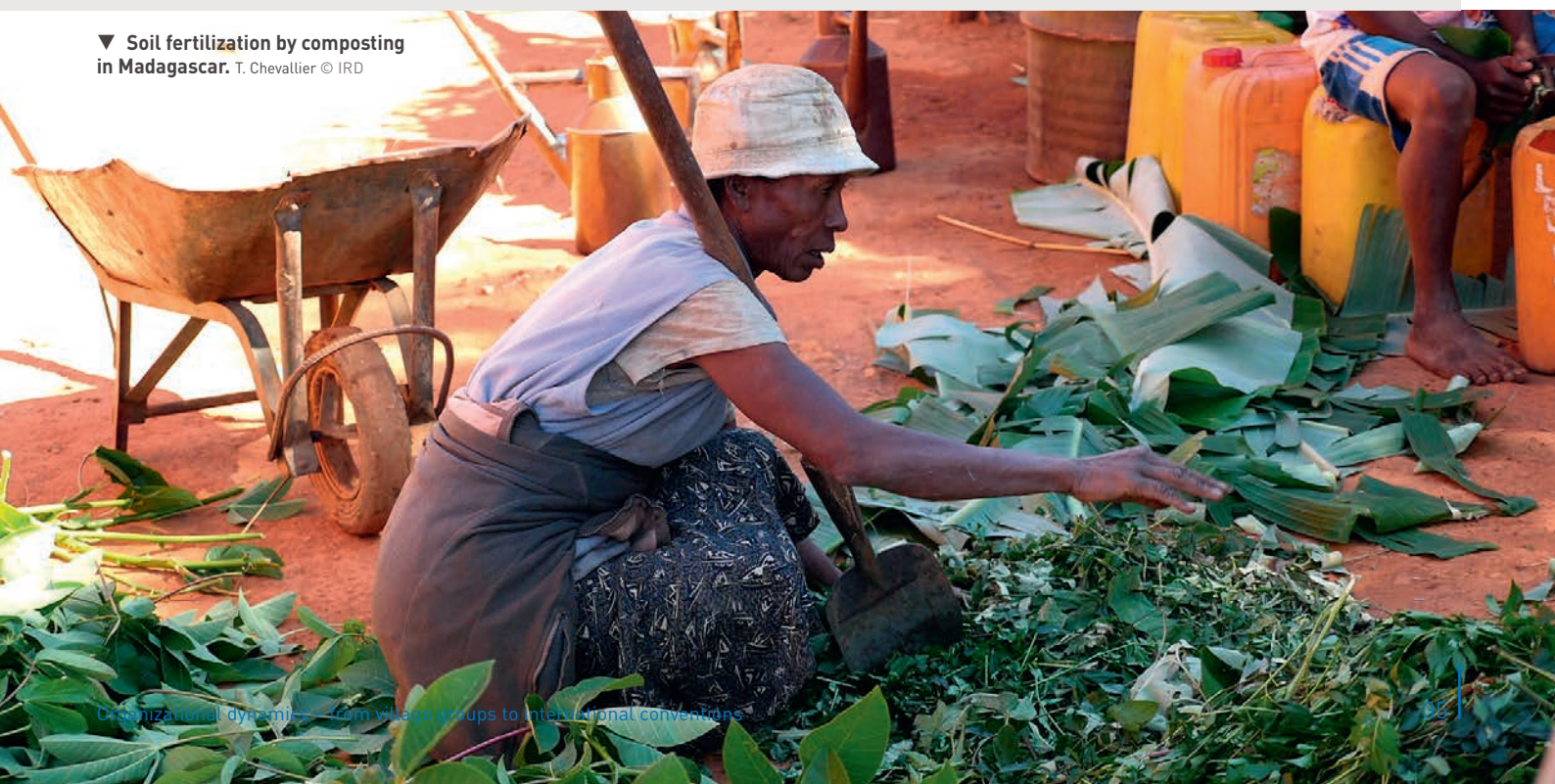
Women are also not a homogeneous group. The impacts of organizational dynamics on women's situation and gender relations are linked to the specificity of the organizations' activities, the economic and sociocultural contexts in which they are active and leadership practices. Women's groups often reflect the hierarchical structure of society, but their associative dynamics also reflect those of civil society. **Key positions are often held by elders, wives of prominent people, educated women, those with greater economic and interpersonal skills. Linkages between individual and collective interests are sometimes problematic and can increase disparities between categories of women.**

Yet women's organizations can also be spaces where women in inferior positions assert themselves through the learning of new skills which they subsequently apply in the tasks entrusted to them. This gives rise to new alliances of 'voiceless' people such as women, youth, 'castes', dominated people and non-natives who may join forces to claim rights to land and trees.

The visibility that women acquire as a result of their increased involvement in family development and subsistence activities is in line with a rebalancing of gender relations. But the additional work and burdens resulting from this increase in their responsibilities is a manifestation of the permanence and even strengthening of gender inequality relations.

For further information: AGRIPADE, 2015; Wided and Bonnassieux, 2014; Saussey, 2011.

▼ **Soil fertilization by composting in Madagascar.** T. Chevallier © IRD



→ EXAMPLE | A Moroccan 'passing on the gift' tradition mainstreamed into a development programme

In the mountainous region of Ouarzazate, Rosa is an original initiative designed to create economic activities for rural women. The aim is to fight poverty in this region marked by desertification and outmigration by developing small income-generating projects with women (dairy goats, sheep, bees, hens and rabbits). The activity is focused mainly on goat farming using recently introduced and well-adapted dairy breeds that are fed locally produced fodder.

Rosa projects are based on the 'who receives...gives' principle (or 'passing on the gift') whereby each time a family receives an animal it signs a contract to donate a newborn animal from its herd to another family. This takes place during a donation transmission ceremony. **This principle strengthens community bonds, while also ensuring the rapid dissemination of women-run livestock farming.**

Ten years after its launch in 2005, Rosa supports 65 village groups located within a 200 km radius around Ouarzazate and federated within the association. **Women's rapid interest in livestock farming led them to form the COROSA dairy cooperative, with a cheese factory being launched in Tamassint in May 2010.** With the support of an NGO (*Élevages sans frontières*), the cooperative is equipped with modern equipment with female staff trained in cheese-making

techniques and the latest hygiene standards. This cheese factory has modernized the cheese manufacturing process and led to the production of superior quality cheese.

For further information: Noutfia *et al.*, 2011.
Women's cooperative for goat rearing and cheese making:
www.corosa.ma
www.elevagessansfrontieres.org/des-donateurs-en-visite



▲ © COROSA

→ EXAMPLE | Women's capacity building – the 'Mata Masu Dubara' savings and credit banks in the Maradi region of Niger

Among the many microfinance projects created with mixed success in recent decades, one set up by the NGO Care in Niger in the Maradi region is often showcased. Created in 1991, this so-called 'Mata Masu Dubara' (MMD, or literally 'women in movement') project is primarily a savings system, inspired by the traditional *tontine* system and based on women's weekly contributions. Credit is allocated to MMD members via this fund to develop small-scale economic activities. The amount of the contributions and interest rates are set by the group. There is no external financial support, but the group is able to gradually acquire management skills through training and supervision. Management innovations, such as unwritten accounting, have enabled often illiterate women to manage the tool.

The model had successfully expanded with the opening of more than 26,000 MMDs in 2017. Maturation has led to the creation of MMD networks that have strengthened the feeling of belonging to a recognized legal entity. Projects use the organizational skills acquired in these groups to generate new activities by forging partnerships to access funding, support or equipment. Women can thus engage in collective and community projects: healthcare huts, cereal banks, collective fields, land reclamation and women's lean season granaries.

This new role of women leads to household adjustments that are sometimes frictional and may have a social cost. A qualitative study has shown that women have to make trade-offs in the management of their time between domestic

tasks, their own economic activities, collective activities and meetings of the group and the MMD network. Women address this issue by mobilizing their daughters, nieces or daughters-in-law for domestic tasks. Due to the time-consuming nature of the involvement in MMD groups and networks, it is often women with mobilizable household labour resources who are able to get involved. The study also highlights the relational (tensions with the husband) and physical impacts of overwork, as well as the financial risks associated with penalties in the event of non-compliance with the group's regulations. However, these disadvantages are generally offset by the opportunities offered by membership in an MMD network, but also by the collective and community recognition status. Indeed, **90% of the village stakeholders interviewed said they recognized the political role of women. MMD women members ran as candidates in the 2004 local elections in 23 of the 30 villages surveyed.**

For further information: Diarra Dacko and Monimart, 2017.
MMD Network in Niger: www.care.org/work/economic-development/microfinance



► A project carried out by the Mata Masu Dubara programme – a cereal bank in the village of Imbalgam in Niger. F. Boyer © IRD

COMMITTED WOMEN INFLUENCE ENVIRONMENTAL POLICY

Some women's groups are becoming interlocutors who can influence public policy choices through different forms of mobilization: actions in decentralized communities for collective resource management, e.g. the struggle for recognition of women's rights on

collective lands or to oppose development projects that deprive them of these rights.

These organizations can impact the institutional approach to gender issues, as can be seen, for instance, in gender mainstreaming in macroeconomic budgets ('gender-sensitive' budgets) in South Africa or Morocco.

→ EXAMPLE | Women's struggle for the creation of an environmental reserve in Brazil

Women played a key role in the creation of the *Nascentes Gerazeiras* Sustainable Development Reserve (RDS) in semiarid *Cerrado* savannah areas north of Minas Gerais in southeast Brazil in October 2014. This new federal conservation site of over 38,000 ha is located in a vast area of preserved natural vegetation. It ensures protection from a deforestation project, which aimed to set up large-scale eucalyptus tree stands to produce charcoal to fuel the steel industry.

A decree signed by Dilma Rousseff, President of Brazil at the time, ended 12 years of struggle by the indigenous *Gerazeiros* people who traditionally live on forest plant processing activities.

Women mobilized and took action during the most strategic moments in this community's struggle to preserve its environment. Faced with the urgency and challenge of defending access to and use of their land and resources (fruit collection, medicinal plants, etc.) upon which their families depend, women have been able to mobilize and act, even without the massive presence of men, who are often absent due to seasonal migration for work. For example, they have

been at the forefront blocking machines to prevent them from cutting down trees. Most of them were still on a hunger and thirst strike outside of the government palace in Brasilia, the capital of Brazil. But beyond their punctual spectacular struggles to create the RDS, and for longer-term sustainable development purposes, women have created a cooperative for fruit processing and promotion. For example, they have now managed to sell frozen fruit pulp to the Rio Pardo de Minas mayor's office, which in turn redistributes it to schools to provide juice for school children at meals. This income-generating activity allows them to boost their family income directly on their land according to their traditions.

▼ Fruit harvesting. © RDS



▼ Demonstration on the reserve. © RDS



LOCAL RESOURCE MANAGEMENT CONVENTIONS – HOW ARE WOMEN INVOLVED?

Many countries are undergoing a decentralization process that also involves local management of natural resources by representative entities (management committees or associations) at the municipal or

village level. This resource management concerns land (e.g. the future of collective lands in Morocco) and forest management or development for water and soil conservation. **But the governance of natural resources—in this case uncultivated areas—gives little leeway to women, who are often primary users.**

▼ Meeting of village association leaders in the Montepuez cotton-growing zone in Mozambique. Note the very low representation of women.

Michel Fok © CIRAD



→ EXAMPLE | Women's involvement in local natural resource management in Mauritania – a difficult path

The decentralized Natural Resources Management Programme (Pro-GRN) was implemented in the Guidimakha region of Mauritania by the German Corporation for International Cooperation (GIZ) from 2001 to 2011. The aim was to develop the common natural resource governance and management capacity of local associations. Thirty-eight local collective management associations (AGCLs) were thus created, supported and recognized by the authorities. They manage the silvopastoral resources in their municipalities and carry out various planning and protection actions.

As in many situations, women are the primary users of these areas, where they gather jujubes, baobab leaves and balanite fruits, which provide an essential nutritional supplement for their families while also generating income. Indeed, 30% of the cash income of the poorest households comes from these harvesting activities and from the sale of crafts made from harvested products. For example, *Haratine** people who harvest gum arabic, are estimated to have earned an average income of MRU60,000 to 80,000**per season from 2009 to 2011.

Women represent a stability factor in villages since they are in daily contact with natural resources and emigrate less than men. They could therefore play a key role in natural resource management. Moreover, from the standpoint of different stakeholders, women are considered to be “more sensitive than men” to the renewal of natural resources upon which they are highly dependent.

A regulation had to be passed to ensure that at least two women would be elected to the executive board of each association because of women's substantial involvement in natural resource management structures. The programme was monitored and assessed so as to be able to record the progress of AGCLs in three areas: their management and organizational capacities; their capacity to manage land and natural resources; and their capacity to acquire and maintain good social and institutional representativeness. Association representativeness monitoring revealed that **on average 20% of the positions of responsibility in 37 associations were held by women, with a high variability range (6-40%). This finding represents a considerable step forward in the local context,**

This is why **gender is a key issue in local resource management**. First there is the question of regulating access rights: how do local conventions mainstream and secure women's rights to resources (e.g. harvesting or use of wood and non-wood products)? Are women's specific resources taken into account in these local conventions?

Then there is the question of women's participation in resource management organizations in societies where their representation is often very low, where a proactive approach is necessary (as in the Mauritania case described in the box below) to ensure that they are allocated decision-making positions in the bodies of these organizations.

▼ Women of the *Groupement de promotion féminine de Kafrine*, Senegal. Michel Fok © CIRAD



but it is still below 30%, i.e. the rate generally considered to be the minimum threshold for a significant contribution of disadvantaged groups to decision-making processes.

A qualitative study was carried out in 2011 to get the viewpoints of stakeholders concerned by this local natural resource management approach, which had been implemented since 2004. Interviews with institutional stakeholders (deconcentrated and decentralised services, local authorities, forest inspectors) and other involved people revealed gender differences. Women had actively participated in tree regeneration initiatives, which helped develop harvesting activities while promoting the re-emergence of certain species. They declared that they were aware of and complied with sustainable natural resource management regulations. **Moreover, through their regular presence in the field, they had become active resource management monitors***, without being officially designated by the associations.**

The interviewed men and women did not share the same viewpoints on users' involvement in governance, i.e. men

believed that management bodies were defending the interests of all users well, while women requested more participation in decision-making and more transparency in the allocation of the funds to which they were contributing. They regretted the scant number of women members of the executive boards (management bodies) and felt that their lack of involvement in AGLC management bodies was a barrier to their success. The choice of executive board bodies is generally made by consensus, while excluding women whose permanent role—especially during the lean season—is essential for the AGLCs to run smoothly.

Source: Isselmou Ould and Niang, 2011.

* The *Haratine* are descendants of the black slaves captured by nomadic Arab and Berber tribes.
 ** Which represents D145 to D193 (MRU = Mauritanian ouguiya)

*** During a local consultation process, negotiations with municipalities and technical services, planning and organization, administrative and legal recognition, AGCLs became officially responsible for the management of a clearly delineated silvopastoral area. They must develop local resource management regulations (local conventions), whose implementation must be monitored by officially designated members.

International conventions and national legislation – uneven progress

The Convention on the Elimination of All Forms of Discrimination against Women, better known as CEDAW, was adopted by the United Nations in 1979, and it has been ratified by 186 countries to date. Other international conventions, such as the three environmental conventions that emerged from the 1992 Rio Summit (on climate, biological diversity and desertification), are gradually taking the gender dimension into account to varying degrees, with action plans and methodological guides for gender mainstreaming, such as the Training Manual on Gender and Climate Change of the International Union for Conservation of Nature (IUCN) (Aguilar, 2009), the Guidelines for Mainstreaming Gender into National Biodiversity Strategies and Action Plans (CBD-IUCN, 2014) and the Gender Action Plan of the United Nations Convention to Combat Desertification (UNCCD, 2016, 2017). **However, beyond the declarations in the texts, there are still difficulties in the concrete implementation of these recommendations in actions to combat desertification, as regularly pointed out by civil society organizations.**

At the country level, significant yet uneven legislative progress has been achieved towards the elimination of discrimination against women. The research of Hallward-Driemeier et al. (2013) provides an overview of these developments in 100 countries (including 33 in sub-Saharan Africa) over the 1960 to 2010 period. The authors used several indicators in their study, such as access rights to property and assets, women's decision-making autonomy (not being under the supervision of a husband or brother for everyday activities, moving or taking a salaried job), as well as the way in which possible contradictions between formal and customary laws are taken into account. **Despite some cases of stagnation or even regression, the results highlighted the significant progress made in national legislation, driven by international conventions and civil society organizations, and the increased proportion of women involved politically at decision-making levels.**

► 11th session of the Conference of the Parties (COP 11) of the UNCCD (16-27 September 2013, Windhoek, Namibia).
© CSFD

→ FOCUS | UNCCD Gender Action Plan

The UNCCD's first Gender Action Plan was adopted in September 2017 at the 13th Conference of the Parties (COP13, Ordos, China). It acknowledges that:

- Gender policies must strengthen sustainable land management activities and their implementation: participation, economic empowerment, access to land and resources, technology development and transfer, and capacity building.
- Women must be involved in the implementation of land and natural resource use policies.
- The gender dimension must be mainstreamed in all targets and objectives of activities carried out under the Convention in order to increase their effectiveness.

Four priorities for action were defined:

1. **Participation in decisions taken during the design, planning, implementation and evaluation of initiatives to implement the Convention.** [...] Parties will seek to increase and strengthen the participation and leadership of women at all levels in decision-making and local implementation of the Convention, including in drought management and sand and dust storm and land degradation neutrality interventions, and aim to reach gender parity by 2030.
2. **Integrating women's economic empowerment in the Convention implementation activities in order to eradicate their extreme poverty.** [...] Parties will aim to promote women's economic empowerment by breaking down gender-related barriers and creating quality income-earning opportunities for rural women involved in implementation activities.
3. **Strengthening women's land rights and access to resources.** Parties will aim to increase women's land rights by 2030 through diverse and innovative approaches.
4. **Enhancing women's access to improved knowledge and technologies that relate to effective implementation of the Convention.** Parties will seek to build the knowledge capacities of female land-users in the areas targeted for sustainable land management to deliver appropriate technological resources, including information technologies, training, extension services and the education of girls.

Source: UNCCD, 2017.

For further information: www.unccd.int/actions/gender-action-plan



Gender inequality in informal institutions is, however, a major obstacle to the practical implementation of more egalitarian policies because this issue is deeply rooted in culture and religion, in a representation of the social roles of men and women that relegates women to a position of inferiority. **Many studies have shown that gender inequality hampers development (Klasen, 2017).**

Making concrete progress on gender equality – examples of tools to measure, monitor, inform and take this issue into better into account

Civil society organizations – French associations such as *Adéquations* and *Genre en action* have long been advocating better mainstreaming of gender issues in development initiatives. They have developed tools, including observatories, communication materials, workshops and publications such as technical support factsheets that may be general in scope, e.g. the *Vivre le genre !* document published in collaboration with the F3E association network (Barré *et al.*, 2018), targeted for development interventions* (Hofmann, 2001), or focused on innovative topics such as gender-sensitive municipal budgeting**.

* www.genreenaction.net/Fiches-pratiques-pour-integrer-le-genre.html

** www.genreenaction.net/Capitalisation-Les-fiches-techniques-du-projet.html



▲ Training of students in a standardized agronomic experimental system comparing 10 quinoa varieties, Bolivia. J.P. RaffaiIlac © IRD

→ FOCUS | OECD Gender Equality Policy Marker

The OECD monitors aid for gender equality and women's rights through the gender equality policy marker of the Development Assistance Committee (DAC). This marker identifies gaps between political commitments and financial support for gender equality and women's rights. Currently 92% of total bilateral aid allocated by sector has been screened against this marker based on a three-point project/programme scoring system:

- **0 - Not targeted:** the project/programme has been screened against the marker but has not been found to target gender equality.
- **1 - Significant:** Gender equality is an important and deliberate objective, but not the principal reason for undertaking the project/programme.
- **2 - Principal:** Gender equality is the main objective of the project/programme and is fundamental in its design and expected results. This project/programme would not have been undertaken without this gender equality objective.

Source: OECD-DAC, 2016.
For further information: www.oecd.org/dac/gender-development/Handbook-OECD-DAC-Gender-Equality-Policy-Marker.pdf

The mobilization of international organizations and national development aid agencies to make concrete progress on gender equality occurred later. However, through its Development Assistance Committee (DAC), the Organisation for Economic Co-operation and Development (OECD) is now actively pursuing this theme, firmly convinced that the main objectives of the 2030 SDG agenda could only be achieved if gender equality is mainstreamed in development assistance interventions: “Priorities for the years to 2030 include gender-responsive investments in basic social services, infrastructure and social protection, as well as addressing persistent gender inequalities in control over and ownership of productive resources and access to decent jobs” (OECD-DAC, 2016a, p.8).

OECD has set up tools to monitor projects for which it has granted development aid* in order to encourage agencies in its Member States to put into practice the objective of reducing gender inequality and supporting women's empowerment (SDG 5). It has thus developed the Gender Equality Policy Marker (see FOCUS opposite). The purpose of this statistical tool is to record

* www.oecd.org/fr/cad/femmes-developpement/outils-pratiques-lignes-directrices.htm

▼ Participatory research on potatoes in Peru. O. Dangles © IRD



and evaluate aid activities that target gender equality as an aid policy objective. A project is classified '0' if none of its specific objectives target gender equality, '1' if this is a deliberate objective but not the principal one, and '2' if gender equality is a main project objective. This score is included in annual reports that countries prepare on their support activities for the Development Assistance Committee. This marker is thus a key tool for monitoring projects, as well as financial volumes, which are still below the objectives, i.e. two-thirds of all programmes were scored 0 in terms of financial volumes in 2015-2016 (OECD-CAD, 2016a and 2018).

Most international cooperation agencies in OECD countries have gradually implemented gender action plans, e.g. the UK Department for International Development (DFID) and the German Corporation for International Cooperation (GIZ).

Since 2014, the French Development Agency (AFD) has been implementing a gender strategy geared towards reducing gender inequality in operations it finances. A cross-cutting action framework has been created to

enhance gender mainstreaming practices in the agency's activities, which is committed to ensuring that 50% of the projects it funds are scored 1 or 2 according to the OECD Gender Equality Policy Marker. To support the implementation of this strategy, 'gender toolboxes' have been developed for AFD's various areas of intervention, including agriculture and biodiversity (Buchy, 2016) or environmental and social diligence** (Repussard, 2018), two themes that underlie actions to combat desertification. Different stages of projects, from their design to their implementation and assessment, may be monitored via these toolkits.

These monitoring tools and mechanisms must be suitable for stakeholders at the different intervention levels. This is an obstacle that has yet to be overcome, as the various stakeholders, including development aid agents, continue to be influenced by prevailing social norms and representations of the roles of women and men.

** The term 'environmental and social due diligence' refers to the verification process implemented by AFD to ensure that environmental and social risks are assessed and managed in accordance with its requirements.



Reducing gender inequality and supporting women's empowerment – a prerequisite for successfully combating desertification

For the most vulnerable populations, land degradation triggers a decline in ecosystem services that has broader consequences than declining soil fertility and its impacts on agricultural or forage production. Water resources, plant diversity (gathered plants, pharmacopoeia) and wood resources are also affected. The **livelihood** system is changing, so it is necessary to find relatively sustainable alternative solutions to cope with this alteration of resources. This can result in increased food insecurity, seasonal or longer-term

migration. Another consequence is the **worsening of inequality** between socioeconomic groups, according to their status and livelihood, and within these groups, according to the position in the **lineage**, birth rank and, of course, gender. One of the baseline elements of the economic and social organization of rural societies involves differentiation of rights, activities and responsibilities between women and men, in addition to other social stratifications.

- Group of women shea growers. Burkina Faso. © M. Loireau
- ▼ Women's meeting. Namibia. © M. Loireau





Women, who have the most precarious rights of access to resources (land, financial or political), are therefore the first to be affected by the restriction of these rights when **livelihoods** deteriorate. **Desertification thus contributes to the loss of women's autonomy, while changes in family structures and economic developments lead to an increase in their responsibilities, as can be seen in the growing number of women household heads taking on the responsibility of supporting their children alone.**

Controlling desertification can contribute to improving women's economic self-sufficiency, their stakeholder capacity, as well as respect for their rights and social status if these dimensions are taken into account in interventions. However, despite some changes, the low representation of women in local to international decision-making bodies, and insufficient attention to the specific issues that concern them, are ongoing stumbling blocks. The focus on reducing gender inequality remains secondary, as does the involvement of men in this process, despite real progress in the implementation of monitoring tools and action plans.

Yet in many situations where women have an essential role in rural areas, combating land degradation will

be ineffective if the actions are 'gender-blind', as exemplified by the following questions. How could women invest labour and money in soil preservation or restoration initiatives if—because of precarious land rights—they are not sure to be able to keep the land. How could they even free up time when social reproductive tasks (e.g. domestic work, child- and elder-care) are so time- and energy-consuming?

Actions to combat desertification at local or regional levels also often contradict policy choices at other scales, such as economic liberalization, allowing foreign investment in agricultural land with agroindustrial farming methods to the detriment of family farming, or leaving room for companies that produce seeds (GMOs, etc.) at the risk of reducing the genetic diversity of farmers' seeds. Gender issues and the desertification combat are part of this and cannot be dealt with in isolation without considering the orientations of development models.

The examples presented in this *Dossier* also illustrate **how rural women are mobilizing as stakeholders in combating desertification, despite the social constraints and norms conveyed by local institutions and often by the projects.**

For further information....

BIBLIOGRAPHY

- AFD/FFEM, 2010. Indications géographiques : qualité des produits, environnement et cultures. *Savoirs communs*. 9. Paris. 104 p. www.ffem.fr/sites/ffem/files/2017-08/Savoirs_commun9_2010.pdf
- Africa Partnership Forum, 2007. *Gender and Economic Empowerment in Africa*. 8th Meeting of the Africa Partnership Forum, Berlin, Germany, 22-23 May 2007. 33 p.
- AGRIPADE, 2015. *Femmes et agroécologie*. 31(4). 28 p. www.iedafric.org/-Femmes-etagroecologie,205-.html
- Aguilar L., 2009. *Training manual on gender and climate change*. IUCN-UNDP-GGCA. 262 p. https://portals.iucn.org/union/sites/union/files/doc/training_manual_on_gender_and_climate_change.pdf
- Alkire S., Meinzen-Dick R., Peterman A., Quisumbing A.R., Seymour G., Vaz A., 2013. *The Women's Empowerment in Agriculture Index*. OPHI Working Paper. 58. Cambridge.
- Alkire A., Malapit H., Meinzen-Dick R., Peterman A., Quisumbing A., Seymour G., Vaz A., 2014. *Instructional Guide on the Women's Empowerment in Agriculture Index*. UF Initiative Ed, Washington DC. 74 p. www.ifpri.org
- Antoine Ph., Marcoux R., 2014. Pluralité des formes et des modèles matrimoniaux en Afrique : un état des lieux. Introduction. In. Ph. Antoine & R. Marcoux. (dir.). *Le mariage en Afrique : pluralité des formes et des modèles matrimoniaux*. Québec: Presses de l'Université du Québec, 2014: 1-18. (Sociétés Africaines en Mutation).
- Balandier G., 1974. *Anthropo-logiques*. Paris, PUF. 279 p.
- Barou J., 2017. Dynamiques de transformation familiale en Afrique subsaharienne et au sein des diasporas présentes en France. *Droit et cultures* [online]. 73(2017-1). <http://journals.openedition.org/droitcultures/4051>
- Barre A., Gautier V., Hofmann E., Nicolas Y., Kamgang A., 2018. *Vivre le genre ! 9 fiches pratiques pour faire progresser l'égalité de genre*. F3E, Collection Repères sur... 68 p. www.euromed-france.org/wp-content/uploads/2019/01/F3E_Guide-Genre_web.pdf
- Bellows A.C., Valente F.L., Lemke S., de Lara M.D.N.B. (eds.), 2015. *Gender, Nutrition, and the Human Right to Adequate Food: Toward an Inclusive Framework* (Vol. 47). Routledge.
- Beneria L., Berik G., Floro M., 2015. *Gender, development and globalization: economics as if all people mattered*. Routledge, New-York.
- Beneria L., Sen G., 1981. *Development and the Sexual Division of Labor Signs*. 7(2): 279-298. The University of Chicago Press.
- Benizid L., Ouedraogo R., 2017. Au Burkina Faso, les femmes redonnent vie à la terre et deviennent motrices de la transformation. In. M. Loireau et N. Ben Khadra (eds.) *Désertification et système terre : de la (re) connaissance à l'action. Liaison Energie Francophonie*, 105: 132-138. ISSN 0840-7827. www.documentation.ird.fr/hor/fdi:010070737
- Bereni L., Chauvin S., Jaunait A., Revillard A., 2012. *Introduction aux études sur le genre*. De Boeck Université, 2^e édition revue et augmentée (2008). 357 p.
- Bidou J.-E., Droy I., 2017. Les inégalités intrafamiliales, une source de tension dans les sociétés rurales : exemples en Afrique de l'Ouest. In. Tropes et topos des insécurités dans l'espace saharo-sahélien. *Dynamiques Internationales*. 12. <http://dynamiquesinternationales.com/publications/numero-12-janvier-2017>
- Bidou J.-E., Droy I., 2017. Mobilités rurales et vulnérabilités des familles : les migrations temporaires au Niger. In. T. Montalieu, J. Brot, H. Gerardin (eds), *Mobilités et soutenabilités du développement*. Karthala, Paris: 275-298.
- Bisilliat J., Verschuur Ch., 2000. Le genre, un outil nécessaire. *Cahiers Genre et Développement*. 1. L'Harmattan, Paris.
- Blackden C.M., Wodon Q., 2006. Gender, Time Use, and Poverty in Sub-Saharan Africa. *World Bank Working Paper*. 73. 172 p. <https://openknowledge.worldbank.org>
- Bock B., Shortall S., 2017. Gender and Rural Globalisation: international perspectives on gender and rural development. *International Perspectives on Gender and Rural Development*. CAB: 1-7.
- Bosc P.M., Sourisseau J.M., Bonnal P., Gassel P., Valette E., Belieres J.F. (dir), 2015. *Diversité des agricultures familiales : exister, se transformer, devenir*. Editions Quae, Versailles, France. 384 p.
- Boserup E., Tan S., Toulmin C., Kanji N., 2007. *Woman's Role in Economic Development*. London: Routledge, 306 p.
- Buchy M., 2016. *Boîte à outils genre, développement rural et biodiversité*. AFD, Paris. 120 p. www.afd.fr/fr/boite-outilsgenre-agriculture-developpement-rural-et-biodiversite
- CBD-IUCN, 2014. Guidelines for Mainstreaming Gender into National Biodiversity Strategies and Action Plans. *CBD Technical Series*. 49. 82 p. www.cbd.int/programmes/cross-cutting/gender/cbd-ts49_gender_guidelines.pdf
- Chambers R., Conway G., 1991. *Sustainable rural livelihoods: Practical concepts for the 21st century*. Brighton, IDS, Working Paper. 296.
- Chopra D., Zambelli E., 2017. *No time to rest: women's lived experiences of balancing paid work and unpaid care work*. Brighton, IDS.
- Colin J.-P., 2004. *Droits fonciers et dimension intrafamiliale de la gestion foncière. Note méthodologique pour une ethnographie économique de l'accès à la terre en Afrique*. Document de travail de l'Unité de recherche 095. 8. IRD - UR Régulations Foncières, Montpellier, France. 31 p. <http://hubrural.org>
- Corniaux C., Duteurtre G., Broutin C. (dir), 2014. *Filières laitières et développement de l'élevage en Afrique de l'Ouest : l'essor des mini-laiteries*. Karthala, Paris, 220 p.
- Cornwall A., 2016. Women's empowerment: what works? *Journal of International Development*. 28: 342-359.
- Croppenstedt A., Goldstein M., Rosas N., 2013. Gender and agriculture: inefficiencies, segregation, and low productivity traps. *The World Bank Research Observer*. 28(1): 79-109.
- Diarra Docka M., Monimart M., 2006. *Femmes sans terres, femmes sans repères ? Genre et décentralisation au Niger*. IIED, dossier n°143. 47 p. <http://pubs.iied.org/pdfs/12535FIIED.pdf>
- Diarra Docka M., Monimart M., 2017. *Conscience politique et action collective des*

structures Mata Masu Dubara au Niger - Recherche formative. Rapport de synthèse. CARE, 21 p. www.careevaluations.org/wp-content/uploads/Final-Conscience-Politique-Action-collective-ds-MMD-au-Niger.pdf

Droy I., 2006. Quel apport de l'approche par les capacités pour l'analyse des inégalités de genre ? In. V. Reboud (ed.), *Amartya Sen, un économiste du développement*. AFD, ND, n°30: 125-148.

Droy I., 2014. Améliorer la visibilité des femmes dans les systèmes d'informations en Afrique de l'Ouest. In. Guetat-Bernard (ed.), *Féminin-Masculin. Genre et agricultures familiales*. Éditions Quae, Coll. Nature et société: 87-100.

Droy I., 2017. Dégénération des terres et pauvreté : des liens complexes. In. M. Loireau et N. Ben Khadra (eds.), *Désertification et système terre : de la (re) connaissance à l'action. Liaison Énergie Francophonie*. 2017(105): 70-72. ISSN 0840-7827

Droy I., Pascual C., Bidou J-E., 2014. Inégalités de genre et vulnérabilité alimentaire en milieu rural béninois: des interactions complexes In. H. Guetat-Bernard et M. Saussey (eds), *Genre et savoirs. Pratiques et innovations rurales au Sud*. IRD Editions, coll. A travers champs: 85-115.

Ellis F., 2000. *Rural livelihoods and diversity in developing countries*. Oxford University Press, UK. 270 p.

FAO, 2011. *The state of food and agriculture. Women in agriculture. Closing the gender gap for development*. Rome. <http://www.fao.org/publications/sofa/2010-11/en>

FAO, AU, 2018. *Leaving no one behind. Empowering Africa's rural women for Zero Hunger and Shared Prosperity*. <http://www.fao.org/3/CA1506EN/ca1506en.pdf>, 28 p.

Ferrant G., Nowacka K., 2015. Measuring the drivers of gender inequality and their impact on development: the role of discriminatory social institutions. *Gender & Development*. 23(2): 319-332.

Floquet A., 2007. À l'échelle d'une vie : trajectoires et décisions paysannes au Bénin. In. M. Gafsi, P. Dugue, J-Y Jamin, J. Brossier (eds.), *Exploitations agricoles et familiales en Afrique de l'Ouest et du Centre. Enjeux, caractéristiques et éléments de gestion*: 195-208. Éditions Quae, Versailles, France.

Forsythe L., Morton J., Nelson V., Quan J., Martin A., Hartog M., 2015. *Strengthening dryland women's land rights: local contexts, global change*. Natural Resources Institute, University of Greenwich, Chatham, UK. 72 p.

Fourgeau C., 2002. Les petites jachères des femmes. In. B. Lacombe, F.K. Pale, F. Sodter et S. Traore. *Études sur la jachère dans le Sud-Ouest du Burkina Faso. Contributions des sciences sociales à la définition des relations sociétés rurales avec les jachères*: 136-153. IRD, Ouagadougou. <http://horizon.documentation.ird.fr>

FSIN, 2019. *Global report on food crisis 2019*. Food Security Information Network. 202 p. www.fsincop.net/resource-centre/detail/en/c/1152017

Granie A.-M., Guetat-Bernard H. (dir), 2006. *Empreintes et inventivités des femmes dans le développement rural*. IRD Editions/Pulm, France.

von Grebmer K., Saltzman A., Birol E., Wiesmann D., Prasai N., Yin S., Yohannes Y., Menon P., Thompson J., Sonntag A., 2014. *2014 Global Hunger Index. The challenge of hidden hunger*. Bonn, Washington, DC, International Food Policy Research Institute, and Concern Worldwide. <http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/128360>

Guerin I., Guetat-Bernard H., Verschuur C., 2014. Introduction: Gender, a necessary tool of analysis for social change. In. C. Verschuur, I. Guerin, H. Guetat-Bernard (dir), *Under Development: Gender. Gender, Development and Social Change*. Palgrave Macmillan, London.

Guerin I., Hersent M., Fraisse L., 2011. *Femmes, économie et développement. De la résistance à la justice sociale*. Eres, IRD, Paris. 384 p.

Guétat H., Hofmann E., Sourisseau J.-M., 2014. Inégalités de genre dans l'agriculture familiale : mesures, indicateurs, leviers pour l'action, introduction. In. Guetat H. (dir), *Féminin-Masculin. Genre et agriculture familiale*. Éditions Quae, Versailles: 79-85.

Hallward-Driemeier M., Hasan T., 2012. *Empowering women: Legal rights and economic opportunities in Africa*. AFD/World Bank Publications, Washington DC.

Hallward-Driemeier M., Hasan T. Rusu A., 2013. *Women's legal rights*

over 50 years: progress, stagnation or regression? Policy Research working paper. WPS 6616. Washington, DC: World Bank Group. 55 p. <http://documents.worldbank.org/curated/en/312581468338398063/Womens-legal-rights-over-50-yearsprogress-stagnation-or-regression>

Hautdidier B., Boutinot L., Gautier D., 2004. La mise en place de marchés ruraux de bois au Mali : un évènement social et territorial. *L'Espace géographique*, 33(4), 289-305.

Hesse C., Anderson S., Cotula L., Skinner J., Toulmin C., 2013. *Gérer la vie en dents de scie : soutenir des moyens de subsistance résilients au climat dans la région du Sahel*. IIED Issue Paper. IIED, London. <http://pubs.iied.org/11504IIED>

Hillenkamp I., 2011. Genre, systèmes agraires et vulnérabilités alimentaires: une analyse nécessaire. In. C. Verschuur (ed.), *Du grain à mouder. Genre, développement rural et alimentation*. IHEID, Genève: 367-443.

Hofmann E., 2001. *Fiches pratiques pour intégrer le genre*, IFAID-MAE-DGCID. www.genreenaction.net/Fiches-pratiques-pour-integrer-le-genre.html

Hofmann E., Marius-Gnanou K., 2006. L'intégration de la dimension « genre » dans une intervention de développement : mythe ou réalité ? In. A.-M. Granie, H. Guetat-Bernard (dir), *Empreintes et inventivités des femmes dans le développement rural*. IRD Presses du Mirail: 47-65.

IRAM, 2014. *Intégration du Jatropha dans les exploitations familiales. Études de cas au Burkina Faso et au Bénin*. 11 p. JatroRef, IRAM, Montpellier, France. <http://jatroref.iram-fr.org>

Isselmou Ould A., Niang F., 2011. *Regard des acteurs et des usagers des ressources naturelles sur l'expérience de gestion locale décentralisée au Guidimakha*. Juillet 2011. Pro-GRN, GIZ-IRAM.

Klasen S., 2017. *Gender, Institutions, and Economic Development. GrOW Working Paper*. 2017-04.

Kuhn B., 1997. "Kosam walaa cede wallaa!" "Pas de lait, pas d'argent!": l'importance du lait chez les femmes peules du Nord-Bénin. In. Th. Bierschenk, P.-Y. Le Meur (eds), *Trajectoires peules au Bénin*. Karthala: 63-76.

- Lalou R., Delaunay V., 2015. Migrations saisonnières et changement climatique en milieu rural sénégalais : forme ou échec de l'adaptation? In: B. Sultan, R. Lalou, M.A. Sanni, A. Oumarou, M. Soumare (eds), *Les Sociétés rurales face aux changements climatiques et environnementaux en Afrique de l'Ouest*. Paris, IRD: 287-314.
- Lemke S., Bellows A.C., 2016. Sustainable food systems, gender and participation: Foregrounding women in the context of the right to adequate food and nutrition. In: A.C. Bellows, F.L.S. Valente, S. Lemke, M.D. Nunez Burbano de Lara (Eds.), *Gender, nutrition, and the human right to adequate food: Toward an inclusive framework*. London & New York, NY: Routledge: 254-340.
- Locoh T. (dir.), 2007. *Genre et sociétés en Afrique. Implications pour le développement*. INED, Paris, 432 p.
- Loireau M., Ben Khatra N. (eds.), 2017. Désertification et système terre: de la (re) connaissance à l'action. *Liaison Energie Francophonie*. 105. 138 p. ISSN 0840-7827. www.documentation.ird.fr/hor/fdi:010070726
- Ludeke M.B.K., Petschel-Helt G., Schnellhuber H.J., 2004. Syndromes of Global Change: The first panoramic view. *GAIA*. 13(1):42-49.
- Luxureau A., 2003. Place actuelle de la cueillette dans l'économie locale du Niger central. *Journal des africanistes*. 73(2): 77-90.
- Mead M., 1935. *Sex and Temperament in Three Primitive Societies*. New York Morrow: 279-283.
- MEAE, 2018. *Stratégie internationale de la France pour l'égalité entre les hommes et les femmes 2018-2022*. 48 p. www.diplomatie.gouv.fr/IMG/pdf/strategie_internationale_egalite_femmes-hommes_web_cle089345.pdf
- Meillassoux C., 1975. *Femmes, greniers et capitaux*. Paris, Maspero.
- Miruka M., Njuki J., Starr L., Kruger E., Hillenbrand E., 2016. Measuring women's empowerment in agriculture. Addressing the multidimensional nature of gender dynamics in agriculture. In: J. Njuki, J.R. Parkins, A. Kaler (dir.), *Transforming Gender and Food Security in the Global South*. London: Routledge.
- Monimart M., 1989. *Femmes du Sahel, la désertification au quotidien*. Karthala, OCDE, Club du Sahel. 263 p.
- Monimart M., 2011. Sahel: sécheresses, crises alimentaires et déféminisation des systèmes agraires. In: Du grain à moudre : Genre, développement rural et alimentation [online]. Genève: Graduate Institute. <http://books.openedition.org/iheid/6752>
- Mounkaila H., 2002. De la migration circulaire à l'abandon du territoire local dans le Zarmaganda (Niger). *Revue européenne des migrations internationales* [online]. 18(2): 161-187. <http://remi.revues.org>
- United Nations, 2015. *The Millennium Development Goals Report*. United Nations. 75 p. [https://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20\(July%201\).pdf](https://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20(July%201).pdf)
- Nicolas Y., 2014. L'accaparement des terres, les femmes en première ligne. *Adéquations*, www.adequations.org/spip.php?article1851
- Noutfia Y., Ibelbachyr M., Zantar S., 2011. Aperçu sur le secteur de fabrication de fromage de chèvre dans la région d'Ouarzazate. In: Economic, social and environmental sustainability in sheep and goat production systems Zaragoza. *CIHEAM/FAO/CITA-DGA Options Méditerranéennes: Série A. Séminaires Méditerranéens*. 100: 305-310.
- Nussbaum M., 2000. *Women and human development: the capabilities approach*. Cambridge, Cambridge University Press. 336 p.
- Oakley A., 1985 [1972]. *Sex, gender and society*. Aldershot, Gower/Maurice Temple. 220 p.
- OECD-DAC, 2016. *Handbook on the OECD-DAC gender equality policy marker*. 24 p. <https://www.oecd.org/dac/gender-development/Handbook-OECD-DAC-Gender-Equality-Policy-Marker.pdf>
- OECD-DAC Network on gender equality (GENDERNET), 2016a. *Tracking the money for women's economic empowerment: still a drop in the ocean*. June 2016, 8 p. www.oecd.org/dac/gender-development
- OECD-DAC Network on Gender Equality (GENDERNET), 2016b. *Definition and minimum recommended criteria for the DAC gender equality policy marker*. December 2016, 4 p. www.oecd.org/dac/genderdevelopment/
- OECD-DAC Network on Gender Equality (GENDERNET), 2018. *Aid to gender equality and women's empowerment. An overview*. 12 p. www.oecd.org/dac/genderdevelopment/Aid-to-gender-overview-2018.pdf
- Olivier de Sardan J.-P., 1995. *Anthropologie et développement: essai en socio-anthropologie du changement social*. Paris: Karthala; Marseille: APAD.
- Ozer P., 2004. Bois de feu et déboisement au Sahel: mise au point. *Science et changements planétaires/Sécheresse*. 15(3): 243-251.
- Quisumbing A.R., Meinzen Dick R., Raney T.L., Croppenstedt A., Behrman J.A., Peterman A. (dir.), 2014. *Gender in agriculture. Closing the knowledge gap*. Rome & New York, NY: FAO & Springer.
- Rao N., 2006. Land rights, gender equality and household food security: Exploring the conceptual links in the case of India. *Food Policy*. 31: 180-193.
- Raynault R. (dir.), 1997. *Sahels: Diversité et dynamique des relations société-nature*. Paris, Karthala, collection "Hommes et Sociétés". 430 p.
- Razavi S., 2009 Engendering the political economy of agrarian change. *The Journal of Peasant Studies*. 36(1): 197-226.
- Repussard C., 2018. *Boîte à outils genre : diligences environnementales et sociales*. AFD, Paris. 127 p. www.afd.fr/fr/boite-outils-genre-diligencesenvironnementales-et-sociales
- Robeyns I., 2003. Sen's capability approach and gender inequality: selecting relevant capabilities. *Feminist Economics*. 9(2-3): 61-92.
- Rosier M., Traore J., 2011. *Évaluation des effets des activités pare-feu et CES sur les revenus et la sécurité alimentaire des ménages Enquête au Guidimakha et au Hodh el Gharbi*. Programme revenus verts pour la nourriture de l'Union Européenne. Programme Gestion des Ressources Naturelles Guidimakha, Hodh el Gharbi. 62 p.
- Sautter G., 1980. Migrations, Society, and Development in Mosiland (Migrations, société et développement en pays Mossi). *Cahiers d'Études Africaines*. 20(79): 215-253.
- Saussey M., 2011. Initiatives féminines et économie sociale et solidaire dans la production du beurre de karité au Burkina Faso. In: *Femmes, économie et développement. De la résistance à la justice sociale*. Toulouse, ERES, "Sociologie économique": 107-128.
- Tidjani Alou M., Mossi Maïga I., Daouda Hainikoye A., 2015. Au cœur de la marginalisation des femmes en milieu rural nigérien : l'accès à l'eau agricole. *Les Cahiers d'Outre-Mer, Stratégies territoriales d'adaptation aux contraintes démographiques et environnementales: le Niger*. 270: 163-188 [online].
- United Nations, 2005. *Guide to producing statistics on Time Use: Measuring Paid and*

Unpaid Work, Department of Economic and Social Affairs, Statistics Division. 400 p.

UNCCD, 2016. *Turning the tide: the gender factor in achieving land degradation neutrality*. 16 p. https://www.unccd.int/sites/default/files/documents/2017/GENDER_BRO_EN.pdf

UNCCD, 2017. *Gender action plan*. https://www.unccd.int/sites/default/files/documents/2018-01/GAP%20ENG%20%20low%20res_0.pdf

UNDP, 2017. *Human Development Report 2016. Human Development for Everyone*. UNDP, New York. 288 p.

UNDP, 2018. *The 2018 Human Development Report (HDR)*.

UNFPA, 2018. *UNFPA Strategic Plan 2018-2021*. 46 p. https://www.unfpa.org/sites/default/files/pub-pdf/18-044_UNFPA-SP2018-EN_2018-03-12-1244_0.pdf

UNICEF, 2019. *The State of the World's Children 2019. Children, Food and Nutrition: Growing well in a changing world*. UNICEF, New York.

UN Women, 2013. *Women and Natural Resources: Unlocking the Peacebuilding Potential*. United Nations Entity for Gender Equality and Women's Empowerment: New York. 74 p. www.undp.org/content/dam/undp/library/crisis%20prevention/WomenNaturalResourcesPBreport2013.pdf

Verschuur Ch., 2011. Changements agraires et des rapports de genre. In: C. Verschuur (dir.), *Du grain à moudre. Genre, développement rural et alimentation*. Actes des colloques Genre et développement. Berne: DDC-Commission nationale suisse pour l'UNESCO; Genève: IHEID: 17-28. <http://books.openedition.org/iheid/6740>

Verschuur Ch., Guerin I., Guetat-Bernard H. (dir), 2014. *Under development: gender*. Palgrave Macmillan, London. 325 p. <https://www.palgrave.com/gp/book/9781137356819>

Wided M., Bonnassieux A., 2014. Dans les périmètres irrigués de Nadhour en Tunisie. Une affirmation encore limitée des positions des femmes. *Pour 2014/2*. 222: 225-233.



▲ Drying sorghum. Young woman drying sorghum on a mat.
This cereal is then consumed in grain or flour form.
M. Donnat © IRD

WEBSITES

International organizations

Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)

www.ohchr.org/fr/ProfessionalInterest/Pages/CEDAW.aspx

Food and Agriculture Organization of the United Nations (FAO)

Gender page: www.fao.org/gender

Gender and Land Rights Database (GLRD): www.fao.org/gender-landrights-database

International Fund for Agricultural Development (IFAD)

www.ifad.org/fr/gender

International Union for Conservation of Nature (IUCN)

www.iucn.org/theme/gender

Organisation for Economic Co-operation and Development (OECD) - Development Assistance Committee (DAC) Network on Gender Equality (GENDERNET)

www.oecd.org/dac/gender-development

United Nations Population Fund (UNFPA)

www.unfpa.org

United Nations Sustainable Development Goals (SDGs)

<https://sustainabledevelopment.un.org>

United Nations (UN Women)

www.unwomen.org

United Nations Convention to Combat Desertification (UNCCD)

www.unccd.int/publications/gender-action-plan

<https://knowledge.unccd.int/topics/gender>

United Nations Convention on Biological Diversity (CBD)

www.cbd.int/gender

United Nations Framework Convention on Climate Change (UNFCCC)

<https://unfccc.int/topics/gender/the-big-picture/introduction-to-gender-and-climate-change>

World Health Organization (WHO) – Sexual and Reproductive Health

www.who.int/reproductivehealth/topics/fgm/en

International cooperation agencies

Department for International Development (DFID, UK)

www.gov.uk/government/publications/dfid-strategic-vision-for-gender-equality-her-potential-our-future

French Development Agency (AFD)

www.afd.fr/en

German Corporation for International Cooperation GmbH (GIZ, Germany)

<https://genderstrategy.giz.de>

www.giz.de/en/worldwide/65544.html

Research institutions and laboratories

Gender and Sexuality Studies Laboratory (LEGS, France)

www.legs.cnrs.fr

Gender Institute (France)

<https://institut-du-genre.fr/en>

Institute of Development Studies (IDS, UK) – BRIDGE (Development – Gender)

www.bridge.ids.ac.uk

Population and Development Centre (CEPED, France)

www.ceped.org/en

Non-governmental organizations

Adéquations (France)

www.adequations.org

Centre d'Actions et de Réalisations Internationales (CARI, France)

www.cariassociation.org

CARE International

www.care.org/our-impact/gender-in-practice

Networks

F3E network of associations devoted to quality, in terms of working methods, of international solidarity or decentralized cooperation initiatives (France)

<https://f3e.asso.fr>

Genre en action network (France)

www.genreenaction.net

Genre et Développement platform launched by the Ministry for Europe and Foreign Affairs (France)

www.genre-developpement.org



► Access to water in the Moroccan High Atlas mountains.
O. Benkroun © IRD

Glossary

Family structure. This refers to the composition and functioning of family units, including marriages, kinship organization and intergenerational relationships. Research on family structures shows that they diversify, change and recombine in relation to social, economic or political transformations. (Source: CEPED)

Kinship. A tie binding people linked by descent (synonymous with 'filiation'). (Source: ATILF)

Lean season. Period before the first harvest when there may be no grain left from the previous harvest.

Lineage society. The lineage is a unilinear filiation group whose members are either in the agnatic line (patrilineal) or in the uterine line (matrilineal) of a known common ancestor. (Source: Larousse and Wikipedia)

Livelihood. The livelihood approach focuses on understanding how households develop (or not) their means and conditions of living. The term could be defined as follows: "A livelihood comprises the capabilities, assets (stores, resources, claims and access) and

activities required for a means of living" (Chambers and Conway, 1991, p. 6); they are considered sustainable when activity systems ensure the different aspects of sustainability (economic, social and environmental) and limit household vulnerability.

Patrilineal or matrilineal affiliation. Which is based solely on paternal (patrilineal) or maternal (matrilineal) ancestry with regard to the filiation, family and social organization of a group or clan. (Source: *Analyse et Traitement Informatique de la Langue Française* [ATILF])

Tontine. An association of people who regularly contribute money to a common fund, the amount of which is paid to each of its members in turn. (Source: *Centre National de Ressources Textuelles et Lexicales*).

Zai. This traditional method helps recover degraded land. It involves digging small 20-40 cm diameter and 10-15 cm deep pits with a hoe during dry periods and then throwing in one or two handfuls of organic manure. This enables occasional localized regeneration of these degraded soils. (Source: CSFD, 2015).

List of acronyms and abbreviations

AFD	French Development Agency
AGCL	Local collective management association
APIL	<i>Appui pour la promotion des initiatives locales</i> , Burkina Faso
CARI	<i>Centre d'Actions et de Réalisations Internationales</i> , France
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CIHEAM-IAM	International Center for Advanced Mediterranean Agronomic Studies-Mediterranean Agronomic Institute of Montpellier, France
COP	Conference of the Parties
CSFD	French Scientific Committee on Desertification
DAC	Development Assistance Committee
DFID	Department for International Development, UK
ECOWAS	Economic Community of West African States
FAO	Food and Agriculture Organization of the United Nations
FCFA	African Financial Community franc, or CFA franc
GIZ	German Corporation for International Cooperation GmbH
HDR	Human Development Report
HIMO	Highly labour-intensive
IFPRI	International Food Policy Research Institute

INS	<i>Institut national de la statistique</i> , Niger
IRAM	Institute for Research and Application of Development Methods, France
IRD	French National Research Institute for Sustainable Development
IUCN	International Union for Conservation of Nature
LSTM	Laboratory of Tropical and Mediterranean Symbioses, France
MDG	Millennium Development Goals
NGO	Non-governmental organization
OECD	Organisation for Economic Co-operation and Development
OLANI	<i>Office du lait du Niger</i>
Pro-GRN	<i>Programme de gestion des ressources naturelles</i> , Mauritania
SDG	Sustainable Development Goals
UMI	International joint research unit
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
WHO	World Health Organization

Abstract

The land desertification process is generally the result of human activities carried out at different scales and exacerbated by global environmental change. Yet the livelihoods of people in rural communities are highly dependent on the quality and diversity of ecosystem resources. These societies are characterized by a high level of sexual division of labour, activities and responsibilities and hence desertification does not affect men and women in the same spheres. Women—in addition to their farming activities, particularly growing subsistence crops—shoulder most tasks encompassed by the social reproduction concept (e.g. domestic activities, child- and elder-care). This unpaid yet essential work is time consuming and restricts women's mobility. In dryland countries with low human development rates, women's heavy and arduous workloads increase when resources such as water, fuelwood or products gathered for food, medicinal purposes or handicrafts are in short supply. Women's resource access rights are also more precarious, and their work is under-rated and -valued. Moreover, women are under-represented in decisionmaking and leadership structures, while being constrained by social norms that often relegate them to inferior roles, and their rights are further eroded when resource competition intensifies. But women are also active in defending their rights and combating desertification, i.e. many are involved in counteracting land degradation or even in its restoration via associations, farmers' organizations and individual initiatives. Operators and policymakers must now take these women stakeholders into better account, as they are too often overlooked in policies to combat desertification.

Keywords:

gender, rights inequalities, dryland area, combating desertification

Résumé

Le processus de désertification des terres est le plus souvent causé par des activités humaines menées à différentes échelles et aggravé par des changements environnementaux globaux. Or, les moyens d'existence des sociétés rurales sont liés à la qualité et à la diversité des ressources fournies par les écosystèmes. Ces sociétés sont marquées par une forte division des tâches, des activités et des responsabilités entre hommes et femmes, et, pour cette raison, les conséquences de la désertification ne les affectent pas dans les mêmes domaines. En plus des activités liées à la production agricole, notamment vivrière, les femmes assument l'essentiel des tâches de la sphère de la reproduction sociale (comme le travail domestique, les soins aux enfants et aux personnes âgées). Ce travail non rémunéré, pourtant essentiel, est consommateur de temps et limite la mobilité des femmes. Dans les pays à faible développement humain de la zone aride, la charge et la pénibilité du travail des femmes augmentent encore lorsque les ressources comme l'eau, le bois de feu ou les produits de cueillette, destinés à l'alimentation, la pharmacopée ou l'artisanat, se font plus rares. Par ailleurs, les femmes ont des droits d'accès aux ressources plus précaires, ainsi qu'une moindre considération et valorisation de leur travail. Moins bien représentées dans les structures de décision et de pouvoir, contraintes par des normes sociales qui souvent les relèguent, elles voient leurs droits rognés lorsque la compétition pour les ressources devient plus rude. Mais, les femmes sont aussi des acteurs dans la défense de leurs droits et dans les actions de lutte contre la désertification : à travers des associations, des organisations de producteurs ou des actions individuelles, elles se mobilisent pour contrecarrer la dégradation des terres, voire les restaurer. Il appartient aux opérateurs et aux décideurs, de mieux prendre en compte ces actrices, trop souvent ignorées dans les politiques de lutte contre la désertification.

Mots clés :

genre, inégalités des droits, zone aride, lutte contre la désertification

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