

ENHANCING GENDER RESPONSIVENESS IN PUTTING NITROGEN TO WORK FOR SMALLHOLDER FARMERS IN AFRICA (N2AFRICA)



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SUMMARY

Agriculture and development projects should be gender responsive and take into consideration the needs, aspirations, knowledge, opportunities, constraints and challenges faced by men and women farmers including the young and old if hunger and poverty are to be alleviated in Africa. N2Africa is a project funded by The Bill & Melinda Gates Foundation and implemented in Ghana, Nigeria, Kenya, Democratic Republic of Congo, Rwanda, Malawi, Mozambique, and Zimbabwe by several partners. The vision of the Project is to raise average grain yields of groundnut, cowpea, soybean, and common bean by 954kg/ha, increase average biological nitrogen fixation (BNF) by 46kg/ha and increase average household income by USD 465 benefitting 225,000 households (1,800,000 individuals). Success of the project will be to a large part determined by how strongly gender is incorporated in all the activities as studies have shown that increasing women's agricultural inputs and education to the same level as men's can increase national agricultural output by 2.5 – 4 %, reducing the number of undernourished people in the world by 12-17% . This would effectively reduce the hungry of the world by 100 – 150 million people (FAO, 2011).

This report discusses the need to address gender issues in the project. A literature review shows that little information exist on gender in legume production. However, because gender is a cross cutting theme, background information including examples have been cited from agricultural work to illustrate the need for and ways to enhance gender in the Project's work with legumes. Gender guidelines, gender indicators and recommendations on ways of enhancing gender in the Project activities are provided in this report. The gender guidelines and indicators and recommendations were arrived at through a desktop study, consultations with the project implementation team, local partners and farmers, and field visits.

1.0 BACKGROUND INFORMATION

1.1 The Project

The *Putting Nitrogen to Work for Smallholder Farmers in Africa (N2Africa)* project is funded by the Bill & Melinda Gates Foundation through a grant to Wageningen University, the Netherlands. The International Institute of Tropical Agriculture (IITA) and International Centre for Tropical Agriculture-Tropical Soil Biology and Fertility Institute (CIAT-TSBF) lead the implementation, in close collaboration with partners in Ghana, Nigeria, Kenya, Democratic Republic of Congo, Rwanda, Malawi, Mozambique, and Zimbabwe. The vision of the Project is to raise average grain legumes yields by 954 kg/ha for four legumes (groundnut, cowpea, soybean, and common bean), increase average biological nitrogen fixation (BNF) by 46 kg/ha, and increase average household income by USD \$465/year, directly benefiting 225,000 households (1,800,000 individuals) in the eight sub-Saharan Africa countries.

The project

1. Links the protein and nitrogen needs of poor African farmers directly to previously inaccessible, massive atmospheric reserves;
2. Provides farmers with new income-generating crop production enterprises;
3. Presents a mechanism of renewable soil fertility management; and
4. Opens the door to the adoption of numerous, profitable accompanying farm technologies and value-adding enterprises.

The International Institute for Tropical Agriculture (IITA) has recognized that the success of the N2Africa project will be determined to a large degree by how strongly gender is integrated into all activities. For this reason, Women Organizing for Change in Agriculture and Natural Resource Management (WOCAN) – a global network of experts in gender and agriculture/natural resource management that IITA has established a partnership with - was requested to provide guidance to the Project to enhance gender integration. A WOCAN Associate in Kenya, with extensive experience in integrating gender into agriculture projects within the CGIAR system and elsewhere, provides this guidance to the Project team to:

1. Recommend the adjustment of project activities and/or the initiation of additional activities, assisted by a background literature review and consultation with WU, IITA, and CIAT to determine the gender dimensions of specific legume production and marketing systems;
2. Develop a coherent set of guidelines for project staff and partners to be used to enhance the reach of project activities to women beneficiaries;
3. Develop specific monitoring and evaluation (M&E) tools for partner organisations to assess their efforts with regards to gender; and
4. Examine and improve the M&E plan and its instruments to ensure gender sensitivity, including adequate follow-up of the proposed activities.

1.2 Introduction

Despite increased attention to gender in the international development arena since the rise of feminism during the 1970s, few international or national agricultural research organizations have integrated gender as a central element of problem diagnosis and technology development; as such, gender issues have not always been taken into account in research, technology development, and dissemination and policy formulation processes. The recently released State of Food and Agriculture by FAO, that focuses on Women in Agriculture reveals that increasing women's agricultural inputs and education to the same level as men's can increase national agricultural output significantly (FAO, 2011).

Although increased utilization of participatory approaches has led to greater involvement of men and women in research and development there are many places, in the world where women and other marginalized groups like youth remain excluded from decisions that impact their lives and livelihoods. This may contribute to the prevailing low adoption of innovations. Reflecting on a growing international concern and the need to address inequalities in development efforts, the United Nations Millennium Development Goals underscores the need to include gender issues in development. The Mid Term Assessment of MDG Progress reported that, "gender equality and women's empowerment have large multiplier effects on all MDGs" (2010). A desktop study revealed that little information on gender in legume production. However because gender is a cross cutting theme, background information including examples have been cited from the agricultural literature to illustrate the rationale for and strategies on how to enhance gender in this projects' work with legumes.

1.2.1 Why pay attention to gender in agriculture?

The rationale for integrating gender in agricultural research relates to agricultural productivity, food security, nutrition, poverty reduction, and empowerment. Female farmers play a vital role in sub-Saharan African (SSA) agriculture and produce up to 80 percent of basic foodstuffs for household consumption and sale but often their roles is under-recognized and face greater constraints than men (Meinzein-Dick et al., 2010). Recognizing this sets the stage for identifying ways that the agricultural research system can redress these problems and contribute to productivity and equity. Considerable evidence exists that households do not act in a unitary manner when allocating resources (Alderman, *et al.*, 1996; Haddad et al., 1997). This means that men and women within households do not have the same preferences nor pool their resources. This has important implications for productivity; several empirical studies have found that redistributing assets between men and women in the household has the potential for increasing productivity (Udry, 1996). Not only do gender disparities in control over assets exist, but increasing women's control over assets has positive effects on a number of important development outcomes, including food security, child nutrition, and education (Quisumbing and Maluccio, 2003). Women play a crucial role in the distribution of food and nonfood household resources that determine the food security of the household. Increases in the resources that women control have been shown to improve child health and nutrition and increase allocations toward education (Quisumbing and Maluccio, 2003). Sustainability in agricultural development calls for passage of knowledge across generations. However involvement of youth in agriculture has been noted to be on the decline and their involvement should be included in the gender work (Njenga et al., 2007)

Consequently, agricultural development must address gender in order to achieve significant impact in the reduction of hunger and poverty as well as to increase productivity and output (ALINe, 2010). Alderman, *et al.*, (1996) estimate that reducing inequalities in human capital, physical capital, and current inputs between male and women farmers in sub-Saharan Africa could potentially increase agricultural productivity by 10–20 percent. Interventions which enhance women's capacity to make their own decisions and build their skills have been shown to promote children's welfare and

education, diversify household livelihoods, increase returns on women's productive labour, and contribute to economic growth and nutrition. Similarly, women's participation in farmer and other types of community organisations has been shown to increase overall cooperation, collective action and impact (ALINE, 2010; World Bank et al., 2009). Thus, agricultural research and development can play an important role in reducing gender inequality in these key areas when it works to enhance women's assets or improve the productivity of the resources that women do control. A large body of evidence shows that, in many parts of the world, men and women spend money differently: women are more likely to spend the income they control on food, healthcare, and education of their children. Increasing household income does not necessarily improve the nutritional and health status of women and children when that income is controlled by men. Women's relative bargaining power within the household is likely to influence whether gains in income translate into nutritional improvements (Meinzein-Dick et al., 2011). It is also very important to realize that alliances between men and women are the most effective ways of engineering positive change as women do not exist in isolation either from each other or from men in their society. Legumes are mainly women's crops grown for home consumption and as such women's active and meaningful involvement in legumes' technology development, transfer and commercialization is crucial.

1.2.2 Gender in selection of best fits legume varieties and technologies

Although end users may not have all information, they are often the experts when it comes to knowledge of the local context; thus it is imperative that their needs and aspirations are taken into considerations in all initiatives that touch on them right from conception of the ideas. As such, agricultural projects and the institutions that implement them should avoid gender blindness (not distinguishing between women's and men's roles and assuming equal access to resources) to the detriment of the project's potential success. At least they should adopt a gender responsive approach where the goals and activities are designed on the basis of well informed analysis; for example, on gendered access to agricultural resources and services, decision making regarding land use and use of inputs, knowledge on agronomic practices, needs, aspirations and constraints.

It is important to recognize the specific expertise of women farmers in participatory legume variety selection processes. This is illustrated in a case where the International Centre for Tropical Agriculture (CIAT) convened a panel of female farmers in Rwanda to evaluate its new crop varieties, which paid significant dividends. The varieties selected by women had production increases of up to 38 per cent over breeder-selected varieties and outperformed local mixtures 64-89 per cent of the time (Sperling and Scheidegger, 1997). A study was carried out in Malawi over five years and more than 3,000 farmers tested legumes and gained knowledge of their contributions to child nutrition and soil productivity. The results showed that legume systems expanded on an average area of 862 square meters in 2005 (772 square meters for women and 956 square meters for men, indicating a gender dimension to legume adoption). Farmers chose edible legume intercrops such as pigeon peas and groundnuts over the *Mucuna* spp. green manure system. Women in particular preferred the edible species to meet their combined goals of food security and soil improvement (Kerr *et al.*, 2007).

1.2.3 Gender responsive delivery and dissemination strategy

Gender transformative interventions seek to change unequal gender relations; -however, these constraints are deep rooted in nature and frequently require gradual and evolving processes (Kabeer *et al.*, 2010). The following is one example of a transformative project: the Bill & Melinda Gates Foundation funded a grant with PRADAN (Professional Assistance for Development Action) in India to test community based water management approaches. The programme is focused on Self-Help Groups (SHGs) which, among other objectives, build women's capacity to manage and utilise financial resources, and to enhance women's decision making in these groups. The SHG approach is sometimes

combined with an integrated livelihoods programme. For example women members of SHGs and elected officials in local government require more specific training in procedures, group management, and leadership. Women's SHGs, as well as NGO-created and funded women's *sanghas* in several Indian states have served as important training grounds for women to develop and define their leadership skills (Horowitz, 2007). An impact evaluation conducted in 2003, in combination with ALINe's qualitative field work, found that this combination had positive impacts on livelihoods and contributed to women's empowerment. The variety of training and planning activities associated with the livelihood programmes not only enhanced women's productivity but also served to strengthen their relationships with each other and their sense of their own capabilities (Kabeer, 2010).

In examining gendered patterns of extension, it is important to consider who receives the extension services and information (only males or heads of households, or whether women are recognized as farmers and clients of the extension services), and how these services are delivered (including individual- or group-based approaches, conventional extension, or farmer field schools [FFSs]). As with research and development, it is important to consider not only formal public extension services, but also private-sector and farmer-to-farmer dissemination, and how effective each of these is in recognizing and reaching women as producers and consumers (Meinzein-Dick, et al., 2010). In Kenya, where cash constraints of many women farmers prevented them from taking measures to improve fertility on poor soils, research on biomass transfers and extension systems that recognized women's low literacy levels led to adoption by women as well as men, and provided not only for higher yields but also increases in organic soil matter (Place et al., 2007).

1.2.4 Building capacity for gender in legume value chain research and development

The fact that women play a central role in food production in sub-Saharan Africa stands in stark contrast to the fact that only one in four of the agricultural researchers in the same continent is female (Beintema and Di Marcantonio, 2009). Although male researchers can address the needs of women farmers, the lack of gender balance among agricultural scientists diminishes the likelihood that the specific needs of rural women will be met (Meinzein-Dick, et al. 2010). Of concern too is the diminishing female participation with career advancement in S&T systems—a phenomenon known as “the leaking pipeline.” (Huyer and Westholm, 2007). In addition to well-documented gender disparities in education in many countries, studies from throughout Africa and South Asia find that women routinely have less access to agricultural extension than their male counterparts (Gilbert, Sakala, and Benson 2002; World Bank and Government of Malawi 2007; World Bank and IFPRI, 2010).

In examining gendered patterns of extension, it is important to consider who delivers extension services (because female extension agents are more likely to reach female farmers, especially in highly sex-segregated societies) (Meinzein-Dick, et al. 2010). The underrepresentation of women in agriculture research has been identified as a significant drawback in improving agricultural output. In Ghana, a World Bank and IFPRI (2010) study showed that of the 70 agricultural extension agents surveyed; only 10 were female. Although about two-thirds of all extension agents stated that they received training that had a gender component, only 7 percent reported receiving training that was totally targeted to gender issues. Although the presence of women professionals in extension organizations and their representation in decision making is critical, the predominant practice continues to direct training and resources to men only. For example, the Sasakawa Africa Fund for Extension Education (SAFE) training program in West Africa set up in universities for midcareer agricultural extension staff of the Ministry of Agriculture has recorded only 21 percent female participation (Akeredolu, 2009). The reasons identified for this low level of female participation include (1) perception bias—the community's low perception of women's talents and potentials, and perception of agriculture as a domain of men; (2) limited access to information about opportunities for

further education; (3) limited opportunities that target professional women; (4) family concerns and time constraints; and (5) other social, cultural, and religious barriers.

Thus a need exists for training materials, tools and skills on how to achieve gender responsiveness in agricultural R&D, and N2Africa should take into consideration building the capacity of women scientists through its post graduate program. It should also encourage and recruit more female extension agents, who were found to be more effective than male extension agents in reaching female farmers (Meinzein-Dick, et al, 2010). Gender expertise should also be built amongst stakeholders through training, as discussed in subsequent sections.

A situation that called for gender skills arose in Kenya during a discussion with women and men farmers, when the facilitator asked the group how much seed they required so that they could increase the size of land under the demonstration. This was after good performance of the crop planted during the first round. Women were quiet. When the facilitator shared this information with the gender consultant and other members of the project team, she realized that women could not have commented as they were required to consult with their husbands first though they were shy to say this in a discussion where men were present

Capacity building on gender for project implementing teams has been found to be rewarding where the teams produced gender disaggregated data in the research projects by Urban Harvest International Potato Centre (CIP) (Njenga et al., 2011).

1.2.5 Gender responsive monitoring and evaluation

Farmers' perceptions influence the adoption of technologies, and so should be included in M&E. This is illustrated in the 1995 study in Burkina Faso and Guinea which found that farmer's subjective perception of new varieties of sorghum and rice significantly affected their adoption (Adesina and Baidu-Forson, 1995). In Senegal a detailed analysis of the adoption of improved varieties of rice, came to the same conclusion: that these perceptions can be quantified in ways that make them accessible to programme teams (Sall et al., 2000). Interventions which enhance women's capacity to make their own decisions and build their skills have shown that increasing women's agricultural inputs and education to the same level as men's can increase national agricultural output by 2.5 – 4 %, reducing the number of undernourished people in the world by 12-17% . This would effectively reduce the hungry of the world by 100 – 150 million people (FAO, 2011)

Gender issues should be taken into account to mitigate against any risks that might occur in men's acquisition of control of income at the expense of women once the N2Africa's target legumes are commercialized. Situations like this have occurred for example in Kenya, where the development of export horticulture has led to an erosion of women's control over their produce, as men realised the benefits of vegetable production (Dolan, 2005). In Uganda, strong demand for leafy vegetables (traditionally a women's crop) in Kampala markets caused men to take over their cultivation (World Bank *et al*, 2009). The design of agricultural projects can have positive or negative impacts on seasonal workloads and the distribution of income, especially for women. Adverse seasonality is most severe for smallholder families that depend on single rainy season agriculture for their livelihood (Devereux and Longhurst, 2010). The use of seasonal calendars show activities undertaken in different periods of the year and men, women and children's involvement while indicating times of labour surplus and

shortages. Seasonality in household income from agriculture and other sources will inform the project on periods of the year when households receive more or experience shortages in income and food from legumes compared to other agricultural and non agricultural activities.

Intended beneficiaries are sometimes skeptical and cautious about interventions, but their voices are rarely heard by researchers or their sponsors (Scoones and Thompson, 2009) a challenge that could be addressed through M&E. Knowledge and adaption of agricultural technologies is gendered, and the success of improvement of legume production by N2Africa will depend on the degree to which it incorporates knowledge of women and men on what, how, where and why it works, and makes adjustments accordingly. This approach is in line with empowerment of women and men in making their decisions on what is best for them rather than merely adopting the recommendations of others. Structures are constituted by rules, norms, beliefs and practices that define social relationships between different groups in a society (Kabeer, 2010). Farmers are knowledgeable about their farming systems, and men and women have different perceptions and knowledge about different aspects of their biophysical and socio-economic situations. Researchers need to learn from this indigenous knowledge, and farmers may need to be encouraged to tap into their own knowledge (World Bank et al., 2009). Because N2Africa's identification of best fits, technology delivery and dissemination strategies involve working with farmer groups, changes in gender relations in decision making should be assessed to ensure that as legumes become commercialized, women's power to exercise choice over their interest is enhanced. When designing and implementing any community based project it is important that tools, methods and approaches take into consideration women and men including other stakeholders' views and active contribution to decisions making processes so that agricultural research and development is more effective in reducing hunger and alleviating poverty.

Since gender issues are so linked to cultural values, social attitudes and perceptions, it is important to use qualitative as well as quantitative methods. When facilitated in a participatory mode in groups and with methods that are visual and tangible, farmers - whether literate or not - can count, measure, estimate, rank, score, value, and compare and generate numbers (Chambers, 2010). Quantitative participatory methods, such as ranking and scoring matrices can quantify the qualitative, and the numbers can be analysed like other statistics. Participatory approaches can empower farmers to analyse and present to policy makers the complexity and diversity of their farming systems and inform scientists and implementers through timely information and insights. To ensure gender responsiveness in data generation, experienced gender-sensitive facilitators and approaches such as men-only and women-only focus group discussions should be applied. People-centred M&E need to be embedded in project cycles to ensure that projects are addressing their preset objectives and interventions are being informed by local people's preferences and priorities at every stage of the project while promoting gender equality. This process serves several purposes which include holding implementers accountable to donors and beneficiaries; providing feedback loops from project implementers, men and women beneficiaries and other stakeholders; and learning and refining of strategies where necessary. Systematically asking farmers about their priorities and what is and is not working is vital to achieving sustainable and equitable improvements in agricultural productivity while achieving accountability to donors and intended beneficiaries (Pinto, 2010).

Programmes that aim to increase overall income and nutrition should take into account measuring progress and impact in regard to gender dimensions where for example a well-designed programme that aims to increase household well-being will pay attention to who is generating the income, how the income is used and who makes decision over its use. Evidence shows that income is often unevenly distributed amongst family members, adversely affecting nutrition objectives. For example in South

Western Kenya, for a given household income level, female-controlled income share was shown to have a positive and significant effect on household calorie consumption, while male-controlled income had a negative effect (Kennedy in Quisumbing, 1995). M&E should be done well so that it makes projects work better, assess impact, steer strategy, increase stakeholder ownership, build the capacity of stakeholders to hold programme financiers and implementers to account and share learning more widely (Pinto, 2010).

1.2.6 Gender indicators and guidelines

In monitoring and evaluating any benefits arising from a project or program, the gender considerations include, developing indicators that define and measure progress in achieving benefits for men and women, ensuring that gender-disaggregated data are collected to monitor impact with respect to gender, and considering ways of involving women in M&E (World Bank, *et al.*, 2009). Measuring gender inequality requires using quantitative, qualitative and perception-based indicators. Decision-making, confidence and attitudes can be measured using perception-based indicators (ALINE, 2010). To support the N2Africa project team and implementers to meet the commitments made to gender equality, comprehensive guidelines have been developed and described in chapter 3 of this report. Gender responsive M&E needs to apply specific gender indicators that best capture the gender-related changes brought about by an intervention that are decided on a case by case basis. Specific gender indicators have been developed for N2Africa as presented in chapter 4 of this report.

2.0 METHODOLOGY

Methods and approaches applied in arriving at this output included a literature review of project documents, consultation with project team from WU, IITA and CIAT and site visits to Kisumu, Kenya and Harare, Zimbabwe. The site visit to Kisumu involved participation of the consultant in the N2Africa project Long Rains (LR) 2011 planning meeting held at Hill Side Villa hotel, at Kisumu city on 31st January and 1st February 2011. The consultants held discussions with the project's scientific and technical team, local partners and facilitator as well as beneficiaries. The consultant learned more about the project activities and implementation strategies as well as gender issues around legume production, processing and commercialization. The consultant also participated in the project annual meeting held in Harare between 14-18 February and exercised in administering one of the baseline survey tools during a visit to the farms (Plate 1).



Plate 1. Mary (left) guiding a legume farmer to draw a map of her farm at Harare

During the discussions with stakeholders she shared her thoughts on critical gender issues that should be addressed in the project. The literature review and consultations with project implementers and farmers resulted into identification of recommendations on how to integrate gender in the project activities including monitoring and evaluation, guidelines on how to enhance gender responsiveness in the project activities and gender indicators.

3.0 GUIDELINES FOR ENHANCING GENDER RESPONSIVENESS IN THE N2AFRICA PROJECT

This section suggests how to incorporate gender systematically in the four main components of the N2Africa project, namely the 1) baseline study, 2) selection of multi-purpose legumes, 3) selection of superior rhizobia strains, and 4) delivery and dissemination and development and strengthening of capacities. The aim of gender responsive research and development is to enable men, women and youth to participate in development processes on equal terms, both as agents and as beneficiaries, ensuring that opportunities for women to participate in income-generating activities, learning and decision-making processes continue to increase and improve so that household income and nutrition levels are achieved and demonstrated (Bill and Melinda Gates Foundation, 2008). A focus on strengthening the capabilities of the implementing agencies to implement R&D projects to effectively integrate gender is also critical.

3.1 Gender responsiveness in the N2Africa should be based on the following principles:

- *All lives—no matter where they are being lived—have equal value* (this underlies the Bill & Melinda Gates Foundation gender impact strategy)
- Acceptance of “*equal human rights for all*”
- Acknowledgement of the real *value of women’s contribution* to development: food security, income, knowledge, labour,
- Recognition of *women as independent actors and beneficiaries* of projects and public policies
- Recognition that the *needs of men and women are different* and that women’s access to and control over resources and participation in decision making is restricted by socio-cultural traditions and institutions
- Recognition that public policies and projects, as well as economic and technological trends, can have *differential effects on men and women*
- Recognition that *affirmative actions are needed* to ensure that women and others who have been marginalized can reap equal benefits from projects and public policies
- Recognition that advancing a gender sensitive approach requires *cultural tact and diplomacy* if embedded constraints (e.g. traditional cultural norms, institutionalised discrimination) are to be overcome and resistance minimised.
- Gender will be considered at all stages of the project cycle from analysis of local situation, project design, activity planning, implementation, monitoring and evaluation, and advocacy to influence policy development.
- No “*one-size-fits-all*” recommendation will be appropriate to guide enhancement of gender responsiveness in activities across countries and local sites. In-depth understanding of the culture and specific gender issues is needed to develop strategies that will ensure gender equity in each site.
- Cultures need to be respected (Plate 2.) Where these hinder communication or implementation of activities, effective ways of reaching the community should be discussed with the local community.

While some of the principles have been developed by the authors, others have been improved from Hovorka et al., 2009.



Plate 2. Women sitting on a carpet and men sitting on a seat for lunch at Harare

3.2 Baseline study

This study is aimed at making an assessment of the social, economic, political and environmental circumstances in which people live and work to analyse their farming systems and livelihood strategies and to define the main problem, needs and resources and opportunities. This section provides a guide to gendered analysis of the local situation. This phase identifies key themes, methods of data collection and participation and data collection itself. Key themes can be identified through literature review to identify research questions and hypothesis. The review also should be used to identify existing information on gender perspectives in legume production. Since gender issues are so linked to cultural values, social attitudes and perceptions, use of both qualitative methods such as questionnaires and focus group discussions and quantitative methods such as participatory techniques e.g. seasonal calendars should be applied. Qualitative data should be quantified as much as possible for example through numbers generated through counting with beneficiaries.

Topics to be covered include:

- Access and decision making over productive resources such as land, inputs, and other resources, as these may influence men's and women's differential adoption of the legume technologies. This will be achieved by use of *farm/resource mapping to show which plots within a farm are allocated to women for legume production. A decision making matrix and symbols should be used to show who has access to use what plots and who makes decision over the use of these plots and other resources.* (Hovorka et al., 2009)
- Access to technical and marketing services
- Social networks and women's leadership within farmer groups
- Division of labour *using seasonal calendar. This should be guided with questions such as:*
 - *how are men and women including children involved in specific legume and other main crops activities at different periods in the year?*
 - *how do their workloads compare?*
 - *which are the most burdensome tasks and who is involved in these?*
 - *what are the busiest periods for men and women/boys and girls?*
 - *what flexibility exists in sharing tasks?*

- Distribution and decision making on benefits including consumption of legumes, use of legume residues and income. *Are benefits commensurate with level of participation, for example in production? Seasonality in availability of income would be achieved through seasonal calendar. Questions such as:*
 - *what periods of the year do households experience surplus and shortages in income?*
 - *how is the income spent on purchases of household assets and food?*
- Social, cultural, religious, economic, technical, environmental constraints, problems and opportunities in adoption of legume technologies should be identified *through open ended questions. The identified constraints, problems and opportunities should be prioritized through ranking matrices.*
- Gender analysis in market demand and opportunities of the four target legumes. Questions such as:
 - *what segments of the legume marketing chain exist?*
 - *who among men, women and youth are involved in each market segment?*
 - *who among men and women farmers sells to which market segments?*
 - *what are the prices and other benefits in selling the legumes through each market segment?*
 - *what constraints and opportunities exist for men and women and youth in selling legumes through each market segment?*
- Gender analysis in market demand and opportunities for inoculants:
 - *who among men and women are willing to use what amounts of inoculants?*
 - *what constraints and opportunities exist in the use and marketing of inoculants?*

Special attention needs to be paid to ensure effective involvement of women through;

- Choosing times and places convenient for both men and women, considering women's child care and domestic responsibilities
- Use of adequate techniques that appeal to women, to encourage their participation
- Use of experienced gender sensitive male and female staff, since the latter establish contacts more easily with women
- Ensure that the agenda of interviews and focus group discussions includes items which are of primary interest of women
- Consider the language used: women often do not speak the official language (use translators; use visualisation techniques).
- Combine a variety of data gathering techniques to gain insight Pay attention to historical perspectives and trends to get more insight.
- Make sure that all data collected differentiate between men and women, age, education, and socio-economic status
- Interview men and women in separate (individual or group) interviews, followed by discussions in mixed groups.

3.3. Select multi-purpose legumes (providing food, animal feed, structural materials and high quality residues) for enhanced Biological Nitrogen Fixation and integrate improved varieties into farming systems

The project should use parameters that appeal to both men and women in the selection of best fit multi-purpose legumes in each site. This will assure the incorporation of both men's and women's different preferences in the evaluation of new technologies or practices for potential adoption which emanates from their different roles and responsibilities (Meinzen-Dick et al., 2010). These preferences are conditioned by the end use of the crop, whether it will be sold right away (yield and profitability) or used for home consumption (storage, taste, and processing). Bellón et al. (2007) looked at men's and women's differential preferences for grain characteristics in Oaxaca and Chiapas, Mexico, and found

that traits related to vulnerability (tolerance to drought, resistance to rot, and resistance to pests) are significantly more important to poor female farmers than to their male counterparts. In general, consumption characteristics were more relevant for women than for men: a reflection of women's role as subsistence farmers and household food providers.

3.4 Select superior rhizobia strains for enhanced BNF and develop inoculum production capacity in sub-Saharan Africa through collaboration with private sector partners

Men and women farmers should participate in the field testing on need to inoculate which will increase their knowledge on the importance of inoculating legumes as they will be able to observe the performance in the field. There should be equal representation of men and women in the discussions on fertilizer and inoculants policy review processes. Men and women farmers have real life case studies which are influential in policy development.

3.5 Deliver and disseminate legume and inoculant technologies to farmers in eight targeted countries within three impact zones

The project should ensure gender balance among extension agents, trainers and master farmers in attempt to create strategic alliances for facilitating dissemination of legume and inoculants technologies in the impact zones. Female extension staff should be used where cultures restrict men-women interactions, and male extension agents should be sensitised to specific needs and priorities of women. The training materials should ensure that content including examples address the needs, aspirations, interest, knowledge and challenges faced by men and women farmers. The training materials should be adapted to the literacy level of rural women. The delivery and training channels- such as demonstration and field days - should be organized in a way that takes into consideration women's other domestic roles, men and women's interests in legume production, processing and marketing. For example, to encourage women's participation, dates of training should be fixed well in advance. The choice of days should consider other local events such as market days which are attended more by women, and should be held on-farm rather than residential. Delivery and dissemination strategies should be designed and chosen in such a way that they reach men and women, including the youth and different household types in terms of wealth status. Family focused approaches that involves inviting family members, allow technologies to reach different members of the household. Factors that may impede attendance to trainings should be assessed and addressed for optimal participation of women and men.

Efforts should be made to empower women in leadership and decision making in legume production, processing and marketing farmer groups. Gender balance in leadership position within mixed farmer groups should be ensured, while active participation of women's farmer groups should be promoted. Care should be taken to avoid *deputy syndrome* in mixed gender groups wherein women take deputy positions only. Half of senior leadership positions in mixed gender farmer groups should be held by women. Men and women leadership and group dynamics management skills should be enhanced through incorporation of gender responsive modules that will promote Community Organizational Development and Institutional Strengthening (CODIS) in farmer's capacity building processes. This can be achieved through collaborating with organizations that use these training materials and gender responsive facilitation skills. This way the project will ensure that women have greater voice in the development and adoption of legume technologies.

3.6 Develop and strengthen capacity for BNF research, technology development, and application

The project should aim to enhance the proportion of women in the implementation team including project staff, consultants, partners, training of trainers, lead farmers and post graduates. Gender aspects of the legume value chain should be analysed and addressed throughout the project cycle. Training in gender analysis will increase understanding and acceptance of gender mainstreaming needs.

3.7 Gender responsive monitoring and evaluation

Gender must be addressed in ongoing monitoring and in evaluation for the same reasons we address other issues and if gender impacts are not evaluated, they are unlikely to be given any attention. (World Bank et al., 2009). The gender responsive M&E process should cover all the components of the project. Performed consistently as part of project M&E, gender analysis helps build a picture of women's growth as individuals and social beings, and helps project staff, other stakeholders, and beneficiaries themselves to understand how project activities are really changing the lives of men and women (or not). It allows assessment of progress and making of corrections if needed to obtain expected gender-related outcomes. Feedback should be shared among stakeholders as it has the potential to have a positive effect on women's empowerment while also increasing the greater community's understanding of the unique challenges and responsibilities of women (Bill and Melinda Gates, 2008). Basic demographic data such as age, education, sex of household head and family size will allow associations to be made between household typologies and adoption of legume technologies.

As part of M&E, information collected during the analysis of the local situation as described in Table 5.1 should be assessed to understand how the activities of N2Africa project are influencing gender relations and women's empowerment. These data will show whether or not and how the project is enhancing women's access to productive resources, income and knowledge in legume production compared to men's, changes in division of labour for men/boys and women/girls, and patterns of decision making. The M&E data will also illustrate how gender issues influence men's and women's differential adoption of the legume technologies. Many projects monitor numbers in participation of men and women in the various project activities which allows generation of sex -disaggregated data indicating the extent to which the project is attending to men and women. However such data do not say much about the impacts of the project on gender relations and women's empowerment in processes and decision making which requires use of rating scales. An example of a rating scale in decision making matrix is: Man only=MO, Man and woman jointly where either (i) Man dominates=MD, (ii) man and woman's influence is equal =MW, or (iii) Woman dominates=WD, and Woman only=WO (Hovorka et al., 2009). The project should also collect information on how income from the sale of legumes is utilized on the purchase of assets and/or food for the household to evaluate implications on hunger and poverty alleviation. In respect to gender analysis in market demand and opportunities of the four target legumes, the M&E process should collect data on men, women and youth's linkages to different marketing systems and the functioning of collective approach, benefits, constraints and opportunities in each marketing system. Gender analysis in market demand and opportunities for inoculants should show men's and women's levels of use of inoculants, interest in local selling of inoculants and how they could source the inoculants for local empowerment on marketing systems of inoculants.

The M&E process should also collect information on preferred legume types and varieties by men and women at local sites. When considering parameters to measure gender responsiveness, research needs to go beyond quantities of production as its only objective and include data on taste, food quality, nutrition, processing, and other characteristics that are particularly important to women. This can

increase the effectiveness of agricultural research by producing crops that reflect the needs not only of farmers but also of processors and others along the value chain (World Bank et al., 2009). This data will indicate the changes in preference of legumes and the driving factors, as well as how men and women's preferences influence adoption. The M&E process should gather data on how the delivery and dissemination strategies are working and for whom, where and why they are working or not. For instance, in the case of packaging of fertilizer and inoculants, what amounts are preferred and by whom? It should show the quality of participation of men and women in trainings and demonstrations, by illustrating how active women are in contributing ideas and asking questions. This is best done using a rating scale. A rating scale on percent (>76%, 51-75%, 26-50%, <25) of men and women who are very active (76%), active (51-75%), average (26-50%) and passive (<25%) would be useful. Factors (transport time and cost, child care, barriers preventing interaction with extension workers) hindering attendance to trainings and how they can be addressed should be identified and discussed with farmers.

The M&E process should also include studying adoption and adaptation of legume technologies being promoted by the project. Information on what agronomics practices have been adopted by whom, what is working well or poorly, how it is working and for whom is it working well or poorly and why. This information should be broken down into specific agronomic practices e.g. spacing, staking for climbing beans, rates and application of fertilizer and inoculants. To understand why agricultural productivity is often lower for women, we need a broader understanding of the obstacles women face. For example, Udry (1996) found productivity on female-managed plots in Burkina Faso was 30 percent lower than on male-managed plots within the same household because labor and fertilizer were more intensively applied on men's plots. M&E process should include collecting data on fertilizer and inoculants application rates adopted by men and women during the phase when farmers are receiving the inputs free and when they start purchasing. Any challenges that might hinder women from purchasing the inputs should be identified and sustainable solutions sought to enhance gender equality in accessing these inputs.

In the development and strengthening capacity for BNF research, technology development and application, gender responsiveness should be monitored. Monitoring should be carried out to ensure gender balance and availability of gender skills and tools among the project team, training of trainers and master farmers. Gender responsiveness in the content of the trainings and messages should be included in the M&E.

Reporting and sharing of information generated from the N2Africa project should be monitored and evaluated to assess gender responsiveness in the content and strategies of communication. Gender should be incorporated in different sections or chapters of reports and publications such as in;

- background information,
- problem statement and justification,
- objectives,
- methods and approaches including typology of respondents and tools applied in data collection,
- results and discussions including data disaggregation by gender,
- conclusions and recommendations including policy influencing

3.8 Reporting and policy influencing

Examples of changes in gender equity in a practical sense should be collected regularly through monitoring and shared with a wide range of stakeholders. Improved advocacy can have a very positive feedback effect on the project. For example, an agricultural project in South Africa focused on developing producer groups (particularly women-led groups). As part of its qualitative evaluation, the

project collected stories and lessons emerging from this process. These were eventually published by a local agricultural magazine that was distributed beyond the original beneficiary groups and reached other departments of agriculture and farmers (World Bank et al., 2009).

A gender analysis technical report/paper should be prepared which presents a gender meta analysis in legume technology development and adoptions in sub Sahara Africa. This gender meta analysis should make comparisons across sites in a country and across countries. The findings of the project should be presented and discussed with women and men farmers and other stakeholders as a way of getting feedback on the benefits and influences of the project as well as recommendations for further work.

3.9 Implementation strategy to ensure gender responsiveness in N2Africa

To ensure that the N2Africa project is gender responsive throughout its cycle, implementation of the recommendations, gender guidelines and gender indicators discussed in this report should be backstopped. For this, a Gender Working Group comprised of leaders of the different components, namely: delivery and dissemination, rhizobiology, capacity building and M&E. The capacity of the implementation team to address gender should be enhanced through the recommended training in gender in legume value chain. Partners involved in this project should show commitment to enhance gender responsiveness in their work. Gender should be considered as a crucial component of the project and should form part of the agenda during planning and progress review meetings. It should be championed at the steering committee level and by the senior staff of implementing agencies.

4.0 GENDER INDICATORS FOR N2AFRICA PROJECT

A gender-sensitive indicator can be defined as “an indicator that captures gender-related changes in society over time” (Beck, 2000). The DFID *Gender Manual* (Derbyshire, 2002) defines gender-sensitive indicators as follows:

Gender-sensitive indicators allow measurement of benefits to women and men and include the impact/effectiveness of activities targeted to:

- Address *women’s or men’s practical needs*, such as new skills, resources, opportunities, or services in the context of their existing gender roles
- Increase gender equality of opportunity, influence or benefit, such as targeted actions to increase women’s role in decision making, opening up new opportunities for women and men in non traditional skill areas
- Develop gender awareness and skills among policy making, management, and implementation staff
- Promote greater gender equity within the staffing and organizational culture of development organizations, such as, the impact of affirmative action policy.

Gender indicators should show how and if gender equity is being reached, and if the approaches used are effective.

They should answer the following questions:

1. How do the anticipated results of the N2Africa project affect men and women differently?
2. How does the Project affect the different roles and status of women and gender relations?
 - a) Are the project activities having an adverse effect on the gender situation (including the socioeconomic position of women and the power relationships between women and men)?
 - b) Is the gap between women and men decreasing in terms of access to inputs, income and power?
3. How might different roles and status of women and men affect the achievement of the N2Africa Project goals?
4. How do the women and men themselves assess the impact on their lives, and would their situation have been different without the project?

Table 4.1 Gender indicators for N2Africa project

Component	Gender indicators	Tools and means of verification (MoV)
<p>Baseline survey monitoring and evaluation processes</p> <p>(Performance and impact assessment will be carried out in all components of the project)</p>	<ul style="list-style-type: none"> • Increase in income for women and men from growing legumes and other farm and off-farm activities while indicating seasonality* • Uses of income by women and men for example on purchasing household assets and/or food* • Influence of women and men in decision making on use of income, and inputs including land* • Labor time and cost changes in different legume production activities and seasonality for women and men and girls and boys* • Percent of women and men in each legume market segment or types of market that farmers sell legumes • Opportunities and constraints for women and men in selling legume grains in each market segment* • Amounts of legume produce traded and amounts of money earned per certain time in different market types/segments by women and men • Amount of legume grains consumed at home • Preference for consumption of legume grains by women and men including girls and boys* • Benefits according to women and men from the legume technologies interventions* • Disaggregation of data by gender and household typologies in reports and publications • Integration of gender perspectives in background information, problem statement and justification, objectives, methods and approaches, results and discussions and conclusions and recommendation of reports and publications 	<p>Tools</p> <ul style="list-style-type: none"> • Questionnaire • Checklist • Seasonal calendar* • Decision making matrix* • Focus group discussions* • Scoring, rating and ranking systems* • Problems and opportunities analysis chart * • Benefits chart* • Detailed farm characterization tool <p>MoV</p> <ul style="list-style-type: none"> • Farmers farm records • Baseline data reports • M &E data and reports • Project planning reports • Project reports and publications
<p>Select multi-purpose legumes (providing food, animal feed, structural materials and high quality residues) for enhanced BNF and integrate improved varieties into farming systems</p>	<ul style="list-style-type: none"> • Number of women and men that have adopted each variety of legume • Change in size of land being used by women and men in growing of each type of legume* • Attributes preferred by women and men for each variety of legumes in each site* 	<p>Tools</p> <ul style="list-style-type: none"> • Questionnaire • Checklist • Farm/resource mapping* • Focus group discussions* • Scoring, rating and ranking systems* • Detailed farm characterization tool <p>MoV</p> <ul style="list-style-type: none"> • Farmer field monitoring book • Baseline data and reports • M&E data and reports
<p>Select superior rhizobia strains for enhanced BNF and develop inoculum production capacity in sub-Saharan Africa through collaboration with private sector</p>	<ul style="list-style-type: none"> • Types and amounts of inoculants being used by women and men • Size of packaging being preferred by women and men • Number of women and men purchasing different types of inoculants • Perception of women and men on use of inoculants.* 	<p>Tools</p> <ul style="list-style-type: none"> • Farmer field monitoring book • Focus group discussions* • Scoring, rating and ranking systems*

partners		<p>MoV</p> <ul style="list-style-type: none"> • Baseline data and reports • M&E data and reports
<p>Delivery and dissemination of legume and inoculant technologies to farmers in eight targeted countries within three impact zones</p>	<ul style="list-style-type: none"> • Number of women and men in the farmer groups • Proportion of women in mixed farmer groups • Proportion of women in the leadership positions in the mixed farmer groups • Number and type of farmer groups with affirmative action's or women quotas to ensure women inclusion in leadership • Number of women and men farmers trained on what modules/topics community organizational development and institutional strengthening courses • What training in legume technologies have what number of women and men received? • Perception of women and men on what technology is working and is not working* • Number of women and men participated in trainings and demonstrations on the different legume technologies including cooking demonstrations • Women and men including boys and girls preferred meals prepared during cooking demonstrations • Percent of women and men applying the legume technologies being promoted by the project • Number of women and men using fertilizer and rates of use • Level of participation of women and men during trainings, demonstrations measured using the following rating scale. Percent (>76%, 51-75%, 26-50%, <25) of men and women who are very active (76%), active (51-75%), average (26-50%) and passive (<25%) would be useful.* • Level of participation of women in mixed groups and women only groups* • Men's attitudes towards women's participation in the public domain?* • Changes in women and men's knowledge regarding legume technologies being promoted by the project* • Changes in self-esteem and self-worth among women* 	<p>Tools</p> <ul style="list-style-type: none"> • Focus group discussions* • Scoring, rating and ranking systems* • Decision making matrix* <p>MoV</p> <ul style="list-style-type: none"> • Group records • Farmer groups constitutions or by-laws • Training and demonstrations reports • Farmer field monitoring book • M&E data and reports
<p>Develop and strengthen capacity for BNF research, technology development, and application including within the project management structure</p>	<ul style="list-style-type: none"> • Proportion of women in the project implementation team including staff, extension team, local partners, local facilitators, training of trainers and master farmers. • Commitment of partners to enhance gender responsiveness in the project activities* • Proportion of women and men post graduates trained. • Proportion of women and men in project team implementation who have received the gender in legume value chain training 	<p>Tools</p> <ul style="list-style-type: none"> • Capacity building on legume value chain • Discussions <p>MoV</p> <ul style="list-style-type: none"> • Partners vision, mission and objectives statements • Training on gender in legume value chain report • Project reports • M&E data and reports

Sources for tools and instruction on how to use them :

Information on all suggested tools are available in Horvoka 2009; (available online and could be purchased at:<http://www.springerlink.com/content/ft508852630t4n27/>) ; IFAD 2002; Njenga et al ., 2007; World Bank et al., 2009. More information on participatory tools, ranking and seasonality is available in Pinto et al., 2010 (pp 45-55; pp 88-95).

*Indicators that need to be collected through qualitative methods and suggested tools. It is important to consider the kind of information that needs to be collected when selecting participatory tools as described in (IFAD, 2002). In Table 4 above indicators give types of information required to guide selection of tools for example, where indicators need to show seasonality, the seasonal calendar is used and where prioritization and/or preference is required ranking and scoring systems are used. In practice various tools are combined. For example a seasonal calendar is used together with scoring, rating and ranking systems and the same way opportunity and constraints analysis charts are used together with scoring, rating and ranking systems. The above provided sources of literature give instructions and examples on use of each tool. However, gender analysis skills of the project team will facilitate the effective use of such tools.

5.0 RECOMMENDATIONS FOR ENHANCED GENDER RESPONSIVENESS IN THE PLANNED N2AFRICA ACTIVITIES

Table 5.1 presents recommendation that needs to be implemented in order to enhance gender responsiveness in the project initiatives. The recommendations are drawn along each objective.

Table 5.1 Recommendations to enhance gender responsiveness in the N2Africa project

Objective 1: Establish a baseline of the current status of BNF, identify farm enterprises and niches for targeting N ₂ -fixing legumes in the impact zones, and establish mechanisms for Monitoring and Evaluation (M&E) and impact assessment		
Activities	Gender issues	Recommendation for gender responsiveness
1.1 Establish project management structure	<ul style="list-style-type: none"> • Are there mechanisms developed to assure the incorporation of gender in the project activities. 	<ul style="list-style-type: none"> • Establish a Gender Working Group among component leaders to coordinate and oversee that gender is attended to at the project and organizational levels. • Assure that gender staff is on management or advisory team • The project implementing team should be comprised of both men and women to ensure that both men and women farmer issues are well addressed. • Capacity building on gender in legume value chain among project implementers including scientific and technical team and local partners and facilitators. • The training should equip the team with skills to identify gender issues, their implications on adoption and impact of the project and strategies to address them. • This training could be made more participatory by asking participants to pre-prepare a one page brief on gender issues in legume value chain for use during practical/exercises. • A training manual should be developed for use across all sites; however unique gender issues within each site should be addressed. • Refresher sessions should be organized by the projects' gender working group as need arises.
1.2 Identify the project sites (e.g., districts, communities, villages, farmer groups) at different scales in the impact zones.	<ul style="list-style-type: none"> • What women farmer groups or mixed groups should be involved for effective gender interactions in legume value chain? 	<ul style="list-style-type: none"> • Identify farmer groups, both women only groups and mixed groups • Cohesive groups comprising farmers with previous experience in legumes value chain and that embrace women empowerment through legumes production would be ideal. • Identification of these groups would effectively be done with the help of local contact persons. • Empowerment of women and men farmers to effectively participate in the project should be carried out as described in activity 4.1.
1.3 Identify new opportunities for targeting legume and inoculant technologies to increase BNF and enlarge the area under the priority legumes in the impact zones	<ul style="list-style-type: none"> • What opportunities exist for women and men in the market demand for the 4 target legumes and BNF inoculants? 	<ul style="list-style-type: none"> • Conduct a gender responsive market analysis that illustrates local and international opportunities for legume trade; identifies key stakeholders in each market segment; outlines primary activities carried out by men and women including the youth* • Examples of questions that should be addressed in this analysis include; <ul style="list-style-type: none"> ➤ Who among women and men including youth is involved in the village or urban, informal or formal, small-scale or large-scale marketing systems? ➤ Which systems yield better profits? • It is important to understand whether there are any financial and/or domestic/social-cultural limitations in women's involvement in marketing systems that yield better profits? If lack of adequate capital exists among women there is need for establishment of linkages to financial institutions that offer women empowerment credit facilities. If social-cultural limitations exist there is need to work with women and men beneficiaries to identify and implement strategies to address these limitations. This way the project will be transforming gender inequalities. • There is need to link the farmers to high-value markets through farmer groups for increased income. • Conduct a cost/benefit analysis on farmers demand for inputs including introduction of inoculants needs questions that address gender categories of members of the households involved in sourcing, making

		<p>payments, and application of inputs, time and costs spent on these activities.</p> <ul style="list-style-type: none"> • Assess existing knowledge on rates of application of fertilizer and benefits from the perspective of men and women including the youth. • After the project team introduces inoculants there is need to gather opinions on its use, to find out what financial and social-cultural factors may influence the demand. This would best be done through focus group discussions with men, women and youth separately, guided with a pre-prepared checklist. Similar questions should also be included in the household survey. In the same discussions and survey with farmers, information should be sought on farmer’s interest in marketing inoculants locally. The market analysis should note the gender and age of farmers interested in selling inoculants and also financial and/or domestic/social-cultural limitations that may influence each genders trade in inoculants. In case they are any challenges on selling inoculants locally, farmer’s opinions on solutions should be sought.
<p>1.4 Quantify the current on-farm Biological Nitrogen Fixation BNF in the target farming systems and its impact on livelihoods, income, and household nutrition.</p>	<ul style="list-style-type: none"> • What current on-farm BNF are being practiced by women and men in the target farming systems and what impacts do they have on women and men’s livelihoods, income, and household nutrition. 	<ul style="list-style-type: none"> ➤ Baseline household surveys in addition to showing gender of household head, respondent and other members should include questions that gather gender disaggregated data on farming practices. <ul style="list-style-type: none"> ➤ For instance what are the levels of use of fertilizer among households? How are legume crop residuals used? ➤ If, for example crop residues are used as livestock feed whose livestock is it for among the household members as this will influence decision making on use residuals for farm fertilization ? ➤ Participation of women and men including girls and boys in provision of labour in the legume value chain should be quantified*. ➤ Women are the majority labour force in the production and local processing segments of legume value chain and commercialization of the crop should ensure their active participation and ability to access benefits in the marketing segment. Questions such as how land is used and how are decisions on its use made should be asked? Decision making on use of land will influence the size of the plots that women can put under legumes production and as such there is need to seek men’s support (e.g. inviting husbands and other family members to attend demonstrations). ➤ The survey tool should also highlight issues on amount of income accrued from sale of legumes and savings made by household in producing own legumes for household consumption and how it is spent. Information on legumes consumption among different gender and age categories of household members and how it is processed is important to establish and monitor nutrition and health*. • Shift to commercialization and formalization of payments for women crops mainly used for home consumption may leave women in worse economic situations. Measures should be taken to ensure that women receive income from sale of the legumes through the collective marketing system. <ul style="list-style-type: none"> ➤ Details of the farmers producing the legumes should be taken and verified at the collection points. ➤ Women should be involved in identifying the best modes of directly remitting the payment to them for their sales. One example would be paying through phone systems and bank accounts for those who have direct access and control of these systems. Arrangements with local banks to pay the women even if they do not have accounts are being made by some organizations such as SMARTLOGISTICS SOL in Kenya and the model could be applied in this project. This will expose women to savings and credit facilities which will encourage them to open bank accounts. The M&E tools should include income and how it is spent as part of evaluating the project’s impacts on livelihoods.

		<ul style="list-style-type: none"> ➤ The household baseline survey should be complimented with focus group discussions (FGD) with men, women and youth farmers separately. Gender analysis tools used in the FGD should include scoring and ranking procedures to allow gathering of qualitative data. This participatory information gathering process will give farmers a chance to freely express their views as a group and the narratives and practical examples out of the process will help the project team better understand gender and socio-cultural issues around legume production. It is necessary to have a gender balanced team facilitating the FGD as many times women are freer when their sessions are facilitated by women. ➤ Information sharing such as through reports, presentations, publications and other media articles and programmes should be gender sensitive in content, delivery and target group. • To ensure that gender aspects are well taken care of in the baseline survey, the M&E and gender working group in the project should participate in the development of the survey tools. See further comments under 4.5.
1.5 Monitor the effects of investments and uptake of legume and inoculant technologies across the impact zones.	<ul style="list-style-type: none"> • What impacts do the uptake of legume and inoculants technologies have on women and men's livelihoods, income, and household nutrition. • Is gender well integrated in the project's M&E and reporting processes? 	<ul style="list-style-type: none"> • Baseline data as described in the above activities 1.3 and 1.4 will used in order to assess the impacts of projects activities on women and women • Adopting a participatory performance measuring process that uses gender responsive indicators, tools and methods will allow analysis and assessment of the projects performance while engaging project implementers, beneficiaries and funding organization in discussions and reflections on progress towards understanding gender dimensions and bringing the desired gender equity in legume production. • Gender guidelines and gender indicators to support implementation of gender responsive initiatives suggested in this document have been developed in consultation with project implementers and farmers and other beneficiaries (See sections 3.0 and 4.0). • The consultant together and the M&E team have enhanced gender integration in the current projects M&E process (See section 5.1). • Reporting processes for example progress reports, technical reports, presentations and publications should integrate gender in the content and implementation strategies. ➤ The reports should be shared among project implementers, and farmers and other beneficiaries and the funding organization.
1.6 Evaluate the impact of introduced legume and inoculant technologies on farmers' livelihoods and soil health across the impact zones.	<ul style="list-style-type: none"> • How is the project influencing women and men's livelihoods, income and nutrition? 	<ul style="list-style-type: none"> • Use baseline survey and gender analysis to determine gender indicators for M & E • M&E tools should be made gender responsive to show impacts of legume and inoculants technologies on women and men's livelihoods, income and nutrition. • Gender should be integrated in every component of the project activities. • Project team members should update each other regularly e.g. on monthly basis • Gender responsive M&E easy to use tools should also be developed for use on the ground by farmer groups to frequently monitor group members activities (e.g. agronomic practices including use of fertilizer and inoculants, consumption and sales of legumes, trainings received, participation in group activities)(CIP, 2010). • The project's gender and M&E experts should work very closely with project implementers to ensure that gender is integrated in this activity.
Objective 2: Select multi-purpose legumes (providing food, animal feed, structural materials and high quality residues) for enhanced BNF and integrate improved varieties into farming systems		
2.1 Select best varieties	Which are the	<ul style="list-style-type: none"> • It is important to collect data on the preferred varieties of legumes by different gender categories of

<p>of soybean for high N₂-fixation capacity and adaptation to abiotic (low soil P, soil acidity) and biotic stresses (pests and diseases).</p>	<p>preferred legume varieties by men and women including the young and old in each of the study sites?</p>	<p>farmers to compare notes with what researchers propose as best bets for each site.*</p> <ul style="list-style-type: none"> • Selection of preferred varieties and evaluation of their performance should include both agronomic, social-economic and health and nutrition parameters (e.g.colour of the skin and flesh, taste, cooking time, nutrition value, consumption and by whom, time to maturity). Inclusion of nutrition, food quality, processing and taste parameters will enhance gender responsiveness as these parameters might appeal more to women. Gendered opinions on the target varieties and potential for adoption should be sought from the farmers. This will be effectively carried out through interactions between the agronomy and social-economic components of the project. This information in addition to enlightening the team on the preference status of the varieties it will also be important in designing delivery strategies of the N2Africa packages and establishment of indicators to measure project impacts on health and nutrition. • This exercise should be included in the household baseline survey including focus group discussions. • Members of the project team facilitating this process should be gender sensitized so that they encourage active participation of men, women and the youth.
<p>2.2Select <i>Phaseolus vulgaris</i> varieties with higher N₂-fixation capacity and adaptation to abiotic (low soil P, soil acidity) and biotic stresses (pests and diseases)</p>	<p>-----do-----</p>	<p>-----do-----</p>
<p>2.3Select other major grain legumes with high BNF potential but less known capacity to respond to inoculation (groundnut and cowpea).</p>	<p>-----do-----</p>	<p>-----do-----</p>
<p>2.4Explore the N₂-fixing potential of multi-purpose tree and forage legumes for intensive meat and milk production and additional environmental services such as erosion control and carbon sequestration.</p>	<p>Which are the preferred multi-purpose trees and forage legumes by men and women including the young and old in each of the study sites?</p>	<p>-----do-----</p>
<p>2.5Identify best-fit agronomic practices (system design, need for amendments) for maximizing potential</p>	<p>What agronomic practices in legume production are preferred by men and women farmers</p>	<ul style="list-style-type: none"> • The baseline survey should generate data on agronomic practices applied by different gender categories, reasons behind their use and constraints and areas of interventions. • The importance of this exercise and approaches used is similar to that of activity 2.1 above.

benefits of legume and inoculant technologies on increasing and stabilizing productivity.	including the young and old?	
2.6 Evaluate contributions of improved legume varieties to best-fit agronomic practices, system productivity and farm livelihood with specific attention to trade-off analysis between competing agricultural enterprises.	How will changing farming systems affect livelihoods of men and women farmers and other household members?	<ul style="list-style-type: none"> • Men and women farmers should be involved in identifying likely effects of changing farming systems. • This should answer questions such as; <ul style="list-style-type: none"> ➤ Who in the households will be affected and how? ➤ Will there be any implications on gender relations? ➤ What opportunity costs will be there if the new technologies were adopted? ➤ If the effects are positive how could they be enhanced to empower women and if they are negative how could they be minimized? <p>To collect these data a tool like the one in table 5.2 will be useful</p>
Objective 3: Select superior rhizobia strains for enhanced BNF and develop inoculum production capacity in sub-Saharan Africa through collaboration with private sector partners		
3.1 Assess the need-to-inoculate for the target legumes and identify elite strains across the impact zones. Establish and characterize a rhizobium germplasm bank in the impact zones.	How can women and men including the young and old contribute to establishment of need to inoculate?	<ul style="list-style-type: none"> • There is need to involve men and women farmers in field testing on need to inoculate. • Gendered information on farmer's observations on inoculated versus non inoculated plots, will enhance the uptake of the technology and revisions of strategies where need be. • Farmer's will also be able to give opinions on need to inoculate based on the lessons they learn.
3.2 Formulate improved inoculant products and develop cost-effective production and delivery methods, including standardized quality assurance procedures.	Do the formulated inoculants take care of needs of women and men?	Use gendered opinions gathered in 3.1 above
3.3 Expand and upgrade inoculant production capacity in sub-Saharan Africa and facilitate private sector involvement in its production and marketing.	-----	None
3.4 Conduct and	How can the interest	<ul style="list-style-type: none"> • There should be equal representation of men and women farmers participating in the workshops and

advocate policy review on inoculant quality and cross-border movement.	of all gender categories especially women and other stakeholders be incorporated in the policy review process	meetings on policy review. <ul style="list-style-type: none"> • The participation of both men and women should not only be on numbers but active contribution. Active contribution of farmers at this level will depend on the capacity building done in other components of the project as advised earlier.
Objective 4: Deliver legume and inoculant technologies to farmers in eight targeted countries within three impact zones		
4.1 Create strategic alliances for facilitating dissemination of legume and inoculant technologies in the impact zones.	What is the level of men and women involvement in the alliance for dissemination of legume and inoculants technologies in the impact zone	<ul style="list-style-type: none"> • There is need to develop a strategy that ensures farmers participation in designing and implementation of the dissemination processes. • Participation in designing and implementation of the dissemination processes should be included by farmer groups as one of their activities. • The farmer groups should elect those to participate in this alliance and should have 50:50 representation of women and men. Incase women are not volunteering to be involved in joining the implementation team it should be made a requirement. This way the process will promote farmer-to-farmer learning. • The capability of the farmers joining in leading this process should be build through a course on community organizational development and institutional strengthening (CODIS) with topics such as group dynamics, leadership, communication, networking and advocacy, financial management and record keeping (FCI, 2010). • The CODIS training materials and training methods should be gender responsive (FCI, 2010). • These trainings should also be included as part of technical capacity being offered to all farmer groups and included in the M&E process under the advice of the project's gender working group. • These training materials and capacity to deliver them exist among NGO's who have been involved in community development work and incase no manuals exist among the NGO's already onboard, the project should consider including one in every country. • Some farmer groups have women as majority with very few men who are also in leadership. The project should contribute in transforming women participation in decision making through empowering them to take leadership positions in these groups. Women leadership in the mixed farmer groups should be enhanced through quota system where 50% of senior leadership to be by women. This process of farmer groups and women empowerment to take up leadership worked well in a traditional vegetable and orange fleshed sweet potato project in East Africa by International Potato Centre and partners (CIP, 2010). For effective women leadership the farmer groups should receive the above mentioned CODIS training. • Active participation of men and women including the youth in farmer groups' activities and discussion processes is important and should be monitored and evaluated by local facilitators. The tool in table 5.3 will be useful: • Use of female extension staff especially where culture does not allow men-women interactions and sensitization of men on women's needs, opportunities and challenges.
4.2 Produce specific dissemination tools, including inoculant packets, adapted to the needs of farmer groups,	Are the dissemination tools and messages gender friendly.	<ul style="list-style-type: none"> • Use of diverse disseminations tools to reach women and men such as media, video, field days, demonstrations • The dissemination tools and messages in addition to taking care of different stakeholders interest and best languages to use, should also target all members of the household? • The dissemination channel for example media should be selected in a way that it reaches different gender

agro-dealers, and development partners.		<p>categories and household types</p> <ul style="list-style-type: none"> • For example use of photos of women, men and children and messages that target improving women’s participation in the areas where research findings show their absence would be important. For instance would be good to have messages that encourage women participation in marketing of legumes and inoculants. • The packaging quantities and costs should ensure that the products are accessibility to male and female headed households of different income levels.
4.3 Engage with other legume seed production and marketing activities, farm input, commodity marketing and processing initiatives, and household and children’s nutrition programs operating throughout the impact zones.	Are the partners working on legume production, marketing, processing and utilization processes gender aware and prepared to be involved in gender transformations as need arises?	<ul style="list-style-type: none"> • Partners collaborating with the project implementers and farmers in N2Africa project should be sensitized on the projects aim of enhancing gender responsiveness in the activities. • The partners should participate in the capacity building courses on gender in legume value chain described under activity 1.1. • Partners should be committed to enhancing gender responsiveness in legume value chain
4.4 Conduct collaborative legume and inoculant technology dissemination campaigns and create awareness in rural communities in all impact zones.	Are the dissemination campaigns designed and delivered in a way that they will reach men and women including the young and old?	<ul style="list-style-type: none"> • Using the gender responsive dissemination materials, the designing and implementation of the demonstrations should be as described in 4.1 and 4.2. • Men and women including the young and old views should be taken into consideration when selecting best fits legumes in each site (country) and sub sites (local units e.g. villages). • Farmer’s facilitators should be gender sensitized to encourage active participation of women in demonstration and presenting their cases. They should control hijacking by men the explaining of situations happening in women’s plots allowing women to talk on their behalf. Family focused demonstration where family members are invited to participate in demonstration and trainings • This activity should be included in the M&E tools used by the farmer groups to monitor the activities on the ground using questions such as; <ul style="list-style-type: none"> ➢ How many demonstrations have women and men including the young and old attended? ➢ How active is their participation. Tool in table ii under activity 4.1 will be useful. • There is need to monitor how the technology is being adopted and adapted to local situations using questions such as; <ul style="list-style-type: none"> ➢ What agronomic, processing and marketing practices have been adopted by men and women including the young and old? ➢ How are they being adapted to the local situations? ➢ What are the views of men and women including the young and old on the agronomic, processing and marketing practices that the project is disseminating? • The cooking demonstrations should take care of cooking processes for food meant for men, women, youth and children. • The cooking demonstration should be designed in a way that they meet the interest of different gender categories.

4.5 Develop strategies for empowering women to benefit from the project products.	How much have women participated and benefited from the project	<ul style="list-style-type: none"> • Strategies for women empowerment should be integrated in every activity • Will be useful for the project implementing team including local facilitator to receive the course on gender in legume value chain mentioned in activity 1.1. • Integrating gender in all activities should be ensured by the project's gender working group who should work closely with the project implementation team. • Monitoring gender aspects in each activity should be inbuilt in the project's M&E tools while using gender sensitive indicators. • Similar M&E tools should be applied in all the eight countries for comparison purposes. However the M&E tools should be designed in such a way that they gather information on socio-cultural factors influencing gender relations in the project activities in each site.
Objective 5: Develop and strengthen capacity for BNF research, technology development, and application		
5.1 Provide short-term, high level technical training for project scientific and technical staff in essential microbiological skills and BNF technologies	How can skills in gender in legume value chain be enhanced among project team members?	<ul style="list-style-type: none"> • The project scientific and technical staff should receive the gender in legume production training described in 1.1.and 4.5. This course will be useful for the scientific and technical staff to enhance their skills in integrating gender in their respective components of the project.
5.2 Support advanced training to MSc and PhD level of an elite young cadre of African scientists focused on topics filling identified knowledge gaps that are identified through competitive calls.	How prepared will the MSc and PhD graduates to address gender in legume production?	<ul style="list-style-type: none"> • As part of their capacity building, the MSc and PhD students should be prepared to address gender issues in legume production. They should receive the gender in legume value chain training described in 1.1.and 4.5. and also integrate gender in their research projects
5.3 Conduct training-of-trainers workshops on legume and inoculant technologies for agricultural extension workers and NGO staff.	How prepared are the training of trainers in addressing gender issues in legume and inoculant technologies for agricultural extension	<ul style="list-style-type: none"> • The trainings should be adapted to women needs and priorities • The ToT should receive the gender in legume value chain training described in 1.1.and 4.5. • The ToT's should integrate gender in the contents and delivery approaches of their extension processes. • They should be gender sensitive to encourage active participation of men and women and youth in the extension processes. • The composition of the ToT should include both women and men and youth and ensure gender balance.
5.4 Conduct training workshops on legume and inoculant technologies for agro-dealers and officers of farmer associations and	How prepared are the agro-dealers and officers of farmer associations and community-based organizations in	-----do-----

community-based organizations.	addressing gender issues in legume and inoculant technologies	
5.5. Provide training, educational and extension resource materials to support 5.1 – 5.4.	Are the training, educational and resource materials gender responsive?	<ul style="list-style-type: none"> • Gender should be incorporated in the training, educational and resource materials and the project's gender working group should work with other project team members to ensure that this is done. • The materials should ensure that content addresses the needs, aspirations, knowledge and challenges faced by men and women including the young and old. • The materials should be easy to understand by low literacy level community members so as not to disadvantage women. For example use of simple, visual methodologies that do not require a lot of reading and writing

*specific studies needed to study sensitive or difficult to measure gender issues

Table 5.2: Effects of technology and mitigation measures

Activity/ technology	Effects	Who will be affected and to what level out of a 100%			Mitigation measures for –ve effect	Who should implement
		Men (%)	Women (%)	Youth % Children %	Enhancement for +ve effect	

Table 5.3. Evaluation of participation

Activity	Level of participation				
		<25% Passive	26-50% Average	51-75% Active	>76% Very active
	Men				
	Women				
	Men				
	Women				

Legend: 76%, 51-75%, 26-50%, <25 of women and men in each of the four levels of participation.

5.1 Enhancing gender responsiveness in the N2Africa's M&E Plan

To enhance gender responsiveness in the M&E plan for the N2Africa project the gender analysis consultant worked with the project's M&E team where they improved on the tools and approaches to better bring out gendered perspectives in access and decision making on land, inputs and household income, labour and consumption of legumes. The M&E plan now has tools such as a decision making matrix that will for example show the degrees of influence in cases where men and women make decisions jointly. Gendered seasonality in income and labour in legume production and other household activities will be covered in the M&E process. Monitoring and evaluation of men and women's participation and contributions in trainings, disseminations and giving feedback to research team on experiences with the best fits legume technologies will also be captured. Training needs assessment of the capacity of the project implementers including post graduate students to address gender in the project will be assessed and skills acquired and number of men and women trained through technical capacity building to be carried out in the project monitoring. Publications and reports will be assessed for their gender responsiveness in terms of content for example through presentation of gender disaggregation of data. Types of stakeholder's receiving project reports and other documents from the project will also be included in the M&E to find out who is being reached with what output materials. Gender responsive M&E will lead to identification of real changes needed in the project activities.

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