Master Plan - M&E and Data Management

# Introduction and justification

The N2Africa Master Plans intended to foster a common approach across all the implementing countries. The plans are designed to achieve the N2Africa Vision of Success and the Research Framework of the approved project proposal. This means all Master Plans need to ensure timely delivery of the outputs and outcomes.

The M&E and data management plan measures results from all project interventions and assesses impacts at scale through strategic M&E. It therefore overlaps with all other master plans.

## Brief Project Description

N2Africa is to contribute to increasing biological nitrogen fixation and productivity of grain legumes among African smallholder farmers which will contribute to enhancing soil fertility, improving household nutrition and increasing income levels of smallholder farmers.

As a vision of success, N2Africa will build sustainable, long-term partnerships to enable African smallholder farmers to benefit from symbiotic N2-fixation by grain legumes through effective production technologies including inoculants and fertilizers adapted to local settings. A strong national expertise in grain legume production and N2-fixation research and development will be the legacy of the project.

The project is implemented in five countries as core countries (Ghana, Nigeria, Tanzania, Uganda and Ethiopia) and six other countries (DR Congo, Malawi, Rwanda, Mozambique, Kenya & Zimbabwe) as tier one countries.

## Purpose and Scope of the Master Plan

The N2Africa Master Plans are documents intended to foster a common approach across its Core Countries. The plans are designed to achieve the N2Africa Vision of Success and the results Framework. With the M&E and Data Management plan, a more strategic framework allowing for timely feedback loops, desired level of consistency in design (of research and dissemination) and data collection to allow for meta-analyses across all N2Africa countries is emphasised. It also allows for learning across all focal areas of the project, i.e. Agronomy, rhizobiology, dissemination, platforms, gender and communications. The project objectives with their specific M&E activities implemented by the M&E and data management master plan are outlined below.

**Objective 1: Project strategy, coordination and implementation and capacity strengthening**

• Activity 1.2: Set up systems for monitoring and evaluating project progress

**Objective 2: Delivery and dissemination, sustainable input supply, and market access**

• Activity 2.9: Assess the effective and efficiency of various input delivery and marketing systems especially for women.

**Objective 5: Enable learning and assess impacts at scale through strategic M&E**

• Activity 5.1: Develop an innovative framework for strategic M&E, allowing for timely feedback loops

• Activity 5.2: Set-up data collection, management, and analysis infrastructure

• Activity 5.3: Conduct situation analysis, including the overall bio-physical, socio-cultural, and political environment, and farming system and yield gap analysis for targeting legume interventions

• Activity 5.4: Develop innovative ICT tools to collect data and provide feedback to stakeholder groups

• Activity 5.5: Unravel GL x GR x E x M interactions for legume production towards the development of best-fit recommendations

• Activity 5.6: Evaluate the effectiveness and efficiency of various D&D approaches for the intensification of legumes in cropping systems

• Activity 5.7: Conduct impact assessment studies with a specific focus on the sustainability of interventions

The plan aims to provide sufficient guidance, outline principles and allow for country teams and partners to own, learn lessons from monitoring experiences, and make adjustment and/or adaptations to the project implementation.

The plan will also ensure a common approach to compiling all reports (integration of the different reporting requirements), compare results, ensure timely feedback loops and facilitate (local) learning. This means integrating the M&E master plan into other project master plans.

## Lessons learned in M&E from N2Africa Phase I and the way forward in Phase II

In the first phase of N2Africa, monitoring and evaluation aimed at facilitating learning within the project through feedback loops, experiences from dissemination were to be monitored and assessed and findings fed back into research as well as planning for next season dissemination activities. Findings from research were also fed back into dissemination efforts of N2Africa. Based on lessons learnt in Phase I,

• Data collected was useful for planning for the next season in terms of agronomic activities but more important, data was untimely. The speed with which data was collected, entered and supplied in Phase I for all indicators was slow, hence contributing to delayed feedback.

• Limited qualitative data also accompanied the quantitative data.

• Meta-analyses though proven to provide very useful insights and understanding, yet there were missing variables in data collected which made analysis difficult.

Based on the above lessons, the following characteristics have been outlined for the second phase M&E system:

• To include innovative tools to strengthen feedback loops and enable continuous learning both within N2Africa, and with stakeholders outside the project.

• The tools and methods for Phase II will have to answer specific questions related to the tailoring and adaptation of technologies, the effectiveness of different dissemination approaches, and sales of inoculants and fertilizers by the private sector.

• To create more diverse ‘feedback’ targeting various audiences including farmers. The use of Information and Communication Technologies (ICT) in data collection will be explored.

• Further empowerment of national teams to analyse data and contextualise results to speed up and improve learning.

• More research on the process of adoption and on dissemination.

# Components of N2Africa Monitoring and Evaluation System

1. The M&E and Data Management Master Plan consist of four components: The project M&E, the learning M&E, impact assessment and Database and data management. Key milestones in the results framework will be used to measure progress in the various components.   
   Project M&E, focuses on the overall results framework, mainly meant to inform project management, staff, the donor and other stakeholders and to support learning, management decisions and reporting. The project M&E will be implemented portfolio-wide, across all countries under direct supervision of the Leadership and Management Team. Monitoring will be done on bi-annual and annual basis for all key milestones. Activities 1.2 and 5.3 of the results framework will be implemented under the project M&E. The sub-components of the project M&E include:

• Monitoring of milestones and reporting and early review of project outcomes by the N2Africa leadership team and the donor.

Refer to Section 4 for details of the project M&E.

1. **Learning M&E** focuses on learning through research (agronomy and rhizobiology) and learning through adaptation and adoption with partners and beneficiaries. The two sub-components of the learning M&E are:

a) **Learning M&E through research** focuses on feedback from development to research activities, informing project management, staff, and other stakeholders about the performance of various technologies and to support learning. This will be implemented within agronomy and rhizobiology activities and giving feedback across all countries under direct supervision of the subject matter specialist and partners involved.

b) **Learning M&E (through partner-led dissemination activities)** mainly deals with the learning obtained through interaction and dissemination with project partners and beneficiaries. It focuses on the adaptation and adoption led by private and NGO partners. Learning from gender-specific activities will also be monitored. Feedback from communities and individual farmer level will be captured to determine their outcomes and behavioural changes as a result of the project interventions which will be used to refine country specific approaches. Informal planning meetings will be held to refine approaches at each of the Core Countries based on feedback as each cropping season ends and another begins.

Activities 5.1, 5.3, and 5.5 of the results framework will be implemented under the learning M&E. Refer to section 5 for details of the learning M&E.

1. **Impact assessment** component of the M&E framework mainly deals with the assessment of the effectiveness of systems including input delivery and marketing systems, D&D approaches and monitoring of gender-specific livelihood impacts and environmental sustainability of legume and inoculants interventions. It will also include impact study which will focus on the higher level impacts attributed to the project. Activities 2.9, 5.3, 5.6 and 5.7 will be implemented under the impact assessment component. The sub-components of the impact assessment include:

• Assessment of effectiveness and efficiency of systems and approaches

• Impact assessment study to ascertain attribution of project impacts at various project locations

1. **Database and Data Management** aspect of the M&E framework is focused on data collection and feedback processes, analysis of various data and reporting. It will determine the various frequencies for specific data collection, data flows and the development of various tools for data collection and timely feedback. Activities 5.2 and 5.4 will be implemented under this component of the master plan. However, each aspect of the other three M&E components has specific data flows, frequencies and data collection methods and therefore will be addressed under each. A general section on the overall database management is presented in Section 7 below.
2. Figure 1 indicates the relationship between the four components of the M&E and data management master plan, the Theory of Change which specifies the entire results of the project and the specific activities.

**Project Theory of Change**

Timely Feedback from R4D, D&D and A&A Partners and beneficiaries feedback on outcomes

Gender specific impacts, preliminary impact assessments, monitoring of specific outcomes including effectivenes of D&D approaches, effectiveness of input systems

Mainly internal monitoring of milestones and planning

Figure : Components of N2Africa M&E System and relation to Project Theory of Change

The project results to be measured (milestones) and other learning areas from agronomy and rhizobiology are based on the project theory of change which also covers all project objectives. The three main components of the M&E and data management plan therefore measures specific areas within the theory of change to ascertain the impact pathway of the project.

# Articulating the Theory of Change in N2Africa

In expressing the Theory of Change in N2Africa, the overall problem framework in the supported sector (grain legumes sector) has been identified and the subsequent impacts to contribute. This is followed by sections of intermediate results (outputs, outcomes) and the specific issues (interventions) that N2Africa will address before the results are achieved. The assumptions (factors beyond the project’s control or that needs further intervention apart from the planned interventions) have been included at each level of the logic. This is to enable monitoring of such assumptions to ensure attainment of the various levels of results as indicated.

However, the initial theory of change has been revised to incorporate all aspects of the results framework and to ensure that the monitoring and evaluation framework measures agreed results.

\*Address constraints to legume productivity (including developing variety x inoculant x nutrient recommendations, recommendations to rehabilitate non-responsive soils, etc)

\*Explain heterogeneous yields at farm and community levels

\*Develop best-fit options for farmer testing

Assess crop-livestock interaction

**Limited national capacity in legume agronomy and rhizobiology D2R**

**Lack of effective legume input supply and output market chains**

**Poor diets and weak support to women and very poor farmers**

**Poor legume productivity**

\*Farmers access and afford best fit productivity increase options

\*Gender legume based constraints addressed

\*Less drudgery, especially for women, and greater farm productivity

\*Inoculant producers avail improved formulations for target legumes

\*Greater legume productivity and area under legumes

\*Quality livestock feed available

\*Gender responsive options for improved legume productivity and N fixation recommended and disseminated

\*Improved legume yield recommendations developed for different yields (Best fit options accessible by farmers)

\*Standard Operating Procedures developed to regulate the production, quality control and application of inoculants

\*Niches for the use of crop residue to produce quality livestock feed

\*Develop intensification options targeted poor and women farmers

\*Target poor and women farmers with tailored legume-based technologies

\*Assess business opportunities for women along the legume value chains

\*Sensitize partners and target households on gender inequality and mainstream approaches

\*Develop legume-based food basket for smallholder farmers

\*Develop efficient pre and post-harvest practices technologies; value added products and enterprises for women

\*Women and men farmers access and afford varied legume intensification options and tailored legume technologies

\*Women specific businesses and models for gender specific disseminations identified

\*Women farmers equipped with efficient pre and post-harvest technologies, and businesses

\*Diversified nutritious diets identified for the poor

\*Efficient pre and post-harvest practices-technologies and value added products identified for women

\*Women actively involved in legume based activities and businesses, e.g. marketing activities

\*Increased productivity (at adaptation level) and production area for both men and women farmers

\*Increased women’s productivity (on and off farm) and market engagements through the use of labour-saving technologies

\*Women and poor farmers use tailored technologies

\*Diversified nutritious diets/food basket developed and accessible to the poor

\*Establish public-private partnerships and stakeholder platforms

\*Assess effectiveness of legume input supply and marketing systems

\*Facilitate agrodealers investment in target areas

\*Facilitate dissemination of technologies through N2Africa and partner-led approaches

\*Support the establishment of agribusiness clusters around marketing and value addition

\*PPPs established strengthening farmer access to quality inputs

\*Constraints within legume input supply and marketing systems addressed in targeted areas

\*Increased number of farmers regularly using inputs within sustainable rotations

\*Farmers access improved legume technologies

\*Increased number of households involved in collecting marketing and value addition

\*Improved farmer access to seeds, inoculants and legume fertilizers through PPPs

\*Availability, accessibility and affordability of (quality) seeds, inoculants, fertilizers and other legume technologies

\*Women and men farmers regularly using inputs within sustainable rotations

\*Increased number of households engaged in legume intensification technologies

\*Improved linkage of farmers to local and international legume markets

\*Collaborate closely with key national partners

\*Provide training from technical to postgraduate level

\*Support national networks for D2R

\*A new cadre of African D2R scientists, and development and gender specialists

\*Potential national networks and partners identified and mapped in each country

\*National teams leading all D2R activities

\*Independent national research to equitable growth and development pipelines

\*Partners along legume input and output VCs cooperate to develop the VCs

**Challenge**

**Outcomes**

**Outputs**

**Interventions**

**Change in investment**

**priority**

**Impact**

\*National institutions support recommendations made

\*Private entrepreneurs available and willing to partner with N2Africa on usage of tools to resolve drudgery

\*National Institutions collaborate with N2Africa on SOPs

\*Farmers access and adapt best fit productivity options

\*Women farmers have equal opportunities as men farmers in accessing technology options

\*Regulatory framework, infrastructure, etc) for inoculant producers to invest

\* Cultural values of target households allows for gender equality activities

\*Services (e.g. finance) are available to women

\*Legume enriched food basket are developed based on BoP demands

\*Private partners’ willingness to invest in legume value chains especially input supply systems

\*Produce from smallholder farmers meets market requirements

\*National Research Institutions and other partners are willing to develop legume technologies

\*National networks for legume value chain development exist in target areas

\* Cultural values of target households allows for women leadership

\*Target women adapt and accept technologies and businesses introduced to them

\*Private partners investing in Input supply & marketing

\*Farmers have access to markets with better prices

\*Markets available for value addition products

\*National Institutions and Networks collaborate with N2Africa in developing improved legume technologies

\*Means for smallholder farmers to adopt legume technologies

\*Acceptance and promotion of improved technologies by national institutions

\*Farmers willingness to increase production areas under legume cultivation

\* Target households accept and consume legume enriched food basket developed

\*Policy framework support for women to have control of productive assets

\*Input supply and demand systems are linked

\*Strategies to support input supply are supported by national policies and frameworks

\* National Institutions are resourced e.g. (infrastructure) to research into legume technologies

\*Increased income (gender disaggregate) of target legume smallholder farmers

\*Improved nutritional status of beneficiary women and children

\*Gender sensitive decision-making enhanced (sales and control of productive assets for legume production)

\*Sustainable use of natural resources

National capacity to lead emerging legumes technologies for smallholder farmers developed

Sustainable input supply systems for legumes at national level

\*Increased productivity at national level

\*Improved yield of subsequent crops

**Assumptions at Output**

**Assumptions at Outcome**

# Project M&E

The Project M&E based on the overall results framework and focusing on the monitoring of selected key milestones to enable reporting on the progress of project implementation to project management, staff, the donor and other stakeholders. The setting up of systems for monitoring and evaluating project progress is the main focus of the project M&E activity 1.2). It is mainly concerned with the close supervision of on-going project activities, and monitoring progress against milestones (output and outcome levels). It also includes early review of project outcomes by the donor to ensure its contribution to wider rural development issues. The key milestones with related indicators are presented in Table 1.

Table : Project M&E

| **# Obj** | **Key Milestones** | **Indicator** | **Focus Area in relation to ToC** |
| --- | --- | --- | --- |
| **Outcome Indicators** | | | |
| 1 | 1.3. Partners along the legume input and output value chains cooperate actively towards achieving the overall N2Africa goals | # of partnerships developed and active | Lack of effective legume input supply and output market chains,  Limited national capacity in legume agronomy and rhizobiology D2R |
| 2 | 2.2. Dissemination partners attain/surpass the anticipated number of households targeted and continue to engage in legume intensification post-project | # of target households (men/women) reached by dissemination partners | Lack of effective legume input supply and output market chains |
| 2 | 2.4. A preset (see Returns-on-Investment calculations) number of households engaged in the collective marketing and value addition of legume grains and value-added products | # of individual households (men/women) engaged in collective marketing, value addition of legumes and value added products | Lack of effective legume input supply and output market chains |
| Volume of produce sold through collective marketing, volume of value addition products and types of value added products |
| 3 | 3.2.2. By Q4 of years 4-5, at least 2 businesses led by women established per country | # of businesses established and led by women | Poor diets and weak support to women and very poor farmers |
| **Output Indicators** | | | |
| 1 | 1.4.1. By Q3 of year 1, an internal and external communication strategy developed | Project wide internal and external communication strategy developed | Lack of effective legume input supply and output market chains |
| 1 | 1.4. By Q4 of year 5, at least 320 persons trained in N2Africa technologies and approaches | # of persons trained (gender disaggregated)in N2Africa technologies and approaches | Lack of effective legume input supply and output market chains |
| 1 | 1.5.1. By Q4 of year 1, country-specific research and dissemination implementation plans formalized, including an exit strategy. | # of specific research and dissemination plans formalized | Lack of effective legume input supply and output market chains |
| 1 | 1.7.1. By Q4 of year 1, a research plan, engaging at least 5 PhD and 10 MSc candidates, developed | # Project wide research plan to engage PhD and MSc students developed | Poor legume productivity |
| # of PhD and MSc students (men/women)engaged | Poor legume productivity |
| 2 | 2.3.1. By Q4 of years 1-4, at least 2 media events (e.g., radio, newspaper articles) per country implemented | # of media events implemented | Lack of effective legume input supply and output market chains |
| 2 | 2.5.1. By Q4 of years 1-4, inoculants available through public-private partnerships, through importation and/or local production, the latter facilitated by the inoculant production pilot plant | # of inoculant outlets in the target areas | Lack of effective legume input supply and output market chains |
| Volume of inoculants imported and /or produced with the identified outlets |
| 4 | 4.1.2. By Q4 of years 2-4, improved legume production recommendations integrated in the dissemination campaigns | # of improved legume production recommendations integrated in dissemination campaigns | Poor legume productivity |
| 4 | 4.6.2. By Q4 of year 5, elite strains used for inoculant production for beans, groundnut, and/or cowpea | # of elite strains used for inoculant production | Poor legume productivity |
| 4 | 4.8.1. By Q4 of year 2, standard operating procedures of quality control (storage), product registration and application of inoculants used by inoculant producers and retailers | # of inoculant producers and retailers (public private suppliers) using standard operating procedures | Lack of effective legume input supply and output market chains |

**Data collection, Analysis and Management within the Project M&E**

This aspect of the project M&E indicates the process of data collection, analysis and data management structures which is represented by Activity 5.2 of Objective 5.

Regarding core countries, project key milestones with related indicators and other project milestones will be monitored by all project staff per country with related responsibilities in project management, agronomy, rhizobiology and dissemination. Data on these indicators will be collected and compiled at the country level by country teams with overall responsibility by the Country Coordinator. Designed data collection templates will be used for data collection through partner systems or field visit by project staff and partners. These data will be collected throughout the year and fed into the central database in Wageningen through the intranet.

With respect to Tier 1 countries, milestones related to Tier 1 country specific activities as agreed during initial planning session with their related indicators will be monitored in each Tier 1 country mainly by partners. Data on these indicators will be collected and compiled at the country level with overall responsibility of the Country Coordinator. Designed data collection templates will be used for data collection (based on required information of the specific milestones) through partner systems or field visit by Country Coordinator and partners. These data will be collected throughout the year and fed into the central database in Wageningen through the intranet.

Data analysis regarding all data from both core and Tier 1 countries will be on two levels; country level data analysis and project level data analysis. Data collected on key milestones will be analysed initially at country levels (led by Country Coordinator) for six monthly reporting and also forward raw data into the database through the intranet. The project level analysis will largely be the responsibility of the M&E Specialist and data analyst with inputs from other project team members. Various data analysis methods will be used to demonstrate the success or otherwise of project interventions, reasons leading to these outcomes to document for future best practices and satisfy indicators for the project results logic. These analyses will be done as regularly as required according to the performance monitoring matrix.

**Reporting and Dissemination of information**

Reporting formats will be developed to facilitate country level reporting from partners. All Country coordinators will submit sixth monthly reports (January to June, July to December) to the Project coordinator for compilation and onward forwarding to the Project leadership team. An annual report will be summarized based on the two six-monthly reports and submitted to BMGF. Raw data will also be forwarded into the central database in WU through the intranet for further analysis. The leadership team will put the report into perspective and submit to Bill and Melinda Gates Foundation (BMGF) on annual basis and also share with other key stakeholders.

**Situational Analysis and Baseline Data**

This aspect of the project M&E focuses on the situational analysis and baseline data regarding the selected milestones. A review of the end line survey data for 2013 will be done and data extrapolated to serve as baseline data for all countries supported in Phase I. Baseline for new countries (Uganda, Tanzania and Ethiopia) will also be established by the 4th quarter of 2014. Below is the data flow for project M&E.

Final annual report to BMGF

Project Coordinator compiles & submits six monthly reports

Country coordinator uploads data & submits six monthly reports with data from central database

Annual Planning (Country specific and Project level)

Project Advisory Committee

Country Team (collects data on other project milestones

FLO/BDO/M&E contact person assists Partners to collect data

Raw data to database in WU for analysis

Clean & Analysed data from WU based on request

Sept for country & End of October for project

1st week in Jan

Jan-December

Sept & Jan

3rd weeks in Jun & Dec

4th weeks in Jun & Dec

Jun 30th & Dec 31st

3rd weeks in Jun & Dec

Jan-December

Sept & Jan

Reporting Feedback

Figure : Project M&E Data collection, reporting and feedback flow chart

With regards to Tier 1 countries where FLO and BDOs are nonexistent, an M&E contact person will be used to assist the country coordinator to gather such data.

# Learning M&E

Learning M&E monitors results and feedback from research (D2R) interventions (learning from R4D activities, demonstrations and adaptations led by N2Africa) and also learning from adaptation and adoption (A&A) through dissemination and delivery activities led by partners. A number of learning questions identified as critical for project learning are outlined below:

• In terms of technologies: What works where, why and for whom? To what extent are technologies tailored to the needs of households? (degree of tailoring) To what extent are technologies adapted by households? (degree of adaptation) What is the best-fit for households in terms of yield gaps?

• In terms of dissemination approaches/methods: Which of the approaches is effective (in terms of getting smallholder farmers to adapt and adopt),

• What are the recommendation domains for different legumes in different AEZ

• Partnerships: What determines/contributes to an effective partnership especially including the private sector?

• To what extent are private sector actors involved in inoculant production and sales? How can the private sector be incorporated in inoculant production and sales? Also other inputs such as fertitilizers? What makes commercial inoculant production feasible?

• What are the incentives for private sector to work with smallholder farmers? What incentives does private sector need in order to engage with smallholder farmers?

**Error! Reference source not found.** indicates the focal areas of feedback and project learning.



Figure : Focal areas to obtain learning

Activities under R4D as indicated in Figure 3 will be monitored through the constant data collection and feedback provided on best bet technologies and making recommendations for dissemination of best technology option. Implementing activity 5.5, unravelling GxExM will prove the best fit technology for legume production and feedback from this will be monitored and provided for an informed decision on technologies. Monitoring for this aspects of the leaning M&E will be done per season and as and when demonstrations and dissemination activities take place.

Such feedback will be fed into the N2Africa –led dissemination activities for farmer demonstrations and adaptations, influencing the planning for seasons. These activities will as well be monitored and feedback provided on the results of demonstrations and adaptation trials which will as well be fed into the partner-led dissemination activities. Partners and beneficiaries will also be monitored including results from farmers own fields. This will aid comparison of learning from D&D and A&A, hence sustainability of results. Common milestones and data needs will used for the monitoring and comparison purposes. Loop Feedback from participating households will be captured to determine their views and behavioural changes as a result of the project interventions which will be used to refine country specific approaches. Both aspects of the learning M&E will also integrate lessons from gender interventions implemented. This feedback will inform project management, staff, and other stakeholders about the performance of various technologies, levels of learning of partners and beneficiaries.

Activity 5.1 is developing an innovative M&E framework for timely feedback and continuous learning. With this, all feedback loops needed for the above outlined process will be identified and appropriate tools designed for timely delivery of such feedback. Informal planning meetings will be held to refine approaches at each of the Core Countries based on feedback as each cropping season ends and another begins.

Activity 5.3 is the situational analysis to be conducted for all results envisaged. These include situational analysis about the specific research results planned to be obtained and also the learning outcomes expected from partners and beneficiaries. This will also include baseline data for all indicators and research questions expected to be answered.

In addition to the specific research data needed to provide feedback on best bet technologies and other results, indicators in Table 2 will also be used to provide learning in the above identified areas. These indicators are part of the key milestones of the project proposal.

Table : Indicators for Learning M&E

| **# Obj** | **Key Milestones** | **Indicator** | **Focus Area in relation to ToC** |
| --- | --- | --- | --- |
| **Outcome Indicators** | | | |
| 2 | 2.3. Local agro-dealers marketing fertilizer, seed, and inoculants are aligned with grassroot producer groups and input wholesalers and manufacturers | Volume of seeds, fertilizers and inoculants used per targeted producer groups per land area and volume sold by agro dealers | Lack of effective legume input supply and output market chains |
| 3 | 3.3. Better knowledge of and access to household-level legume processing tools improves the nutritional status of women and children in at least 2 target countries | # of women using household level-legume processing technologies | Poor diets and weak support to women and very poor farmers |
| 3 | 3.4. Women use pre- and post-harvest labour-saving tools | # of women using pre- and post-harvest labour saving tools | Poor diets and weak support to women and very poor farmers |
| 4 | 4.1. Recommendations for the intensification of legume production result in at least 50% increase in legume productivity | % increase in legume productivity among target households participating in adaptation trials | Poor legume productivity |
| # of target households (men/women) with 50% increased productivity through adaptation trials |
| 4 | 4.2. Inoculant producers avail improved inoculant formulations for the target legumes resulting in at least 10% increase in legume productivity and BNF | # of inoculant formulations applied/used by inoculant producers for target legumes in core countries (Productivity will be measured by milestone 4.1) | Poor legume productivity |
|  | 5.2 Dissemination partners integrate effective and efficient dissemination approaches for legume technologies | # of dissemination partners integrating effective and efficient dissemination approaches in their programmes across target countries. (Effectiveness and efficiency of dissemination approaches will be measured by milestone 5.6) | Lack of effective legume input supply and output market chains |
| **Output Indicators** | | | |
| 3 | 3.5.1. By Q4 of year 3, relationships between grain nutritional quality and management / environmental conditions quantified | # of relationship equations quantified | Poor legume productivity |
| 5 | 5.1.1. Throughout the project, a strategic M&E framework provides timely feedback to learning and future planning | M&E framework outline types of feedback and planning and provide timely data | All four area of the TOC |
| 5 | 5.5.1. By Q4 of year 4, the relative important of GL, GR, E, and M understood for specific legumes and production environments and integrated in improved recommendations | # of quantified relationships integrated in improved recommendations | Poor legume productivity |
|  | Best-fit recommendations available for all target legumes in each country |

Table : Specific Agronomic and Rhizobiology data requirements

|  |  |
| --- | --- |
| **Type of data** | **Frequency** |
| Farm typology and agronomic data from **diagnostic** trials | 1 or 2 times per year after harvest for 2014 and 2015(depending on country specific seasons) |
| Farm typology and agronomic data from **demonstration** trials | 1 or 2 times per year after harvest for 2014- 2017(depending on country specific seasons) |
| Feedback on yield, performance and farmer practice from **adaptation** trials | 1 or 2 times per year after harvest for 2014- 2017 |
| Data from specialized **agronomy** trials | 1 or 2 times per year after harvest for 2014- 2017 |

**Data collection, Analysis and Management**

This aspect of the learning M&E indicates the data collection methods, processes, analysis and feedback. These are represented by activities 5.2 and 5.4 of objective 5. Specific data required under agronomy and rhizobiology trials and demonstrations (**diagnostic** trials, **demonstration** trials and **adaptation** trials) will be collected with specified field books and templates and will be monitored by all project data analyst per country with related responsibilities in these areas. This means data concerning GL x GR x E x M equation will be collected for analysis. Field books will be administered per farmer per season and data collected for analysis and subsequent feedback.

In addition, other learning indicators as listed in Table 2 to measure results and provide feedback on partner and beneficiary outcomes will be monitored under this section and feedback provided to respective stakeholders and users for learning purposes.

Methods of data collection is per indicator type, however, currently identified methods include interviews with data collection guides and tools, focus group discussions, field observations, etc. With this also, M&E will be an integral part of all partnership agreements (both N2Africa-led and partner-led dissemination interventions) specifying the results areas to be measured, targets, roles and responsibilities, etc. Specific data will be collected with agreed tools from partners and beneficiaries and analysed to provide needed feedback especially at outcome results level. Other qualitative data such as behavioural changes among beneficiaries, beneficiary opinion on project interventions will be collected occasionally through methods such as focus group discussions and outcome mapping at selected communities and from sampled farmers.

Monitoring will be done per season and as and when trials and demonstrations take place in various core countries. Situational analysis will be done per target area for all aspects of learning M&E. This will enable proper targeting of legume interventions and to obtain the magnitude of project results. Refer to Table 2 and Table 3 for specific indicators and data requirements to be monitored under learning M&E.

**Reporting and Dissemination of information**

Reporting under research learning will involve providing timely feedback to operationalize the development-to-research learning loops and informing planning for next season. This will mainly be done in the core countries. The reporting will also help to decide on the best fit technology options for target areas. Refer to Feedback platforms identified include;

Planning meetings with Country specific stakeholders

Partnership platforms (emanating from partnership agreements)

• Mid season training sessions

• Field days

• End of season (feedback to Extension Agents & Farmers)

• Community Mobilization

•

This implies continuous data collection during trials and demonstrations to understand the performance of legume technologies and more specifically to understand best fit options for various target areas.

Another aspect of reporting is the feedback from beneficiaries and partners. Reports will be obtained from partners indicating the various results achieved and lessons learnt. Refer to section 8 for detailed timing for all M&E activities. Feedback platforms identified include;

• Planning meetings with Country specific stakeholders

• Partnership platforms (emanating from partnership agreements)

• Mid season training sessions

• Field days

• End of season (feedback to Extension Agents & Farmers)

• Community Mobilization

Table : Feedback type, frequency and reporting formats

| **Type of output** | **Format** | **Distribution** | **Timing** |
| --- | --- | --- | --- |
| Basic analysis of agronomy data. | Concise reports on efficacy of treatments and experimental/data quality. | Intranet | within 2 weeks after uploading of data (typically each season) |
| Summaries of the agronomic trials per country, | Concise documents describing location, characteristics and basic outcomes of different trials | Internet | within 3 months after uploading of data (typically each season) |
| Summaries of dissemination activities per country | Concise documents mapping the dissemination progress for different technologies. | Internet | within 3 months after uploading of data (typically each season) |
| Advanced (meta) analysis of agronomy data | Extended reports on treatment effects and their most probable biophysical and agronomic determinants | intranet, scientific papers internet | Within 6 months after uploading of data. |
| Selected data subsets | Purpose specific data products derived from the database | Internet | Upon request |

**Situational Analysis and Baseline Data**

Situational analysis will be conducted for both research and partner outcome learning. Regarding research learning, situational analysis will be conducted per core country for all agronomic and rhizobiology data requirements. This will establish the baseline data per country before the project intervention. For other learning areas, an end line survey of the project was conducted in 2013 for all Phase I countries for which baseline data will be obtained for these countries. Baseline data is also being collected for all new countries. Situational analysis will also be conducted for all other learning indicators without existing baseline data to establish the relevant reference point data before project intervention starts.

Below is the data flow regarding learning M&E.

Field data (diagnostic, demonstration and adaptation trials)

Other institutional data (weather forecast, etc)

Central database in WU (cleaned data)

Data Analyst analyses Data

Data from A&A (partners & beneficiaries on outcome of project intervention)

BDOs/FLOs & dissemination Partners collects data on A&A interventions & upload onto central database

Country Data Analyst collects data & uploads onto central database

Country coordinator submits six monthly reports with data from central database

Annual planning (Country specific & project level)

Final annual report submitted to BMGF

Country Coordinator provides feedback to Data analyst

Project Coordinator compiles & submits six monthly reports

Leadership Team reviews and submit six monthly reports to BMGF & SAC

Project Advisory Committee

Jan-Dec

During trials

3rd weeks in Jun & Dec

2 weeks (basic analysis) & 3 months (country specific details)

2 weeks after harvests

Jun 30th & Dec 31st

1st week in Jan

Sept & Jan

Sept for country & End of October for project

Sept & Jan

3rd weeks in Jun & Dec

Data collection & reporting Feedback

Figure : Learning M&E Data collection, reporting and feedback flow chart

Regarding Tier 1 countries, dissemination partners will mainly provide data.

# Project Impact Assessment and Assessment of Systems & Approaches

There are two components of impact assessment in N2Africa. First, impact assessment aiming to measure the real impact of the project on the lives of the project participants and secondly, assessment of input-output systems and dissemination approaches.

## Project Impact Assessment

The impact of a project is the difference between the observed outcomes with the interventions of the project and the outcomes without the interventions. In other words, a precise causality needs to be established between the project’s activities and potential outcomes and impacts, i.e. tracking the impact pathway of the project. With regards to N2Africa, project impact assessment will investigate if and to what extent the project activities actually benefited the intended recipients, and if these benefits can be attributed to the project activities. The focus will be on the sustainability of interventions for the projects contributions in the target areas.

### *Design of the impact assessment*

The impact assessment for N2Africa will be conducted based on selected project areas in different ecological zones across all countries. The design will focus on specific expected effects/areas (called impact domains) and consider changes in those areas. These expected effects and impacts of the project on beneficiaries have been identified together with the donor based on the Theory of Change. The specific impact domains and learning areas are outlined below:

### *Learning areas, impact assessment domains and related indicators*

* Change in income earned from increased legume production and use of such additional income
* Gender inclusion and empowerment: Changes in gender disparities in targeted value chains
* Sustainability of interventions related to marketing (does collaboration with private sector continues after project ends?)
* Best-fit business model (What kind of business models work?)
* Soil fertility and other benefits to other crops (What are the rotational effects and/or broader benefits of legume crops in farming system?)
* Benefits/value generated to male and female farmers including health and nutritional benefits specifically change in nutritional aspects of selected women and children benefiting from project interventions (legume-based protein intake).
* Sustainability of input supply and market systems, best-fit D&D approaches in terms of effectiveness and efficiency
* Sustainability of national institutions to lead and develop improved legume technologies; capacity of partners to take up dissemination after project ends and capacity of households to adopt technologies introduced. (To what extent has the project contributed to institutional, partners and individuals (farmers’ capacity) capacity building?)

### *Key impact assessment questions*

In terms of developing a strategy to assess the impact of the project, the below key questions will be asked based on the impact assessment domains identified in section 6.1.2 and the indicators in Table 5.

1. What has changed since the project began?

2. How much change has occurred since the project began?

3. Who experienced the change most and least?

4. How and why did the change occur or not?

5. How much of the change can be attributed to the project itself rather than to external factors (to know if the project contributed to the observed effect or was there some other reason)?

Table : Indicators for impact evaluation

| **# Obj** | **Key Milestones** | **Indicator** | **Focus Area in relation to ToC** |
| --- | --- | --- | --- |
| **Impact Indicators** | | | |
| **1, 3** | Increased income (gender disaggregated) of targeted legume smallholder farmers | % change in farmers’ (men/ women) net household income | Poor diets and weak support to women and very poor farmers,  Poor legume productivity |
| % of farmers (men/women) with increased income |
| **2** | Improved nutritional status (focusing on legume-based protein intake) of beneficiary women and children | % Legume-based protein intake per woman & child | Poor diets and weak support to women and very poor farmers |
| # of women & children with at least 25% legume-based protein intake |
| **2** | Sustainable input supply systems for legumes at national level | Volume of seeds, fertilizers and inoculants used per target producer groups per land area | Lack of effective legume input supply and output market chains |
| Volume sold by agro dealers. Continuous supply of inputs by input producers as needed by producer |
| **4** | National capacity to pipeline (lead) emerging legumes technologies to smallholder farmers developed | # of national institutions leading development of emerging legume technologies | Limited national capacity in legume  agronomy and rhizobiology D2R |
| # of dissemination partners with additional programs to disseminate legume technologies beyond the partnership with N2Africa |
| **4** | Sustainable use of natural resources (as a measure of soil fertility) | % target households using inputs within sustainable rotations (target households using improved farming systems) | Lack of effective legume input supply and output market chains |
| **3** | Productivity at farmer main fields (as a measure of sustainability of technologies) | % increase in legume productivity on target households main fields | Poor legume productivity |
| **3** | Adoption of technologies by target beneficiaries | % of individual beneficiary farmers adopting any of the N2Africa components on their main fields | Poor legume productivity |
| **Output Indicators** | | |  |
| 5 | 5.7.1. By Q4 of year 4, the sustainability of legume interventions for smallholder farmers evaluated through impact assessment studies | Project wide impact assessment conducted with available report indicating level of sustainability of project interventions. | All four area of the TOC |

### *Impact Assessment Methodology*

In terms of methodology, the main approach to be employed is a non-experiment approach focused on tracing the impact pathway of the project using the project logic for implementation and impact development. This means establishing project attribution based on the causal relationship within the project logic (ToC). Critical questions based on the proposed impact assessment domains will be used to trace the impact pathway during the impact assessment.

This approach is devoid of counterfactuals using exact experiments to measure attribution of the project. N2Africa’s approach of reaching out to majority households in all target areas and introducing legume technologies to such households limits the use of experiments. Control groups can easily be contaminated in the few months of project implementation when actual results are not yet achieved to enable impact measurement.

With this methodology, baseline and endline evidence based assessment will be done to sum up the worth or value of the project interventions at its conclusion and to mainly determine contributions made by N2Africa, where it makes that difference and for whom, and less concerned with counterfactuals to establish attributions.

In this instance, the assessment will be combined with case studies focusing on specific issues to determine some of the unique contributions of N2Africa, i.e. some impact assessment domains as identified above will be assessed through case studies before the end of the project, (e.g. case study on gender integration in legume value chain). Such case studies and other project outcome data will contribute to the final impact assessment of the project. An the end of the project, impact assessment will be conducted to compare the before and after situation.

In addition to the above methodology and **where appropriate**, quasi-experimental designs will be used with counterfactuals but in limited situations (e.g. contributions of a specific N2Africa technology to increased yield) to determine project contribution and attribution. In this case, treatment and comparison groups will be measured for before and after situations (introduction of the technology). Target households will be sampled with appropriate control groups (reasonable comparison group for those situations) in selected countries and target areas. Baselines will be constructed for both groups in an early impact assessment study (when such situations are identified). The opinions of stakeholders will also be captured through participatory discussions for correction and confirmation purposes. Detail impact assessment design will be done together with a selected organization for the assessment and agreed upon with BMGF.

**Data collection, Analysis and Management**

This aspect of the impact assessment indicates the process of data collection, analysis and data management structures which are represented by Activities 5.2 and 5.4 of Objective 5. Impact indicators in Table 5 will be used for the impact assessments.

Data on impact assessment will be collected through household survey with sampled beneficiaries. Agreed structured and semi-structured tools will be developed and used for data gathering. Case studies will be used for specific issues. Data will be analysed per project ecological zone and overall project level.

**Situational Analysis and Baseline Data**

An end survey of the project was conducted in 2013 for all Tier 1 countries and a baseline is being conducted for new countries. Baseline data will be extrapolated from these data to represent the “before intervention” reference point. In year 4, a final impact assessment will be conducted to compare the two situations.

**Reporting and Dissemination of information**

Data will be analysed and an impact assessment report submitted by the lead organization. Data from the assessment will also be uploaded onto the central repository for reference and further analysis. Reports will be developed and disseminated to project stakeholders.

## Assessment of other Systems & Approaches

Assessment of systems and approaches will include evaluating the effectiveness and efficiency of the various systems being used to disseminate technologies and approaches. These include the various D&D approaches and the input supply and marketing systems. Dissemination approaches are the main entry points to determine the project’s attribution of impacts at beneficiary levels. Assessing and evaluating their effectiveness and efficiency will provide learning as to which approach gives greater results.

Table : Indicators to assess input& marketing systems and D&D approaches

| **# Objective** | **Key Milestones** | **Indicator** | **Focus Area in relation to ToC** |
| --- | --- | --- | --- |
| **Output Indicators** | | |  |
| 2 | 2.9.1. By Q4 of year 2, inventory and analysis of input supply and marketing systems conducted across all countries | Report of inventory and Analysis indicating strengths and weaknesses of the input supply & marketing system | Lack of effective legume input supply and output market chains |
| 2.9.2. By Q4 of year 4, effectiveness of input supply and marketing systems evaluated in the Core Countries | Evaluation report |
| 5 | 5.6.1. By Q4 of year 4, information on the effectiveness and efficiency of various D&D approaches for legume intensification available to dissemination partners | # of evaluation studies conducted |
| Effectiveness and efficiency of different D&D approaches identified, documented and shared with partners |

**Data collection, Analysis and Management**

This aspect of the impact assessment indicates the process of data collection, analysis and data management structures which is represented by Activity 5.2 of Objective 5. Specific indicators (to be proposed) will be used for the assessment of the input and marketing systems as well as the D&D approaches. Concerning the assessment of the various D&D approaches, specific data collection templates will be developed to assess the effectiveness and the efficiency of such approaches. Students and other resource persons will be engaged in the data collection and analysis. Data will be based on the indicators for effectiveness and efficiency developed with project staff and partners.

Data on impact assessment will be collected through household survey based on indicators listed above and agreed with BMGF. Target households will be sampled with appropriate control groups (reasonable comparison group) in selected countries and target areas.

**Situational Analysis and Baseline Data**

This aspect of the plan deals with Activity 5.3 of the results framework. An end survey of the project was conducted in 2013 for all Tier 1 countries and a baseline is being conducted for new countries. Baseline data will be extrapolated from these data to represent the “before intervention” reference point. In year 4, a final impact assessment will be conducted to compare the two situations.

**Reporting and Dissemination of information**

Reports per country specific assessment of systems and approaches will be submitted after each study and a final report for project level. These reports will be reviewed and disseminated to project stakeholders. Data will be analysed and uploaded onto the central repository.

Figure 5 indicates the flow of data, responsible persons and feedback systems within the impact assessment and assessment of the various systems and approaches.

Assessments reports submitted & reviewed by responsible project staff (e.g. BDOs, M&E, Country Coordinators)

Assessment of input & marketing systems

Impact Assessment of project interventions data

Assessment of D&D approaches

Central database (WU) Raw data from impact assessments and studies

Independent organization

Students conduct various assessments

Impact assessment report submitted to leadership team

Leadership Team reviews assessment reports

Annual planning (Country specific & Project level

Scientific Advisory committee

Case studies for selected issues such as nutrition

Project final report to BMGF

Clean & Analysed data from impact assessments and studies

Project Coordinator reviews assessment reports & include in six monthly report

1 month after study

2 weeks after submission

2 weeks after submission

1st weeks in Jun & Dec

1 month after study

1 month after study

1 month after study

End of October

Annual reports to BMGF

2 weeks after submission

1st week in Jan

Year 4 (2016)

2 weeks

Data collection & reporting Feedback

Figure : M&E Data collection, reporting and feedback flow chart for impact assessment component

# Overall Data collection, Analysis and Dissemination Plan

## General Data flows within N2Africa

Continuous learning from dissemination and research activities is one of the defining aspects of N2Africa's D2R approach. The need for timely feedback from on-going activities requires an efficient system of data flow and data management. In addition, information and knowledge generated by N2Africa should be accessible to research and development professionals outside the project and to the public at large in a way that allows accountability and learning for the underlying data.

All data generated within N2Africa will be compiled, curated, stored and distributed by Wageningen University (WU). This will ensure long-term availability, consistency and accessibility of the data. Responsibility for data at the level of individual countries lies with the country coordinators. Country coordinators and their staff will continuously compile and check all data from research and dissemination partners and communicate it to WU.

To ensure smooth data flows, standard data collection forms and associated electronic data entry sheets will be provided for the main types of data (agronomy specific data and project level data). Country coordinators will make sure that data is collected in the correct format.

## Overview of data flow structure

All data will be entered through N2Africa's **Intranet**, hosted by WU. Country coordinators can use the integrated data upload facility to upload files or folders and provide meta-data. After uploading, raw data will be automatically stored on a central server (WU) with daily backups. This data is then converted, checked for quality issues and read into the **Central database**. The central database is the main point of storage, access and reference for N2Africa data. Country and research coordinators will have unlimited read-only access while M&E and research & data coordinators will have editing rights to ensure that data remains up-to date and accurate.

All products (including reports and publications) and analyses based on N2Africa data will use the data stored in the central database, with explicit reference of the date on which it was accessed. Important changes to the data related to data quality should be communicated to the data coordinator (WU) so that these changes may be incorporated in the database. Upon request of the country coordinators, intermediate results and reports may be generated from data in the database, to ensure timely feedback on methods and approaches. These preliminary, internal reports will be communicated internally to the coordinators through the **Intranet**. Data subsets and reports suitable for distribution to project partners and the general public will be accessible through the **Internet**. There is scope for eventually making the aspects of the data base publically available, after removing privacy sensitive information.

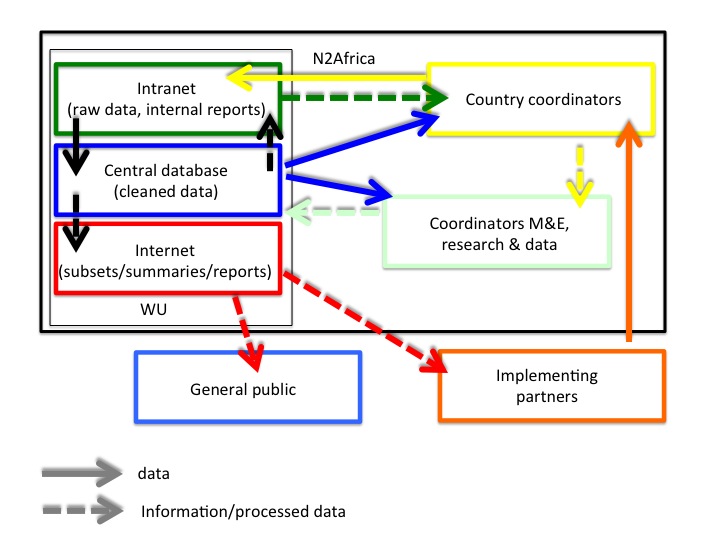


Figure : Data flows and data management structure within N2Africa

## Exploring ICT tools for data collection, analysis and feedback

This section of the plan implements activity 5.4 of the results framework. Information and Communication Technologies (ICT) tools are to strengthen feedback loops and foster continuous learning in all aspects of the project. It is also to enable information sharing with partners and stakeholders. This means an ICT tool to enable data collection, analysis and reporting and sending feedback within a stipulated timeframe.

Based on the above role, a proposed ICT tool will assists in data collection, analyze and reports on all project indicators and also data from trials and demonstrations. A sketch of a proposed tool is presented in Figure 7.

**Reporting Page (for various reports)**

**Data Aggregation /Analysis/feedback**

**Mobile App**

**Web based**

Data Collection

Figure : Sketch of ICT tool for data collection, analysis and feedback

Data will be collected by project staff and partners using both web and mobile phone based applications on all project indicators. At partner level, data will be collected on dissemination activities and any other data relevant. The database (at WU) will be the main avenue for data entry by selected partners and staff. These data will be uploaded directly onto the database for data cleaning and subsequent analysis and reporting. Selected partners will be registered to have access to the reports. The database will also be accessible to 3rd party systems (i.e., for integration of surveys – farmer survey) through appropriate interfaces. Feedback on trials and demonstrations will be sent through the mobile app to needed persons.

Data will be analysed using simple charts and tables. Indicator calculations methods will be integrated into the system to aid the analysis of the data. Project reports will be written and shared with stakeholders using the analysed data from the database.

This will be developed and piloted in selected countries for feedback and then disseminated to all core countries.

# Overall implementation plan for M&E activities

| **Monitoring and Evaluation Activities** | **FY 2014** | | | | **FY 2015** | | | | **FY 2016** | | | | **FY 2017** | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| **A. Collect M&E data & reporting by country teams, other project staff and Partners** |  | **X** |  | **X** |  | **X** |  | **X** |  | **X** |  | **X** |  | **X** |  | **X** |
| **B. Submit annual report to BMGF** |  |  |  | **X** |  |  |  | **X** |  |  |  | **X** |  |  |  | **X** |
| **C. Collect data on agronomy/rhizobiology & feedback (by data analysts & data manager)** |  | **X** | **X** |  |  | **X** | **X** |  |  | **X** | **X** |  | **X** | **X** |  |  |
| Organise baseline data from phase I |  | **X** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **D. Conduct Impact Assessment, Case Studies & other assessment studies** | | | | | | | | | | | | | | | | |
| Conduct Assessments on D&D approaches |  |  |  |  | **X** |  |  | **X** |  |  |  |  |  |  |  |  |
| Conduct case studies on specific issues (e.g. nutrition) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Conduct early and end of project impact assessments |  |  |  |  |  |  |  | **X** |  |  |  |  |  | **X** |  |  |
| **E. Review Performance Information** | | | | | | | | | | | | | | | | |
| Bi-annual review with country coordinators |  | **X** |  | **X** |  | **X** |  | **X** |  | **X** |  | **X** |  | **X** |  |  |
| Annual review of performance &Planning |  |  |  | **X** |  |  |  | **X** |  |  |  |  |  | **X** |  |  |
| **F. Review & Update M&E Plan** | | | | | | | | | | | | | | | | |
| Update indicator matrix & M&E plan to reflect any changes in project strategy | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |  |  | **X** | **X** |  |  |

# Abbreviations

|  |  |
| --- | --- |
| A&A | Adaptation and Adoption |
| BDO | Business Development Officer |
| BMGF | Bill and Melinda Gates Foundation |
| D&D | Delivery and Dissemination |
| D2R | Development to Research |
| FLO | Field Liaison Officer |
| GLxGRxExM |  |
| ICT | Information Communication Technology |
| M&E | Monitoring and Evaluation |
| N2Africa | Putting nitrogen fixation to work for Smallholder farmers in Africa |
| SAC | Scientific Advisory Committee |
| TOC | Theory of Change |
| WU | Wageningen University |

# ANNEXES

# Annex I Operationalizing the Indicators

(Refer to Excel file –M&E Result’s framework for milestone details)

# Annex II: Operationalizing the Specific Data needs for agronomy and rhizobiology

|  |  |  |  |
| --- | --- | --- | --- |
| **Type of data** | **Data collection format (paper)** | **Data entry format (excel)** | **frequency** |
| Farm typology and agronomic data from **diagnostic** trials | Field book (diagnostic/focal trials) | Standardized data entry workbooks (1 file/trial) | 1 or 2 times per year after harvest for 2014 and 2015(depending on country specific seasons) |
| Farm typology and agronomic data from **demonstration** trials | Field book (demonstrations) | Standardized data entry workbooks (1 file/trial) | 1 or 2 times per year after harvest for 2014- 2017(depending on country specific seasons) |
| Feedback on yield, performance and farmer practice from **adaptation** trials | Feedback form | Standardized data entry workbook | 1 or 2 times per year after harvest for 2014- 2017 |
| Data from specialized **agronomy** trials | Standardized agronomy trial form | Standardized data entry workbook | 1 or 2 times per year after harvest for 2014- 2017 |

# Annex III Definitions of Terminologies

| **Terminology** | **Definition** |
| --- | --- |
| Adaptation | Adaptation in N2Africa is tailoring of legume technologies to the needs of rural households to support local adaptation. This is done through adaptation trials with selected farmers in target communities. |
| Adoption | A farm household is considered as an ‘adopter’ if, for three seasons, it uses at least two of the N2Africa components. Components could include: new variety, additional legume, fertilizer, inoculums, and improved agronomic practices. |
| Agri-business cluster | An agribusiness cluster is a partnership between public and private sector actors that collaborate to build profitable agricultural commodity-based value chains. Actors within such clusters comprise producers and their organizations, input suppliers, financial services, processors, collection point and warehouse managers, traders, business development services, etc. |
| Agro-dealers |  |
| Awareness creation campaigns | Awareness creation campaigns are the use of local radio, newspapers, posters and pamphlets to publicize and build on the dissemination activities in countries. |
| Business led by women | A business is a commercial (viable and scale of a business) activity engaged in as a means of livelihood or profit. Businesses led by women (in N2Africa) are considered as commercial activities focusing on any aspect of the selected legume value chains, from input supply through to processing and marketing. Businesses led by women are same as businesses owned by women. Viability in terms of income generation and scale in terms of main source of employment for owner and if possible others. Businesses led by individual or group of women will be considered based on the viability and scale. |
| Business opportunities | A business opportunity is a proven business concept/idea within any of the N2Africa legume crops that can generate livelihoods for a household or an individual. A business opportunity for women is where such business concepts or ideas have been proven to thrive with women being in the lead. |
| Collective marketing | Collective marketing is where farmers come together to sell their produce as a group allowing for better prices and lower transaction costs. |
| Communication products | Communication products are goods, [information](http://www.businessdictionary.com/definition/information.html) gathered, [object](http://www.businessdictionary.com/definition/object.html) or [service](http://www.businessdictionary.com/definition/final-good-service.html)s created to [serve](http://www.businessdictionary.com/definition/serve.html) communication purposes. Communication products such as Podcasters, updated project website, etc will be used. |
| Communication tools | A communication tool is a way that N2Africa and its partners interact with each other and also with project beneficiaries at all levels. Such tools include: Posters (e.g. simple posters on adapted technologies), newspapers, radio broadcasts, leaflets, Podcasters, pamphlets, video (e.g. for instruction and training material) , link to Digital Green, field days and demonstrations (especially at local levels with beneficiaries), N2Africa website (<http://www.n2africa.org> ), social networks such as Facebook. |
| Community-based seed production | The promotion of seed multiplication at community levels involving project beneficiaries. This is to improve access to quality seeds |
| Development-to-research learning cycle(s) | The N2Africa ‘development to research’ model has Delivery and dissemination (D&D) as core activities that take technologies to farmers, whereas monitoring and evaluation (M&E) provide the learning of what works where, and why for whom, and research learning loops analyse and iteratively improve the technologies and their targeting within D&D. |
| Direct beneficiaries | Direct beneficiaries are those that will interact directly with the dissemination investments of Phase II of N2Africa. Beneficiaries reached through N2Africa-led dissemination |
| Direct Dissemination | **Direct dissemination** is where N2Africa facilitates testing and refining of best technologies developed by the project (n2Africa-led dissemination) |
| Dissemination approach | Dissemination in N2Africa is the process of communicating proven and locally-adoptable legume technologies to beneficiaries at all levels. Dissemination approach is the way and manner in which proven technologies are communicated to users (beneficiaries). In N2Africa, there are 2 types of dissemination approaches: Direct and Indirect  **Direct dissemination** is where N2Africa facilitates testing and refining of best technologies developed by the project (n2Africa-led dissemination)  **Indirect dissemination** is where the tested technologies are passed on to other development organizations for inclusion within their programmes (Partner-led dissemination) |
| Dissemination campaigns | Dissemination campaigns are series of organized processes and events to communicate proven and locally-adoptable legume technologies to beneficiaries at all levels to enable such beneficiaries adapt and eventually adopt such technologies.  In N2Africa, there are three processes with which technological campaigns can be done: N2Africa-led dissemination campaigns, Partner-led dissemination campaigns and Awareness creation. |
| Effective and efficient dissemination approaches | **Effective dissemination** approach is defined as being able to get agreed number of farmers to adapt N2Africa legume technologies introduced to them (e.g. through appropriate demonstrations). **Efficient dissemination** approach can be defined as minimizing the costs involved in dissemination activities yet reaching out to agreed targets of farmers to adapt the technologies. |
| Effective ICT tools | Effective Information and Communication Technologies (ICT) tools are those that enable rapid feedback on data collected in the field and allow for adaptation of legume technologies in the following seasons. |
| Effectiveness of input supply and marketing systems | Effectiveness of input supply system is measured by the volume of inputs needed by agricultural producers and that supplied by agro input dealers. Input supply system is effective when supply for inputs meet its demand and actors are connected. |
| Indirect beneficiaries | Indirect beneficiaries are those that are exposed to N2Africa products through partner organizations, with a cost sharing element between N2Africa and partner organization for the dissemination campaigns. N2Africa will work with partner organizations to ensure that households are properly trained on legume agronomy and agro-input use. |
| Indirect dissemination | Indirect dissemination is where the tested technologies are passed on to other development organizations for inclusion within their programmes (Partner-led dissemination) |
| Innovative ICT tools for M&E | Innovative ICT tools and methods for M&E are ones which will answer specific questions and provide learning related to tailoring and adaptation of technologies, the effectiveness of different dissemination approaches, and sales of inoculants and fertilizers by the private sector. |
| Last-mile delivery networks | Last mile delivery networks are the final input delivery networks segment of the input supply chain that delivers inputs to local farmers and ensure access to inputs by local farmers. The part of the input supply system that actually reaches the farmers to have access to inputs. |
| N2Africa technology/ies | Technologies related to the N2Africa promoted legumes that are being developed and disseminated by N2Africa and its partners. |
| Number of households engage in legume intensification post-project | Households who still uses (adopt) the legume technologies introduced to them by N2Africa and its partners. This will be measured by productivity |
| Partners / partner organization | An organization is considered a partner to cooperative actively with N2Africa when a partnership agreement with above qualities pertains. Partnerships should include National teams/organizations involved in D2R activities |
| Partnerships Developed | A partnership is considered developed and active if there is a binding documentation of roles and responsibilities to disseminate N2Africa technologies and focusing on one of the following: capacity building, market, dissemination and input supply system. It should also indicate the results to be achieved through the partnership. A partner is considered to cooperative actively with N2Africa when a partnership agreement with above qualities pertains. |
| Pre- and post-harvest labour saving tools | Labour saving tools are those that decrease labour intensive work. |
| Public-Private Partnerships | A Public Private Partnership (PPP) is a form of cooperation in which parties belonging to the public and private sector are jointly accountable for activities carried out under their common objective, using their pooled resources and personnel and sharing risks. IITA/N2Africa is considered a public organization under any PPP within N2Africa. |
| Stakeholders platforms | A stakeholder platform is described as a forum established to foster interaction among a group of **relevant** stakeholders around a shared interest. In N2Africa, stakeholder platforms will be established with key stakeholders (farmers, researchers, private sector actors, development partners, etc) to facilitate and coordinate dissemination of legume technologies and other relevant issues affecting the priority value chains. An operational stakeholder platform is where all stakeholders have agreed to roles and responsibilities to address the reasons for the establishment of the platform. |
| Summative impact assessment | An assessment of learning that provides information on an interventions’ efficacy (its ability to do what it was designed to do) |
| Sustainable supply of inputs | Sustainable supply of inputs is where farmers have a reliable (consistent and unfailing) source of high quality agricultural inputs, such as quality seeds, fertilizer, inoculants, farm equipment, and general agricultural services, including extension services. |
| Timely feedback loops/learning | Timely feedback is where M&E data is used to inform D&D and research (e.g. allow for adaptation of legume technologies in following seasons). It’s also referred to as when information is provided as and when needed to inform project decision at each level |
| Value addition | Value addition is the process of changing or altering a product from its original state to a more valuable state preferred by the market. **Value addition of legume grains** is to economically add value to legume grains (such as soybeans) by processing it into a product (such as soya milk) desired by soybean consumers. |
| Value-added products | Agricultural products (such as Legume grain) that have increased in value due to processing. An example is soybean meal. |

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