

Gender Assessment

FP012: Africa Hydromet Program – Strengthening Climate Resilience in Sub-Saharan Africa: Mali Country Project

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Africa Hydromet Program
Strengthening Climate Resilience in Sub-Saharan Africa:
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Les hommes et femmes ont un accès différencié aux ressources économiques, aux opportunités, et aux financements selon les rôles attribués à chaque genre : ces différences de genre conditionnent aussi les responsabilités vis-à-vis des autres membres de la famille et de la communauté. Pendant les crises économiques, les conflits et les désastres naturels, ces inégalités ont tendance à se renforcer.

La sécheresse par exemple augmente la charge de travail pour les femmes et les jeunes filles car elles sont chargées de parcourir des plus longues distances pour s’approvisionner en eau pour les besoins domestiques et le bétail. Plus de temps passé à la recherche de bois et d’eau soustrait du temps destiné à l’éducation, à la création de revenus, et à la production alimentaire – activités qui sont nécessaires pour rendre les ménages plus résilients. En raison du récent conflit dans le nord du Mali, ces activités posent des risques supplémentaires pour leur sécurité. Entre 2012 et 2014, années du conflit dans le nord du pays, des vagues de départ des maris vers le sud du Mali et vers les camps de réfugiés aux frontières avec le Burkina Faso, le Niger et la Mauritanie, combiné à des vols généralisés de bétail, ressources agricoles et capital par les occupants et par l’armée malienne, ont rendu les femmes du nord du pays plus vulnérables aux aléas climatiques, celles-ci manquant de soutien physique et économique pour continuer les activités agricoles et d’élevage. Aujourd’hui, alors que le Mali entame une période de paix et de reconstruction, les femmes du nord du Mali restent vulnérables, étant donné l’insécurité qui persiste dans certaines zones du nord, et les dommages économiques que le conflit a entraîné pour les ménages du nord.

Les normes de genre conditionnent aussi les capacités, les stratégies et les mécanismes de subsistance comme par exemple la nutrition. Les femmes contrôlent la nutrition des membres de la famille et surtout des enfants : en temps de crise elles peuvent ainsi être amenées à réduire leur propre consommation pour que le reste de la famille ait de quoi se nourrir. Les femmes jouent donc un rôle important dans la famille et dans la communauté mais nécessitent d’être mieux impliquées dans la prévention et la gestion des désastres naturels.

Cette étude analyse le rôle économique et social des femmes et des hommes au Mali ainsi que leurs conditions de vulnérabilité face aux aléas hydrométéorologiques dans différents secteurs de production, en particulier l’agriculture, et face aux risques de crise alimentaire et de malnutrition. Dans cette perspective, l’étude prend en compte les usages du territoire et des ressources naturelles spécifiques à chaque zone climatique du Mali, et répond aux questions suivantes :

Table 1 : Questions guidant la présente étude genre du projet pour le Mali

Contexte	Quel est le statut légal de la femme au Mali? Quelles sont les normes et valeurs liées au genre ? Quels sont les niveaux d’éducation et formation des femmes et des hommes? Quels sont les croyances, perceptions et stéréotypes concernant le genre?
Qui fait quoi?	Quelle est la division du travail entre les hommes et les femmes? Quelle est la situation des hommes et des femmes dans les secteurs d’intervention du projet? Quelle est la participation des femmes et des hommes dans les secteurs formel et informel de l’économie? Qui gère les ménages, et qui est responsable des enfants et personnes âgées?
Qui possède quoi?	Les femmes et les hommes ont-ils un même accès à la finance, aux technologies, à l’information, et aux services (aux niveaux local et national)? Qui contrôle les

	ressources? Les femmes et les hommes bénéficient-ils de ces ressources équitablement? Les femmes et les hommes ont-ils un accès équitable à l'éducation, au savoir technique, et à la formation continue?
Qui décide?	Qui décide au sein du ménage, du secteur public, et des entreprises? Les possibilités de négociation des hommes et des femmes sont-elles différentes? Les femmes sont-elles impliquées dans les décisions économiques? Les hommes et les femmes participent-ils de façon équitable aux activités de la sphère politique? Qui possède l'influence politique?
Qui bénéficie du projet, et de quoi?	Quelles sont les opportunités pour assurer une participation au projet et des bénéfices égaux entre femmes et hommes? Le projet prend-il en compte les différents besoins et priorités des femmes et des hommes? Les services et technologies fournis par le projet seront-ils accessibles aux hommes et aux femmes? Le projet reconnaît-il les différentes vulnérabilités des femmes et des hommes et développe-t-il des stratégies de réponse spécifiques pour chacun des groupes cibles?

Sur la base de l'évaluation de ces différences de genre, le projet souhaite mettre en place un système de suivi, alerte et prévisions hydrométéorologiques qui prévoient une meilleure implication de la femme dans la gestion et la prévention des désastres naturels. Le projet prend ainsi en charge la formation et la valorisation du rôle de la femme au sein de la communauté dans l'observation et la récolte des données relatives à la variabilité du climat ; dans la maintenance de l'équipement et dans la transmission des données ; et enfin dans la prise de décision aussi bien au niveau communautaire qu'interministériel et institutionnel.

Mali, a fragile State vulnerable to natural disasters

Mali, with its over 14 million inhabitants, is a landlocked country in West Africa affected by instability, with a series of cyclical conflicts in the north since its independence, including the latest conflict that struck it between 2012 and 2015. Mali is also extremely vulnerable to food insecurity, disasters and climate risks with high exposure to floods and droughts. After independence from France in 1960, Mali suffered from cyclical droughts and rebellions in the north, 2 military coups in 1968 and in 2012, and 23 years of military dictatorship until democratic elections were held in 1992. In January 2013, an international coalition of Malian, African and French troops intervened militarily upon the government's request following the capture of the town of Konna and its troops overran Islamist strongholds. A short period of stability followed the intervention, with peaceful elections marking the return of democratic government in September that same year. But the conflict returned shortly after, in May 2014, when armed groups reclaimed control over large parts of the north. Until early 2015, the country remained in a state of protracted crisis. The Algiers Peace Accord was signed on the 15th of May and the 20th of June 2015 between the government of Mali and members of the rebellion, officially ending the armed conflict, by establishing a joint vision for peace and prosperity in Mali predicated on military demobilization and disarmament, the devolution of authority to local governments, and on establishing the conditions for restoring stability and economic recovery in northern Mali. Today, there remains some pockets of insecurity in the North, a region that is characterized by lower State presence due to difficult geographic conditions and low population density. The legacy of the conflict today is Mali's vulnerability to terrorist attacks. In March and November 2015, the country was hit by two deadly terrorist attacks, respectively at the La Terrace nightclub and at the Radisson Blu hotel, a place frequently visited by members of the international aid and UN community as well as government officials and wealthy Malians.

Solutions for Mali's peaceful recovery are closely connected with a more resilient future for the Sahel and the rest of West Africa. The impacts of climate change are projected to increase both the frequency and severity of hazards and, in turn, political instability. Fragile, conflict and post-conflict affected States are more likely to suffer more from natural disasters and climate hazards since they generally have weaker institutions, economic wealth and social contracts that limit their capacity to prepare, respond to and recover from natural disasters. In this context, even a small natural disaster may have a big impact on a fragile State, leading to increased fragility. In the case of fragile and post-conflict Mali, improved weather and climate information is therefore required from the national level down to the household level, and as at the horizontal level, to allow the population to become more prepared and resilient both to internal and external shocks.

A close relationship between gender, fragility, and natural disasters

As Enarson and Morrow (1998) have noted, disaster reveal inequalities at all levels, including at the gender level. Migrant groups lacking citizen status, and ethnic groups lacking political voice and participation are more vulnerable to natural disasters. In turn, gender influences entitlement to economic opportunities and family care responsibilities, which can be disrupted in the event of a natural disaster, making women more vulnerable. For example, drought and erratic rainfall increase the workload of women and girls on family farms because they need to walk longer distances and spend more time securing water for cooking, household sanitation needs, and caretaking of young children and livestock. Additional time spent on

resource collection means less time available for education, income generation, or household food production – all of which are cornerstones for resilient individuals and households. In the case of changed weather conditions or of a natural disaster, violence and insecurity add even greater risks on women and girls since these can further reduce their mobility and agency: during the latest conflict in Northern Mali, the occupants obliged women to stay home instead of continuing their activities. For instance, women, who traditionally sell on the market the fishing products seized by the men, were not allowed to, leading to a decrease in economic activity and in the own resources for themselves and their household. Women and girl's limited rights in succession and assets accumulation, also make them less resilient in buffering shocks.

Gender norms also influence the skills, strategies, and survival mechanisms such as food intake. For example, women may reduce the amount they eat so their children and husbands have enough. Small livestock, typically owned by women and youth, is sold first in hard times. Domestic violence, early and forced marriage, as well as gender based violence (GBV) tend to increase in times of insecurity and when social structures experience failures. The Sahel region ranks high in female genital mutilation, domestic violence and early marriage. In Mali, according to focus groups conducted by Mercy Corps, older girls report “dating” multiple men to get money and gifts (such as food) during lean times. For girls early marriage rate increases during food shortage times. Malian women in general, and those affected by gender based violence in particular, are therefore vulnerable to the effects of natural disasters, since they are less independent socially and economically, and as such less prepared to develop coping mechanisms that differ from the traditional lifestyle which the natural disaster will disrupt. To be effective, a project aiming to help them be more resilient to hydro meteorological hazards therefore needs to be adapted to their specific needs and socio economic profile.

Gender Mainstreaming in the Project Development Objectives

Who benefits?	Where are the opportunities or entry points to the project to ensure equal participation and benefits? Does the project address the different needs and priorities of women and men? Will the services and technologies provided by the project be available and accessible to both women and men? Does the project recognize the distinct vulnerabilities of women and men and develop specific response strategies for each target group?
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Enhanced hydro meteorological systems, as contributors to Mali's road to recovery, will benefit women

Hydromet and early warning services act as a key enabler for a broad range of adaptation decisions, ranging from the agriculture sector and the related issue of food security and nutrition, infrastructure, disaster risk management, and others. For example, projected changes in climate are expected to result in increased rainfall over shorter time spans for some areas of Mali, with potential impacts on the levels of agricultural production and urban flooding, among others. Improved hydromet and early warning services would allow agencies to better monitor, prepare for and respond to extreme rainfall events and flooding, thus building adaptive capacity and reducing the vulnerability of communities, including women.

In areas of infrastructure development, hydromet information will inform the resilient design of relevant works such as bridges, culverts, and erosion protection. In terms of agriculture and food security, reliable hydromet information assists farmers in deciding which agricultural technologies and adaptation

mechanisms may be most useful in responding to weather variability and climate change. In the context of growing tensions due to climate change between groups relying on seasonality to practice complementary activities like fishing, herding and farming on the same areas, the project should also contribute to ease tensions by fostering better dialogue between groups and enhancing preparedness to adapt to and address together the effects of disrupted seasonality. Private companies, micro-insurances and businesses also need and rely on the hydromet data to make investment decisions related to climate risk mitigation for their operations. Malian women are heavily involved in all of these sectors, whether formally or informally, and are therefore set to be primary beneficiaries of an improvement of the country's hydromet and early warning services.

Gender entry points to the project

The Project Development Objective is to strengthen the adaptive capacity and climate resilience of vulnerable communities and the economy of Mali. This will be achieved by developing the capacity of national hydro-meteorological and early warning services, which will in turn support adaptation planning for public and private sector users, which include women.

Agro-climate monitoring in the region indicates that drought conditions occurred during critical stages in the growing season, and that long-term effects of repeated drought shocks had consequences on soil quality, crop failure, and regional food shortage. By ensuring the delivery of services to communities, the project will benefit vulnerable groups, including the 80% of country's population whose livelihoods are dependent on predominantly rain-fed agriculture and about 5.3 million people directly exposed to drought or flooding. Among these groups, the project will benefit the 78.8% of Malian women involved in rural agriculture, herding and fishing, whether formally or informally.¹ The project will be an entry point for women's reduced economic vulnerability through natural disaster risk reduction, covering their enhanced preparedness, resilience and recovery capacities to natural disaster.

Ensuring equal access by men and women to the technologies provided as well as women inclusion

The project will rely on new technologies to capture, assess, and communicate data more quickly and with greater reliability, benefiting women equally as men. Mobile phones and tablets, up-to-date hydrological maps, and online platforms for two-ways information collection will improve risk management by enabling men and women to:

- Be better informed of risks.
- Better evaluate evolving risks.
- Better manage risks in pursuit of opportunity. Respond to risk more quickly.
- Evaluate the effectiveness of risk management and adjust their strategies accordingly.
- New technologies can make new types of information available, improve its timeliness, provide more flexible ways of handling information, and cut costs significantly.

Second, the project will be an opportunity for women's empowerment through better women's inclusion in

¹ « Etude sur la situation de la femme au Mali », Ministère de la promotion de la femme, de l'enfant et de la famille, République du Mali, septembre 2007. Accessible at: http://www.greenaction.net/IMG/pdf/Recofem_2007_rapport_final.pdf

weather forecasting, warnings and disaster risk preparedness. Such goals will be achieved through training, effective communication, and capacity building. The project will therefore generate enhanced economic opportunities and voice for women and girls.

Recognition of women's general vulnerabilities and responses to these

To be successful the project needs to foster women's empowerment and elevate women's status within the community, increasing female participation in disaster risk resilience and decision-making. Gender norms need to be unpacked at every level of project cycles, including project design. Development aid has sometimes reinforced existing local gender norms, relegating women to a marginal role under pretext of their lower level of literacy and engagement compared to their male counterparts. For example, during interviews with women's organizations in the Sahel, Oxfam Canada (2013) found that women identify risks that are often absent from "mainstream resilience frameworks": "Women emphasize risks that originate at the household level, that are rooted in gender inequality, and that are exacerbated by cultural stereotypes about women's roles and their ability to engage in decision making. They also cite barriers to building resilience that are linked to sexual stereotypes, care responsibilities and time poverty".

It is thus recommended to mainstream gender issues in all the processes, roles and responsibilities during the generation and dissemination of the relevant hydro meteorological information. Meteorological services need to ensure: (i) equal involvement of women and men in agro-meteorological services and farmer-observer committees; (ii) the establishment of systems to verify that information has reached both women and men equally; (iii) documentation of the hazards and climate risks that women consider relevant; (iv) collection of gender-differentiated data from regional networks, adjacent territories, and international sources accessible; (v) production of data and warnings that can be understood by both women and men; (vi) women and men trained on how to forecast hazards using different resources; and (vii) that women and men's traditional knowledge is considered equally.²

Indirect or gender-neutral policies will also be considered. Project interventions geared to support general services and public good – e.g. training of government officials and/or the extension of meteorological services to agriculture – needs to be considered through a gender lens as they can become catalyzers for women's empowerment. Recommendations on gender mainstreaming will be systematically provided in all project components to mitigate risks deriving from existing gender differentials in education, access to legal services, inputs, land, finances, technology and equipment in rural areas.

Recognition of women's specific vulnerabilities by project component, and responses to these

The project objectives consist in the following components:

Component 1 - Capacity building and institutional development

This will include: (i) training and capacity building programs for agencies' staff and management, (ii) enhancing institutional and regulatory frameworks, and (iii) providing support for detailed design and system integration of project activities. The scope of this project component is to enhance government capacity and regulatory frameworks in hydrology, meteorology, food security and disaster risk management.

² UNISDR, UNDP, and IUCN, 2009, *Making Disaster Risk Reduction Gender-Sensitive: Policy and Practical Guidelines*, Geneva.

Challenges, vulnerabilities and specific responses: The component draws heavily on training of government officials both at national and local level. Women are low represented in organization-wide task forces in disaster risk management, especially at local level. The regulatory frameworks needs to be enhanced in order to foster a better coordination among the government agencies involved (hydrology, meteorology, food security, and civil protection) and make sure that gender issues are considered as relevant for all the agencies involved. Training time and curricula need to be gender-sensitive; as women in Mali have lower levels of literacy and specific schedules. The teaching methodology needs to be adapted to allow both men and women to fully participate.

Component 2 - Improvement of hydromet and early warning infrastructure

This will include (i) expanding and upgrading hydromet observation networks, (ii) enhancing data collection & transmission, forecasting and decision support systems, and (iii) strengthening preparedness and emergency response facilities and operations. This component aims at reinforcing data collection and dissemination in hydromet observations strengthening preparedness.

Challenges, vulnerabilities and specific responses: Success depends on communities' capacity to participate, understand and being active agents for the preservation, maintenance and appropriate use of equipment. Malian women have less access to farming equipment than men, which limits their capacity to participate to the improvement of hydromet and early warning infrastructure on an equal footing to men: a 2013 Care baseline assessment conducted in six countries in Asia and Africa, including Mali, on the productivity and empowerment of women smallholder farmers³ found that among the 785 households interviewed in Mali, only 24.5% of the women had sole or joint access to agricultural assets, those being defined as the following: agricultural land, chicken/poultry, small livestock, large livestock, mechanized farm equipment, non-mechanized farm equipment, fish ponds/fishing equipment. Strengthening preparedness and emergency response facilities and operations implies having well-trained units who are able to address gender-specific issues, master communication channels that work for women, and be prepared to address spike in violence, domestic violence and GBV during emergencies.

Component 3 - Enhancement of service delivery and warnings to communities

This component will include (i) establishing a national framework of climate services, (ii) improving flood and drought forecasting and warnings, (iii) developing new products for sector specific needs (focused on agriculture, food security and disaster risk management, etc.), (iv) strengthening “last mile” connectivity to ensure appropriate understanding and use of information, and (v) mobilization and sensitization of community and establishing effective feedback mechanisms for communities at risk.

Since 2004, and with the follow-up international conference on early warning systems in 2006, the role and importance of effective communication with natural disaster preparedness and response, and with food crisis-affected communities has grown significantly, driven by the proliferation of accountability initiatives and availability of affordable media channels such as mobile phones. Limited arable land, unpredictable weather, natural disasters (including drought, locust infestations and floods), environmental degradation and fluctuating commodity prices have led to numerous food security challenges in Mali. Children are the most affected by these challenges: the prevalence of Global Acute Malnutrition among children under 5

³ “Increasing the Productivity and Empowerment of Women Smallholder Farmers, Results of a Baseline Assessment from Six Countries in Africa and Asia”, Jemimah Njuki, Elizabeth Kruger & Laurie Starr, CARE, October 2013
Accessible at: <http://www.care.org/sites/default/files/documents/pathways-global-baseline-report-2013.pdf>

was reported as 15 percent according to the last Demographic and Health Survey in Mali⁴. The enhancement of agro meteorology and early warning service delivery to communities, through enhanced connectivity will complement the existing initiatives aimed at strengthening food security: those include projects related to drought relief, the development of the milk industry, technical support to stabilize and restructure the cereal markets, food aid for refugees and those affected by conflict in neighboring countries, and the creation of cooperatives to enable small farmers to become competitive cereal suppliers on local and regional markets.

The enhancement of early warning and hydro meteorological services to communities will also contribute to prepare these to anticipate and respond to flooding risks, which have been particularly acute in Mali in 2013. A 2014 study by the Malian authorities and UNICEF of floods in Mali between 2006 and 2013⁵ shows that the regions of Kayes and Ségou are the most vulnerable to floods due to their proximity with the Inner Delta River. However, vulnerability to floods depends on additional factors, such as the density of population, inadequate urban planning and infrastructures. For instance in August 2013, heavy floods killed 37 persons in Bamako and affected more than 19,000 persons according to OCHA. Overall, the 2014 study finds that the 2012 floods affected over 25,000 persons throughout Mali and generated severe damages, including house destructions, wasted agricultural production and food stocks, and damaged water points.

Challenges, vulnerabilities and specific responses: This is the key project component in terms of gender mainstreaming and focuses heavily on impacts, end-beneficiaries and their capacity to understand and react to warnings. Profiling of end beneficiaries is key to understand habits, livelihood activities, hazard exposure and vulnerability. Livelihood profiling of end beneficiaries often tends to focus on formal workers, their needs and preference. However, the most vulnerable population is often engaged in multiple forms of survival livelihood activities, which have low representation and visibility. For example, poor women in Mali are often engaged in petty trade, hairdressing, seasonal farm labor, and artisanal mining therefore do not receive appropriate training and information about risks and hazards. Relying on the local and community levels to identify women involved in the informal sectors and vulnerable to hydro meteorological hazards will be key since formal sources of information are likely to be insufficient to that respect. Beyond transmitting information, it is also important to deeply understand social and cultural norms are embedded in agency and influence decision-making. Improved last mile service require a blend of i) organizational and decision-making processes institutionalized; ii) effective communications equipment; iii) but most and foremost the fact that warning messages are recognized, understood and respected.

Component 4 - Project management

This component will include support to the project management unit providing assistance to executing entities and ensure fiduciary compliance.

⁴ <https://www.wfp.org/countries/mali/overview>

⁵ “Etude des Inondations au Mali 2006-2013” – May 2014, Etude réalisée en collaboration avec la Direction Nationale de la Protection Civile du Mali et avec l’appui technique et financier d’UNICEF. Accessible at: http://www.reach-initiative.org/wp-content/uploads/2014/05/anne.thurin-08052014-024644-REACH_-Etude-des-Inondations-au-Mali-2006-2013.pdf

Gender vulnerability in Mali is strictly interwoven with conflict and insecurity, land titling/land use and gender norms. Gender norms impact women and men, boys and girls in the way they i) understand and perceive risks, and ii) cope and respond.

Country Gender Context:

What is the context?	What is the legal status of women in the country of intervention? What are the gender norms and values? What are the training and education levels among women and men? What are commonly held beliefs, perceptions, and stereotypes relating to gender?
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Due to gender imbalance in the level of education and literacy, women's limited rights and political representation, and access to social infrastructure, including health facilities, Mali ranks at the top ranking in maternal mortality, children's malnutrition and stunting. Although DRR and climate change are high government priorities, female-led cooperatives, which tend to be less formal and numerous than men's, receive less information and support, and limited financial help.

Demography and fertility trend

High fertility rates and gender imbalances are key drivers of Mali's poverty dynamics. High fertility rates (6.7 births per woman) not only affect population growth, but also women's health and productive capacity. As a matter of fact, teenagers' pregnancy level is higher in Mali than in other low income countries (see Annexes) and female-headed households tend to be poorer after adjusting for household size and scale economies in consumption. Within households, females perceive themselves as poorer than their husbands in terms of both wealth and decision-making power (World Bank, 2013).

Households are extended families. Average household size is in the range of 13 to 16 people and is a sign of the presence of extended families, or "concessions". The percentage of male members is slightly higher than that of women. The dependency ratio is not high and the average age within the households is 22–25 years. The socio-cultural phenomenon of extended families brings both advantages and disadvantages. An advantage is that people care for one another—reducing the negative impacts of droughts, for example—but an important disadvantage is that better-off family members are culturally obliged to take care of their less fortunate household members, thus minimizing rewards for household members that develop successful economic activities. This disadvantage has important consequences for the types of strategies adopted in the villages (World Bank, 2013).

The population policy for 2003-21 took a very wide approach to demographic issues with quantified objectives geared towards 3 main goals: education, health and fertility. In regards to fertility, the 2003 policy aimed to increase the rate of contraceptive prevalence (all methods) from 8.2% in 2001 to 30% in 2025, and reducing under-age marriage for young girls.

Access to health service and reproductive health

In regards to health and reproductive health, a Ten-Year Health and Social Development Plan (PDDSS) 1998-2007 was implemented through a number of Health and Social Development Programs (PRODESS), the most recent one having been extended until 2011. The objectives were the following: reduce infant and maternal mortality rates; reduce fertility rates (from 6.6 to 5.5 children per woman); reduce unmet family planning needs from 31% to 25%; and increase the prevalence of modern contraceptives, from 6.2% to 10%.

Within the PDDSS framework, Mali also adopted in 2002 an “action plan to promote safe contraception in Mali”. As a matter of fact, the high level of obstetrical emergencies led to the adoption of a Strategic plan for reproductive health 2004-2008 and of programs such as the National Plan for Emergency Obstetric Care with the integration of newborns (SOU and SONU).

In Mali the total demand for family planning (sum of the percentage of women using contraception and of the percentage of non-satisfied needs) also varies according to the categories. It is indeed at 57% and 53% for more educated and wealthier women respectively, and 38% and 33% with less educated and poorer women. However, while approximately 40% of this demand is met for the wealthier and better-educated women, less than 20% of demand is satisfied for uneducated and poorer women.

The deterioration of the quality of care provided by public services certainly played a role in the weak impact to the family planning campaigns. It is also important to note the weakness of demand for family planning, even among women with secondary education or more. In fact, the campaign focused on the need of spacing childbirths but was hampered by entrenched social norms, which perpetuate the valorization of multiple pregnancies and a large offspring. Results from the 2006 DHS study (based on age group, level of education, and wealth quintile) indicate that the number of desired children is still high in Mali, even among more educated women.

Literacy and access to education

Literacy rates are lower for females than males (18.8 versus 41.6 percent) and girls are less likely to be in school than boys (gross primary enrollment rates are 69.6 and 79.1 percent respectively). School enrolment and completion for female students are significant lower than for male students in Mali. Despite the significant progress in improving primary and secondary education in Mali, the country still ranks low in school enrolment and completion compared to other low-income countries, and most specifically for female students (see annex 1).

According to a World Bank study carried out at village level (World Bank, 2011) in different climatic areas of the country, the education gap impacts the level of resilience of households towards the hungry season and extended periods of droughts. The people in the villages had only a limited access to formal education, with on average less than 2 years of formal education. Only the village of Kondogola actually has a school. In general boys enjoy more time in school than girls. Gender differences in school enrollment are huge and as a consequence girls are less equipped to improve their situation. The general low level of education for both boys and girls sadly implies that, in the next decades, many people will lack the capacity to reduce their vulnerability to climate risks. This is supported by conclusions from IFPRI (2010a) that households with higher education are more likely to invest in new techniques and be more resilient.

Women's employment, business ownership, and political representation

Who decides?	Who participates in the decision making in the household, the public sector, and corporate sector? Are the bargaining positions of women and men different? Are women involved in making economic decisions? Is there an equal participation of women and men in the political sphere? Who has political influence?
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Women are under-represented in political decision-making and in business and employment (World Bank, 2013). Women are a disadvantaged group in Mali. Female-headed households tend to be poorer after adjusting for household size and scale economies in consumption (van de Walle, 2011) and within households, females perceive themselves as poorer than their husbands in terms of both wealth and decision-making power. As elsewhere in Sub-Saharan Africa, females are under-represented in political decision-making in business and employment.

As elsewhere, females are also under-represented amongst owners and managers of formal enterprises in Mali – although according to estimates the informal economy accounts up to 70 percent. In 2010, females in the formal economy represent 13.1 percent of all managers whilst in 2007 females are 16.3 percent of owners. Similarly to other SSA countries shows that female controlled firms differ from their male controlled counterparts.

In general, female-run firms tend to be smaller in terms of employment and turnover and are more likely to operate in the service sector. These characteristics are reflected in the Malian Enterprise Survey (2007). In addition, firms with female managers tend to be more likely to be in a large town – perhaps reflecting a larger pool of qualified female labor in large urban areas and rural-urban differences in social norms. It is also possible that, in the formal sector, there is a greater density of ‘female sectors’ in urban areas. Female managers also employ more female employees on average both in absolute terms and as a proportion of the workforce. This is discussed in more detail later. It is striking that, despite the difficulties of comparison across the years due to using female managers in 2010 and female owners in 2007, many of the characteristics of ‘female firms’ are applicable in both cases.

Results from the Artisan Census (*Ministère de l'Artisanat et du Tourisme*, 2010) reports the sectors in which female owners and managers operate in the formal sector. The food sector is the most important one for females across both Enterprise Surveys and the Artisan Census but remains more important for females operating in the artisan sector than those interviewed by the Enterprise Surveys. Hygiene and personal care artisans (hairdressers, beauty salons, etc.) are more likely to be female than those from other sectors but firms in this sector do not feature at all in the formal sector due, likely, partly to sampling and partly to the fact that most such firms operate in the informal market.

Similarly to other countries in Sub Saharan Africa, women entrepreneurs are discriminated against despite their importance for economic growth and female employment and equality. This could take the form of officials being more likely to solicit bribes from females or prevent them from obtaining operating licenses. Credit institutions see female clients disadvantaged while asking for loans and employees are reluctant to work under female managers.

Gender differentials in access to finance

Who has what?	Do women and men have equal access to resources including finance, technologies, information, and services (at national, sectoral and local level)? Who has control over these resources? Do women and men equally benefit from these resources? Do women and men have equal access to education, technical knowledge, and/or skill upgrading?
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According to the Mali business survey both in 2007 and 2010, ‘Access to finance’ is the single most important obstacle in starting and operating a business for women-owned enterprises, although it appears to have improved over time. Both males and females rate this as a significant constraint in both years. Indeed, with the exception of females in 2010 who rate ‘access to land’ as slightly more of a constraint, ‘access to finance’ is consistently the most severe constraint for both men and women. However, differences exist between male and female responders for both 2010 and 2007, with more acute barriers for women in accessing land than finances. According to the 2010 business survey key differences between male and female firms in terms of constraints were: access to finance; access to land; transport; and customs/trade regulations, compared to the 2007 business survey results where, the major differences were in access to finance; tax rates; and transport (World Bank, 2013:70-118).

Legal rights and social norms

Disparities in access to credit only mirror inequalities in legal status. For example, according to the World Bank’s *Women, Business and the Law* (2016) Malian women are not treated equally while applying for a passport. Other areas where married women cannot perform some actions in the same way as married men are numerous and reflect inequalities transferred to national legislation from customary law, which discriminates against women, typically family law. Efforts to revise family law giving greater legal rights to females met with strong opposition from some religious sections of Malian society leading to significant adjustments before being adopted in late 2012. The original version designated the ‘parental authority’ as head of the family but this was revised to designate the male as household head following protests; the female age of marriage was intended to be 18 years but this was revised downwards to 16 years old in the final version (the legal marriage age for males stayed at 18 years old). In addition, according to the new family law code, the female owes obedience to her husband.

Mali faces numerous challenges resulting from its high population growth: employment creation; migration; and resources for funding the health and education of the young population are key to the country’s stability and success (Ibid: 68).

Migration

Migration is a common characteristic in rural Mali, with the majority of households having either temporary and/or permanent migrated family members. Temporary migration is much more common than permanent migration. Migration occurs during hungry seasons from rural areas toward the urban. Conflict and insecurity have exacerbated this trend.

Migration is a coping strategy adopted to diversify household income and reducing pressure over households under stress. Given the large size of the households in Mali, migration does not cause many

social problems, however the most valiant members tend to migrate while the others stay behind. Women migrate less often than men and are left behind to look after the children and elders. They may also be overburden by family responsibilities and labor in the farm. Furthermore, fewer job opportunities for women can make it more difficult for women to make ends meet. Besides petty trade, most financial and employment opportunities are for men. Men are the only decision-makers, with women having little decision-making and leadership roles (World Bank, 2011).

The effects of the Malian conflict on gender

The post-conflict needs assessment for Mali undertaken jointly by the World Bank, United Nations, African Development Bank and Islamic Development Bank and finalized in November 2015 highlights the following impacts of the crisis and conflict on gender inequality in the North of the country where the rebel and jihadist occupation took place: the conflict has disproportionately impacted on women, who have lost their spouses, been victims of rape, forced marriages, and other atrocities. Moreover, the destruction of local health-providing infrastructures has had a negative impact on access to important health services, especially reproductive health. The crisis has equally had a negative impact on the economic situation for women, who in many cases are the main providers for large households. The Peace Agreement includes a focus on transitional justice measures, which will provide legal support for women, in addition to their socio-economic reintegration by way of economic revival programs and the promotion of income-generating activities. Strengthening the place and the role of women within society through information programs, promoting awareness of peace and other themes affecting their lives, will support these goals.⁶ By enhancing the role of women in the share of information on weather and hydrologic conditions, the project will align with the post-conflict and peace-building programs of the government.

The effects of the crisis on women in Northern Mali have been described by the study “State legitimacy, stability and social cohesion in low population density areas, The case of northern Mali”⁷, which relied on surveys with the men and women that stayed in the North during the crisis, were internally displaced, or moved to refugee camps in Niger, Burkina Faso and Mauritania. Men and women interviewed insisted that the rebel and jihadist occupation between 2012 and 2013 was particularly difficult for women. Female respondents from Gao described how the application of sharia restricted their movements. A former NGO worker confirmed the disproportionate violence of the occupants targeting women, including rapes and forced marriages. Women who were victims of rape suffered from a double disgrace, since they were subsequently discriminated for being the victim of a rape and sometimes abandoned by their husbands. In this context, some women preferred to commit suicide rather than suffering from acute stigmatization. Finally, women were made more vulnerable since the occupation forced many men to flee either to the south of Mali or to the refugee camps at the borders. Women were left behind to look after the children and subsist on their own, which proved to be challenging since women are generally, in peace time, not the heads of the households: as part of the Post Conflict Needs Joint Assessment Mission, a survey was undertaken among populations in Northern Mali in August and September of 2015, with 500 households

⁶ “Assessing Recovery and Development Priorities in Mali’s Conflict-Affected Regions”, Final Report of the Joint Assessment Mission for Northern Mali, World Bank, African development Bank, Islamic Development Bank, United Nations, November 2015

⁷ “State legitimacy, stability and social cohesion in low population density areas, The case of northern Mali”, Jaimie Bleck, Julia Lendorfer, Asbjorn Wee and Charlotte Yaiche, July 2014. Paper presented at the Second Annual World Bank Conference on Africa (ABCA) in Berkeley, California, on June. 8-9, 2015

proportionally distributed across the regions of Gao, Kidal and Timbuktu. While the survey interviewed approximately equal numbers of men and women (53 vs 47 percent), over 90 percent of surveyed households were headed by men.

As Mali has entered a post-conflict period, there continues to be pockets of insecurity in the North that expose women to similar risks as those suffered during the occupation. The absence of the State in some areas makes them a particularly vulnerable target to violence and discrimination. The Africa Hydromet Program in Mali, by including women as beneficiaries and actors of the information networks on weather conditions, will help women in the North regain the possibility of accessing economic independence and empowerment, and therefore help them be more resilient in the event of a future security or climate crisis.

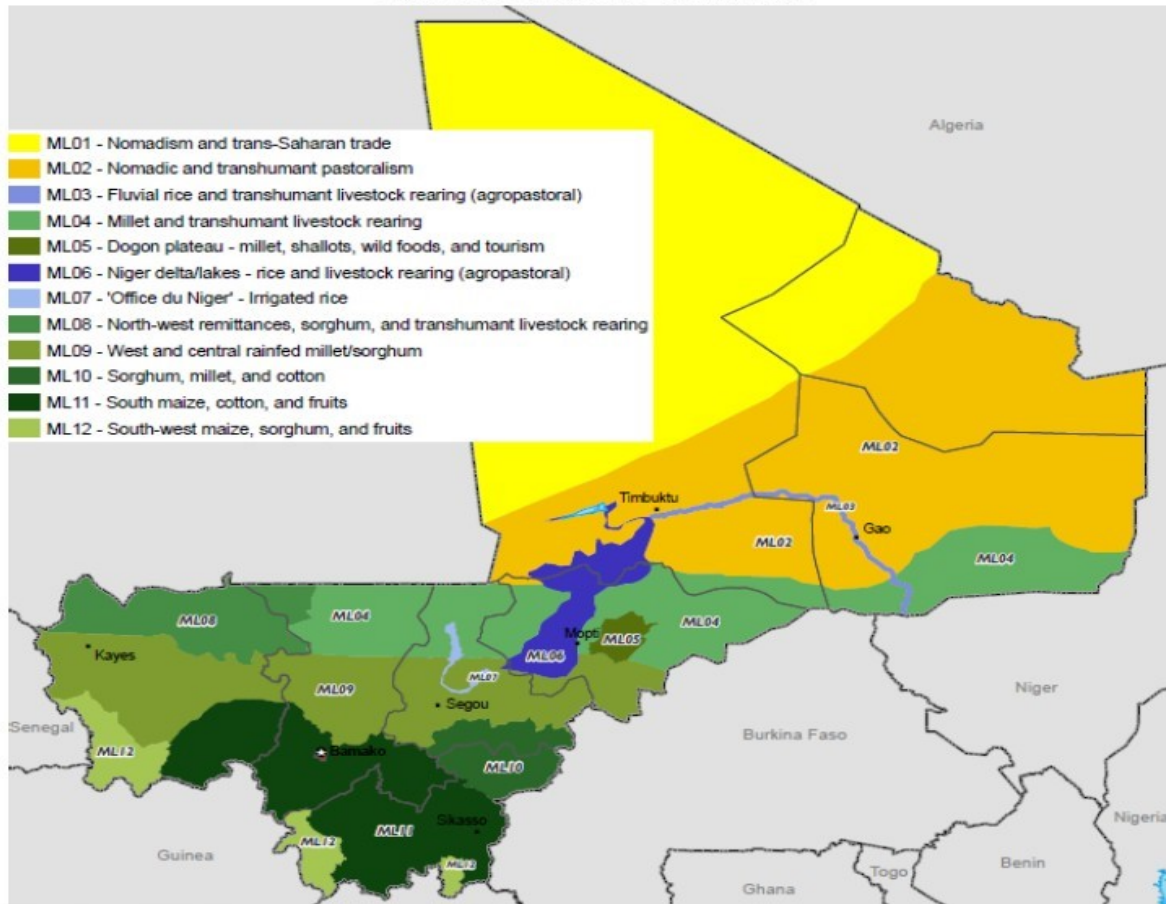
Who Does What?

Who does what?	What is the division of labor among women and men? What is the situation of women and men in the specific sector of intervention? What is the participation between women and men in the formal/informal economy? Who manages the household? Who takes responsibility for the care of children and the elderly?
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Livelihood areas and vulnerabilities to natural disasters

A sector specific vulnerability analysis has been carried out for this project (pastoralists, agriculturalists and fishermen) within the World Bank-led PRECA-Sahel project TA framework. Data analyze specific land/water resources use and gender differentials in access, entitlements, and income. They also take into account social change under stress and economic shocks. Available data on household coping mechanisms are also available through a wide range of sources, including a World Bank survey at village level on climate adaptation (World Bank, 2011) and a Poverty and Gender Note about Mali (World Bank, 2013).

Figure 3.1: Livelihood Zones in Mali



Source: FEWSNET 2010.

The cities of Gao and Tombouctou are the main urban centers of the nomadic and transhumant pastoralism livelihood zone, and are geographically located in the fluvial basin of the Niger River, which is classified as livelihood zone 3. The highest rainfalls occur in zone 4 – in the wide Sahelian band farmers can grow millet and cowpeas, depending erratic rainfall – and the lowest rainfalls are in zone 3. Transhumant livestock rearing is most important livelihood activity in zone 3. The Niger River defines another three livelihood zones. The Niger River is the lifeline of Mali. During the rainy season (June to September) and for a few months afterward, most of the course of the Niger is navigable by larger ships, while canoes and small craft can cruise the river year-round⁸. Ports all over along the river, from Koulikoro to Mopti, Diré, Kabara, and Gao host a large diversity of ethnic groups who live along the course of the Niger River - some include large groups, such as the Bambara, the Malinke, the Songhai, and the Zarma. The delta (zone 6) near Mopti is a vast flood plain inundated for five months a year due to the very low level of the slope. The seasonal flooding generates pasture for cattle and allows farming, mainly rice and sorghum. The river is an important ecological factor determining the livelihoods of a huge number of people living along its banks (zone 3). For example, Bozo fishermen (sub-zone 6), who camp along the river, are totally dependent on stream level and ecosystem. Finally, the Office du Niger (zone 7, north of Ségou) is the location for the most important irrigation system in the country, and it is totally dependent on water pumped from the river.

⁸ http://www.countriesquest.com/africa/mali/economy/transportation_and_communications.htm

This zone is a hosts several irrigation canals and a few dams. Zone 9, the band stretching roughly from Kayes to Bamako to Ségou gradually transitions from the dry semi-arid north to the agricultural south, where households are less dependent on livestock and tend to grow a large variety food staple and cash crops. In the agricultural areas, family size and population density increase. The three southern-most zones (10, 11, 12), which are demarcated by Bamako to the north and Sikasso to the south, are the largest range of cash crops producers, and the zones with the largest families and greatest population density.⁹

Drought and conflicts can have major impacts on pastoralists' transhumance movements: as a consequence of the drought of 1973, a wave of thousands of Tuaregs relying on pastoral activities migrated to Algeria, and from there, continued to Libya. A similar drought occurred in the 1980s, and thousands of Tuaregs from Mali and Niger fled to the neighboring countries in the north. The 2012-2015 conflict had a heavy toll on the number of cattle lost by internally displaced owners, as the cattle was stolen or destroyed by rebel and jihadist groups and, in some cases, by the Malian army. Droughts also have a major impact on low levels of wells, can affect quality of water, endangering both human and animal health. Pest invasions, storms, and bush fires can considerably reduce the quantity and quality of forage for cattle and small livestock. Agriculturalists affected by repeated droughts and crop failures can face food shortage and lack seeds reserves for the following agricultural season. Famine and malnutrition, combined with high price volatility can induce huge population movement, sale of assets, such as land, for labor migration. Artisanal fishermen can face food shortage due to overfishing, conflict with other migrating groups, or flooding. Overlapping land use – for example cattle watering, rice paddy cultivation, and fish transformation take place on the Inner Niger Delta riverbanks – and a reduced space due to changed seasonality as a result of climate change can potentially generate small-scale conflicts and tensions between pastoralists, farmers, and fishermen.

Mali is much less urbanized than other countries in the region. However, its urban areas are growing very rapidly and the proportion of the total population living in urban areas is expected to virtually double by 2024. Urban populations are vulnerable to flooding. In August 2013, heavy rains in Ségou in central Mali forced thousands of people to flee their homes. More than 175 homes were destroyed and hundreds of people are still living in temporary shelters.¹⁰ Floods triggered by heavy rains affected about 10,700 people living in and around the city of Segou. In Bamako in August 2013, heavy floods killed 37 persons and affected more than 19,000 persons according to OCHA.

Livelihood activities, land ownership and assets, with a focus on gender

Agriculture

Agriculture is the main source of income for almost all households across all regions including both men and women, while animal husbandry is the most important secondary activity in almost all households. Poultry and sheep are the most common types of small livestock, in some cases owned by women, followed by small numbers of breeding cattle and traction livestock. Cereals are the main crops grown in all villages, although all villages also grow cash crops, vegetables, and fruits. Some root crops are also grown, usually as reserve for the hunger periods. Cereals grown are similar for all villages with an important focus on

¹⁰ <http://www.unocha.org/top-stories/all-stories/mali-neighbourhoods-emptied-rising-flood-waters>

sorghum and millet, while the villages of Kandara, Touara, and Togou have an important rice production. In all villages a significant proportion of households' cereal production is not consumed in the household, but rather is sold, especially vegetables and cash crops.

Generally, households do not cultivate all the land they own; and part of the land is left fallow. More land owned does not even necessarily mean that households are wealthier. Yield differences between different rainfall zones are large; for example, half hectare in N'Tjila is more productive than one hectare in Fambougou. However, it is unknown whether fallow farmland has decreased due to factors such as climate variability or population pressure.

Livestock

Livestock production (including meat, leather and wool) in Mali represented in 2004, 11.7% of the total agricultural production, with 7.8 million bovine head counts and 22 million caprine headcounts.¹¹ According to Malian government estimates (June 2012), livestock contributes to an increase in the revenue of 80% of the rural populations living in pastoral areas and 18% of those living in agro-pastoral areas.¹² Livestock production constitutes the main activity of subsistence for over 30% of the population, mostly living in the North of Mali. Livestock farming in the Northern region is either nomad or semi-nomad and relies heavily on natural resources for fodder and water.

Nomadic pastoralists practice a seasonal transhumance that allows their livestock to survive in a fragile and dry ecosystem. Nomadic herders living in Adrar, Azaouad, Azaouak and Tilemsi and in the northern Sahel such as the Gourma and the Hodh raise resistant breeds of cattle, while Maurs and Tuareg raise zebus, Sahelian sheeps, goats and camels. Semi-nomad pastoralists tend to combine seasonal transhumance with rain-fed agriculture. Nomadic pastoralists return to the south during the dry season. Due to climate change, and consequent exhaustion of the northern pastures, seizure time during transhumance is shorter and shorter, causing more ecological pressure and conflict between agriculturalists and pastoralists. The improvement in feeding with the use of cultivated forage, cotton cake, molasses, treated straw and cotton seed or concentrates has enabled an increased milk production up to 3 to 5 liters per day even during the dry season in some farms. Milk is sold to small cooperatives.

Improvements in livestock production has helped to increase domestic consumption but has also favored the production of a marketable surplus. Commercial production systems typically focus on milk production and fattening. To increase their milk production some agro-pastoralists have started to select better breeds. Milk production has become the dominant activity of urban and peri-urban areas, often a female-dominated activity, to various degrees depending on the ethnic group. The following table indicates livestock use in the three regions of Northern Mali as of 2014:

Table 2: Livestock use in the three regions of Northern Mali as of 2014

Use	Gao	Kidal	Tombouctou	Together
Wealth	24.6	32.9	37.1	31.6
Self-consumption	29.0	29.4	40.6	35.2
Trade	28.6	30.4	13.7	20.8

¹¹<http://coin.fao.org/cms/world/mali/InformationSurLePays.html>

¹² <https://sustainabledevelopment.un.org/content/documents/983mali.pdf>

Milk	9.3	5.5	3.5	6.1
Ceremony	8.5	1.8	5.0	6.4
Total	100	100	100	100

Source : World Bank, 2015, Évaluation de la situation socio-économique des populations du nord Mali et leurs priorités pour la paix et la sécurité.

Fishery

Fishery is an important secondary activity in the villages along the Niger delta. In Mali, 35,000 families living from fishery in the Inner Niger delta, with an average 100,000 tons capture every year. Fishermen tend to diversify risks by cultivating rice during the low season from June to December, while the most labor-intensive season for fishery season is from November to July. Other activities performed by the households are of less importance, although wage labor, trade and commerce are practiced to diversify income stream and reduce risks. Artisanal fishery is a risky activity and needs financing for equipment and infrastructure: in many countries in the Sahel, the women finance the purchase of boats (Agritrade, 2014), although boats belong to the male members of the family, notably the husband. Women are almost never involved in direct capture, however they may be business owners in fish trade and transformation. Typically, women operating in this sector are widowed or head of household (Enda Grefa Sahel, 2012-2013). Currently, the Malian government does not take into consideration women and girls' needs in training, hygiene, and technology in its Fishery and Aquaculture Strategy (2006-2015).

Inland fishery production, including aquaculture, accounts for an estimated 3.5% of GDP, however mostly from capture rather than aquaculture (USAID, 2011). In June 2012, the Malian government estimated that the sector generated 500,000 jobs, including 73,000 fishermen.¹³ The main production areas in Mali are: i) The Central Niger Delta, 80 percent of the halieutic potential, 2) the Sélingué Lake, and 3) the Manantali lake. Mixed farming fishing activities can be found among the Rimaïbé, Bambara, Marka, and Songhaï; the Somono are sedentary fishermen, living on fishery almost exclusively; while the Bozo are migrant fishermen who rely exclusively on the fishing activity, but do not have land rights. They have a very sophisticated knowledge of fishing techniques and migrate according to the availability of the halieutic resources.

Gender division of labor in agriculture, livestock and fishery

Gender division of labor is very much dependent on cultural norms. According to fieldwork carried out by Oxfam, among the Bambaras, Dogons, Malinkes, Kasounkes, Sarakoles and Maurs, cattle grazing is a man's responsibility, especially young men and boys, while women are relegated to domestic chores and gardening. Taking the cattle to the wells and water points is again a male task, with the exception of the Peuls (Doka et al., 2014). Animal health care is almost exclusively a male task except for the Peuls and Touaregs, who delegate their women. However, for all ethnic groups, the decision whether to sell livestock is men's responsibility, including women's small livestock. Only the Bambaras leave to the women the decision whether to sell their own livestock. In Mali, women do not control the yield of their own work, nor the land they cultivate, including the sale of their own livestock.

Over all, among primary activities, livestock and fisheries tend to be male-dominated, while women play a more significant role in agriculture. Usually, agricultural activities are gender-specific, with women more

¹³ <https://sustainabledevelopment.un.org/content/documents/983mali.pdf>

involved in staple food production and men in cash cropping. Women and children normally take care of the weeding activities in both male and female plots. Furthermore, women are engaged in trade and commerce. In Mali, many women earn cash through petty trade of handicrafts, vegetables, fruits, and fish and artisanal mining. Women are particularly active in fish transformation and conservation as well as fishmongers, although their activity is considered as less formal. Halieutic production is a major source of food security for the poorest: dried fish, oftentimes in the form of ground fish heads, is a major source of protein for poor households. Fishery is particularly vulnerable to the increase of temperature and decrease in the rise of the water level of the Niger.

In Mali, depending on the ethnic groups, women tend neither to own land nor to cultivate their land, however they perform unpaid labor during the sowing and yielding season in their husband's plot. Because of the phenomenon of migration and the introduction of cash cropping, women increasingly seek job opportunities as day laborers. Like in many areas of Africa women have lesser access to land, inputs and capitals, such an inequality hampers women's participation to the market economy and export (WDR, 2012). Women's access to land is limited to usage rights that can be retrieved any time by male chiefs. In Mali it has been noted that development project promoting irrigated agriculture is oftentimes an opportunity for men to retrieve the land from women, as well as from poorer men and renters (Cotula: 2006). Malian women are however well represented in horticulture, since this sector of activity is practiced almost exclusively by women, and represents therefore a vital source of household income and nutrition for women.¹⁴

Box 1: Focus on the National Federation of Rural Women (FENAFER)

The National Federation of Rural Women is an independent non-political association aiming to support women of rural areas to increase their capacity to produce agricultural goods, ensure food security and reduce poverty among women. The specific objectives of the association are to train and inform a majority of women in rural areas, develop their production capacities, build water points, and protect the environment. The core targets of the association are women involved in agriculture, herding, fishing, forestry and craftsmanship. The association is active at the national level in all regions of Mali. It includes 9 professional associations of rural women across the 8 regions, 46 associations of rural women across the districts of Mali, and associations in some of the rural municipalities of the country.

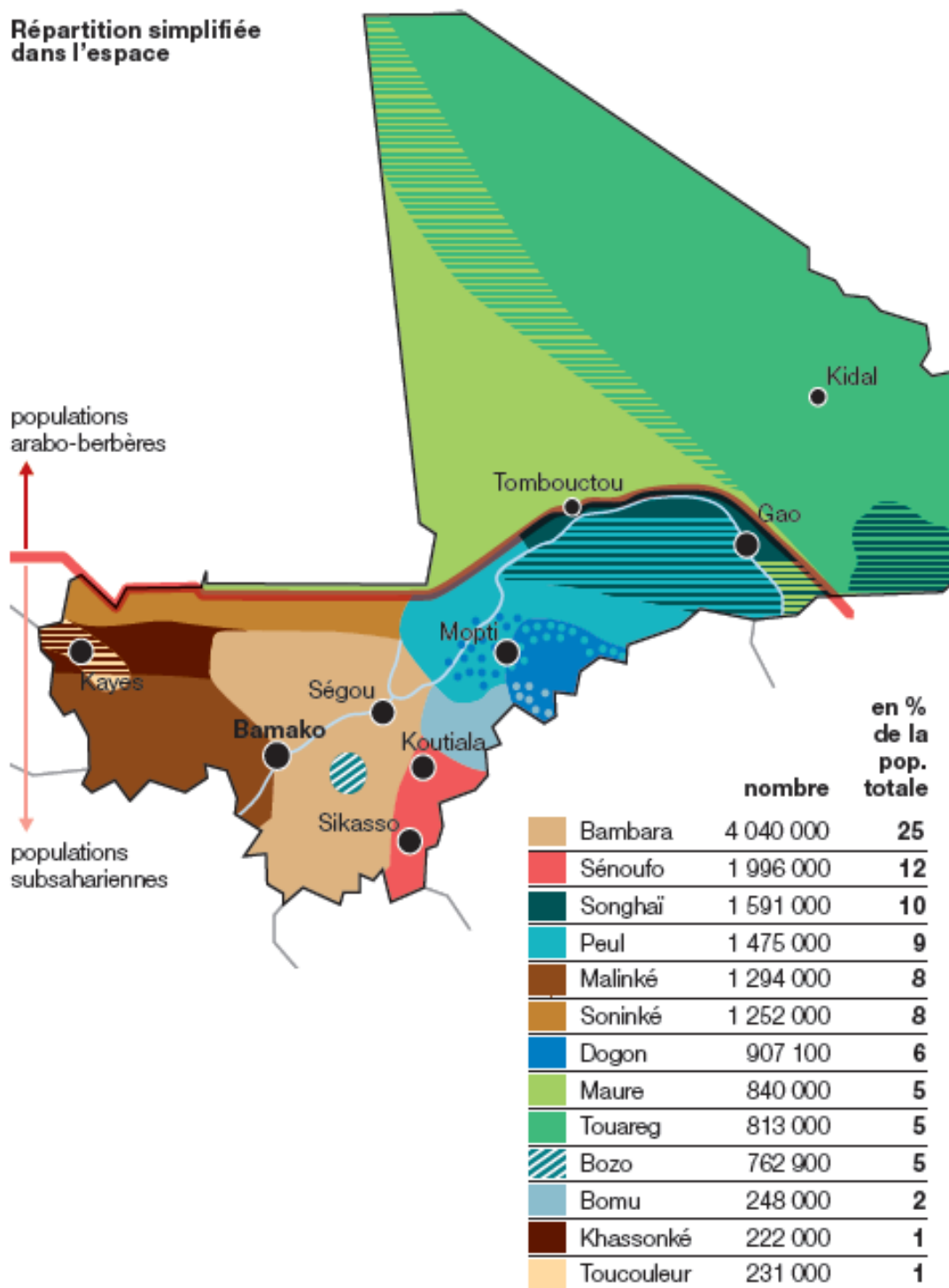
Source: Adapted from <http://www.cnop-mali.org/spip.php?article16d>

Ethnic division of labor

Various ethnic groups live in different areas of the country and therefore specialize in certain types of livelihood. The largest majority of the population is engaged in agricultural activities. The Bozos ethnic group - 5 percent of the total population - is associated with fishery, while the Peuls, the Tuareg and the Maurs, who represent respectively 10 percent, 5 percent and 5 percent of the population, typically have a nomadic lifestyle and engage in livestock, pastoral and semi pastoral activities. The graph below represents a simplified spatial share of the main ethnic groups across Mali:

¹⁴ <http://blogs.ei.columbia.edu/2011/11/29/addressing-gender-inequality-through-agriculture-tiby-mali-mvp-women%E2%80%99s-horticulture-gardens/>

Répartition simplifiée dans l'espace



Source: OECD 2015.

Secondary and tertiary activities

The extractive industry represents 0.9 percent of all jobs in Mali, a total of 35,631 jobs in 2009. Job opportunities are mainly in cities with less than 30,000 inhabitants and in rural areas (World Bank, 2015). In 2012 and 2013, revenues from the mining sector represented in Mali respectively, 13.5% and 9.4% of

GDP.¹⁵ Mali's mining sector is dominated by gold: the country is Africa's third largest producer of gold. In 2013 gold exports accounted for about 75% of export earnings and approximately 7.6% of GDP according to the IMF.¹⁶ Other extractives include bauxite, iron ore, diamond, limestone, manganese, nickel, petroleum, phosphates, and uranium. Currently, there are 9 gold mines in activity in Mali, which generated 3862 direct jobs in 2012, and another 11 958 indirect jobs.¹⁷ Aside from the employment, the Malian Chamber of Malian Mines (Chambre des Mines du Mali) indicates that an unidentified number of gold washers are present in any region of Mali, and up to a total of 1 million persons throughout the country according to some estimates.¹⁸

Throughout Mali, the road network accounts for 5 953 km, the railway system for 643 km. Due to limited road maintenance many roads are impracticable during the rainy season. Only 5 percent of rural roads are in a good condition and as many as 47 percent are listed as being in a poor condition. Connectivity is particularly important is on considers that that most of the population lives in rural areas: only 3.7 million of people live in cities out of a total population of 11.7 million.

Beneficiaries' Profiling: Poverty and Vulnerability

Using monetary and non-monetary indicators, including malnutrition data and information about household wealth available at local levels, the World Bank-led poverty and gender note finds a clear and irrefutable reduction in the percent of Malians living in poverty. When looking at poverty across the nine regions of Mali, two findings are worth noting. First, most of the decline in aggregate poverty is explained by a very large decline in the Kayes and Koulikoro regions; and second, the Sikasso region, one of the best endowed agricultural regions in the country, has the highest poverty headcount rate and is the only region not having experienced any decline in poverty – this phenomenon is also called the Sikasso paradox (World Bank, 2013).

Climate-zone specific value-chains

Vulnerability and Poverty

1	<i>Nomadism and trans-Saharan trade</i>	Due the increased insecurity in the northern region, nomad households are very poor and food insecure.
2	<i>Nomadic and transhumant pastoralism</i>	The incidence of climate change and insecurity has taken a toll on this type of livelihood.
3	<i>Rain fed rice production combined with transhumant pastoralism</i>	Access to markets is difficult: villages located in the middle section can be fairly isolated during the rainy season: for example, it can take s two to three days to travel by road from Téméra to Gao.

¹⁵ World Development Indicators.

¹⁶ <https://eiti.org/Mali>

¹⁷ <https://eiti.org/Mali>

¹⁸ <http://www.chambredesminesdumali.org/orpaillage.php>

4	<i>Millet production and transhumant livestock rearing</i>	Access to markets in this zone is generally easy during the dry season, although areas of the zone are isolated. Access becomes more difficult during the rainy season.
5	<i>Dogon plateau – millet production combined with horticulture and tourism</i>	Market access is relatively good and income stream is diversified
6	<i>Inner Niger delta: rice and animal husbandry (agro pastoralism)</i>	Market access in this zone is worse than in zones 4 and 5 and during the rainy season many roads are impracticable. Trading occurs by canoe and motorized canoes but decreases from March to July when the water levels are low.
7	<i>Office du Niger: irrigated rice</i>	Markets are generally accessible in all seasons, although during the rains some areas can be cut off.
8	<i>North-west: remittances, sorghum production and transhumant pastoralism</i>	Access to markets is relatively poor; during the dry season roads can very sandy and in the wet season very muddy.
9	<i>West and central: rain fed millet/sorghum</i>	Markets access in this zone is generally good; however, it can become very difficult in some areas during the wet season, because of rivers and muddy roads.
10	<i>Sorghum, millet and cotton production</i>	Market access is generally good, but can become difficult in some areas during the rainy season.
11	<i>South: maize, cotton and fruits</i>	Market access is generally good, apart from during the rains when areas can become isolated and lorries easily get bogged down on the roads. Seasonal rivers may also block roads.
12	<i>South-west: maize, sorghum and horticulture</i>	Market access in this zone is generally good, but can become difficult in some areas during the rainy season.
13	<i>Bamako</i>	Overall good access to services and opportunities

Source: World Bank 2013

According to the World Bank village survey on climate adaptation (2014) Kandara is one of the most affected villages by food shortages, notably in the months of July through September. The other villages all show food shortages at the end of the rainy season, before the crops are harvested. The wider, annual fluctuations and the onset of the rainy season seem to be important vulnerability determinants. If climate change were to have a worsening impact on this annual cycle — for example, by lengthening the dry season

— this is likely to result in a lengthening of the hunger period.

Within villages a big gap exists between the richest and poorest asset owners with a few households owning a large number of assets, compared to the other quartiles. In the fishing village of Kandara, for example, only a few households own a boat, whereas half of the households in Touara own one. In Touara, about half of the population owns a television, whereas it is almost absent in the other villages. Moreover, it is striking to see that cellphone ownership is skyrocketing, with currently about 40 percent of households owning one. In Touara and Kondogola, cell phone ownership is highest (52 percent and 66 percent, respectively). In Touara, the higher rate of ownership can be explained by the relatively wealthy state of the village; for Kondogola, it may be because of the higher rate of migration.

Different types of households are present within each village, can be segregated by cluster:

	Clusters within Villages	Livelihood Activity
1	<i>Better educated, wealthy livestock farmers</i>	Members of this cluster have large herds of small and large cattle, and produce cereals and cash crops (peanuts and sesame)
2	<i>Diversified, rich farmers</i>	Members of this cluster consist in a more diversified type of households. They own assets, land (esp. for cereals/rice crops), livestock and income from fisheries, and hardly know any permanent - rather temporary - migration.
3	<i>Fisheries-dependent households (in the relevant zones)</i>	This cluster is made of large households and are mainly engaged in fisheries combined with rain fed agriculture (mainly rice) and a few cash crops. They own few assets and have a high percentage of permanent migration. The level of education is low.
4	<i>Larger cash-crop growing households</i>	Better-educated cash crop producers characterize this cluster: low levels of migration with a high percentage of cash crop production (cotton and peanut) and horticulture (mango and watermelon).
5	<i>Poor households</i>	This cluster is made of poor households, owing with fewer assets such as small ruminants. They produce cereals and cash crops (peanuts and sesame) and vegetables for consumption. This group has a low level of education and a relatively high dependency ratio, combined with a low level of migration.
6	<i>Smallholder cash-crop growers</i>	This cluster consists of smallholder cash-crop growers owning only a few hectares of land, and owing only few animals

Source: World Bank 2013

Two elements are key to determine household vulnerability across all clusters. The dependency ratio and the rate of migration are not determining factors in the analysis of household vulnerability: all households score more or less the same on these parameters. Education and income stream diversification explain the differences between the clusters.

Whereas the analysis of the villages includes exposure to climate change, the cluster analysis only looks at the coping capacity and vulnerability to climate change of the clusters. More than one cluster exists within each village. In this way the cluster analysis gives more insight into the detailed groups of households that are present in the villages. From the cluster analysis, it can be concluded that the “poor households” and the “small cash-crop producers” (clusters 5 and 6) are the most vulnerable to climate change. The “diversified rich farmers” and the “large migrant farmers” (clusters 2 and 3) are the least vulnerable (World Bank, 2011).

It is also striking to see that the “better educated, wealthy livestock farmers” (cluster 1) and the “poor households” (cluster 5) are the largest clusters. Most of these households live in Kondogola, Fambougou, and Togou. In these villages there seems to be a social divide between the better-off and worse-off households. Also the fisheries community is subdivided into two groups (cluster 2 and 3), of which the more diversified households from cluster 2 seem to be somewhat better off than those of the “large fisheries households” (cluster 3). Cluster 4—the “large, cash-crop growing households”—is a relatively small group. They have a less diversified income, but their higher education levels and higher cash earnings put them in a less vulnerable situation than many of the other households.

Local Coping Strategies and Indigenous Knowledge

In the village survey, households were asked which strategies they had adopted in order to manage the effects of the hazards they face. Four categories of strategies were distinguished.

<i>Agricultural techniques</i>	These include the adoption of drought-tolerant or resistant crops, changing planting dates, changing cropping densities, changing fertilizer and pesticide application, changing the pastoral system, changing the herd composition, and applying different feed techniques
<i>Water management techniques</i>	These include the use of water harvesting techniques, improvement or rehabilitation of terraces, the use of irrigation techniques, and improvement of watering sites in pastoral areas.
<i>Income diversification techniques</i>	These include temporary or permanent migration, non-timber forest product commercialization, home-garden agriculture, increase in market sales, charcoal or timber sales, changing consumption patterns, and draw down of livestock or savings
<i>Communal pooling techniques</i>	These include restoration of homestead or mountain forests, rangeland preservation, soil erosion prevention programs; communal water harvesting techniques; communal irrigation schemes; or cereal banks.

Difficulty in Enabling Communal Pooling Mechanisms

As discussed above, local coping strategies predominantly are individual strategies. There are only few collective strategies—such as cereal banks and irrigation—that are used. Furthermore, it seems that these communal strategies are initiated through outside assistance to the village and carry a substantial external funding component. The range of local strategies adopted, however, is rather limited. As explained above, strategies requiring collective action are almost absent.

A few observations can be made here. First, a number of coping mechanisms that may reverse such vulnerability — for example, hydromet services, irrigation, erosion prevention, and reforestation—do require collective action and strong institutions. As a consequence, resilience strategies also require instruments and tools that go beyond the capabilities of individual farmers.

Secondly, in many villages several institutions have attempted to promote community development plans, but many projects are not sustainable once donor involvement stops. Lack of sustainability is partly caused by a culture privileging extended families' self-interests. Individual preferences and strategies also tend to rather balance wealth within the extended family instead of promoting public good, which may also partially explain the underinvestment in communal strategies. Third, teaching adaptation and communal mechanisms and building stronger institutions can enhance donors' impact: so far donors' interventions have tended to focus on access to inputs for farmers. According to the results of the study, past intervention did not emphasize enough the importance of taking responsibility for disaster risk reduction.

The most important strategies selected in the different villages are basically the same in many areas of the country. From the point of view of institutional intervention, the fact that everybody adopts the same strategies, independently of the agro ecological and climatological characteristics, also shows that many households lack information about their zone's specific climate risks.

Development interventions in this disaster risk reduction (DRR): who is doing what?

Although each village receives support from more than one institution, most institutions focus on the same villages. The bulk of assistance is given through NGOs and cooperatives. Extension agencies play only a minor role, and women's groups and micro-finance groups are almost absent or too small to be relevant. Even from the beneficiaries' perspective, these types of institutions (“*ton*”) are seen as village informal community groups instead of official institutions capable of delivering support.

Wealthier households receive on average more assistance than the poor households. Cotton wholesale buyers, for example, provide support to their affiliates, for example in the form of incentives for purchase of farming inputs. Smallholder cash-crop growers also receive little support from governmental and non-governmental institutions. A significant portion of poor households receives assistance from NGOs and village associations, mainly cooperatives, which also provide micro-finance services and clearly targets women. This type of institution (“*ton*”) has existed since long time however, since many of these groups require small monthly or annual payments, the poorest groups end up not receiving adequate support.

It is noteworthy that training and capacity building receive so little attention from the donors' community. Until now, assistance is mainly given in the form of inputs: for example, in the form of inputs like seeds, fertilizers, and pesticides, only a small percentage of assistance is given in the form of cash or food. Training is almost absent. Institutional stakeholders mainly target local organizations (cooperatives and micro-

finance) without paying much attention to their members. Other institutions seem to exclusively focus on agricultural services, without taking into account the other livelihood activities (World Bank, 2011) and informal employment.

Training is one of the best ways to give beneficiaries the capacity to respond to disaster risks and build resilience. This is confirmed in a recent IFPRI study, which has concluded that better trained households are more resilient as they adopt a larger variety of coping techniques (IFPRI 2010a). Interestingly, surveyed household members and institutional stakeholders on climate adaptation voiced the fact that they need more resources and equipment for improving their condition. International donors, national authorities, banks, schools, and religious associations' interventions were not considered as aligned with households' needs.

This is in contrast with the large amount of money spent by donor-funded programs in Mali for decades. All these programs apparently have not succeeded in improving resilience, building capacity of local institutions, and above all in fostering ownership among stakeholders. It is important for donors to put more emphasis on training and capacity building and finally in setting up institutional management systems where responsibilities are clearly described (ibid). Women's role in DRR has remained anecdotal, narrowly limited to numerical seats held by women in local associations, leaving local tradition unchallenged - and sadly without enabling women's role as agents of change.

Knowledge Gaps

Although documentation on gender differentials in entitlement, opportunities and risks is widely available through desk review, other issues remain unknown and require deeper investigation, such as differentials in vulnerability in each sub-category and village clusters are so far unknown. Gender-disaggregated data collection within disaster risk management is a recent phenomenon, including in post-disaster need assessment (PDNA) reports. These are some of the most pressing questions necessary to entangle the nexus between resilience, coping mechanisms, and behavioral change in early warning systems:

- How women, men and youth are affected differently by various emergencies?
- Are Governments' EWS and strategies taking into account different needs and social roles of women and men, before, during and after forced displacement?
- Are statistics and plans emerging from disaster mitigation effectively disaggregated by sex and age?
- Are women, men and youth affected by forced displacement granted equal treatment, rights and access to services and resources?
- Do women, men and youth adapt differently to the new areas, livelihoods, prerequisites, problems and possibilities they encounter?
- In what way are remittances sent and received in connection with forced displacement influenced by gender?
- Are plans and strategies for resettlement and relocation, adaptation gender sensitive?
- Are women, men and youth, benefitting from community education, awareness-raising, and training?
- Are women and men able to participate in decision making processes?

- Are women and men in being affected differently by the presence of forced migrants, due to climate change and conflict?
- Are partnerships, consultations, and involvement of stakeholders during an emergency, gender sensitive

Insecurity in the Northern regions and the consequent challenges in conducting fieldwork hampers the depth and the type of information it will be possible to pull in a few months. However, strategies can be identified to overcome such challenges: for example (i) identifying key informants among government officials; (ii) hiring a local gender expert; (iii) consulting local female-led organizations such as for example the *Fédération Nationale des Femmes Rurales* (FENAFER) and international NGOs.

Gender-Sensitive Monitoring and Evaluation Systems

The result of a well-planned, gender-sensitive monitoring and evaluation framework is reliable impact evaluation findings, which can inform effective gender and entrepreneurship policy changes. The project will:

- Set gender-sensitive goals and objectives with a clear understanding of how this would inform the monitoring and evaluation.
 - Create a clear plan for a gender-sensitive field assessment before collecting data on identified indicators in order to account for social norms and cultural nuances that are not commonly known.
 - Create survey questions sensitive to build robust gender-related indicators. The careful design of a questionnaire is critical to the quality of data gathered, particularly as it relates to gender.
 - Create a plan to test the questions created through a pilot survey, and amend, if necessary, for another round of pilot surveys or for the baseline study.
 - Create a plan for qualitative data collection, or focus groups, to inform context behind survey data. These groups should be assembled in a way that maximizes participation among a diverse mix of participants, representing various ages, social statuses or ethnic and religious views.
 - Evaluate outputs as well as outcomes through a blend of quantitative and qualitative data collection.
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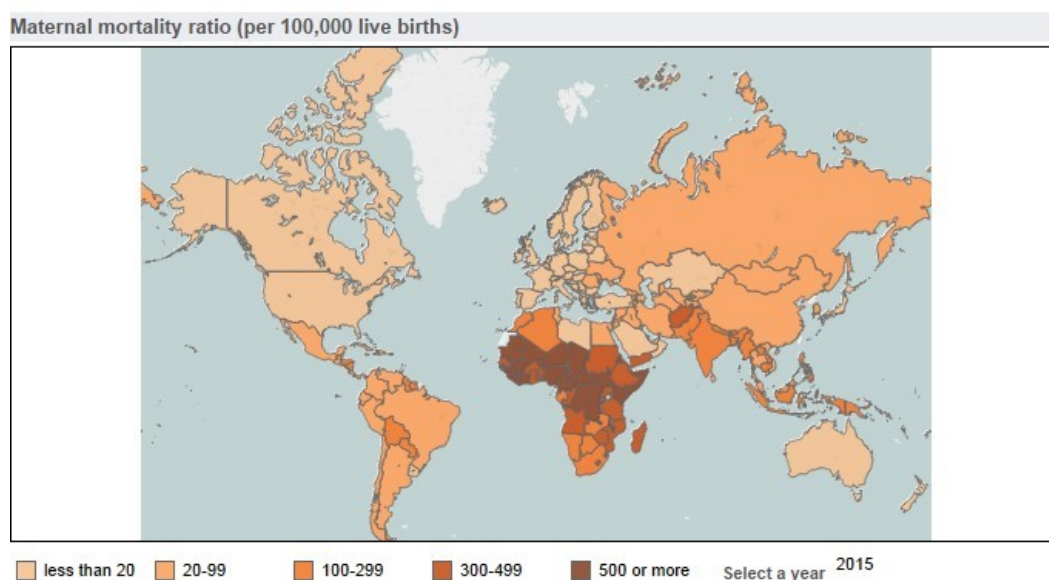
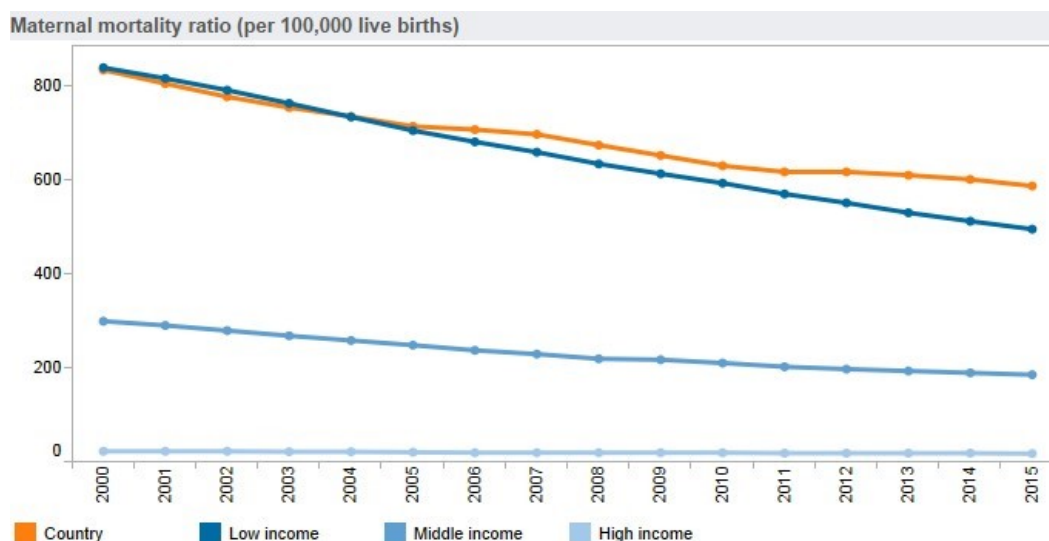
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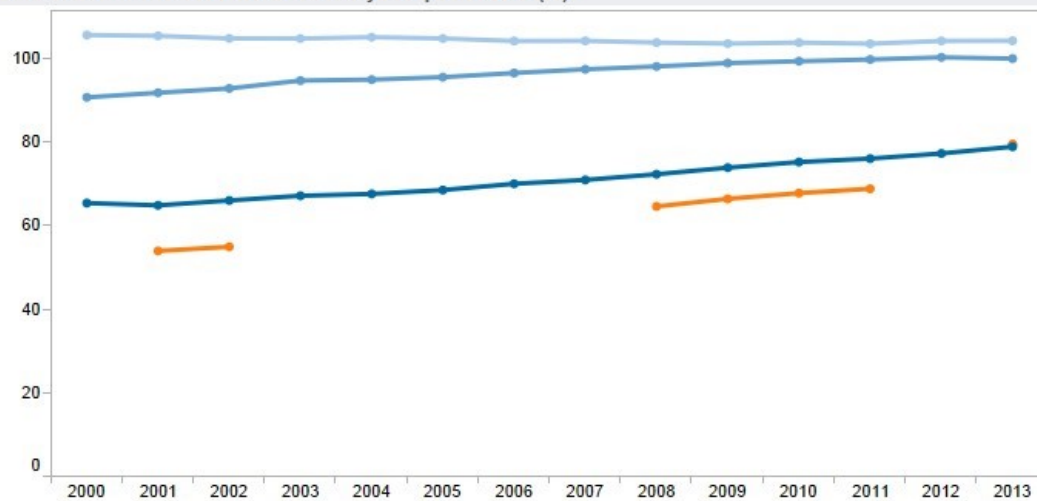
From World Bank, *Gender Data Portal*, <http://datatopics.worldbank.org/gender>



Featured indicators		
	2000	2015
Life expectancy at birth, female (years)	48.6	57.3
Life expectancy at birth, male (years)	49.2	57.7
Mortality rate, under-5, female (per 1,000)	210.7	108.4
Prevalence of HIV, female (% ages 15-24)	0.7	0.7
Mortality rate, under-5, male (per 1,000)	228.0	120.4
Births attended by skilled health staff (% of total)		58.7
Female adults with HIV (% of population ages 15+ with HIV)	58.7	59.2

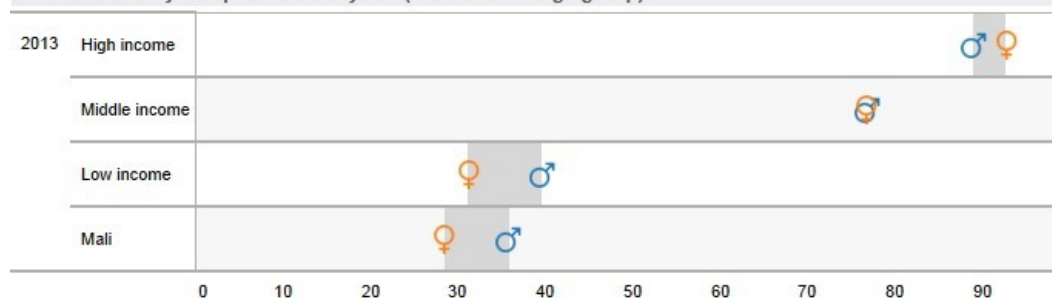
Note: The table only displays indicators available for the selected country and year.

Ratio of female to male lower secondary completion rate (%)



Country Low income Middle income High income

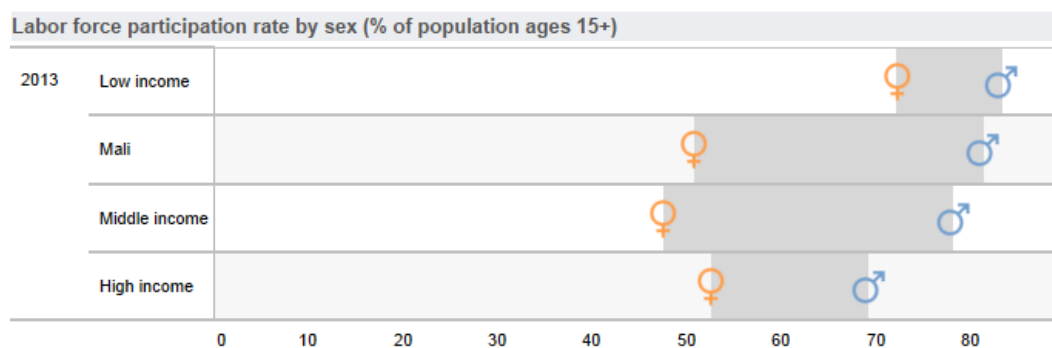
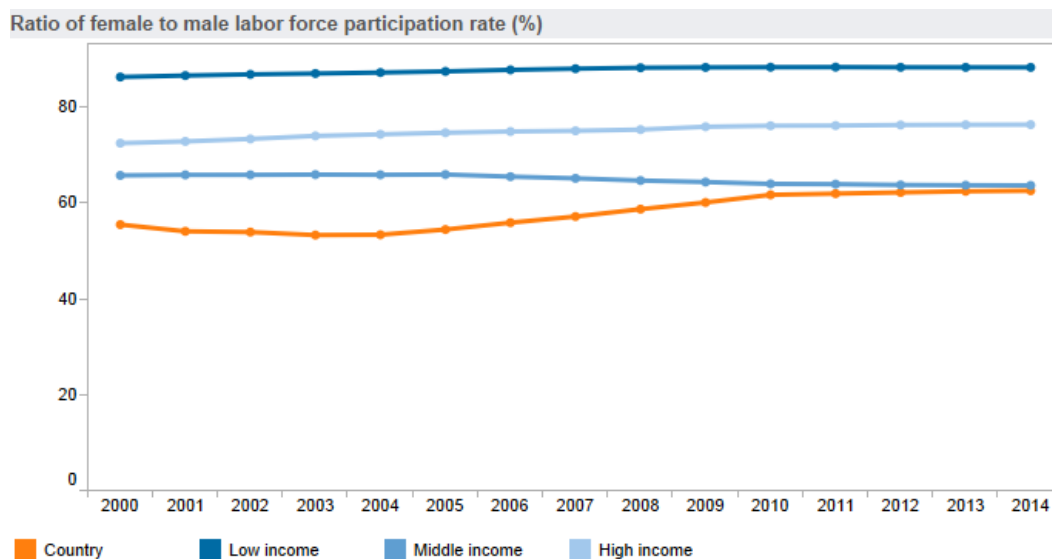
Lower secondary completion rate by sex (% of relevant age group)



Featured indicators

	2000	2013
School enrollment, primary, female (% net)	39.7	64.3
School enrollment, primary, male (% net)	54.4	73.0
School enrollment, secondary, female (% net)		31.5
School enrollment, secondary, male (% net)		39.5
School enrollment, tertiary, female (% gross)	1.3	4.4
School enrollment, tertiary, male (% gross)	2.7	10.4
Primary completion rate, female (% of relevant age group)	25.7	54.0
Primary completion rate, male (% of relevant age group)	40.1	63.1
Progression to secondary school, female (%)	71.1	91.8
Progression to secondary school, male (%)	82.2	93.7
Lower secondary completion rate, female (% of relevant ..		28.5
Lower secondary completion rate, male (% of relevant a..		35.9
Literacy rate, youth female (% of females ages 15-24)		39.0
Literacy rate, youth male (% of males ages 15-24)		56.3

Note: The table only displays indicators available for the selected country and year.



Featured indicators		
	2000	2014
Wage and salaried workers, female (% of females employed)		3.6
Wage and salary workers, male (% of males employed)		12.4
Self-employed, female (% of females employed)		89.0
Self-employed, male (% of males employed)		76.5
Contributing family workers, female (% of females employed)		34.1
Contributing family workers, male (% of males employed)		18.5
Unemployment, female (% of female labor force) (modeled ILO estimate)	11.5	11.2
Unemployment, male (% of male labor force) (modeled ILO estimate)	6.4	6.2

Note: The table only displays indicators available for the selected country and year.