# The Drylands Development Programme (DryDev)


*A Farmer-led Programme to Enhance Water Management, Food Security, and Rural Economic Development in the Drylands of Burkina Faso, Ethiopia, Kenya, Mali and Niger*

## 2018 NARRATIVE REPORT

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**Submitted**: 15th July 2019

**Front Picture:** Mrs. Timina Mwangangi of Lower Yatta (Machakos Country, Kenya) testifies of how her farm pond supported by the DryDev Programme has transformed her life. Picture used by permission

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Acroynymns

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| ACCA | : Africa Congress on Conservation Agriculture |
| ADRA | : Adventist Development and Relief Agency Kenya |
| AEDD | : Agency for the Environment and Sustainable Development |
| AMEDD | : Malian Association for Awareness Raising and Sustainable Development |
| AMEPPE | : Malian Association for Public Education and Protection of the Environment |
| ASSCCU | : Awash Saving and Credit Cooperative Union |
| BECR | : Collection of Runoff Water Collection Basins |
| CA | : Conservation Agriculture |
| CAHW | : Community Animal Health Workers |
| CAPs | : Community Action Plans |
| CBOs | : Community-Based Organization |
| CCC | : Community Care Coalition |
| CCT | : Country Core Team |
| CIDP | : County Integrated Development Plans (CIDP) |
| CLC | : County land commission |
| CMDRR | : Community Managed Disaster Risk Reduction |
| COFOBs | : Management Committees and Grassroot land Committees |
| CRGE | : The Climate-Resilient Green Economy |
| CSP | : Climate Smart Production |
| CSWTs | : Community Sub-Watershed Teams |
| CTT | : Country Technical Team |
| CWIS | : Capillary Wick Irrigation System |
| DCS | : Digital Classroom System |
| DECSI | : Debit Credit & Savings Institute |
| DIP | : Detailed Implementation Plan |
| DNA | : The National Directorate of Agriculture |
| DNEF | : The National Directorate of Water and Forests |
| DNHE | : The National Directorate of Hydraulics & Energy |
| DRYDEV | : Drylands Development Programme |
| ECOWAS | : Economic Community of West African States |
| EDB | : The Ethiopian Development Bank |
| EECS | : Energy Efficient Cook Stoves |
| EOC-DICAC | : Ethiopian Orthodox Church — Development and Inter Church Aid Commission |
| EP | : Enrichment Planting |
| FMNR | : Farmer Managed Natural Regeneration |
| FMP | : Forest Management Plan |
| FOs, or FCFAs | : Farmer organizations |
| FPP | : Farm Pond Planning |
| GIE | : Economic Interest Groups |
| GIS | : Geographic Information System |
| GLAM | : Weather Assistance Group |
| GLF | : Global Landscape Forum |
| IATI | : International Aid Transparency Initiative |
| ICRAF | : International Centre for Research in Agroforestry (World Agroforestry) |
| ICT | : Information Communication Technology |
| IER | : The Institute of Rural Economy |
| JQM | : Joint Quality Monitoring |

| | |
|---|---|
| KALRO | : Kenya Agriculture & Livestock Research Organization |
| KCEP: | : Kenya Cereal Enhancement Program |
| KENDAT | : Kenya Network for Draft Animal Technology |
| KESSFF | : Kenya Small Scale Farmers Forum |
| KFS | : Kenya Forest Service |
| LAU | : Lume-Adama Union |
| M&E | : Monitoring &Evaluation |
| MFIs | : Micro-financial institutions |
| MFIs | : Monetary Financial Institutions |
| MIS | : Market Information System |
| MoFA | : Ministry of Foreign Affairs |
| NDRE | : National Directorate of Rural Engineering |
| NGOs | : Non-Governmental Organizations |
| NLOs | : National Lead Organizations |
| NRM | : Natural Resources Management |
| NTFPs | : Non-timber forest products |
| OHADA | : Organisation pour l'Harmonistion en Afrique du droit des Affaires (Organization for the Harmonization of Business Law in Africa |
| PAC | : Programme Advisory Committee |
| PCs | : Planned Comparisons |
| PDAZAM | : Mali Drylands Development Project |
| PICSA | : Participatory Integrated Climate Services for Agriculture |
| PIP | : Programme Implementation Plan |
| PMC | : Project Management Committee |
| REST | : Relief Society of Tigray |
| RUSACCOs | : Rural Savings and Credit Cooperative Organization |
| RWH | : Rain Water Harvesting |
| SACCOs | : Savings and Credit Co-Operative Societies |
| SEMUs | : Solidarité, Entraide Mutuelle au Sahel (Solidarity, Mutual Aid in the Sahel) |
| SIMA | : Market Information System |
| SLAT | : Local Spatial Planning Plans |
| SNV | : Netherlands Development Organization |
| SWC | : Soil and water conservation |
| SWS | : Sub-watersheds |
| TOTs | : Trainers of Trainers |
| USAID | : The United States Agency for International Development |
| VC | : Value Chain |
| VCA | : Value Chain Association |
| VSLAs | : Community Based Financial Institutions |
| VSLAs | : Village Saving and Loans Associations |
| W | : Women |
| WDC | : Ward Development Committees |
| WEF | : Women Enterprise Fund |
| WP | : Work Package |
| WRAs | : Water Resources Authorities |
| WRUAs | : Water Resources Users' Associations |
| WVA | : World Vision Australia |
| WVE | : World Vision Ethiopia |

WVK : World Vision Kenya
YEF : Youth Enterprise Fund

# 1.0 INTRODUCTION AND BACKGROUND

The Drylands Development Programme (DryDev) is a six-year initiative (August 2013 to July 2019) funded by the Ministry of Foreign Affairs (MoFA) of the Netherlands, with a substantial contribution from World Vision Australia (WVA). The World Agroforestry Centre (ICRAF) is the overall implementing agency. DryDev is designed to provide relevant, contextually appropriate support to smallholder farmers in selected dryland areas of Burkina Faso, Mali, Niger, Ethiopia, and Kenya. It is seeking to meaningfully contribute to the realization of a vision where households residing in such areas have transitioned from subsistence farming and emergency aid to sustainable rural development. This is to be achieved by increasing food and water security, enhancing market access, and strengthening the local economy for different categories of farmers.

The DryDev programme aims to reach over 227,000 farmers across five countries in Eastern Africa (Ethiopia and Kenya) and the Sahel (Burkina Faso, Mali and Niger). During the year 2018, the programme was implemented by a consortium of 16 organizations. Working with ICRAF to implement DryDev in its targeted countries are three National Lead Organizations (NLOs) and thirteen Implementation Partners (IPs), as shown in Table 1.1.

Table 1.1: DryDev programme consortium members

| Country | National Lead Organizations (NLOs) | Implementing Partners (IPs) |
|---|---|---|
| Burkina Faso | ICRAF | SNV; Tree Aid |
| Ethiopia | World Vision | EOC/DICAC; REST |
| Kenya | World Vision | SNV; CARITAS; ADRA |
| Mali | Sahel Eco | OXFAM; AMEDD; AMEPPE |
| Niger | Care International | KARKARA; AREN; RAIL |

This report is a detailed account of the fourth year in the Implementation Phase of the programme, covering January to December of 2018. The report describes activities carried out and outputs and outcomes realized in each country with respect to DryDev's eight Work Packages (WP) presented in the Consolidated Programme Implementation Plan (PIP) and the 2017 Detailed Implementation Plan (DIP). The report is presented in four sections:

1. Overview of progress in the five countries
2. Programme governance, coordination and technical support
3. Challenges, opportunities and lessons learned
4. Country-specific reports

# 2.0 OVERVIEW OF PROGRESS AND ACHIEVEMENTS

The year 2018 was a very intensive year with efforts directed at both consolidating activities and transitioning towards programme exit. By the end of the year 115,037 farmers (59,156 women) had been reached across the five countries. Cumulatively (from 2015), the programme had reached 243,275 farmers, 115,129 women of them being women, which is 107% and 97% of the total programme targets. Unlike the previous years where achievements were restricted to WP 1-5, in 2018 activities and achievements were spread across all work packages with a lot of investment in learning and stakeholder engagement. However, capacity of institutions and weak linkages to input suppliers and markets might

pose a threat to the sustainability of the programme interventions. Some of the main results for 2018 include:

- 88,105 (44,536 women) reached with various sub catchment management events with 57,070 farmers (25,935 women) directly engaged in sub-catchment level natural resources management interventions covering 36,569 ha and planting 1,090,038 trees
- 80,251 farmers (48,935 women) were reached with various on farm soil and water management activities with 48,967 farmers (17,281 women) participating in on-farm soil and water conservation including planting 457,503 trees on farm land; 47,560 farmers (15,064 women) participated in soil fertility management initiatives covering more than 30,000 ha of farm land
- More than 1,000 farmer groups were supported in climate smart commodity production; 71,157 farmers (37,782 women) were reached by climate smart production (CSP) interventions with 67,825 farmers (32,269 women) directly engaged putting 27,703 ha under improved agricultural production whilst 49,922 farmers (28,618 women) benefited from input and seed supply systems
- 55,533 farmers (38,927 women) were reached with market linkages activities; 47,467 (28,448 women) participated in 45 value chains and 32,027 farmers (21,972 women) were linked to markets whilst 52,628 farmers (17,074 women) were linked to market information sources.
- 50,309 people (24,894 women) were reached with financial linkages interventions; 49,933 including 21,243 women actively participated in financial service related activities; with 987 VSLA groups giving loans amounting to USD 767,686; 30,515 people including 16,558 women were linked to MFI accessing USD 460,114 in loans whilst 48,646 people (24,146 women) had access to financial services information.
- 9,331 people (3,304 women) were reached and 499 people (138 women) leaders from 361 farmer organisations were supported whilst 1,439 people (380 women) including farmer representatives, subnational level leaders and technical experts participated in multi stakeholder platforms for planning, coordination of development and extension services participated in various institutional development events
- 7,091 people (2,801 women) were engaged in monitoring, evaluation and learning activities, with 4,616 people (1,974 women) participating in community level stakeholder review reflection meetings whilst 4,532 (3,220 women) farmers participated in 14 action learning interventions /planned comparison; evidence generated was by documented/packaged and shared at community where farmers made choices on the options best suited for their context
- 1,587 people of whom 435 were women were engaged in training and awareness raising whilst 348 people (201 women) participated in lobby and /or policy dialogue events resulting in some concessions made with subnational governments

## 2.1 Work Package 1: Sub-catchment Level Natural Resource Management

Sub catchment management activities aimed at transforming degraded areas into productive lands intensified in 2018. The main achievements were review, development and improvement of 68 sub catchment management related plans across the five countries. More than 30,000 farmers (12,716 women) participated in various capacity building events. At least 57,000 farmers including 25,935 women were engaged in establishing sub catchment management interventions on 36,569.40 ha of communal land (Table 2.1). To facilitate these activities, local-level institutions charged with mobilizing communities, coordinating implementation and linking with various service providers were established and / or supported. The local institutions included Ward Development Committees (WDC), Project Management Committees (PMC), and Water Resource Users Associations (WRUA) of Kenya; community sub watershed teams (CSWT) in Ethiopia; management committees and grassroot land committees (COFOBs) in Niger; and forest management committees and infrastructure management committees in Burkina Faso. Most of these local institutions still need incubation and 'hand holding' to effectively deliver on their mandate. In collaboration with various government agencies, members of the local institutions were engaged in training and exchange visits on community action planning, resource mobilization, efficient resource utilization, development and implementation of by-laws, sub catchment management techniques, leadership and governance reaching 11,443 members (6,006 women) from 129 institutions (Table 2.1).

Table 2.1 Sub catchment management institutions and community participation

| Indicators | Burkina Faso | Ethiopia | Kenya | Mali | Niger | Total |
|---|---|---|---|---|---|---|
| Farmers participating in sub catchment management activities | 4,675 (3,338 W) | 23,877 (8,354 W) | 9,477 (5,235W) | 9,773 (3103 W) | 9,268 (5,905 W) | 57,070 (25,935W) |
| Community members participating in capacity building | 1,331 (643 W) | 15,429 (4,781 W) | 9,217 (5,163W) | 3,197 (1,789W) | 840 (340 W) | 30,014 (12,716 W)) |
| Members of the local institutions engaged | 1,331 (643 W) | 367 (99 W) | 9,217 (5,163 W) | 422 (94 W) | 106 (7 W) | 11,443 (6,006 W) |
| Number of institutions established and/or trained | 18 | 29 | 6 | 10 | 66 | 129 |
| Area covered by sub catchment management activities, ha | 6,460.50 | 19,751.00 | 8,200.90 | 1,985.52 | 2,157 | 36,569.40 |

Communities were sensitized, trained and engaged in various land rehabilitation techniques like farmer managed natural regeneration (FMNR), area closure and tree-planting, water buffering, Zaï pits, half-moons, stone bunds, etc reaching 46,607 people (including 23,086 women) resulting in close to 11,000 ha rehabilitated and 1,090,038 trees planted across the five countries. However, overgrazing and free grazing remain key drivers of land degradation and major causes of conflicts in the dryland areas thus the programme facilitated several capacity building events on sustainable grazing, grazing land management, and forage production engaging 9,379 farmers (2,760 women) farmers and putting 4,703 ha of community pastoral and grazing land under management. This was achieved by embarking on extensive

tree planting, seeding of grasses and herbaceous fodder plants, and clearing of invasive species. Likewise, concerted efforts were made to reduce the impact of woodfuel extraction by introducing energy-saving stoves in Ethiopia, Burkina and Niger. A total of 14,186 people (9,398 women) were trained and supported in this regard (Table 2.2).

Table 2.2 Reforestation of degraded lands in the sub catchments

| Indicators | Burkina Faso | Ethiopia | Kenya | Mali | Niger | Total |
|---|---|---|---|---|---|---|
| Number of farmers engaged in area closure, FMNR and tree planting activities | 18,104 (9,595 W) | 9,888 (3,027 W) | 5,904 (3,807 W) | 3 444 (752 W) | 9,268 (5,905 W) | 46,607 (23,086 W) |
| Number of farmers trained in FMNR and tree planting | 905 (410 W) | 8,631 (2,627 W) | 9,217 (5,163W) | 8,740 | 1,966 | 29,459 (8,200 W) |
| Area covered by FMNR and tree planting, ha | 5,007 | 2,670.6 | 2,610 | 1 ,525,94 | 541 | 10, 828.6 |
| Number of farmers trained in grazing management | 146 (28 W) | 2646 (738 W) | n/a | 856 (12 W) | 4,335 (1,982 W) | 9,379 (2,760 W) |
| Pastoral/grazing area covered, ha | 605 | 2,531 | n/a | 168 | 1,399 | 4,703 |
| Trained and supported in energy efficient stoves | 2,410 W | 9,825 (5,578 W) | n/a | 1,866 (1,410 W) | | 14,101 (9,398 W) |
| Trees planted | 120,564 | 732,615 | 24,860 | 44,390 | 304,173 | 1,090,038 |

The programme continued investing in the development of water harvesting infrastructure for landscape restoration, increased agricultural productivity and domestic use. The sub catchment management committees continued to be supported, and they mobilized 15,799 community members (7,527 women) to construct 213 water buffering and soil stabilizing structures. Developed structures included trenches, sand dams, shallow wells, ponds, check dams, percolation pits, stone/earth bunds, micro-dams, gabions, dikes, zai pits, as well as grass seeding and tree planting covering 17,161.23 ha and benefiting more than 20,000 domestic animals in each country. However, funding large-scale water harvesting infrastructure remains a challenge, thus the action plans developed included resource mobilization as a key activity resulting in USD 895,000 being raised for this purpose (Table 2.3).

Table 2.3 Sub catchment soil and water conservation

| Indicators | Burkina Faso | Ethiopia | Kenya | Mali | Niger | Total |
|---|---|---|---|---|---|---|
| Number of farmers trained in soil and water conservation | 1,527 (748 W) | 5,724 (1,505 W) | 8,049 (5,116W) | 182 (30 W) | 317 (128 W) | 15,799 (7,527 W) |
| Water buffering structures | 5 | 37 | 41 | 115 | 15 | 213 |
| Land under soil and water conservation, ha | 826 | 7,864 | 216 | 86 | 8169 | 17,161.23 |
| Funds mobilized by local institutions, USD | 259,000 | 200,000 | 36,000 | | 400,000 | 895,000 |

## 2.2 Work Package 2: On-farm Water and Soil Management

Moisture stress, chronic drought and unreliable rainfall are major challenges for small holder farmers. Thus, DryDev supported the establishment and construction of on farm rainwater harvesting (RWH) structures to support micro irrigation and livelihood diversification. Using the farmer to farmer extension and collaborating with various agricultural extension agents, 46,685 (21,505 women) farmers were trained and 47,560 farmers including 15,064 women were already applying the knowledge and skills on 22,839.7 ha of farmland (Table 2.4). Training was delivered through field visits, field days, co-learning platforms, agricultural shows, study tour and other events. Water harvesting structures were constructed including 11.35 km of canals in Ethiopia, 18,117 RWH structures in Kenya (18,069 Zai pits, 48 farm ponds, 50 km terraces), 21 agricultural basins (reservoirs, ponds, boreholes) in Niger, and six RWH structures in Burkina Faso.

Micro irrigation remained a key intervention for the programme, and activities continued to support the design, set up and maintenance of these structures; 394 (116 women) innovation farmers/ TOTs/ community artisans and irrigation management committees were trained and supported. with equipment (solar pumps, drip kits, pond liners) on a cost-sharing basis to establish demonstration sites for continued learning by other community members. More than 20,000 farmers (9,237 women) were already practicing small-scale irrigation putting 8,710.5 ha of land under irrigation (Table 2.4). Upscaling of these interventions is still a challenge as the equipment is too expensive for the resource poor smallholder farmers. However, the financial linkages created, and government programs being launched provide promising pathways to overcoming this. Incentivizing the artisans and farmer trainers is also a big threat to scaling, although in some countries this has been partially solved by commercializing the service.

Table 2.4 On-farm RWH and utilisation

| Indicators | Burkina Faso | Ethiopia | Kenya | Mali | Niger | Total |
|---|---|---|---|---|---|---|
| Number of farmers trained on rain water harvesting | 24,029 (12,254 W) | 4,633 (1,132 W) | 8,081 (5,254 W) | 8,604 (2,146 W) | 1,338 (719 W) | 46,685 (21,505 W) |
| Farmers applying the knowledge and skills in situ soil and water conservation technologies (SWC) | 9,357 (4,772 W) | 8,073 (2,928 W) | 4,448 (2,979 W) | 14,372 | 11,410 (4,385 W) | 47,560 (15,064W) |
| Land under on-farm RWH (ha) | 7,837 | 1,541 | 4,411.7 | 10,392.5 | 9,050 | 22,839.7 |
| Number of farmers participating in small scale irrigation | 994 (517 W) | 9,793 (3,092 W) | 8,049 (5,116 W) | 480 (404 W) | 725 (512 W) | 20,041 (9,237 W) |
| Number of artisans trained | 287 (86 W) | NA | 86 (30 W) | | 21 | 394 (116 W) |
| Number of farmers receiving material support | 287 (86 W) | 3,846 (1,204 W) | 25 (7 W) | 480 (404 W) | 2,000 (875 W) | 6,638 (2,576 W) |
| Land irrigated (ha) | 81.5 | 3,996 | 3,020.5 | 1,514 | 98.5 | 8,710.5 |

In addition to water, the other limiting factor to agricultural productivity for small holder farmers in these dry areas is soil fertility. In 2018, more than 40,000 farmers (19,537 women) were trained in integrated soil management and water conservation (SWC) techniques with special focus on soil fertility and agroforestry. This was all aimed at overcoming water stress and soil fertility challenges to improve crop and livestock productivity. As many as 48,967 farmers (17,281 women) were reached and / or engaged with various technologies such as composting, manuring, mulching, application of liquid fertilizers and micro-dose with 34,598 including 17,253 women applying integrated on-farm soil, water management and soil fertility on 29,870 ha of farmland. In addition, integration and management of trees in farmlands was promoted through various agroforestry techniques/practices including nurseries and woodlots, live fences, FMNR and enrichment planting. The capacity development activities reached 33,331 people (9,784 women) targeting farmers, farmer trainers, and nursery operators resulting in 547,503 tree seedlings of fruit and multipurpose trees being planted on 14,336 ha of farmland (Table 2.5). In Kenya 400,000 listeners were reached with RWH information through a partnership with Royal Media Services' Musyi FM Radio Station (a Kamba Language station).

Table 2.5 On farm soil conservation, fertility management and agroforestry

| Indicators | Burkina Faso | Ethiopia | Kenya | Mali | Niger | Total |
|---|---|---|---|---|---|---|
| Number of farmers trained in SWC & soil fertility practices | 11,541 (6,245 W) | 8,073 (2,928 W) | 8,081 (5,244 W) | 3,859 (695 W) | 9,744 (4,425 W) | 41,298 (19,537W) |
| Number of farmers participating in soil conservation and fertility management | 9,537 (2,861 W) | 8,073 (2,928 W) | 8,049 (5,116 W) | 3,859 (695 W) | 19,449 (5,681 W) | 48,967 (17,281W) |
| Area covered with SWC and fertility practices (ha) | 12,841 | 2,602 | 4,411.70 | 3,690.65 | 6,325 | 29,870 |
| Farmers applying integrated on-farm soil, water management and soil fertility practices | 9,537 (2,861 W) | 8,073 (2,928 W) | 4,448 (2,979 W) | 3,859 (695 W) | 8,681 (7,889 W) | 34,598 (17,253 W) |
| Number of farmers engaged in agroforestry and on-farm FMNR | 3,777 (1,775 W) | 5,416 (1,379 W) | 3,484 (2,524 W) | 2,123 (588 W) | 12,771 (3,578 W) | 33,331 (9,784 W) |
| Trees planted on farm | 120,564 | 247,511 | 29,360 | 12,895 | 137,173 | 547,503 |
| On farm land under tree planting, (ha) | 2,571 | 1,576.38 | 4,411.70 | 608 | 5,169 | 14,336 |

## 2.3 Work Package 3: Agricultural Commodity Production

The programme adopted a farmer organisation model in 2016 to facilitate commodity production and marketing. Through awareness-raising campaigns, farmers were encouraged to join producer and marketing groups, cooperatives and unions, a practice that continued in 2018. In 2018, more than 1,000 farmer groups were supported to ensure information and knowledge reaches as many farmers as possible to increase technology adoption through the farmer to farmer extension systems. The farmer to farmer extension systems have proven to be a promising, cost effective and efficient approach of

reaching many farmers. To strengthen the groups, farmer trainers (peer trainers/ innovative farmers/ trainers of trainer's TOTs/ lead farmers/ community facilitators/ community trainers) were engaged and trained, in turn reaching 67,825 farmers (32,269 women) (Table 2.6).

In addition, stakeholder platforms events such as meetings and seed/trade fairs which brought together, input suppliers, traders, and agro-dealers were held. These platforms provided opportunities for initiating strategic partnerships, contract and loan negotiations, as well as linkages with research centres. The farmer trainers in collaboration with and support of project staff and government extension agents engaged 42,933 (21,243 women) farmers in capacity building events (training, exchange visit, demonstrations and field days, and innovative farmer networks). The training focused on good crop agronomic practices, livestock husbandry (poultry, sheep, pig farming, fish farming) vegetable gardening, post-harvest management, production planning, beekeeping, bio-pesticides use, agricultural market information system (MIS), solar-powered water supply or delivery systems, and promoted climate-smart agriculture (CSA) technologies (improved zai, composting, half moon, conservation agriculture, RWH, farm ponds). As a result, 49,647 (25,721 women) farmers were practicing CSA and 27,703 hectares of land was put under promoted climate smart practices and increasing food and commodity production (Table 2.6).

Table 2.6 Capacity development on commodity production

| Indicators | Burkina Faso | Ethiopia | Kenya | Mali | Niger | Total |
|---|---|---|---|---|---|---|
| Number of producer groups supported | 198 | 115 | 171 | 35 | 553 | 1,072 |
| Farmers reached by climate smart production (CSP) interventions | 18 720 (9170 W) | 8,717 (3,919 W) | 9,631 (6,601 W) | 16,932 (5,700 W) | 13,825 (6,879 W) | 67,825 (32,269 W) |
| Farmers participating in CSP capacity building events | 18,720 (9,170 W) | 4,212 (1,503 W) | 6,772 (4,827W) | 1,411 (886 W) | 11,819 (4,857 W) | 42,933 (21,243 W) |
| Farmers applying CSP interventions | 15,654 (7,670 W) | 8,717 (3,919 W) | 6,772 (4,827 W) | 11,635 (4,384 W) | 6,869 (4,922 W) | 49,647 (25,721 W) |
| Land under CSP, (ha) | 14,228 | 1,187.40 | 5,821 | 6,249 | 6,467 | 27,703 |

Furthermore, timely access to inputs is key to improving agricultural production and food security. Thus, all five countries continued to develop and strengthen contextually appropriate input access modalities. These included providing catalytic seed capital/inputs on a cost sharing basis with part repaid in cash or kind. Public and private input suppliers (75) were engaged and linked with 569 farmer groups and as many as 49,922 farmers (28,618 women) benefited across the five countries (Table2.7).

Table 2.7 Inputs and seed supply systems

| Indicators | Burkina Faso | Ethiopia | Kenya | Mali | Niger | Total |
|---|---|---|---|---|---|---|
| Number of groups supported in input/seed access | 198 | 26 | 171 | 35 | 139 | 569 |
| Number of input suppliers engaged | 10 | 29 | 11 | 8 | 17 | 75 |
| Farmers benefiting from input supply systems | 3,933 (2,707 W) | 8,717 (3,919 W) | 22,464 (14,694 W) | 4,612 (948 W) | 10,196 (6,350 W) | 49,922 (28,618 W) |

## 2.4 Work Package 4: Enhancing Market Access

Enhancing market access was one of the main interventions for the programme in the year. Farmers were mobilised to form marketing groups to facilitate access to extension services, training, reliable information on markets, input suppliers, and other service providers. Farmer organisation leaders, animators, TOTs, innovative volunteers etc were trained in governance, resource mobilization and business management, basic principles of entrepreneurship, production planning and financial literacy, warehousing, post-harvest handling, financial management and leadership. Farmer organisations were also supported to develop and review their business plans, by-laws, recording and warrantage systems. Almost 30,000 farmers including 18,081 women from 621 farmer organisations (FOs) were engaged in capacity building events. Learning also happened during trade fairs, Agricultural Shows, exposure visits, multi stakeholder platforms. This benefited 47,467 farmers (28,448 women) who acquired knowledge and information on business development services, market linkages, financial linkages, capital and legal services for registration (Table2.8). Business plans (511) were developed and /or reviewed with the support of relevant government departments across all the five countries. The plans were valuable documentation for loan applications and marketing contracts negotiations. More than 42,000 farmers (23,469 women) in 45 value chains were linked to sustainable markets. Market linkages were developed/facilitated for small millet, sorghum, cattle fattening; food processing, Balinites, tamarind juice processing, shea butter groundnut, haricot bean, tomato, potato, onion, milk, poultry, shoats, honey, green grams and green gram seed. In Kenya, Mali and Niger, USD 209,262 was made from sales (Table 2.8).

One of the major causes of loss for most small-scale businesses is poor post-harvest handling. Thus over 12,052 farmers (6,903 women) were trained in post-harvest handling and supported to access appropriate technologies to increase product/produce shelf life and delay selling produce until prices are competitive (Table 2.8). Some of the farmers (13,382 including 7,993 women) were supported to acquire post-harvest technologies like the Mwala Growers' Cooperative Society Fruit in Kenya that acquired a fruit cooler to benefit 345 cooperative members (121 women) whilst in Burkina Faso, Ethiopia and Niger, warehouses were constructed to facilitate bulking, storage and collective marketing. Farmers were also trained in value addition, equipment maintenance, packaging and product standardization.

Table 2.8 Farmer organizations and markets linkages

| Indicators | Burkina Faso | Ethiopia | Kenya | Mali | Niger | Total |
|---|---|---|---|---|---|---|
| Farmers reached/trained market linkages interventions | 1,896 (1,520 W) | 4,113 (1,557 W) | 11,004 (6,746 W) | 12,422 (5,808 W) | 2,450 W | 28,185 (18,081 W) |
| Farmer groups supported | 198 | 15 | 140 | 260 | 8 | 621 |
| Number of farmers in farmer groups | 1,824 (1,623 W) | 8,343 (3921 W) | 11,004 (6,746 W) | 10,896 (4,783 W) | 15,400 (11,375 W) | 47,467 (28,448 W) |
| Business plans developed | 205 | 163 | 1 | 129 | 13 | 511 |
| Farmers linked to markets | 1,096 (895 W) | 7,289 (3,386 W) | 10,758 (6,848 W) | 12,422 (5,808 W) | 462 | 32,027 (21,972 W) |
| Number of value chains | 10 | 7 | 7 | 16 | 5 | 45 |
| Number of value chain commodities | 26 | 9 | 7 | 16 | 5 | 63 |
| Number of farmers in value chains | 14,709 (9,907 W) | 3,979 (1557 W) | 11,004 (6,746 W) | 10,896 (4,783 W) | 1,812 (476 W) | 42,400 (23,469 W) |
| Sales | | | 88,471 | 62,991 | 57,800 | 209,262 |
| Number of farmers trained in post-harvest technology | 1,789 (1,508W) | 3,013 (1,218 W) | 6,577 (4,090 W) | 443 (94 W) | 230 (87 W) | 12,052 (6,903 W) |
| Farmers acquiring technology | 700 W | 3,096 (1,183 W) | 8,851 (5,724 W) | 443 (94 W) | 292 W | 13,382 (7,993 W) |

Multi-stakeholder platforms (meetings, exhibitions, agricultural shows, fairs) were a core approach to facilitate dialogue, linkages and training as well as strengthen effective collaboration between value chain actors. More than 25,000 farmers (15,095 women) from producer and marketing groups, cooperatives, MMDs[1]) were supported to participate in these platforms where they interacted with buyers, negotiated deals, accessed information and learnt from each (Table 2.9). Some of the value chain platforms have been formalized to enhance collaboration, networking and build alliances, such as 12 value chain platforms mostly for beans and local poultry in Burkina Faso and four Value Chain Associations for mango and chicken, honey and green grams in Kenya. Several FOs were supported to gain legal status through registration, making it easier for them to have legally binding agreements with financial institutions, buyers and input suppliers.

Furthermore, as the programme draws to an end, access to reliable market information is very critical for smallholder farmers and their enterprises. Countries adopted varied approaches to facilitate linkages to up-to-date and accurate information benefiting 52,658 farmers including more than 17,000 women (2.9). Linkages to information systems included telephone call systems, weekly market board posting; farmer to farmer market information exchange in Ethiopia; mobile phone platforms (iShamba/Digifarm) in Kenya; "Allo Dubaru" market information system in Niger; cell phone text-based message with traditional public announcements and local radios in Mali and the Network of Agricultural stakeholders' and Relay producers market information systems in Burkina Faso.

[1] Mata Masu Dubara (literally Women on the Move) – Niger's version of village savings and loans association

Table 2.9 Multi-stakeholder value chain platforms and market Information systems

| Indicators | Burkina Faso | Ethiopia | Kenya | Mali | Niger | Total |
|---|---|---|---|---|---|---|
| Number of farmers participating in stakeholder platforms | 6,148 (4,268 W) | 7,289 (3,386 W) | 11,004 (6,746 W) | n/a | 1,346 (695 W) | 25,787 (15,095 W) |
| Number of farmers linked to market information providers/systems | 4,050 (3,280 W) | 7,110 (3,035 W) | 8,851 (5,724 W) | 12,422 (5,808 W) | 20,225 (5,035 W) | 52,658 (17,074 W) |

## 2.5 Work Package 5: Financial Services Linking

Establishing and strengthening community based financial institutions is key to ensuring smallholder farmers especially women have access to finance for establishing and growing their enterprises. Many groups (987) with a membership of 38,428 people including 23,222 women were trained and or supported in the year (Table 2.10). However, financial illiteracy is a major challenge across all sites in all countries, threatening the sustainability of this intervention. To this end, the capacity building intensified in 2018 through the farmer to farmer extension approach apart from Ethiopia, where the existing grassroots extension system already exists and programme staff with government staff directly trained group leaders and members. Thus, 2,454 people including 2,115 women (village facilitators /financial literacy ToTs /Farmers Organizations leaders) were trained to facilitate training and information dissemination. The training enhanced the group's capacity to improve coordination of production and marketing, warehousing, collective marketing, record-keeping, monthly saving installments, lending rates, loans repayments leadership, group governance and decision making. The groups were able to offer loans to their members amounting to USD 767,686 (Table 2.10).

Table 2.10 Support to community-based financial institutions

| Indicators | Burkina Faso | Ethiopia | Kenya | Mali | Niger | Total |
|---|---|---|---|---|---|---|
| Number VSLAs / SG/ MMD supported | 77 | 167 | 152 | 24 | 567 | 987 |
| TOTs trained | 1,762 (1727W) | n/a | 133 (72 W) | 341 (273W) | 218 (43 W) | 2,454 (2,115w) |
| Number of farmers in VSLAs | 3,055 (2,994 W) | 3,915 (2,517 W) | 6,398 (4,361 W) | 10,885 (4,778 W) | 14,175 (1,335 W) | 38,428 (23,222 W) |
| Value of loans accessed from VSLAs | 17,1700 | 268,225[2] | 34,790 | 160,478 | 132,493 | 767,686 |

Financial linkages are one of the crucial mechanisms for building enterprises and ensuring timely access to finance and inputs as well as boosting commodity production and maintenance of market linkages. Many farmers, total of 30,515 including 16,559 women)) were linked to 108 financial service providers who were providing information on the available financial products, facilitating account opening, training,

[2] Includes a bit of loans from MFIs

and processing loans and disbursements. Majority of the farmers (20,325 in total; 13,044 women) took loans amounting to USD728,339. In total 48,646 farmers (24,146 women) had access to financial information (Table 2.11).

Table 2.11 Linkages with financial service providers

| Indicators | Burkina Faso | Ethiopia | Kenya | Mali | Niger | Total |
|---|---|---|---|---|---|---|
| Number of farmers linked to financial institutions | 7,178 (5,910 W) | 5,702 (3,039 W) | 1,984 (530 W) | 5,843 (3,335 W) | 9,808 (4,275 W) | 30,515 (16,559 W) |
| Number of financial institutions engaged | 5 | 87 | 4 | 8 | 4 | 108 |
| Number of farmers borrowing from MFIs | 4,262 (2,916 W) | 3,915 (2,517 W) | 6,398 (4,361 W) | 723 (300 W) | 9,808 (3,250 W) | 20,325 (13,044 W |
| Number of farmers having access to financial information | 5,600 (4,572 W) | 3,280 (1,887 W) | 12,570 (4,337W) | 10,896 (4,783 W) | 16,300 (13,350 W) | 48,646 (24,146 W) |
| Number of FOs benefiting from MFIs | 198 | 13 | 100 | 24 | 22 | 357 |
| Loans accessed from MFIs USD | 97,000 | n/a | 157,699 | 49,487 | 155,928 | 460,114 |

## 2.6 Work Package 6: Local Governance & Institutional Strengthening

Inclusive institutional development enhances social integration and empowers the marginalized to participate, engage and contribute to community development, agricultural production and economic growth. Activities under this workpackage in 2018 aimed at achieving these objectives with a lot of investments in supporting the establishment farmer organisations. More than 499 (138 women) farmer organization leaders from 361 FOs and extension staff participated in various training sessions including transformational leadership, good governance, gender; constitution development, bylaw formulation, agriculture land law, pastoralism law, land tenure, ownership and land transaction, riparian land protection, organizational structure and role clarification (Table 12). Positive results were realized with several groups increasing membership as well as contributions and investments in more welfare and income generating activities.

However, the sustainability of the community-based initiatives is contingent on good governance. All country teams made efforts to promote and inculcate values of good governance at subnational level. This was a difficult task and very country specific, determined by the country's political and governance systems which can facilitate or constrain changes/processes introduced by a programme especially within such a short time frame. Thus, most of activities tended to focus on technical capacity development of government extension agents rather than structural issues of institutional mechanisms for delivering services to the farmers. In total, 416 subnational level administrative and technical staff were engaged and trained in agriculture land tenure, good governance and gender inclusiveness, prevention and management of community and intercommunity conflicts.

To facilitate interaction and dialogue between farmers, subnational level multi stakeholder platforms were organised attended by 1,439 people (380 women). These included programme quarterly review meetings where 521 (173 women) extension staff participated to share and streamline approaches, develop common objectives as well as match service delivery with programme and farmer needs (Table 2.12). Some of the major outcomes were improvements in coordination of development and extension services, greater awareness of current legal tools available to address conflicts, better management of land issues including mediating conflicts, and increased support for the programme.

Table 2.12 Capacity development for farmer organization and local government institutions

| Indicators | Burkina Faso | Ethiopia | Kenya | Mali | Niger | Total |
|---|---|---|---|---|---|---|
| Number of local leaders and extension staff attending governance training | 21 | n/a | 310 (112 W) | 48 | 120 (26 W) | 499 (138 W) |
| FOs supported | 198 | 79 | 54 | 51 | 45 | 361 |
| Number of administration and extension staff attending technical training | 21 | | 142 (47W) | 54 | 199 (18 W) | 416 (65 W) |
| Number of local governance and extension staff attending multi stakeholder platforms technical training/review meetings | 261 (60 W) | 116 (48 W) | 88 (29W) | 51 (18 W) | 66 (18 W) | 521 (173 W) |
| Number of participants in meetings/dialogues of the platform | 261 (60 W) | 899 (278 W) | 33 (22 W) | 241 (20 W) | 16 | 1,439 (380 W) |

## 2.7 Work Package 7: Planning, M&E, and Scaling of Learning

In total the programme reached 115,037 farmers (59,156 women) in 2018 (Table 2.13) resulting in 243,275 (115,129 women) being reached cumulatively from 2015 which is 107% of the overall programme target of 227,000 (Table 2.14). Programme activities under this WP can be grouped under i) planning, monitoring, evaluation and ii) evidence generation, collaborative learning and scaling. The first group of activities was undertaken to ensure quality interventions were delivered and the programme remained on track. Specific activities included compiling quarterly output tracking updates, development of a programme database, capacity development in monitoring data collection, management, storage reporting. These activities were achieved well but issues of double counting were not resolved as the Data Management System process was not completed due to human capacity challenges, and such reports continued being based on the output tracking data. To improve data quality, M&E specialists in the Sahel countries had an exchange to discuss tools and methods for collecting reliable and appropriate data which resulted in improved reporting. Despite the delays, progress reports were produced at different levels at a monthly, quarterly, biannual and annual basis and shared as required. In addition,

related implementation plans were produced and submitted to NLO, ICRAF and the donor at the stipulated times as per the contractual agreements. To manage project performance all countries continued to hold quarterly reflection review and planning meetings which were also used as technical training platforms for programme and extension agency staff.

One of the critical activities for tracking and managing programme performance was the joint quality monitoring missions co-led by NLOs and ICRAF. Each country undertook at least one such mission with the objective of assessing adherence of interventions to programme scaling principles. On the spot technical support was given and recommendation incorporated into implementation plans. However, in some areas there were security concerns and this exercise could not be undertaken, like Mopti in Mali and, Oromia in Ethiopia. In addition, the Regional Programme Coordination Committees held their meetings to give strategic direction in implementation, partnerships and opportunities to overcome challenges and programme weaknesses in the two regions, and again the recommendations were incorporated into the implementation plan of 2018 and 2019. The above processes were all internal assessments while a third process led by the Programme Advisory Committee was implemented in Ethiopia focusing a lot more on sustainability building blocks and the future beyond DryDev. In addition, the countries also hosted the External Review mission commissioned by (DGIS) Dutch Ministry of Foreign Affairs and coordinated by ICRAF which concluded that the programme had been successfully implemented, although there were still opportunities to improve and their recommendation were incorporated in the 2018 and 2019 implementation plans.

Table 2.13 Farmers reached in 2018

| Work Packages | Burkina Faso | | Ethiopia | | Kenya | | Mali | | Niger | | Programme | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Women | Total | Women | Total | Women | Total | Women | Total | Women | Total | Women |
| WP1 | 36,215 | 20,614 | 23,877 | 8,354 | 9,477 | 5,235 | 9,268 | 4,428 | 9,268 | 5,905 | 88,105 | 44,536 |
| WP2 | 38,587 | 21,972 | 8,073 | 2,928 | 8,049 | 5,116 | 12,771 | 15,341 | 12,771 | 3,578 | 80,251 | 48,935 |
| WP3 | 26,760 | 11,599 | 7,116 | 2,981 | 9,631 | 6,601 | 13,825 | 9,722 | 13,825 | 6,879 | 71,157 | 37,782 |
| WP4 | 11,046 | 7,383 | 7,289 | 3,386 | 6,398 | 4,361 | 15,400 | 12,422 | 15,400 | 11,375 | 55,533 | 38,927 |
| WP5 | 5,609 | 3,706 | 5,702 | 3,039 | 6,398 | 4,361 | 16,300 | 438 | 16,300 | 13,350 | 50,309 | 24,894 |
| WP6 | 1,502 | 745 | 3,263 | 985 | 2260 | 989 | 1,743 | 312 | 563 | 273 | 9,331 | 3,304 |
| WP7 | 1,200 | 286 | 939 | 237 | 2,652 | 1,590 | 1,700 | 612 | 600 | 76 | 7,091 | 2,801 |
| WP8 | 600 | 170 | 445 | 105 | 301 | 122 | 121 | 12 | 120 | 26 | 1,587 | 435 |
| Total farmers | 38,587 | 21,972 | 23,877 | 8,354 | 19,973 | 11,052 | 16,300 | 4,428 | 16,300 | 13,350 | 115,037 | 59,156 |

Table 2.14 Farmers reached 2015-2018

| Work Packages | Burkina Faso | | | Ethiopia | | | Kenya | | | Mali | | | Niger | | | Overall Programme | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Target | Achievement | | Target | Achievement | | Target | Achievement | | Target | Achievement | | Target | Achievement | | Target | Achievement | | % Total |
| | | Total | Women | | Total | Women | | Total | Women | | Total | Women | | Total | Women | | Total | Women | |
| WP1 | 45,000 | 41,772 | 22,379 | 40,000 | 65,949 | 23,780 | 34,500 | 20,509 | 9,199 | 53,286 | 46,437 | 20,328 | 51,336 | 12,169 | 5,905 | 224,122 | 186,836 | 81,591 | 83 |
| WP2 | 10,000 | 41,772 | 22,379 | 15,000 | 25,732 | 9,662 | 18,000 | 20,509 | 9,199 | 14,200 | 34,472 | 10,156 | 46,200 | 43,777 | 25,668 | 103,400 | 166,262 | 77,064 | 161 |
| WP3 | 10,000 | 30,075 | 12,622 | 12,000 | 28,457 | 8,950 | 16,800 | 20,711 | 14,754 | 14,200 | 22,996 | 9,453 | 30,800 | 22,915 | 6,105 | 83,800 | 125,154 | 51,884 | 149 |
| WP4 | 5,000 | 14,709 | 9,907 | 15,000 | 21,602 | 9,221 | 5,400 | 6,398 | 4,361 | 7,100 | 23,947 | 11,295 | 30,800 | 20 225 | 5 035 | 63,300 | 66,656 | 34,784 | 105 |
| WP5 | 3,600 | 8,764 | 5,119 | 14,000 | 16,530 | 8,669 | 5,400 | 6,398 | 4,361 | 7,100 | 10,896 | 4,783 | 5,120 | 21,725 | 6 138 | 35,220 | 64,313 | 22,932 | 183 |
| WP6 | 1,800 | 20,315 | 13,100 | 2,000 | 10,637 | 3,408 | 1,500 | 10,497 | 7,382 | 53,286 | 46,437 | 20,328 | 51,336 | 1,348 | 695 | 109,922 | 89,234 | 44,913 | 81 |
| WP7 | 1,000 | 41,772 | 22,379 | 3,000 | 5,766 | 1,429 | 16,800 | 35,363 | 22,974 | 53,286 | 46,437 | 20,328 | 300 | 600 | 76 | 74,386 | 129,938 | 67,186 | 175 |
| WP8 | 180 | 516 | 147 | 500 | 1,916 | 617 | 11,200 | 11,147 | 7,091 | 53,286 | 46,437 | 20,328 | 51,336 | 12,490 | 5,712 | 116,502 | 72,506 | 33,895 | 62 |
| **Total** | 45,000 | 41,772 | 22,379 | 40,000 | 67,503 | 23,780 | 34,500 | 35,363 | 22,974 | 53,286 | 46,437 | 20,328 | 51,336 | 52,200 | 25,668 | 227,071 | 243,275 | 115,129 | 107 |
| **Total women** | **22500** | **93** | **99** | **22000** | **169** | **108** | **20355** | **103** | **113** | **28680** | **87** | **71** | **25668** | **102** | **100** | **119203** | **107** | **97** | 97 |

The second group of WP7 programme activities, focused on evidence generation, collaborative learning and scaling of options, was progressed by the programme continuing to support two major interventions, namely i) Participatory M&E with FOs and local stakeholders; and ii) implementation of action learning / planned comparisons. Participatory monitoring activities were undertaken at least once a quarter drawing participant form Project Management Committees (PMCs), Government technical and extension services, drawn from a range of ministries such as Natural Resources, Water, Irrigation, Agriculture, Rural Development office, Cooperative Promotion, Fisheries, forestry) local administration, customary authorities, partners, innovation platforms sub-catchments managements committees, MFIs and farmers. In addition, annual review meetings/events were also used as fora of exchange of information and sharing of experiences, with stakeholders including farmers. More than 3,000 people participated in these events.

Several learning and sharing events were held at community and subnational level with more than 4,616 people including 1,974 women and 1,405 people (357 women) participating at district and community levels respectively (Table 3.15). In Ethiopia scaling stakeholders' workshops for learning, sharing and scaling were attended by 73 and 70 participants at the subnational and national level respectively; whilst in Kenya the preparations were underway for a conference in early 2019.In addition Ethiopia, Kenya and Niger participated at the Nairobi Global Landscape Forum presenting lessons and evidence for landscape rstoration from DryDev.

Table 2.15 Stakeholders participation in M&E

| Indicators | Burkina Faso | Ethiopia | Kenya | Mali | Niger | |
|---|---|---|---|---|---|---|
| Number of people participating in County/Woreda/Commune level Stakeholders review and reflection meetings | 21 | 939 (237 W) | 229 (89W) | 1,700 (612 W) | 600 (76 W) | 3,489 (1,014 W) |
| Number of people participating in community level stakeholder review reflection meetings | 261 (60 W) | 939 (237 W) | 2,652 (1,590 W) | 164 (11 W) | 600 (76 W) | 4,616 (1,974 W) |
| Potential scaling stakeholders identified | | 24 | 11 | 76 | 6 | 117 |

Planned comparisons were scientifically designed trials undertaken by more than 4,000 farmers (Table 2.16). Fourteen PCs were implemented in the five countries and farmers were making informed choices about technologies they have tested in their own contexts. In addition, year 2018 was a year of documentation in all countries, to capture lessons learnt, good practice stories, and scalable innovations were presented as videos, briefs, and in various other forms. Briefs on lessons and evidence were developed and shared with various stakeholders and policymakers. The videos produced were:

- Ethiopia - Interventions and achievements of DryDev https://www.youtube.com/watch?v=SdnbjUABXSI
- Burkina Faso -Four videos on warrantage, onion preservation, sustainable input supply system, technology

- https://drydev.org/video/sadi-burkina-faso/
- https://drydev.org/video/young-people-from-kiembaras-artisanal-gold-sites-restore-degraded-lands/
- https://drydev.org/video/onion-warrantage-an-innovative-innovation-of-the-onion-sector/
- https://drydev.org/video/proximity-assistance-mechanism-for-the-recovery-of-degraded-lands/
- https://drydev.org/video/resultats-du-programme-drydev-en-2018-dans-les-communes-de-zogore-et-kiembara-burkina-faso/
- Kenya - On farm rainwater harvesting and tree planting in Kenya https://drydev.akvoapp.org/en/project/3763/update/23341/
- Mali -DryDev Mali achievements https://www.youtube.com/watch?v=ZcTZlNHnrXA&feature=share .
- Niger - the extent of environmental recovery arising from land regeneration activities under Work Package 1.

Table 2.16 Farmer participation in planned comparisons

| County | Action learning/ Planned comparison | Total |
|---|---|---|
| Burkina Faso | 1. Shea tree production through grafting<br>2. effects of liquid fertilizers on onion and cabbage vegetable<br>3. contribution of pastoral zones to improving livestock management and reduction of conflicts over access to and control over natural resources.<br>4. tree planting tailored to the semi-arid context of Burkina Faso<br>5. Rectangular zai with a combined supply of compost and NPK<br>6. assess the efficiency of two types of onion conservation infrastructure | 1,244 (1,036 W) |
| Ethiopia | 7. FMNR<br>8. Tree planting | 312 (65 W) |
| Kenya | 9. Soil & Water Conservation (Zai pit)<br>10. Tree planting<br>11. Post-Harvest Management | 2136 (1596W) |
| Niger | 12. Bio-pesticides to control pests of cowpea, peanut and other crops<br>13. Effectiveness of Zai and semi circular bunds, in land restoration. | 433 (180 W) |
| Mali | 14. Biopecticide production and utilisation as opposed to chemical pesticides vegetables | 407 (343 W) |
| **Total** | | **4,532 (3,220 W)** |

## 2.8 Work Package 8: Policy Analysis & Influencing

Evidence based policy influencing was a slow carefully crafted process in DryDev and only came to fruition in 2018, four years after the first step was completed. This process started with policy characterizations studies in 2014, followed by policy analysis and synthesis in 2015 and 2016 resulting in the preliminary identification of policy constraints and key policies impacting on the programme. The information was then packaged in reports and policy briefs. The briefs were mainly on (i) securing agricultural land, (ii) scaling agroforestry practices, and (iii) financing agricultural production in Mali whilst in Burkina Faso they focused on, (i) forest governance, (ii) forest-based economic opportunities and ii) access to and control of land and forest resources. Further participatory identification of policy constraints and solutions to create

and enabling conditions were undertaken during feedback, validation training, sensitization / awareness raising meetings attended by 12,433 people (7,378 women) including farmers, extension and technical services (environment, agriculture and livestock) pastoralists, customary leaders, and other stakeholders especially in Ethiopia Kenya and Niger (Table 2.17.

Networking among farmers, civil society and other stakeholders was key in increasing the voices on policy challenges and possible solutions. Farmers organizations and civil society enhanced community awareness of the roles and responsibilities of local leaders in order to hold them accountable and lobby for enabling conditions; 23,892 people including 12,845 women participated in these activities (Table 2.17). Farmers and communities raised several issues that they wanted addressed by policy makers including:

- Burkina Faso -improve access to finance, markets and competitiveness by applying the law on pastoralism and ECOWAS laws
- Niger -institutionalization of innovation platforms, and financing of agricultural activities by local governments;
- Mali -promotion of sustainable family farming systems and to ensure security of small farmers land
- Kenya - improved service delivery and resource allocation water, environment and agriculture to inclusively benefit the small-scale farmers

Thus, lobbying by farmer organisations and civil society combined with strategic engagement policy makers, and contributing to policy formulation by DryDev partners were the main approaches to policy influencing. The briefs were shared to raise awareness and inform, strategy development and budgeting, whereas meetings were held to get some form of commitment by local authorities to address the presented issues. For instance, in Kenya County Integrated Development Plans (CIDP) 2018-2022 incorporated recommendations on resource allocation to the key sectors that support DryDev interventions, such as Makueni County Water Policy and associated legislation; and the Kitui County's *Ndengu* (Green Gram) strategy.

Table 2.17 Participation in policy awareness raising and lobbying

| Indicator | Burkina | Ethiopia | Kenya | Mali | Niger | Total |
|---|---|---|---|---|---|---|
| Numbers of people engaged in training and awareness raising | 600 (170 W) | 445 (105 W) | 11,147 (7,091 W) | 121 (12 W) | 120 (26) | 12,433 (7,392 W) |
| Numbers of people attending stakeholder engagement/ lobby platform/meetings | 36 | 98 (30 W) | 11,147 (7,091 W | 121 (12 W) | 12,490 (5,712 W) | 23,892 (12,845 W) |

# 3.0 PROGRAMME GOVERNANCE, COORDINATION AND TECHNICAL SUPPORT

## 3.1 Programme Governance & Oversight

Programme coordination and governance activities were undertaken to ensure coordinated high-quality delivery and timely reporting. Across all countries core teams and regional coordination committee meetings were held giving strategic guidance on various issues including measures to enhance the sustainability of programme interventions and ensuring that proper exit and sustainability strategies are formulated and implemented. Joint quality monitoring meetings were also used to assess the preparedness for exit in terms of building blocks including capacity of famers and stakeholders, linkages for inputs, markets, finance and other services. In most countries the exit strategies had been initiated, however the limited capacity of the farmer organization and weak linkages with local government and service providers posed a great threat to sustainability and became the point of focus for 2019. In addition, there were issues of insecurity especially in Mali, Burkina Faso and Ethiopia that prevented some programme sites from being visited at least for some part of the year. Furthermore, the final Programme Advisory Committee (PAC) mission was undertaken with a field visit to the sites in Tigray region in Ethiopia which lauded the great progress made but emphasized the need to put in place a strong foundation for exit and up scaling (Photo 3.1).

Photo 3.1. Members of PAC in a field site in Samre, Ethiopia

The annual report for 2017 and the detailed implementation plan for 2019 were successfully compiled and submitted. The no cost extension was approved and the programme extended to July 2019. Major challenges were related to staff turnover and loss of key staff within NLOs and IPs due to anxiety on the future – beyond July 2019. This affected nearly all countries, though some more than others, from around mid-2018. In addition, the restructuring of country consortia in some countries derailed implementation. However, in Burkina Faso the new country team led by ICRAF has made great progress in catching up with the seasons and targets. There were delays in report submissions by NLOs, with some attributing it to delayed reporting by their implementing partners. Quarterly compliance reviews were undertaken in the Sahel and the schedules for reporting by partners revised to quarterly basis to improve compliance and financial management.

## 3.2 Facilitation of Options-by-Context & Related Action Learning Activities

Action learning/ planned comparisons (PCs) activities continued in 2018 with the support from the IFAD-EU Land Restoration project which leveraged funds for field staff to support farmers and collect data. All the PCs were reviewed and four more introduced in the Sahel. In total 4,532 people of whom (3,220 were women participated in the 20 PCs across the five countries (Table 2.18). Several publications were drafted documenting the process and results of the action learning.

Table 3.1: List of planned comparison activities and number of farmers involved across the five DryDev countries

| Country | Planned Comparison | Participating farmers in 2018 |
|---|---|---|
| Ethiopia | 1. Tree planting practices with varying watering and mulching regimes | 229 |
| | 2. FMNR and enclosure with enrichment planting | 236 |
| | | **312 (65 W)** |
| Kenya | 3. Tree planting comparing niches, hole sizes and mulching | 1903 |
| | 4. Post-harvest pest control evaluating farmer practices | 1193 |
| | 5. Zaï pits – testing sizes and mulching practices | 1123 |
| | | **2,136 (1,596 W)** |
| Burkina Faso | 6. Evaluation of the survival rate and growth of indigenous fruit tree | 582 (145 W) |
| | 7. Comparing dryland cereal and legumes yield on farm fertilized with liquid fertilizer and farmer practices | 1,244 (1,036 W) |
| | 8. Effects of liquid fertilizer on the physicochemical properties of soils and yields of cabbage and onion on DryDev supported market gardening perimeters | 402 (390 W) |
| | 9. In Situ Grafting of *Vitellaria Paradoxa* C. F. Gaertn in the Province of the Sanguie | 45 (36 W) |
| | 10. Onion Warrantage and Rural Women's Financial Empowerment, Challenges and Prospects | (96 W) |
| | 11. Comparative study of four dimensions of rectangular zaï pockets with that of the spherical shape of the ordinary Zaï popper on the yield of sorghum in the Sudanian zone of Burkina Faso | 8 (0 W) |
| | 12. Comparative investigation of farmer's criteria for cowpea varieties via farmers' participatory varietal selection | 89 (52 W) |
| | 13. Farmers perception of pastoral land management on contribution of conflict reduction and livestock production | 273 (68w) |
| | | **1,244 (1,036)** |
| Mali | 14. Evaluate the survival rate and growth of planted fodder/fruit trees under land restoration | 1639 (209w) |
| | 15. Evaluation of plant extracts in vegetable field pest control | 81 |
| | 16. In-field water harvesting using contour bunds | 318 (0w) |
| | | **1,639 (209w)** |
| Niger | 17. Evaluating the efficiency of biopesticides and local sprayers on legumes pest and parasites control | 211 (33) |
| | 18. Seeds soaking Technique as Tool to Improve Germination (for sorghum, millet, cowpea and groundnut) and seedling establishment in semi-arid sites | 21 (0w) |
| | 19. In situ grafting of indigenous fruit trees in Farmer Managed Natural Regeneration (FMNR) | 433 (180 w) |
| | 20. Comparing the impact of half moon and zaï pits on soil restoration and biomass production | 433 (180 w) |
| | | **433 (180 w** |
| | | **4,532 (3,220 W)** |

Most of the farmers involved in the PCs have made informed choice about the options best suited for their biophysical, economic and sociocultural contexts. Some of the key learnings from PCs were:

**Tree planting:** Mulching, bigger planting holes up to a certain diameter and watering improved tree seedling survival (still need further learning) in Burkina Faso, Ethiopia, Kenya and Mali (Photo 3.2; Figure 3.1). The project holds a lesson in this respect. More comprehensive evaluation that combined biophysical environment and social factors related to the farmers are needed to explain success in plantation and involvement of farmer in the participatory learning activities induce behavioral change in terms of care needed for planted tree seedlings. For example, 90% of farmers engaged in the activities now consider increasing the planting pit size as compared with their previous practice.

Photo 3.2. Tree planting in Burkina Faso

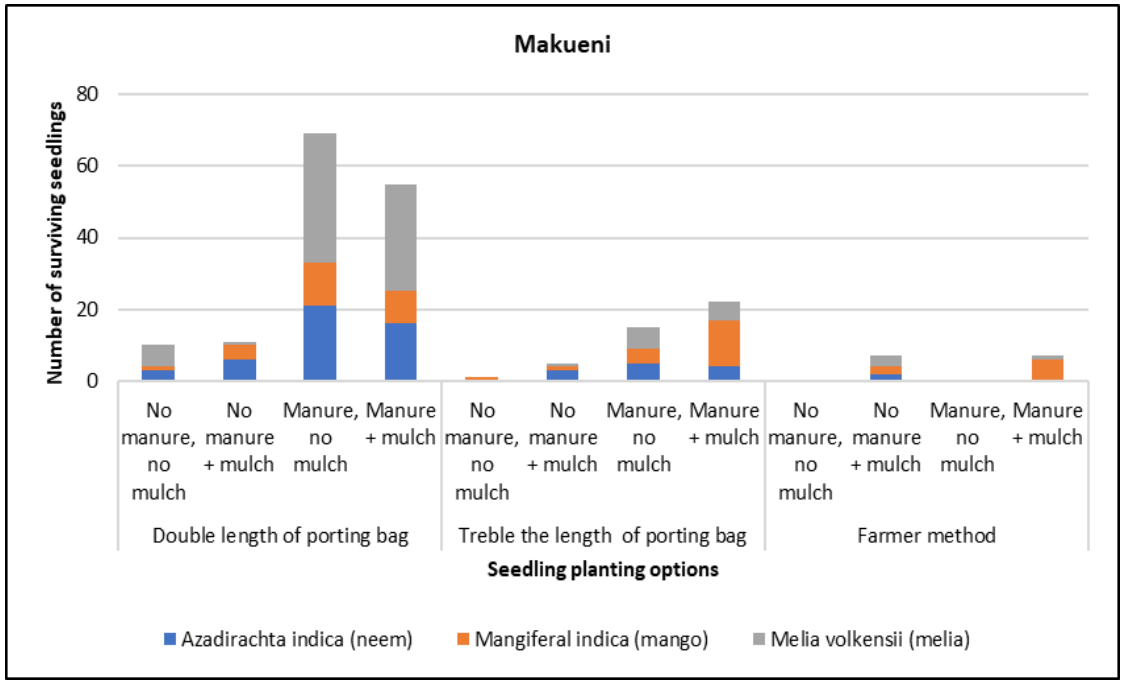


Figure 3.1. Performance of seedlings in the tree planting PC in Kenya

**Planting basins (zai pits):** larger rectangular planting basins are more cost-effective than smaller ones; manure application improved yields in the planting basins, mainly associated with higher nutrients and improved water retention (learning is necessary) in Mali and Kenya (Photo 3.3)

Photo 3.3 Zai pit PC s; (left)Maize growing in improved planting basins and ordinary planting basins (front) in Mali and (right) maize planted in zai pits in Kenya

Pest control: Pesticidal plants' extracts are effective in controlling field (mainly in vegetable garden) and storage pests, with specificity to insects, however they require repeated application compared to synthetics (Photo 3.4). The farmers in Kenya, Mali, and Niger appreciated the technique which costs less than chemical pesticides.

Photo 3.4. Use of pesticidal plant extracts (biopesticide) in PCs; (left) damaged cowpeas and undamaged maize treated with neem after in Makueni, Kenya and (right) application of neem for field pest control in Kifosso, Mali

FMNR: enclosures with enrichment planting and other silvicultural management practices increased biomass /benefits from trees and grasses in Ethiopia and Niger, for instance in Niger it increased fodder availability by 6-fold (Photo 3.5).


Photo 3.5. FMNR PCs; (left) PC plot for pasture restoration in Niger and (right) Grass harvesting from PC plot in Ethiopia

## 3.3 Technical Support and Capacity Development

Even though capacity development activities led by ICRAF were scaling down, they remained of critical importance to enable and support partners develop and implement transition and exit strategies that ensure farmer organization have the requisite capacity, linkages, enduring institutions and enabling condition to continue with the programme interventions beyond 2019. The main interventions were the development of training materials, promotion of co-learning and scaling processes and engagement of scaling stakeholders and policy makers to dialogue and lobby for better conditions. In total 16 tools were developed/adapted and or promoted to improve quality of interventions and 15 studies conducted to generate information to inform co-designing of plans and strategies (Table 3.2).

ICRAF staff participated in all technical country team meetings giving on the spot technical support and guidance on watershed management, agroforestry, soil and water management, small scale irrigation, climate-smart technologies pre- and post-harvest management, value chains, gender, institutional development, policy, monitoring and evaluation (M&E), communication, as well as evidence generation and scaling. More than 1,820 people comprising programme staff, lead farmers, extension staff and other local stakeholders were trained (Table 3.3; Photo 3.6).


Photo 3.6. Training farmer trainers: (left)TOTs for farm ponds pose for a picture and (right) Mali field technician on grafting at ICRAF nursery in Mali

Table 3.2: Tools developed/adapted, and studies conducted to inform/improve progrmme implementation

| Technical support | Tool | Study/Survey |
|---|---|---|
| Landscape management | 1. Application of GIS and remote sensing to Assess and make recommendations for viable for Land and Water Resources Management options in Drydev Sahel Countries<br>2. WAPOR modeling for Water productivity<br>3. Training/sensitization on systemic approach to resource management in sub-catchment | 1. Produced 108 maps for Sahel (Burkina Faso, Mali and Niger) including 15 base maps on land use and cover, digital elevation model – DEM, soil texture, rainfall and temperature and 93 thematic maps on land and water management options, potential soil loss hotspots and runoff potential for RWH.<br>2. Conducted water productivity modeling using FAO WAPOR for 6 intervention and 6 comparison DRYDEV sub-watersheds in Kenya. |
| On farm soil water conservation and trees | 4. Automation of Farm Irrigation system<br>5. Adaptation and of the groasis Boxx to improve tree growth<br>6. Hydrogel/Polymer improving water holding capacity around tree seedlings<br>7. Technical manual: succeeding with agroforestry trees and shrub planting in the Sahel<br>8. Technical manual and image tool box on in situ grafting of agroforestry species<br>9. Akvo FLOW tool for project team to monitor and evaluate, create surveys and generate online maps to view | 1. Mapping of past, present & projected Drydev interventions in the 6 sub-catchment sites<br>2. Improving efficiency of pond components and system.<br>3. Perfecting irrigation scheduling<br>4. Siting of On-farm SWC interventions.<br>5. Studies on dew harvesting for growing of trees and horticultural crops<br>6. Conserving water for crop use by mitigating against seepage and evaporation losses.<br>7. Nursery enterprises viability assessment<br>8. Mapping of DryDev intervention in Mali and Burkina Faso |
| Climate smart agriculture production | 10. Contextualized climate-information tools and basket of options for smallholders to tempering the negative effects of weather-based changes (through PICSA)<br>11. Technical guidance to set basins for rainwater harvesting to buffer skewed rainfall distribution<br>12. Training module on improved rectangular Zai pit | 9. Effectiveness of extension services in supporting small scale farmers to respond to climate variability in Kitui Rural Sub-County, Kenya<br>10. Comparative study of various locally adapted soil water conservation practices works on sorghum yield |
| Market and financial linkages | 13. Tool for conduction financial education with farmers (modules: savings, loan and budget) | 11. Onion warrantage and Rural Women's Financial Empowerment, Challenges and Prospects<br>12. Analysis of policies and supply systems in inputs and agricultural equipment in Burkina Faso (with focus on DryDev sub-catchments) |
| Policy, governance and institutional strengthening | 14. Farmer Organisation governance (capacity and performance) assessment tool | 13. FO/leadership assessment |
| Co-learning, evidence generation and scaling | 15. Field guide on the design and implementation of the action learning | 14. Co-learning in SWC + trees and post-harvest pest management in Kenya<br>15. Uptake of technologies, practices and approaches promoted by the programme |

Table 3.3: Trainings conducted by ICRAF staff in 2018

| Technical thematic areas | Work package | Numbers trained |
|---|---|---|
| Training on beekeeping | 1 | 57 (1 W) |
| Refresher training on agroforestry tree planting and rolling of planned comparison on tree planting | 1 | 584 (64 w) |
| Training on tree planting data capture using Open Data Kit (ODK) | 1 | 14 (0 w) |
| Improvement of Shea in situ grafting | 2 | 52 |
| Training on girdling, adult tree management and parasitic Loranthaceae control on Shea tree | 2 | 30 (11 W) |
| Training on agroforestry, nursery management and tree propagation technique for technical staff | 2 | 68 (22 W) |
| On farm soil water conservation and trees | 2 | 106 (43 W) |
| Refresher training on FMNR and methods of data collection from FMNR PCs for DryDev staff and experts from the government | 2 | 9 (1 W) |
| Refresher training on in situ grafting of Ziziphus and pest control on flowering Ziziphus | 2 | 36 (12W) |
| Participatory Integrated Climate Services for Agriculture (PICSA) | 3 | 32 (4 W) |
| Climate smart agriculture production, practices and adaptation | 3 | 121 (52 W) |
| Trained farmers and 12 field officers on the design and implementation of the pest control action learning | 3 | 1094 (873 W) |
| Post-harvest management | 3 | 235 (153 W) |
| Transformational leadership | 6 | 3 (1 W) |
| Enumerators training for field staff using on real time data collection tools e.g. AKVOFLOW | 7 | 42 |
| Training on AKVO Lumen | 7 | 40 (6 W) |
| Collaborative learning and evidence generation | 7 | 9 |
| **Total trained** | | **1,820** |

In addition, a number of reports, policy and technical briefs were developed and reviewed, as part of ICRAF's support for these activities especially in the Sahel. Regional reflection meetings were held in the Sahel, however in East Africa the funds were used to support partner staff and farmers to participate in national and international fora including a famer exchange visit to Ethiopia for the Kenyan sub catchment management committees, hosting a side event during the GLF Nairobi, participating at the 2nd Africa Congress on Conservation Agriculture ( ACCA) in Johannesburg by six country team members, as part of capacity building. In addition, there was an international in-field training course on Rainwater Harvesting in Kenya for 95 participants from Burkina Faso, Niger, Kenya, Uganda, DRC, Sudan, Ethiopia, Tanzania and the Netherlands. The course, which took place from 21-27 June 2018, provided participants with an in-depth understanding of different practical methods, technologies and applications in catchment management and rainwater harvesting. The course targeted development workers, engineers, extension staff, policy makers and government representatives active in the field of water management in Africa. DRYDEV was able to show case several successful rainwater harvesting interventions in Machakos and Makueni counties. http://www.rainfoundation.org/news/rain-announces-field-training-rainwater-harvesting-kenya/

## 3.4 Monitoring and Evaluation

Collection, storage and analysis of output and outcome tracking data remained a challenge as the proposed online database could not take off due to various constraints. The data base required that each country uploads a complete farmer profile file including unique farmer identifier as specified in the database design. In addition, primary data sources for each event/activity with date and name of participants to be selected from the uploaded profiles were required to populate the database. This, however, proved to a very difficult to do retrospectively for all the country teams. Thus, the data base was still partially developed by end of 2018. Event tracking/monitoring continued throughout the year with updated output tracking tables received together with the narrative reports. Comprehensive programme monitoring data collection was undertaken d in Burkina Faso and Mali with support of Akvo http://www.drydev-cartographie.com/drydev). The data for the 2017 uptake surveys was analysed and reports circulated and reviewed with partners to incorporate areas lagging in planning for 2019 The key recommendations form the uptake surveys were mostly about increasing budget allocation to interventions promising whose uptake was low due to low exposure. As well as strengthening governance and local institutions to ensure sustainability and scaling up and out of the programmer's approaches, both of which became key in 2019. The 2018 uptake survey was cancelled due two large scale M&E related events; the midterm evaluation which was commissioned by DGIS and coordinated by ICRAF across the five countries and the end of programme impact evaluation which was to take place beginning of 2019.

## 3.4 Communication and Programme Visibility

The DRYDEV's website https://drydev.org/ remained the main platform used for communicating and disseminating and sharing of programme outputs and achievements continuously updated by all country teams. With the support of ICRAF and WVA in East Africa the country teams produced several information communication and extension materials for farmers and stakeholders including technical briefs, information sheets, flyers etc. In Burkina Faso, the new programme team, led by ICRAF-NLO, launched a monthly newsletter and a bi-annual magazine which are regularly produced and widely distributed to share evidence and success stories with stakeholders including government agencies. In Mali and Niger, a communication officer based in Bamako, provided support to country in producing success stories and newsletters.

Furthermore, to enhance documentation and uploading to the website Akvo conducted training on Akvo RSR reporting, AkvoFlow & AkvoLumen data collection, monitoring and understanding. This resulted in the designing and inputing of suboutcome tracking data online which will be published in 2019. ICRAF also spearheaded the publishing of DryDev data in the Internatinal Aid Transparency Initiative (IATI). The programme data in IATI was updated twice in 2018 presenting output/outcome/impact indicator tracking and financial reports online. https://iatiregistry.org/publisher/icraf . Presentations were made in various fora and materials published/disseminated including:

1. BF1 TV : https://drive.google.com/file/d/17wTapoXxTD4Hi3XkrH12SRkrwcUWX-0J/view?usp=sharing
2. Write up and publication of Kitui JQM visit: Farm ponds offer a unique integrated solution for Kitui County, Kenya.

3. Site web DryDev (English): https://drydev.org/video/young-people-from-kiembaras-artisanal-gold-sites-restore-degraded-lands-french/
4. Site youtube de GLDC: https://www.youtube.com/watch?v=U0a-MiEHaMw&feature=youtu.be
5. Agribusiness TV (français): http://agribusinesstv.info/fr/burkina-faso-les-jeunes-des-sites-auriferes-artisanaux-de-kiembara-reviennent-a-lagriculture-grace-a-des-strategies-innovantes-de-restauration-des-terres-degradees/
6. https://drydev.org/video/sadi-burkina-faso/
7. https://drydev.org/video/young-people-from-kiembaras-artisanal-gold-sites-restore-degraded-lands/
8. https://drydev.org/video/onion-warrantage-an-innovative-innovation-of-the-onion-sector/
9. https://drydev.org/video/proximity-assistance-mechanism-for-the-recovery-of-degraded-lands/
10. https://drydev.org/video/resultats-du-programme-drydev-en-2018-dans-les-communes-de-zogore-et-kiembara-burkina-faso/
11. Observateur Paalga lefaso.net: http://lefaso.net/spip.php?article84239
12. WWW in Stockholm sofa discussion -What sorts of knowledge, resources and partnerships are needed to improve the situation on the ground in drylands, and how can local successes be scaled up? https://we.tl/t-3bqWJ4CccD
13. Why keep Africa's dryland forests alive? - http://blog.worldagroforestry.org/index.php/2018/09/14/why-keep-africas-dryland-forests-alive/
14. Global Landscape Forum -https://events.globallandscapesforum.org/agenda/nairobi-2018/day-2-thursday-30-august-2018/parallel-sessions/side-event-4-transforming-livelihoods-and-landscapes-rehabilitation-and-restoration-of-african-drylands

## 3.5 Policy Analysis and Influencing

Policy analysis and influencing had three to five key steps depending on the country's socio-political context including i) stakeholder mapping, ii) policy analysis and synthesis, iii) awareness raising campaigns, iv) alliance building and lobbying, and v) engagement of policy makers and contributing to policy/strategy formulation. ICRAF supported and led the policy analysis and synthesis as well as development of technical/policy briefs used for awareness raising and engagement activities. The NLOs spearheaded the awareness campaigns, alliance building and engagement of policy makers. In Burkina Faso and Mali, several policy briefs were developed, reviewed and published awareness campaigns were conducted, and some efforts made in informing policy processes. Ethiopia and Niger focused more on raising awareness on the current policies based on the synthesis reports. In Kenya all the key steps were attempted including alliance building, lobbying and inputting into the formulation of policies and strategies. Policy makers and scaling stakeholders were engaged at district level meetings in all countries with national scaling stakeholders' workshop being organized in Ethiopia, an event planned for 2019 in the other countries.

## 3.6 Scaling of Evidence and Learning

Key activities planned for the year 2018 were attempted and or successfully implemented in most countries. Lessons learnt, and evidence generated on the contextual appropriateness of interventions were extensively documented and shared at various fora. For instance, several co-learning events at community and subnational level engaging scaling stakeholders and policy makers were organised reflecting on appropriateness and effectiveness of options (What works, for who, where, with what, with who?). A national scaling stakeholders' workshop was only held in Ethiopia whilst the other countries have planned for this event in 2019. In addition, ICRAF facilitated the participation and presentation of lessons from the programme to various international fora including:

Photo 3.7. DryDev staff and speakers at the Nairobi Global Landscape Forum, Side Event, UNEP, August 2018

1. Hosting a side event during Global Landscape Forum 29-30th August 2018: Side Event 4: Transforming livelihoods and landscapes: rehabilitation and restoration of African drylands
2. Make a presentation on evidence generation and scaling during the Kenya Inaugural High Panel Conference on Agriculture Research in Kenya 12th September 2018 http://www.worldagroforestry.org/event/inaugural-high-panel-conference-agriculture-research-kenya
3. http://www.tropentag.de/2018/abstracts/posters/869.pdf Tropentag 2018. Global food security and food safety: The role of universities. Sep 17-19, 2018, Belgium
4. Ethiopia Drydev contribution to National Climate Change Initiative 15th November 2018
5. Making a presentation on lessons learnt from DryDev to the Regreening Project Steering Committee meeting and field visit in Ethiopia 19-24th November 2018

# 4.0 KEY CHALLENGES AND OPPORTUNITIES

## 4.1 Key Challenges and Constraints Encountered in 2017

- Like the past years, unfavorable security situations in some target countries continued to pose serious challenges to programme implementation and monitoring. The Sahel countries were most affected.
    - Mali: arising for from the increased incidences of banditry and terrorist attacks in some parts of the intervention sites (such as the districts of Bankass, Bandiagara and Tominian). For instance in February 2018 the military banned the movement of motorcycles and pick-up vehicles (two most common modes of transport) in these areas. This forced the team to resort to using public transport and renting of others type of vehicles to transport staff in the field for the implementation of activities. Other coping strategies included the covering of several themes in one training sessions.
    - Burkina Faso:, much of the sub-catchments of Zogoré and Kiembare were affected by insecurity, with the latter sub-catchment being placed under state of emergency by the Burkina Faso Government. The Burkina situation, in the two sub-catchments, affected the movement of programme staff implementation sites, but farmers and programme beneficiaries reported their inability to service the loans they acquired under DryDev's value chain development and sustainable input system activities.
    - Ethiopia; has experienced sustained protests some areas including DryDev sites. The political changes in 2018, and issues that arose from those changes, tended to impose negative impacts on certain DryDev activities. They also discouraged the beneficiaries from investing in improved technologies and reduced their loan repayment rates. The DryDev Ethiopia team responded to this challenge by continuing to raise awareness of the value of loans for the improvement of value chains and implementation of business plans.
- Staff changes / departures: Staff departures from the programme became more frequent in 2018, especially within the partner organizations. Nearly every country was affected by the departure of critical staff during the year under review. It may be suggested that the increase in these staff changes in 2018 arose from the uncertainly of the future of DryDev, as the programme drew closer to its end in 2019. Several staff responded to such uncertainty by positioning themselves with other projects and / or organizations to get longer and more certain contracts. In some cases, the partner institutions themselves engineered these staff changes through internal re-structuring of their staffing positions, which saw some staff that had previously been recruited for DryDev being re-deployed to other projects. Overall, the effects of these changes were the weakening of the delivery capacity in the organizations and countries affected. M&E specialists was one key position that was affected across the countries. DryDev lost in Niger, Ethiopia and Kenya. Although the respective organizations filled the positions through new recruitments or internal restructuring. Programme Management was able to detect, most notably in Niger, significant lowering of the standards of performance in this critical position. Staff turnover and subsequent changes were not limited to the programme but also extended to the government departments that worked closely with DryDev. For example:
    - In Ethiopia, where the country programme works more closely with the local government departments the reforms initiated by the new government saw higher-than-normal staff changes at the woreda level. This created capacity gaps for sector office. However, these changes were managed by the country programme coordination team by working closely

with the in-coming government staff and continuous capacity building of new government staffs, as well as by leveraging resources.
    - As part of reorganization of service delivery, In Kenya, the county governments of Kitui and Makueni transfered key field staff who had been supporting the programme, and whose capacity had been enhanced by DryDev. This forced the DryDev Kenya team to invest efforts and resources to induct the new county staff so they could continue their support to implementation and ensure annual targets were reached.
- Natural disasters posed great challenges, especially in Kenya where extreme weather conditions were experienced (unexpected and early onset of very heavy and torrential March-May rains that disrupted farmer engagements, destroyed crops, road and water infrastructure), followed by an outbreak of armyworm in the programme sites.
- Failure by some of the partners to provide certain services to meet their obligations to the programme and / or the beneficiaries. For example, in Niger, the commitments made by the Rural Engineering of Malbaza and Dogon Kiria failed to provide the needed technical information on past feasibility studies, tender documents and quotations as they had agreed with the programme team. Moreover, some of the service providers (especially those linked to government departments) were found to have little autonomy to conduct the activities and provide the services that were expected of them. These bottlenecks had the effect of slowing down the implementation of certain planned activities.
- Some countries, such as Niger, have weak micro-finance infrastructure, which means that there are not many MFIs that are willing (or have the necessary experience) to provide financial services to rural-based enterprises and such as the value chains and VSLAs promoted by DryDev.

## 4.2 Opportunities Identified in 2017

- As the programme drew closer to its end, programme teams in most target countries continued to identify possible areas of alignments between DryDev interventions and respective government policies and approaches, as a way of enhancing both the sustainability of programme interventions and the leveraging of strategic partnerships and resources. For example, in Ethiopia, most of DryDev WPs are well aligned to Ethiopian national and regional governments' key policies and strategies. This alignment has helped with resource leveraging (i.e. technical, financial & material) and created strong coordination with key government sectors.
- As DryDev has generated greater publicity resulting higher demands for scaling out of programme interventions to other areas and engage more farmers. This increased demand for programme interventions, created more opportunities for strategic partnerships and leveraging of additional resources.
- Partnerships with local radio stations, which reach hundreds of thousands of listeners every day, run programmes that air information on DryDev-type interventions in the local languages were intiated in all the five countries. This provided excellent opportunities for each DryDev team to broadcast its messages to target communities and carry out its policy awareness campaigns.
- In Mali, the success of the DryDev approach has inspired the World Bank to design a project titled '*Mali Drylands Development Project*' (PDAZAM) which aims to improve agricultural productivity and strengthen resilience of rural households living in the targeted dryland areas.

The NLOs and ICRAF teams are working with the PDAZAM implementing agency to discuss how this project can extend and consolidate the achievements of DryDev and what role DryDev partners can play in the implementation phase

# 5.0 LESSONS LEARNED

## 5.1 Working with Partners

- Partnerships and close linkage with government departments has proved to be critically important for the success of the programme, in all target countries. Of critical importance has been the linkage between the country programme teams and the respective government departments and staff. In Ethiopia, close working relationship between the DryDev team and the Woreda sector offices helped fill the gap created by frequent staff changes in the local government staff.
- Partnerships with MFIs has helped leverage the much-needed services that have strongly enhanced the beneficial effects of DryDev interventions. In Kenya, linkages made with input suppliers (e.g. G-North) and financial institutions (KCB Foundation and Equity Bank) provided farmer-friendly packages for acquiring inputs such as farm pond liners, and drip kits and are anticipated to enhance technology uptake. Furthermore, the Kenya Cereal Enhancement Program (KCEP) within the programme area also enhanced value chain financing for key inputs such as seed, fertilizer, post-harvest technologies and land preparation services and conservation thus offers an opportunity for scaling interventions

## 5.2 Good Practice/Innovation

- Contextualization of options to local contexts has proved important in increasing chances of success In very poor communities, it became essential to provide some input as “seed” for community mobilization and support. For example, in Ethiopia, a minimal investment by DryDev in a poultry demonstration centre in Ts/Emba led to a large number of farmers being trained and taking up poultry production. The centre is functioning now not only as an extension and learning centre, but also to support and link farmers with input suppliers.
- Provision of water, (runoff ponds, sand dams, wells, boreholes, etc.) whether for domestic and livestock use or for off-season crop / vegetable irrigation, has proved to be an important investment in the drylands, where water scarcity is one of the limiting factors. Activities that provided water to the communities enabled the beneficiaries to increase their staple food production as well as vegetables form market gardens. Livestock survival through the (sometimes) lengthy dry periods was enhanced, and water for domestic use was supplied in some communities.
- In Kenya, the Digifarm platform and DryDev’s farm pond planner were found to be key potential innovations that could unlock credit access. Digifarm relies on a big data model developed by FarmDrive to score farmers for financing, based on historical data on their farms. The Farm pond planner simulates and generates periodic profitability status of farm pond thus helping financial institutions to make informed decisions. The programme will enhance efforts to link the farmers to these platforms for sustainability.

- Still in Kenya, the Capillary Wick Irrigation System (CWIS)[3] was observed to be labour-saving as well as time and water costs compared to conventional watering. It is highly recommended for the elderly and farmers living with disability as a way of providing them with highly-nutritious vegetables with minimum demands for labour and water.

## 5.3 Communication

- Effective communication methods employed by country teams has helped to raise the visibility of the programme and increase the demands for programme support. For example, following the restructuring of the programme in Burkina Faso in 2017, the new ICRAF-led country coordination unit developed effective methods for highlighting the activities of the programme in the six target sub-catchments. This increased the programme's coverage in local and national media, drew the attention of the communities as well as the local and national government staff and raised the demands for a wider reach by the programme.
- The use of modern tele-conference facilities (such as Skype) and social media platforms (such as Whatsapp) has greatly enhanced the linkage and closeness of the programme staff in the consortium. Progarmme meetings (between partners) became more regular, and the staff from different country partners (and even across the countries and regions) shared experiences and ideas without the need for expensive and time-consuming travels.

## 5.4 Programme Management

The use of modern telecommunication platforms (mentioned in Section 5.3) also helped strengthen programme management and coordination, both within and across countries and regions

[3] Capillary Wick Irrigation System (CWIS) - a sub-irrigation system that involves the use of a wick that delivers water by capillary movement from a reservoir to the plant growing in a medium

# 6.0 COUNTRY REPORTS

## 6.1 ETHIOPIA

The DryDev programme in Ethiopia is implemented in 29 sub-watersheds (SWS) in six districts (or *woredas*) of two regional states: Oromia (Boset, Gursum and Jarso woredas) and Tigray (Tseada Emba, Kilite Awulalo and Samre woredas). The programme is being implemented by three organizations, namely, World Vision Ethiopia (WVE) as the national lead organization (NLO) and implementer in Oromia and Tigray regions, Relief Society of Tigray (REST) implementing in Tigray region and Ethiopian Orthodox Church — Development and Inter Church Aid Commission (EOC-DICAC) implementing in Oromia region. The activities carried out in Ethiopia in 2018, and results obtained, are described in Sections 6.1.1 to 6.1.8.

### 6.1.1 Work Package 1: Sub-Catchment Level Natural Resources Management

During the year, a total of 23,877 farmers (8,354 women) were reached by engaging in integrated sub-watershed development interventions across the 29 target SWSs. A total of 43,678 ha is now under rehabilitation.

- Activity Area 1.1: Establish and/or strengthen community watershed teams.

DryDev Ethiopia activities related to natural resources management (NRM) are mainly implemented by the wider community through community sub-watershed teams (CSWTs), who function as mobilizer, coordinator and leader of programme interventions in their areas. To ensure the sustainability of these programme interventions, the programme strengthened capacities of 367 CSWT members (99 women) and 15,429 farmers (4,781 women) in 29 SWSs. Trainings focusing on SWS community action planning, mobilization, efficient resource utilization, management and implementation of by-laws, among others, were provided for the CSWT members in collaboration with concerned local and district sector offices (Table 6.1, Photo 6.1). Besides, CSWTs participated in various meetings in their respective SWS and woredas to strengthen their capacity and leadership quality.

Table 6.1: Community sub-watershed teams strengthened during 2018

| Woreda | Number of CSWTs | CSWT members | | | CSWT and community members strengthened | | |
|---|---|---|---|---|---|---|---|
| | | M | W | T | M | W | T |
| Boset | 5 | 30 | 5 | 35 | 1,824 | 302 | 2,126 |
| Gursum | 4 | 60 | 12 | 72 | 2,531 | 1,167 | 3,698 |
| Jarso | 4 | 40 | 8 | 48 | 2,988 | 988 | 3,976 |
| K/Awulalo | 4 | 43 | 21 | 64 | 2,86 | 217 | 503 |
| Samre | 4 | 40 | 20 | 60 | 1,744 | 1,311 | 3,055 |
| T/Emba | 8 | 55 | 33 | 88 | 1,275 | 796 | 2,071 |
| **Total** | **29** | **268** | **99** | **367** | **10,648** | **4,781** | **15,429** |

Photo 6.1: Community capacity building training in Boset (left) and Samre (right) woredas

- Activity Area 1.2: Development of sub-watershed action plans.

Following strengthening of CSWTs and farmers through capacity-building sessions, a total of 18 sub-catchment action / management planning sessions and 34 plan review meetings were conducted. As a result, each SWS developed independent action / management plans which included details such as activities to be undertaken, budget, leveraged resources (from community and other institutions), implementation time frame and person responsible. Moreover, resources (mainly in-kind) worth more than US$200,000 were leveraged for SWS management activities from the community and other sources including the woreda government.

- Activity Area 1.3: Rehabilitate degraded land through tree-planting & FMNR practices

To mitigate land degradation and deforestation of the targeted SWSs, 8,631 farmers (2,627 women) were provided with on-site theoretical and practical training on farmer managed natural regeneration (FMNR), area closure and tree-planting in their respective SWSs in collaboration with the relevant government sector, the Agriculture and Rural Development Office. Further, to complement and sustain physical measures, various biological measures, such as area closure, FMNR and/or multi-purpose tree planting (also referred to as enrichment planting), have been key activities in the year. As a result, a total of 9,888 farmers (3,027 women) were mobilized during 2018, and a total of 2,670.6 ha of communal land is now under rehabilitation with these biological measures (Table 6.2).

Table 6.2: Number of community members mobilized and area covered with biological measures in 2018

| Woreda | Farmers mobilized for area closure, FMNR and tree planting | | | Area covered in area closures with FMNR and/or enrichment planting (ha) | Number of trees accessed & planted |
|---|---|---|---|---|---|
| | M | W | T | | |
| Boset | 1,349 | 436 | 1,785 | 160 | 71,700 |
| Gursum | 978 | 395 | 1,373 | 618.6 | 95,000 |
| Jarso | 560 | 143 | 703 | 650 | 189,500 |
| K/Awulalo | 1,296 | 669 | 1,965 | 750 | 101,095 |
| Samre | 390 | 280 | 670 | 425 | 109,900 |
| T/Emba | 2,288 | 1,104 | 3,392 | 67 | 165,420 |
| **Total** | **6,861** | **3,027** | **9,888** | **2,670.6** | **732,615** |

A total of 732,615 seedlings of multipurpose trees have been planted. Some of the species planted are: *Moringa oleifera*, *Acacia saligna*, *Grevillea robusta*, Jacaranda, neem tree, *Eucalyptus camaldulensis*, *Eucalyptus globulus*, *Leucaena leucocephala*, *Acacia albida*, *Acacia dicurrens*, *Olea africana*, Melia (*Melia azedarach*), *Sesbania sesban*, *Acacia seyal*, and Juniperus. In addition, the programme strengthened nine community nurseries in this reporting period across four woredas (one in Boset, two each in Gursum and Jarso and four in K/Awulalo) through provision of different nursery materials such as: seeds and tools; and capacity-building through training provided for nursery technicians.

- Activity Area 1.4: Introduce / strengthen soil conservation & water-harvesting structures

For farmers to better understand implementation of physical measures and improve their efficiency, theoretical and practical context-specific soil and water conservation (SWC) trainings were provided to 5,724 community members (1,505 women). Subsequently, 23,877 farmers (8,354 women) were mobilized to construct different physical structures to support NRM and water-buffering, such as trenches, check dams, percolation ponds, stone bunds and soil bunds. A total of 678.5 km of various water buffer structures, capable of storing 331,713 $m^3$ of water, were constructed on 7,864 ha of degraded land (Table 6.3).

Table 6.3: Trained and mobilized farmers for sub-catchment SWC across six districts in 2018

| Woreda | Farmers participating in capacity building on SWC | | | Farmers mobilized for SWC | | | Area covered (ha) |
|---|---|---|---|---|---|---|---|
| | M | W | T | M | W | T | |
| Boset | 1,250 | 317 | 1,567 | 464 | 96 | 560 | 948 |
| Gursum | 803 | 302 | 1,105 | 7,257 | 1,861 | 9,118 | 1,908 |
| Jarso | 1,110 | 178 | 1,288 | 3,349 | 626 | 3,975 | 1,582 |
| K/Awulalo | 241 | 311 | 552 | 741 | 576 | 1,317 | 1,476 |
| Samre | 197 | 179 | 376 | 1,426 | 1,490 | 2,916 | 1,533 |
| T/Emba | 618 | 218 | 836 | 2,286 | 3,705 | 5,991 | 417 |
| **Total** | **4,219** | **1,505** | **5,724** | **15,523** | **8,354** | **23,877** | **7,864** |

Photo 6.2: Sub-catchment SWC in Elalem, Gursum (Left) and Osele SWSs, Boset (right)

- Activity Area 1.5: Mitigation measures on drivers of deforestation promoted

To mitigate the impact of climate change and indoor air pollution hazards particularly for women and children, different trainings and forums on causes and drivers of deforestation and use of improved Energy Efficient Cook Stoves (EECS) and tree planting (as mitigation measures) were provided to 1,874 farmers (861 women) across all woredas. Following these capacity building events and forums, 9,825 farmers (5,578 women) were reached with different types of EECS and solar technologies, except for

those in Boset who were reached through WVE's Cook Stove Programme[4] integrated into DryDev sites. Further, in Jarso woreda, one EECS producer group was established to ensure a sustainable local supply and to generate employment.

- Activity Area 1.6: Enhance sustainable grazing management

Overgrazing and free grazing are primary drivers of land degradation all over Ethiopia, and dryland areas are especially prone because of smallholder dependency on rains, over-stocking for social and economic security purposes, and the 'problem of the commons', the fact that communal land is often under pressure which makes it increasingly marginal. Therefore, to reverse the damage to the landscape and improve livestock productivity, various capacity-building trainings and experience sharing events on sustainable grazing land management, grazing land rain water harvesting (RWH) techniques and forage production were organized and 2,646 farmers (738 women) were reached in all woredas except for K/Awulalo (as they had already reached their targets). Besides, 4,042 farmers (1,561 women) acquired improved grass and legume seeds and practiced grazing land RWH techniques. A total of 2,531 ha of communal grazing land has been sown across all woredas (Table 6.4).

Table 6.4: Farmers trained in grazing management and received forage seeds and seedlings

| Woreda | Farmers in capacity-building on grazing management | | | Farmers who received forage seeds and seedlings | | | Area covered (ha) |
|---|---|---|---|---|---|---|---|
| | M | W | T | M | W | T | |
| Boset | 1,056 | 197 | 1,253 | 619 | 415 | 1,034 | 617 |
| Gursum | 178 | 66 | 244 | 101 | 143 | 244 | 695 |
| Jarso | 352 | 330 | 682 | 125 | 15 | 140 | 234 |
| K/Awulalo | 0 | 0 | 0 | 552 | 330 | 882 | 275 |
| Samre | 102 | 86 | 188 | 290 | 182 | 472 | 624 |
| T/Emba | 220 | 59 | 279 | 794 | 476 | 1,270 | 86 |
| **Total** | **1,908** | **738** | **2,646** | **2,481** | **1,561** | **4,042** | **2,531** |

### 6.1.2 Work Package 2: On-farm Water and Soil Management

During the year, the programme focused on strengthening capacities of farmers to rehabilitate their farms, to enhance productivity of crops and livestock, to better utilize multi-purpose trees, and to continue expansion of small-scale irrigation areas. In 2018, the programme reached 8,073 farmers (2,928 women) with these initiatives and the total irrigated area expanded to nearly 4,000 ha, an increase of 700 ha (or 21%) over the irrigated area reported in 2017.

- Activity Area 2.1: Introduce & strengthen integrated soil & water management

To enhance the productivity of crop and livestock and to further address the lack of moisture in targeted SWSs, capacity-building trainings were provided to 2,938 farmers (783 women) on different in-situ rainwater harvesting techniques and soil fertility enhancement practices. Following these trainings, 8,073 farmers (2,928 women) were mobilized on their respective farms to rehabilitate land using context-specific SWC and fertility management practices (manuring, composting, and crop rotation) and as a result 2,601.6 ha of land was rehabilitated (Table 6.5).

[4] A separate programme by WVE, that DryDev Ethiopia is using to leverage resources to optimize outcomes for DryDev beneficiaries


Photo 6.3: On-farm SWC in Kora and Agona SWS, Gursum and K/Awulalo woredas, respectively

Table 6.5: Community members trained and mobilized for on-farm SWC and area covered

| Woreda | Farmers trained on SWC & soil fertility practices | | | Farmers mobilized for on-farm SWC | | | Area covered with SWC and fertility practices (ha) |
|---|---|---|---|---|---|---|---|
| | M | W | T | M | W | T | |
| Boset | 300 | 21 | 321 | 1,124 | 486 | 1,610 | 436.5 |
| Gursum | 796 | 369 | 1,165 | 876 | 138 | 1,014 | 217 |
| Jarso | 475 | 107 | 582 | 1,528 | 278 | 1,806 | 823.5 |
| K/Awulalo | 60 | 13 | 73 | 122 | 63 | 185 | 253 |
| Samre | 34 | 19 | 53 | 411 | 262 | 673 | 546 |
| T/Emba | 490 | 254 | 744 | 1,084 | 1,701 | 2,785 | 326 |
| **Total** | **2,155** | **783** | **2,938** | **5,145** | **2,928** | **8,073** | **2,602** |

- Activity Area 2.2: Enhance agro-forestry options that provide for multiple purposes

To sustainably utilize farmlands for a range of purposes, FMNR, tree planting and post planting management capacity-building trainings were provided to 5,416 farmers (1,379 women) in all woredas. As a result, 1,845 ha of farmland was regenerated with on-farm FMNR and a total of 247,511 different selected fruit and multi-purpose trees were planted on 1,576.38 ha of farmland in all woredas.

Photo 6.4: On-farm tree planting practice Takot SWS, T/Emba (left); improved mango and avocado seedlings accessed to farmers, Boset (right)

- Activity Area 2.3: Facilitate & support small-scale irrigation practices and management

To ensure food security and to commercialize production sustainably, the programme collaborated with the respective woreda agricultural irrigation offices to provide various trainings on RWH, small-scale irrigation (SSI) and efficient water management for 4,633 farmers (1,132 women). A total of 3,846 farmers (1,204 women) were supported by the programme in construction of SSI schemes.

Farmers have benefited from RWH (3,461 including 1,270 women) and SSI (6,332 including 1,822 women); a total of 3,996 ha of irrigated land has been added since the programme inception (Table 6.6). As part of the programme intervention, in the reporting period, 11.35 km of canals were constructed, increasing the irrigable land across all woredas by 171.5 ha.

Photo 6.5: Water harvesting check dam on Bara SWS, Samre

Table 6.6: Trained and benefited community members on RWH and SSI

| Woreda | Number of farmers trained on RWH & SSI practice knowledge | | | Number of farmers benefiting from RWH & SSI | | | Area irrigated by the various schemes (ha) |
|---|---|---|---|---|---|---|---|
| | M | W | T | M | W | T | |
| Boset | 1,024 | 139 | 1,163 | 2,036 | 479 | 2,515 | 559 |
| Gursum | 863 | 317 | 1,180 | 1,155 | 472 | 1,627 | 439 |
| Jarso | 464 | 174 | 638 | 946 | 380 | 1,326 | 725 |
| K/Awulalo | 110 | 109 | 219 | 936 | 814 | 1,750 | 1,167 |
| Samre | 0 | 0 | 0 | 778 | 509 | 1,287 | 903 |
| T/Emba | 1,040 | 393 | 1,433 | 850 | 438 | 1,288 | 203 |
| **Total** | **3,501** | **1,132** | **4,633** | **6,701** | **3,092** | **9,793** | **3,996** |

### 6.1.3 Work Package 3: Agricultural Commodity Production

The programme worked to further develop the input supply chain so farmers were better enabled to access inputs; 20 producer groups were started and a further 95 groups were strengthened and resourced. As a result, the programme reached 7,116 farmers (2,981 women) with climate-smart production options, making up a total of 31,063 farmers (10,250 women) reached to date.

- Activity Area 3.1: Develop an efficient input supply system

Establishing and maintaining an efficient input supply system contributes immensely to improving the agricultural production and productivity. Therefore, the programme worked with relevant government sectors to help farmers access 24 climate-smart production technologies for five food crops (wheat, maize, haricot bean, teff), six vegetables (tomato, beetroot, cabbage, carrot, onion, pepper) and four livestock aspects (heifers, chickens, concentrated animal feed, vaccine) based on the input accessing modalities. In addition, 26 producer groups were strengthened through different capacity-building events and were able to access inputs. In the reporting period, 8,717 farmers (3,919 women) were able to access supplies of various inputs for crops and livestock in line with the input accessing modality (Table 6.7). As a result, a total of 1,187.4 ha of land was managed with promoted agricultural technologies/practices (agronomic and fertility practices).

Photo 6.6: Potato seed produced by seed producer group Jun 2018 (Jarso)

Table 6.7: Number of farmers linked to improved types of inputs and groups established

| Woreda | No. farmers linked to crop inputs | | | No. farmers linked to livestock inputs | | | No of techn. | No. producer groups estab/strengthened |
|---|---|---|---|---|---|---|---|---|
| | M | W | T | M | W | T | | |
| Boset | 321 | 295 | 616 | 217 | 197 | 414 | 5 | 5 |
| Gursum | 1,381 | 1,033 | 2,414 | 75 | 151 | 226 | 6 | 0 |
| Jarso | 1,331 | 1,084 | 2,415 | 62 | 164 | 226 | 7 | 4 |
| K/Awulalo | 127 | 126 | 253 | 60 | 39 | 99 | 0 | 1 |
| Samre | 397 | 142 | 539 | 38 | 34 | 72 | 2 | 1 |
| T/Emba | 578 | 301 | 879 | 211 | 353 | 564 | 4 | 15 |
| **Total** | **4,135** | **2,981** | **7,116** | **663** | **938** | **1,601** | **24** | **26** |

- Activity Area 3.2: Capacity development on commodity production & utilization

During the reporting period, various types of trainings on promoted climate smart production options, both for crop production (agronomic practices for crop and vegetable productions) and livestock husbandry (livestock health, feeding, small ruminant/shoat fattening, beekeeping, etc.) were provided for 650 farmers (270 women). For example, in Boset, a farmer field day was conducted which involved 279 people (168 women) from the wider community, including farmers and their respective woreda, zone and regional stakeholders for selected value chain commodity and fruit production.

- Activity Area 3.3: Formation and strengthening of producer groups

For the purpose of improving the value chain commodity production, easy access to inputs and improving incomes of farmers, the programme invested in the formation and strengthening of producer groups. As a result, a total of 20 producer groups were established in 2018 in Boset, Gursum, Jarso and K/Awulalo woredas. A total of 95 existing and newly established producer groups have been strengthened through trainings such as business plan development, access to inputs, post-harvest handling, bargaining with value chain actors, market linkage and product advertising. To enable the different producer groups to work efficiently and effectively, 177 group and individual business plans were developed. A total of 3,643 farmers (973 women) were linked with various stakeholder institutions in private and public sectors for input access and output marketing purposes.

### 6.1.4 Work Package 4: Enhancing Market Access

In 2018, DryDev Ethiopia focused on enhancing the capacity of leaders and members of farmer organizations (FOs) to minimize post-harvest losses, to consolidate understanding about market linkage, value chain (VC) and financial literacy, to build leadership skills within community-based

organizations, and to provide platforms for knowledge-sharing, decision-making and learning. A total of 7,289 farmers (3,386 women) engaged in the various trainings delivered through WP4, contributing to 163 business plans being finalized (vs 115 plans in 2017) across the nine selected value chain commodities with 98% of these farmers linked to market information providers.

- Activity Area 4.1: Promote post-harvest technologies

To minimize post-harvest losses, which is about 30% of the yield in Ethiopia, and to reduce farmers' immediate sale of their produce at a low price after harvest, trainings on post-harvest management for crop and livestock was provided to 3,013 targeted farmers (1,218 women) in collaboration with the relevant government sectors in all woredas. Farmers engaged in improved haricot bean production in Boset woreda were facilitated to access modern warehouse (Table 6.8). In the reporting period, 36 post-harvest technologies (such as improved warehousing, honey collection and processing center, vegetable boxes, honey and milk processing and poultry equipment etc.) were promoted and accessed through DryDev's input access modality across all woredas. Following the training on post-harvest management, 3,096 farmers (1,183 women) were linked to and supported with post-harvest technologies.

Table 6.8: Number of post-harvest technologies (PHT) promoted and farmers linked

| Woreda | Farmers trained on agri-processing/PHT | | | Farmers acquired PHT | | | Number of PHTs promoted |
|---|---|---|---|---|---|---|---|
| | M | W | T | M | W | T | |
| Boset | 557 | 136 | 693 | 174 | 10 | 184 | 1 |
| Gursum | 218 | 327 | 545 | 220 | 167 | 387 | 13 |
| Jarso | 324 | 83 | 407 | 403 | 165 | 568 | 13 |
| K/Awulalo | 402 | 235 | 637 | 371 | 291 | 662 | 5 |
| Samre | 95 | 74 | 169 | 191 | 176 | 367 | 1 |
| T/Emba | 199 | 363 | 562 | 554 | 374 | 928 | 3 |
| **Total** | **1,795** | **1,218** | **3,013** | **1,913** | **1,183** | **3,096** | **36** |

- Activity Area 4.2: Capacity development for farmer and other value chain actors

To ensure all value chain actors have equitable benefits along the chain, the programme organized capacity building on VC principles, market linkage between producers and potential buyers (input-output market), stakeholder management, business plan development, financial literacy and management and leadership. A total of 4,113 farmers (1,557 women) and other VC actors engaged in the trainings across the identified value chain commodities. Following these trainings, 163 group and individual business plans were developed. Seven multi stakeholder VC platforms were conducted in this period to facilitate and promote the VC interventions. One market analysis study was completed in each district, apart from Samre, for the selected VCs (Table 6.9).

Table 6.9: Business plans, market studies and value chain trainings

| Woreda | Business plans developed | Market analysis studies completed | Trainees in VC | | | VC platforms established/ engaged |
|---|---|---|---|---|---|---|
| | | | M | W | T | |
| Boset | 4 | 1 | 732 | 539 | 1271 | 1 |
| Gursum | 5 | 1 | 448 | 374 | 822 | 1 |
| Jarso | 5 | 1 | 503 | 175 | 678 | 0 |
| K/Awulalo | 115 | 1 | 149 | 103 | 252 | 2 |
| Samre | 2 | 0 | 317 | 182 | 499 | 1 |
| T/Emba | 32 | 1 | 273 | 184 | 457 | 2 |
| **Total** | **163** | **5** | **2,422** | **1,557** | **3,979** | **7** |



Photo 6.7: Capacity building of VC actors T/Emba, Gursum and Samre woredas, respectively

- Activity Area 4.3: Formation and strengthening of marketing groups

To improve market access for value chain actors, 15 marketing groups were strengthened through trainings, updating business plans, organizing platform meetings, preparing by-laws, improving their recording system, and undertaking exposure visits.

- Activity Area 4.4: Facilitate linkages between farmer groups with sustainable markets

The DryDev programme facilitated multi-stakeholder platform discussion among farmers and traders to link farmer groups with sustainable markets, following the market assessment findings. As a result, a total of 7,289 farmers (3,386 women) were linked to sustainable markets for the DryDev VC commodities (groundnut, haricot bean, tomato, potato, onion, milk, poultry and shoat fattening) in their respective regional, zonal, woreda and the local markets. For example, in Samre woreda, about 250 kg of honey was sold during the World Bee Day exhibition held at Mekelle, giving producers an opportunity to promote and link their products to different actors.

- Activity Area 4.5: Strengthen market information systems

For smallholders to have sustainable market information, there needs to be reliable institutions that disseminate up-to-date and accurate market information. Hence, the programme has so far engaged 12 providers of market information, with some of them introduced in the reporting period. Information provided include telephone messages sent by the institutions they were linked to; weekly market information through information board posting; the Woreda/Multi-purpose cooperative and market & trade offices; Tigray Agricultural Marketing and Promotion Agency (TAMPA) using local FM

radio; and farmer to farmer market information exchange. As a result, 7,110 farmers (3,035 women) were able to access market information to sell their produce on a reasonable price (Table 6.10).

Table 6.10: Numbers of farmers linked to sustainable markets information providers

| Woreda | No. of market information sources | Farmers linked to market information providers | | |
|---|---|---|---|---|
| | | M | W | T |
| Boset | 3 | 1,000 | 750 | 1,750 |
| Gursum | 1 | 26 | 281 | 307 |
| Jarso | 1 | 1,130 | 111 | 1,241 |
| K/Awulalo | 1 | 200 | 157 | 357 |
| Samre | 4 | 159 | 100 | 259 |
| T/Emba | 2 | 1,560 | 1,636 | 3,196 |
| **Total** | **12** | **4,075** | **3,035** | **7,110** |

Photo 6.8: Farmers accessing market information from information boards at Sifa Betie (left) and Mulata SWS (right) of Boset and Jarso woredas, respectively

### 6.1.5 Work Package 5: Financial Service Linking

In 2018, a total of 5,702 farmers (3,039 women) took part in interventions related to financial services linking, designed to link farmers organizations with credit services, and to capacity development to build financial literacy skills. Loans valued at nearly 800,000 ETB (USD 30,000) were accessed during 2018.

- Activity Areas 5.1: Establish and strengthen community based financial institutions

In 2018, the capacity of 167 community based financial institutions (VSLAs) was enhanced through different events such as training on financial recording system, saving and credit, financial management, financial literacy and group governance, and through refining their by-laws. A total of 203 VSLAs are now functioning well, as observed during field monitoring exercises, and using World Vision's Savings Group Information Exchange. A total of 3,280 farmers (1,887 women) were trained on savings and credit access, and 3,915 (2,517 women) farmers are now engaged in local financial institutions (VSLAs) (Table 6.11). In Gursum, VSLA groups were supported with VSLA facility/materials such as saving box and stationery materials.

Table 6.11: Number of VSLAs strengthened / established, farmers linked to financial institutions and capacity building on saving and credit

| Woreda | Number of VSLAs strengthened | Capacity building on saving and credit | | | Farmers engaged with financial institutions (SG/VSLA | | |
|---|---|---|---|---|---|---|---|
| | | M | W | T | M | W | T |
| Boset | 23 | 187 | 225 | 412 | 411 | 625 | 1,036 |
| Gursum | 38 | 119 | 693 | 812 | 46 | 874 | 920 |
| Jarso | 24 | 11 | 268 | 279 | 13 | 330 | 343 |
| K/Awulalo | 20 | 442 | 253 | 695 | 130 | 131 | 261 |
| Samre | 23 | 403 | 162 | 565 | 403 | 162 | 565 |
| T/Emba | 39 | 231 | 286 | 517 | 395 | 395 | 790 |
| **Total** | **167** | **1,393** | **1,887** | **3,280** | **1,398** | **2,517** | **3,915** |


Photo 6.9: Establishment of VSLA Negashi in K/Awulalo (left), and financial strengthening training, T/Emba woreda (right)

- Activity Area 5.2: Link value chain actors to financial service providers

During this reporting period, 13 potential financial institutions (*Walqo*, RUSACCOs, Lume-Adama Union, Awash Saving and Credit Cooperative Union, Community Care Coalition, Dedebit Credit & Savings Institute (DECSI) and the Ethiopian Development Bank (EDB)) were engaged in financial service providers' forums to facilitate access to required credit service for farmers. As a result, across all intervention woredas 5,702 farmers (3,039 women) were linked to 87 different financial service providers operating in their locality, including those mentioned above. Loans totaling 788,978 ETB were accessed. In addition, financial and resource management training was provided to 185 VSLAs to enhance their performance.

Table 6.12: Service providers linked with farmers & Number of Farmers linked with service providers

| Woreda | Number of financial service providers linked with farmers | Number of farmers linked with financial institutions | | |
|---|---|---|---|---|
| | | Total | M | F |
| Boset | 3 | 187 | 58 | 129 |
| Gursum | 6 | 1494 | 621 | 873 |
| Jarso | 1 | 407 | 46 | 361 |
| Kilteawlalo | 30 | 525 | 262 | 263 |
| Samre | 27 | 555 | 400 | 155 |
| T/Emba | 20 | 2,534 | 1,276 | 1,258 |
| **Total** | **87** | **5,702** | **2,663** | **3,039** |

### 6.1.6 Work Package 6: Local Governance & Institutional Strengthening

In 2018, the programme further strengthened the governance capacities of community-based organizations and local government officials to deepen the ownership of interventions and facilitated discussion platforms to build rapport between community and government institutions. A total of 3,263 participants (985 women) engaged in these activities.

- **Activity Area 6.1: Capacity building of farmer organizations**

It is always important to ensure that the programme interventions are fully owned by the wider community and can be sustained with the support of various stakeholders. This ownership was enhanced through strengthening the capacities of different local institutions and local government officials such as CSWTs, Kebele leaders, woreda sector offices, cooperatives, FOs, water user associations, producer groups, and woreda steering committees. Trainings were conducted on topics such as good governance, development of by-laws and NRM. The trainings were supplemented with provision of material support. A total of 79 community-based institutions were trained in all woredas, covering 2,601 farmers (536 women) and other participants as mentioned above. Furthermore, a total of 49 institutions were strengthened through by-law development in all woredas except for Boset, and 13 local institutions in all woredas except K/Awulalo were strengthened through different material support (Table 6.13).

Table 6.131: Number of institutions strengthened

| Woreda | No. institutions strengthened | | Remark |
|---|---|---|---|
| | through by-law development | through material support | |
| Boset | 0 | 2 | Corrugated iron for organized community members to construct sheds for their heifers |
| Gursum | 4 | 3 | Stationery and farm tools |
| Jarso | 10 | 4 | Two sheds constructed for vegetable producers, stationery for cooperatives, beehive equipment for honey producers and farm tools |
| K/Awulalo | 20 | 0 | - |
| Samre | 6 | 1 | One Farmer Training Centre (FTC) supported with small ruminants |
| T/Emba | 9 | 3 | One FTC supported with egg holder, waterer and feeders, 45-day old chicken, concentrated feed and mesh wire |
| **Total** | **49** | **13** | |

- **Activity Area 6.2: Creating/Strengthening platforms for improved local governance**

With the objective of improving the programme performance and resolving challenges encountered in the course of implementation, participatory planning, implementation and reviewing of programme activities have proved crucial. Thus, in the reporting period, 24 woreda-level steering committee review meetings were conducted. These reviews focused on tracking the annual plan and implementation of activities as well as budget allocation and utilization. Further, areas for improvement were identified, challenges encountered were reflected upon and the way forward was discussed. Platforms were created in each woreda to strengthen the programme interventions.

Following the establishment of these platforms, meetings/dialogues between community and local government institutions were conducted in Gursum, Jarso, Samre and T/Emba woredas where 899 people (278 women) participated (Table 6.14).

Table 6.14: Number of meetings/dialogues of the platform held

| Woreda | No. of meetings/dialogues of the platform held | Number of Participants | | |
|---|---|---|---|---|
| | | Total | M | F |
| T/Emba | 4 | 198 | 135 | 66 |
| Samre | 6 | 284 | 201 | 83 |
| Jarso | 4 | 180 | 124 | 56 |
| Gursum | 5 | 237 | 164 | 73 |
| **Total** | **19** | **899** | **624** | **278** |

### 6.1.7 Work Package 7: Planning, M&E and Scaling of Learning

In 2018, the programme undertook joint monitoring exercises, coordinated the DGIS-led external review, and led planning workshops, impact surveys, video capture, and reviews. Lessons and outcomes realized were prepared and disseminated to ICRAF, and to scaling stakeholders at high-level forums including Global Landscape Forum, Programme Advisory Committee (PAC) and the National Scaling Stakeholders' Workshop. A total of 939 participants (237 women) engaged in these activities.

- Activity Area 7.1: Programme monitoring and communication

The programme achievements have been significant in this reporting period. Table 6.15 presents a summary of number of farmers reached in 2018 and cumulatively, under each work package. Like previous years, the Country Core Team (CCT) and Country Technical Team (CTT) remained actively engaged in improving the quality and delivery of the programme interventions. Four CCT and two CTT meetings were conducted in the reporting period. A total of six programme plans and 94 programme reports (monthly, quarterly, biannual and annual), that updated the programme progress and lessons, were also produced during the year. Additionally, different programme special publications/information communication materials, case stories and other pieces were produced and posted on the DryDev website. In May 2018, WVE, the country NLO, coordinated the field visits by the programme's external review team commissioned by DGIS. In October 2018, the NLO with ICRAF hosted the Programme Advisory Council (PAC) meeting in Ethiopia, with the first meetings held in Addis Ababa followed by a field visit to Tigray (T/Emba & Samre). During the year, Joint Quality Monitoring (JQM) was conducted in Samre and T/Emba woredas by five team members from ICRAF and WVE. The monitoring team evaluated the performance of the programme by implementing partners (IPs) and examined whether it was in line with the scaling principles of the programme.

Table 6.15: Number of farmers reached in Ethiopia under each Work Package

| Work Packages | Farmers reached in 2018 | | | Farmers reached from 2015 to 2018 |
|---|---|---|---|---|
| | Total | Men | Women | Total |
| WP1 | 23,877 | 15,523 | 8,354 | 67,503 |
| WP2 | 8,073 | 5,145 | 2,928 | 26,304 |
| WP3 | 7,116 | 4,135 | 2,981 | 26,297 |
| WP4 | 7,289 | 3,903 | 3,386 | 17,145 |
| WP5 | 5,702 | 2,663 | 3,039 | 14,014 |
| WP6 | 3,263 | 2,278 | 985 | 8,257[5] |
| WP7 | 939 | 702 | 237 | 5,040 |
| WP8 | 445 | 340 | 105 | 1,971 |
| **Total farmers** | **23,877** | **15,523** | **8,354** | **67,503** |

Photo 6.10: JQM team discussing with community members Atami SWS, Samre woreda

### Activity Area 7.2: Participatory M&E with FOs and local stakeholders

Participatory monitoring and evaluation is a key instrument to attain the programme goals and sustainability, to create a sense of ownership, and to leverage resources from available sources. To this end, 11 planning and reflection workshops were conducted in all woredas which involved 939 farmers (237 women) as well as participants from irrigation user associations, SWS committees, cooperatives, local government bodies, producer/saving groups, other community representatives, relevant government stakeholders and experts and local stakeholders. Further, two planned comparisons (PCs) on FMNR and tree planting have been run by 312 farmers (65 women) to generate evidence of an improved approach, compared with the traditional area closure and normal tree survival rates.

- ### Activity Area 7.3 Scaling of evidence and learning

With the objective of scaling up evidence and learning of the DryDev programme, 24 scaling stakeholder institutions, such as Agriculture & Rural Development office and the Cooperative Promotion office, participated in monitoring and evaluation to generate evidence and learning during this reporting period. Furthermore, a total of 73 representatives of scaling stakeholders in all woredas

[5] This number is of those who were directly reached by activities under this WP. Various institutional strengthening interventions with FOs and number of participants have been reported in the respective WP.

participated in knowledge-sharing events, and the good practices and lessons from the programme were shared among the participants. For scaling of evidence and learning, an 8-minute programme video was prepared and shared with participants of the national scaling stakeholders' workshop, and subsequently posted on the DryDev website and shared widely through YouTube. In September 2018, DryDev Ethiopia (representatives from all partners REST, EOC-DICAC and WVE) together with the other DryDev countries participated in an ICRAF-organized side event at the Global Landscape Form held in Nairobi where lessons and experiences from the programme were shared. The Ethiopia State Ministry of Agriculture and Livestock participated in the panel discussion of the same session, providing a national-level perspective to discussions on the DryDev interventions.

In addition, after concerted efforts from the team and support from WVA team short briefs presenting lessons and evidence on various impact themes were developed and shared at a National Scaling Stakeholder workshop held in Addis in November which brought together more than 70 participants from the respective woreda farmers, government relevant sectors representatives (woreda, zone, region and federal), NGOs and other bilateral organizations. This also included lessons and experiences from planned comparison activities on FMNR and tree planting which were implemented in Boset, Gursum, Samre and T/Emba woredas and also synthesized and presented at the National Scaling Stakeholder workshop. The proceedings of the stakeholders' workshop were produced and disseminated in February 2019.


Photo 6.11: Group photo of the participants of the National Scaling Stakeholder Workshop, Addis.

### 6.1.8 Work Package 8: Policy Analysis & Influencing

During 2018, woreda-level platforms continued to meet regularly to share implementation plans and improve coordination and resourcing. Programme partners facilitated the involvement of 445 farmers (105 women) in awareness-raising and review of government policies.

- **Activity Area 8.2: Stakeholder mapping & engagement**

Various woreda level multi-stakeholder platforms have been established since 2015. With the support from the programme, woreda stakeholders have developed joint action plans including and regular follow-up on programme implementation. Across all woredas, except for Boset, 11 multi-stakeholder platform meetings were conducted where programme updates were shared, implementation challenges were resolved, and the way forward discussed.

Table 6.16: Number of platforms organized at woreda level

| Woreda | Number of Platforms organized |
|---|---|
| Tseada Emba | 1 |
| Samre | 2 |
| Kilte Awulalo | 3 |
| Jarso | 3 |
| Gursum | 2 |
| Boset | 0 |
| **Total** | **11** |

- **Activity Area 8.3: Raise awareness on policy provisions and constraints**

Based on the policy review conducted in 2015, the main challenge is a lack of understanding by field-facing government staff of central policies and strategies. Thus, to bridge this policy knowledge gap being faced at the woreda level, 445 people (105 women) were sensitized on existing national and regional policies related to NRM, water, and cooperatives policies, the Growth & Transformation Plan II and food security strategy, the Climate-Resilient Green Economy (CRGE) growth plan, and related policies.

## 6.2 KENYA

The DryDev programme in Kenya is implemented in the three counties of lower Eastern Kenya namely, Makueni, Machakos and Kitui. World Vision Kenya (WVK) is the national lead organization (NLO) while the Adventist Development and Relief Agency Kenya (ADRA), Caritas Kenya, and Netherlands Development Organization (SNV) are the Implementing Partners (IPs). The NLO provides coordination and oversight of the DryDev consortium partners in Kenya. The interventions associated with Work Packages (WPs) 1-3 are implemented by Caritas in Makueni County, WVK in Machakos County and ADRA in Kitui County. SNV implements interventions associated with WPs 4-5 while WVK implements interventions associated with WPs 6, 7 & 8, respectively, across all the three counties. World Vision Australia (WVA) provides a matching fund in addition to technical and programmatic support. The activities carried out in Kenya in 2018, and results obtained, are described in Sections 6.2.1 to 6.2.8.

### 6.2.1 Work Package 1: Sub Catchment Level Natural Resources Management

During the year 2018, DryDev Kenya promoted integrated interventions on sub-catchment natural resources management (NRM) reaching 9,477 farmers (5,235 women) in the three target countries: Makueni 2,064 (1,342 women), Machakos 2,937 (1,462 women) and Kitui 4,476 (2,431 women). The cumulative reach to date for all WPs is 20,509 farmers (9,199 women).

- Activity Area 1.1: Sub-catchment Action Plan development

The programme supported alignment of the Community Action Plans (CAPs) with the Sub-Catchment Management Plans (SCMPs) of the Water Resources Users' Associations (WRUAs) of Upper Kambu and Kalawa in Makueni County, which had been outstanding from 2017. A follow-up training was conducted targeting 65 members (26 women) of the Ward Development Committees (WDC) from these sites on various sub-catchment management approaches. A similar training was conducted in Machakos County where 43 (9 women) members of the Project Management Committee (PMC) and WRUA were retrained on their roles in monitoring and implementation of NRM activities at the sub-catchment level. DryDev Kenya was also able to map all denuded sites (hotspots of degradation) using Geographic Information System (GIS) support provided by ICRAF, to facilitate planning and roll-out of landscape and farm level interventions. The hotspot maps will be shared with the county governments, Kenya Forest Service (KFS) and the Water Resources Authorities (WRAs) to inform interventions in land restoration. Further, in partnership with WRA, the programme sensitized 1,266 community members (661 women) on policies and basic information about the sub-catchment management in Machakos. As a result, the communities took several rehabilitation measures, detailed under Activity Area 1.6.

#### Activity Area 1.2: Sub-catchment capacity development for local institutions

In collaboration with the WRAs, a capacity assessment for WRUAs, Water Users Associations (WUA), sand dam committees and Project Management Committees (PMC) in the three counties was conducted. A follow up training on sub-catchment NRM, resource mobilization, leadership and governance was rolled out to 1,079 community members (634 women); 1,001 (610 women) in Machakos, 35 (15 women) in Kitui and 43 (9 women) in Makueni. To enhance the community capacity to cope with disaster of drought and human wildlife conflict, the programme trained 31 Trainers of Trainers (TOTs) (15 women) from Makueni County on Community Managed Disaster Risk Reduction (CMDRR). These TOTs will support roll-out of similar training to community members in collaboration

with the county structures. The county is planning to establish a county disaster management and coordination unit that will map and develop a framework for preparedness and response operations and contributing to climate-change adaptation. DryDev further trained 43 local extension staff (17 women) on the sub-catchment approach. The participants are expected to reach 430 community members with information on sub-catchment NRM. In addition, the programme supported 7 persons (2 programme staff and 5 WRUA representatives) for a cross learning visit to DryDev Ethiopia on integrated sub-watershed management. The lessons learnt have since been integrated in the SCMPs by the WRUAs.

- Activity Area 1.3: Sub-catchment restoration/reforestation through FMNR & Enrichment Planting (EP)

DryDev, in collaboration with KFS and WRA engaged PMCs, WDCs and WRUA members on land restoration initiatives that reached 9,217 community members (5,163 women); Makueni 1,804 (1,270 women), Kitui 4,476 (2,431 women) and Machakos 2,937 (1,462 women) with sub-catchment restoration information through training, demonstration, tree planting, direct seeding using seedballs[6] and FMNR knowledge (Table 6.17). Additional 97 FMNR TOTs (77 W) were trained in Makueni to continue with sensitization of other community member.

Table 6.17: Training and adoption of FMNR and EP

| County | Farmers/community trained | Farmers practicing/applying | Area (ha) covered with FMNR & EP |
|---|---|---|---|
| Kitui | 4,476 (2,431 W) | 1,758 (880 W) | 526 |
| Makueni | 1,804 (1,270 W) | 1,477 (678 W) | 741 |
| Machakos | 2,937 (1,462 W) | 1,266 (661 W) | 1,343 |
| **Total** | **9,217 (5,163 W)** | **4,501 (2,219 W)** | **2,610** |

- Activity Area 1.4: Establishment and maintenance of water buffering

During 2018, DryDev Kenya continued to support the development and management of water buffering structures in collaboration with the county governments' departments of water, agriculture and irrigation. A total of 11 sand dams, two shallow wells and ten farm ponds, with an estimated capacity of 469,328 $m^3$, were constructed or rehabilitated. The water harvested in these structures is estimated to serve 7,192 households and 20,526 heads of livestock (Table 6.18). In addition, a total of 3,722 (2538 women) community members were trained on water buffering.

[6] Seedballs are balls of charcoal dust containing seeds and biochar binders. The biochar coating on the balls protects the seeds within from predators such as birds, rodents and insects and extremes of temperature until the rains arrive

Table 6.18: Water buffering structures established

| County | No. and Type of buffering structures | | | | No. of HH benefiting from structures | No. of animals benefiting from structures | Amount of water buffered ($m^3$) |
|---|---|---|---|---|---|---|---|
| | Sand dams | | Shallow wells | Farm ponds | | | |
| | New | Rehabilitated | | | | | |
| Kitui | 7 | 4 | 0 | 8 | 3,722 | 11,166 | 322,000 |
| Makueni | 3 | 0 | 2 | 2 | 1,920 | 3,360 | 1728.25 |
| Machakos | 1 | 7 | 0 | 0 | 1,550 | 6,000 | 145,600 |
| **Totals** | **11** | **11** | **2** | **10** | **7,192** | **20,526** | **469,328.25** |

- Activity Area 1.5: Resource leveraging for water buffering infrastructure

The WRAs were supported to undertake capacity building of six WRUAs on resource mobilization and financial management. A total of 167 (74 women) WRUA members in Makueni (20 (7 women)) and Machakos (80 (37 women)) were trained in 2018. Ten proposals were developed and submitted to institutions such as: Water Service Trusts Fund (WSTF), Anglican Development Services (ADS), Salvation Army and County government for funding out of which one for Upper Enziu WRUA was funded to the tune of KSH 3,600,000 (approx. US$ 36,000). The amount raised through the proposal went into the construction of four sand dams and four roof rainwater harvesting (RWH) tanks installed in Upper Enziu catchment of Kitui County.

- Activity Area 1.6: Protection and Rehabilitation of denuded lands

DryDev Kenya, in collaboration with various stakeholders, conducted sensitization campaigns on protection and rehabilitation of denuded land that reached 5,904 (3,808 women) community members (Table 6.19). This campaign resulted in restoration of 596.6 ha of denuded land (Makueni 50.6 ha, Kitui 526 ha and Machakos 20 ha). In addition, the community members living along the riparian areas pegged off 119 km in Machakos (75 km) and Makueni (44 km) to allow for regeneration with minimal disruption. This was followed by planting of 600 bamboo seedlings, 24,260 assorted trees seedlings (17,990 Machakos; 6,270 Makueni) for protection and prevention of soil erosion along the rivers where water buffering structures (sand dams) have been constructed.

Table 6.19: Number of farmers by county engaged in rehabilitation of denuded lands

| County | Number of Participating Farmers in sensitization meetings | Number of Farmers that embarked on rehabilitation of denuded lands |
|---|---|---|
| Machakos | 954 (589 W) | 32 (10W) |
| Makueni | 2,789 (1,617 W) | 288 (150 W) |
| Kitui | 2,161 (1,602 W) | 429 (308 W) |
| **Total** | **5,904 (3,807 W)** | **749 (468 W)** |

Photo 6.12: Rehabilitation of degraded land in Mandongoi Sub-location in Kitui Rural Sub-county (left) Status of degradation at the start of rehabilitation; (right) Recent status of the formerly degraded land

### 6.2.2 Work Package 2: On-farm Water and Soil Management

The interventions carried out by the DryDev Kenya team, under WP 2, included capacity building events on soil and water conservation, fertility management, RWH, micro irrigation and on-farm Farmer Managed Natural Regeneration (FMNR) and Enrichment Planting (EP). During the year, the programme reached 8,049 farmers (5,116 women) resulting in a cumulative reach of 20,593 farmers (9,199 women).

- Activity Area 2.1: On-farm rain water harvesting

To enhance the adoption of on-farm RWH technologies for crop production, DryDev Kenya reached 4,448 (2,979 women) farmers (Kitui 4,195 (2,826 women); Makueni 235 (153 women) and Machakos 60 (20 women)) through information dissemination, training and technical backstopping. The programme worked with 86 (30 women) trained community artisans and RWH service providers to deliver relevant service to the community members. A total of 18,117 RWH structures were established in Kitui (6,744), Makueni (3,721) and Machakos (7,652) (Table 6.20). Terraces measuring a total of 50,098 m were also constructed. Knowledge and skills were delivered through training, farmers' field days, farmer-to-farmer learning, participation in agricultural shows and in events such as the World Environment Day.

Table 6.20: Rainwater harvesting structures established by farmers

| County | Number of RWH structures established | | | |
|---|---|---|---|---|
| | Total RWH Structures | Zai pits | Farm ponds | Metres of terraces excavated |
| Machakos | 7,652 | 7,614 | 38 | 38,000 |
| Makueni | 3,721 | 3,719 | 2 | 12,098 |
| Kitui | 6,744 | 6,736 | 8 | - |
| **Total** | **18,117** | **18,069** | **48** | **50,098** |

- Activity Area 2.2: Agroforestry and on-farm FMNR

DryDev Kenya continued to promote agroforestry and on-farm FMNR among the farmers through sensitization meetings, trainings, field days, peer-to-peer cross visits, practical sessions at demonstration sites and joint monitoring visits. A total of 3,274 farmers (2,001 women) were reached in Kitui (1,263 (1,078 women)), Makueni (455 (294 women)) and Machakos (1,556 (629 women)), and 139 ha put under FMNR during the year. Fifty-five farmers (26 women) were trained as FMNR TOTs in Makueni (36 (15 women)) and Machakos (19 (11 women)). The training equipped the TOTs with basic FMNR principles to impart, in turn, to other farmers. In Machakos, 19 FMNR TOTs (11 women) participated in peer-to-peer learning farm visits where TOTs who had performed well were recognized through affirmation by the entire team. In the end, the TOTs appreciated the peer-to-peer visit noting it had opened their eyes to what their peers had been able to accomplish within similar contexts. The programme, in collaboration with KFS, continued to provide training on tree nursery and woodlot establishment and management. This training focused on the prioritized tree species such as Senna, Melia, Neem, Mango, Grevillea, Moringa, Papaya, Lemon, Acacia, Croton and Kai apple. A total of 3,484 farmers (2,524 women) were engaged in planting 29,360 tree seedlings in Machakos (13,990), Kitui (3,010) and Makueni (12,360). The area covered by EP in the year was 3,473 ha. In addition, action learning on tree planting continued in the year with 247 farmers (209 women) participating in Kitui County while 400 farmers (305 women) participated on tree planting and RWH. The key lesson learnt from this collaborative action learning was that, Melia planted on ridges had a higher survival rate (65%) than those planted in depressions and prepared holes (15%).

- Activity Area 2.3: Soil conservation and fertility management

DryDev, in collaboration with the Kenya Agriculture & Livestock Research Organization (KALRO), Kenya Network for Draft Animal Technology (KENDAT) and Machakos University, enhanced the capacity of farmers in composting, conservation agriculture (CA) and integration of fertilizer trees. A total of 8,081 farmers (5,254 women) were reached through training and demonstration.

- Activity Area 2.4: Small-scale irrigation

Various capacity-building events were conducted to increase adoption of small-scale irrigation, focusing on micro-irrigation integrated with RWH technologies such as terracing, capillary wick irrigation system, measured irrigation and farm ponds. A total of 1,471 (857 women) farmers were reached through these efforts. To ensure continued availability of knowledge and skills locally, 43 (21 women) artisans from Makueni were trained on farm pond designing and terracing. In addition, 137 (78 women) farmers were supported to participate in exposure tours to the Machakos agricultural show (102 (61 women)) and the Christian Impact Mission's Technology Transfer Centre (35 (17 women)). The farmers were exposed to various RWH technologies in dryland areas and gained knowledge on high value crop production and value addition.

The programme commissioned a feasibility study on farm pond technology which resulted in the development of a farm pond planning tool. The tool was pilot tested by 60 farmers (7 women) in Machakos to guide on the choice of appropriate enterprise mix to be supported by farm pond micro irrigation. The results will be consolidated for sharing with stakeholders in 2019. Further, RWH was promoted across the three counties in collaboration with Royal Media Services' Musyi FM Radio Station (a Kamba Language station). According to GeoPoll, over 400,000 listeners were reached with the message, resulting in numerous follow-up calls which were addressed by the programme team. DryDev also supported, on cost-sharing basis, 25 (7 women) farmers in Machakos with micro-

irrigation equipment (including 18 solar pumps, five with drip kits and two farmers with pond liners) to establish demonstration sites for continued learning by other community members.

### 6.2.3 Work Package 3: Agricultural Commodity Production

The focus of WP 3 in 2018 was to promote climate-smart agriculture for household food security and income generation through market-led production interventions and sustainable input supply system. The programme reached 9,631 (6,601 women) farmers with various WP 3 interventions in 2018, giving a cumulative figure of 20,249 (14,206 women) farmers from 2015.

- **Activity Areas 3.1 & 3.2: Promotion of climate smart production for food security & income generation**

During the year, the programme focused on building the capacity of farmers on good agronomic and livestock production practices, post-harvest management and production planning across the target counties. Table 6.21 presents the number of farmers reached by these efforts. To promote enterprise diversification, DryDev collaborated with the County Department of Livestock Production to conducted training on poultry production to 85 (77 women) farmers. The same farmers were also supported with improved KALRO *Kienyeji*[7] cocks to upgrade their local breeds. In addition, 42 (29 women) farmers were supported with 20 modern Langstroth bee hives to establish an apiary for commercial honey production.

Table 6.21: Capacity building on various commodity production options

| County | Post-Harvest Management | Good Agronomic Practices | Climate Smart Production | Trainer of Trainers | Production plans |
|---|---|---|---|---|---|
| Kitui | 6,420 (4578 W) | 6,420 (4578 W) | 97 (56 W) | 420 (251 W) | 70 |
| Makueni | 296 (202 W) | 41 (36W) | 34 (21 W) | - | 21 |
| Machakos | 56 (47 W) | 153(105 W) | 570 (419 W) | 48 (30 W) | 80 |
| **Totals** | **6,772 (4827 W)** | **6,614(4719W)** | **701 (496 W)** | **468 (281 W)** | **171** |

- **Activity Area 3.3: Establishment of sustainable seed and seedling supply system**

During the year, DryDev facilitated 22,464 farmers (14,694 women) to access various farm inputs. A total of 25 (17 women) new farmers were linked with Simlaw Seed Company who contracted them to multiply seeds of green gram (*Vigna radiata*) variety KS20. This brings to 73 (18 women) the number of farmers who have been so-linked by the programme to date. Another 38 (16 women) farm pond farmers were linked to G. North & Son Company for the supply of irrigation equipment through a loan agreement signed between Equity Bank and G. North & Son. DryDev also supported Nzamu Community-based Organization (CBO) in Kibwezi East with a grant of KSH 366,972 (US$ 3,670) to establish an agro-vet shop in Nzambani, Muthingiini Sub-location. The CBO was also supported with a further grant of KSH 52,000 (US$ 520) to purchase an incubator that can hold 1,000 eggs. In Machakos County, the programme supported 275 (145 women) farmers from two farmer organizations (FOs) with two tons of green grams (variety KS20) as seed capital, which the FOs sold at a discounted price to the farmers within the implementation areas. This enabled 2,109 (1,356 women) farmers to access high quality seeds during the planting season. The seeds were planted in

[7] *Kienyeji is the Kiswahili word for local/indigenous. This breed is locally adapted, early maturing and disease-resistant*

over 8,125 ha and were estimated to yield over 13 tons despite the poor distribution of rainfall experienced.

DryDev Kenya brokered a linkage with the County Departments of Agriculture and Livestock and the Kenya Cereal Enhancement Program (KCEP) from which, a total of 562 (377 women) farmers in Waita (Kitui) benefited from seed and fertilizer inputs, while 305 (204 women) farmers received 600 kg of the improved green grams seed (KS20) through the Kitui County Ndengu Revolution initiative. Further, County level trade fairs organized in collaboration with various government departments brought together various input suppliers, traders and other actors. The programme supported the participation of 536 (331 women) farmers from Makueni (430 (258 women)) and Kitui (106 (73 women)) where they acquired quality input at subsidized costs. In addition, 51 (38 women) farmers were facilitated to participate in an exchange visit to Kibwezi to learn poultry keeping, management, disease control, feed formulation and incubation procedure. In Machakos County, DryDev purchased over 13,000 tree seedlings from three well established tree nurseries whose capacity the programme had built over the years. These seedlings were used for action learning activities and riparian zone protection.

### 6.2.4 Work Package 4: Enhancing Market Access

Under WP 4, DryDev Kenya focused on enhancing market access by various commodity. By close of 2018, the programme registered marketing groups with 11,004 (6,746 women) members, six WRUAs with a total membership of 3,977 (2,381 women) and two VC associations with a membership of 1,325 (456 women).

- Activity Area 4.1: Conduct market analysis for selected value chains

The programme commissioned an assessment to determine the economic viability of the farm pond technology with respect to the emerging value chain commodities (vegetables, onions, water melon, spinach and tomatoes). The assessment results were utilized to develop the above-mentioned Farm Pond Planner tool to enable farmers make informed decision on the appropriate VC commodities to be promoted by the farm pond on specific seasons and land size. The tool is currently being piloted among select farmers.

- Activity Area 4.2: Establish and strengthen marketing groups

To sustainably mentor and coach the FOs through implementation of their business plans, the programme initiated a workshop to induct 7 (2 women) officers from the Ministry of Trade and Cooperative Development and Ministry of Culture and Social Development on the business model. A refresher training on production plan development was also conducted for 32 (16 women) leaders from the FOs' production sub-committees. The leaders were charged with the responsibility of cascading the knowledge gained to their affiliate groups. A total of 1,325 (456 women) members of two VC associations/platforms (mango and chicken) from Machakos were trained on market linkages, group governance, resource mobilization and management. During the year, the prevalent drought hampered commodity production with only 8 groups with 10,758 (6,848W) farmers managing to engage in collective selling. The amount realized from the sales totaled to KSH 8,847,100 (USD 88,471) (Table 6.22).

Table 6.22: Sales and income generated from sales of various commodities by different FOs

| County | FO / CBO Name | Membership | VC Commodity | Qty collected for sale* | Sale amount (KSH) | Buyer |
|---|---|---|---|---|---|---|
| Kitui | Mwingi Beekeepers Cooperative | 1,172 (361 W) | Honey and honey products | 4,359 kg | 3,066,520 | Walk-in customers to the retail outlet in Mwingi |
| | Kaluluini disabled | 65 (41 W) | Green gram | 2,380 kg | 119,000 | Primax Limited |
| | Makaki Cooperative | 701 (650 W) | Green gram | 3,510 | 241,650 | Local traders |
| | Lower Yatta Cooperative | 624 (390 W) | Green gram | 9,000 | 423,000 | Local wholesalers |
| Makueni | Kibwezi East Cooperative | 6,398 (4,361 W) | Green grams | 15,390 kg | 804,690 | Local wholesalers |
| | Kathulumbi Kilimo Bora | 1,550 (900 W) | Green grams | 5,400 | 243,000 | Local wholesalers |
| | Nzamu | 183 (121 W) | Green grams | 2,700 | 121,000 | Local traders |
| Machakos | Ngengi | 65 (24 W) | Indigenous Chicken | 105 bird | 50,400 | East Meat Ltd |
| | | | Green gram | 6,480 kg | 537,840 | Local market |
| | | | Seed green gram | 27,000 kg | 3,240,000 | Simlaw Seed |
| Total | | 10,758 (6,848 W) | | | 8,847,100 | |

* Not all members of the FOs aggregate for every round/harvest for various reasons and therefore, it will be incorrect to calculate average sale by using total membership

- Activity Area 4.3: Establish multi-stakeholder value chain platforms

Several activities were carried out with a view to strengthening the capacity of four county-level value chain associations (VCAs). In Kitui County, 41 (9 women) members of the County Honey Value Chain Association/Platform were facilitated to hold a consultative meeting. In Machakos County, 43 (6 women) members of the Mango and Chicken Value Chain Associations/platforms were trained on market linkage, governance, resource mobilization and management. Finally, in Makueni County, 26 (13 women) members of the Makueni County Green Grams Value Chain Association/Platform were supported to initiate the process of registration. Further, DryDev Kenya supported 89 (47 women) farmers to exhibit in the South Eastern Kenya Agricultural Show held in Machakos Town while 78 farmers (43 women) were sponsored to exhibit in the Kenya Livestock Producers' Association Trade Fair held at Nduluku Technical Training Institute in Makueni County. A total of 821 (382 W) farmers visited the DryDev stands in both Machakos and Kitui shows, where they were exposed to appropriate and simple innovation for improving agricultural production such as on-farm RWH technologies, Digital Classroom System (smart projector), financial literacy curriculum, digital extension (*iShamba*) and locally made poultry feed mixture.

DryDev Kenya supported the Mwala Fruit Growers' Cooperative Society to establish a charcoal run cooler on a cost-sharing basis. Once operational, the cooler will benefit the cooperative's 345 (121 women) members by prolonging the shelf life of their produce. In addition, 32 farmer leaders (13 women), drawn from 16 marketing organizations with a total membership of 11,004 farmers, were trained on modern methods of transporting chicken by use of crates to reduce mortality rates.


Photo 6.13 Training in and access to post harvest management teschnologies (left) DryDev farmers learning about aggregation and post-harvest management at Mbuvo Commercial Village Ltd, (right) Chicken Transportation Boxes that farmers were introduced to

- Activity Area 4.4: Strengthen market information systems

In 2018, the programme was able to reach a total of 8,851 (5,724 women) farmers through iShamba mobile phone application. The programme also introduced 1,151(748 women) farmers to *Digifarm;* a mobile technology-based platform that brings together value chain actors and other private actors. Through the *Digifarm* platform, a total of 1,550 (900 women) farmers received inputs on credit worth KSH 800,000 (US$ 8,000). Training through Digital Classroom System (DCS)[8] was given to 5,889 (3,656 women) farmers from 140 FOs.

### 6.2.5 Work Package 5: Financial Services Linking

DryDev Kenya collaborated with the financial service providers such as; banks, MFI and SACCOs to facilitate the linkage of 6,398 (4,361 women) farmers with financial institutions. Training was also given on financial management. Cumulatively, 393 savings groups and 10 savings and credit schemes (with a total membership of 6,398 (4,361 women) farmers) have been linked to 23 financial institutions.

- Activity Area 5.1: Enhance financial literacy for the producer organizations

DryDev Kenya conducted a financial literacy training for 188 groups comprising 5,113 (3,640 women) farmers (Table 6.23). To date, a total of 133 (72 women) farmers have been trained and certified as financially literate ToTs. Other capacity strengthening activities included the training of the members of six FOs (Mwala Fruits Growers Cooperative Society, Kibwezi East Cooperative (Fig 12), Kwinengane CBO, Kilimo Bora CBO, Sweat is Sweet SHG and Mwingi Beekeepers SACCO) on financial management and the facilitation of 16 FO representatives to participate in learning visits to Ndithini Community Development Association and Tharaka Cereal Growers Cooperative Society.

Table 6.23: Farmers trained on Financial Literacy in 2018

| County | Farmer Organizations | Total farmers Reached | Financial literacy TOTs |
|---|---|---|---|
| Kitui | 37 | 807 (628 W) | 61 (30 W) |
| Makueni | 145 | 4,014 (2,637 W) | 23 (17 W) |
| Machakos | 6 | 159 (123 W) | 49 (25 W) |
| **Total** | **188** | **5,113 (3,460 W)** | **133 (72 W)** |

[8] Digital Classroom System: A training methodology where various learning materials and relevant market information is uploaded on a hard disk and the training dissemination is done through a smart projector during group meetings

- Activity Area 5.2: Broker linkages with financial service providers

The programme continued linking farmers and their organizations with financial institutions as well as providing information on the available financial products for various commodities. A total of 1,984 (530 women) farmers were able to access loans amounting to KSH 15,769,910 (US$ 157,699) from micro-financial institutions (MFIs) and government funds such as Women Enterprise Fund (WEF), Youth Enterprise Fund (YEF), Uwezo and Tetheka) (Table 6.23). Continuous strengthening of existing savings and credit model among the target groups progressed well with 152 VSLAs developing financial management systems. Several groups have adopted improved record-keeping, increasing their monthly saving installments, offering longer credit periods, reducing lending rates, repaying bank loans promptly, extending their life-cycle among other improvements.

Table 6.23: Loans borrowed from Various Sources (Kenya Shillings)

| County | No of farmer organizations | No of beneficiary farmers | Source of funds | | | |
|---|---|---|---|---|---|---|
| | | | MFI | Government | VSLAs | Total |
| Kitui | 40 | 680 (218W) | N/A | 3,850,000 | 952,000 | 4,802,000 |
| Machakos | 15 | 375 (77W) | N/A | 1,900,000 | 2,287,000 | 4,187,000 |
| Makueni | 45 | 929 (235W) | 5,940,910 | 600,000 | 240,000 | 6,780,910 |
| **Totals** | **100** | **1,984 (530W)** | **5,940,910** | **6,350,000** | **3,479,000** | **15,769,910** |

*Source: 2018 Monitoring report*

## 6.2.6 Work Package 6: Local Governance & Institutional Strengthening

By end of 2018, a total of 599 (197 women) county and national government staff had started taking pro-active roles in community mobilization for the implementation of DryDev programme interventions. A total of 1,950 (877 women) farmers from 241 FOs and 240 (121 women) from six WRUAs have been trained on governance and transformational leadership in partnership with the Ministry of Gender and Social Development and the WRA.

- Activity Area 6.1: Strengthening existing and mobilizing new farmer organizations

DryDev Kenya conducted training on transformational leadership, governance and gender to 296 (122 women) leaders representing 54 FOs (Table 6.24). This training built on the strategies formulated during the 2017 institutional development training for DryDev and government extension staff.

Table 6.24: Trainings given to FOs on leadership, governance and gender mainstreaming

| County | Sub-County | No. attendees from FOs | | | No. WRUA Leaders | | WRUA |
|---|---|---|---|---|---|---|---|
| | | Total | Women | No. of FOs | Total | Women | |
| Machakos | Yatta | 151 | 63 | 38 | 14 | 2 | Mathauta |
| | Mwala | 14 | 1 | 2 | 13 | 6 | Miindu |
| Kitui | Waita | 6 | 4 | 2 | 17 | 4 | Upper Enziu |
| | Lower Yatta | 6 | 4 | 3 | 6 | 5 | Mid-Tiva |
| Makueni | Kalawa | 3 | 0 | 1 | 28 | 19 | Kalawa/Thwake |
| | Mtito Andei | 14 | 3 | 2 | 23 | 11 | Upper Kambu |
| **Total** | | **194** | **75** | **48** | **101** | **47** | **6** |

The DryDev Kenya team held review, reflection and co-learning meetings with 342 (243 women) leaders from 123 FOs leaders who had previously been trained in group leadership and governance. Following these trainings, the FO leaders took steps to formulate their constitutions and by-laws, review their organizational structure and clarified their roles (Figure 6.1). There has been increased commitment by members to invest more in the groups by contributing towards initiating new

activities. The leaders noted increased benefits by the group, which is critical for group sustainability (Figure 6.2).

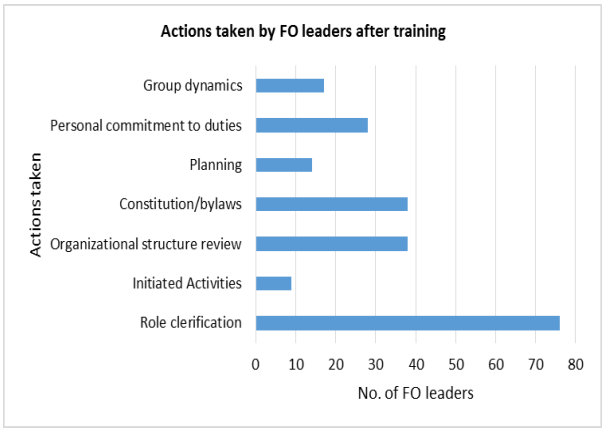


Figure 6.11: Actions taken by FO leaders after training


Figure 6.2: Results after actions have been taken

- **Activity Area 6.2: Action oriented capacity development for local Gov. Institutions**

In 2017, DryDev Kenya adopted the use of locational development committees in Machakos, ward development committees in Makueni, and village councils in Kitui as partners in the coordination and management of DryDev initiatives in respective counties. Training was conducted on roles and mandate for 91 (60 women) members of Kalawa ward and cluster development committees in partnership with Makueni County government. The programme partnered with the national government's administration department to train 310 (112 women) community-level government administrative staff (Chiefs, assistant chiefs and village elders) on aspects of good governance and gender inclusiveness (Photo 6.13). Strategies and plans to improve local governance were agreed upon, and meetings were held to review, reflect and share experience and document actions taken by previously trained local government staff towards improved service delivery for farmers. Key actions taken included community mobilization for various development initiatives, enhanced community participation in planning/policy formulation processes, sensitization of the community members on various laws, and enhanced policy implementation.

Photo 6.14: Good governance training for chiefs and assistant chiefs in Mwingi

- **Activity Area 6.3: Social accountability fora between FOs and local government institutions**

To enhance the farmers' capacity to engage the government in demanding improved service delivery, 33 (22 women) farmers from 13 FOs in Makueni County were trained on service delivery mechanisms, service charters, planning, budgeting and project implementation. A key gap identified within the Department of Agriculture was low resource allocation that led to few services being given to the farmers. As a result, the trainees mobilized 565 farmers, identified key priority issues in agriculture (input supply – green gram value addition machine, certified seeds and trainings) for resource allocation consideration and presented a proposal to the county department of agriculture. This was adopted and incorporated into the County Integrated Development Plan for 2018-2022. A review

meeting held with 20 (13 women) trained leaders from 12 FOs revealed that they had managed to influence the county government through various engagements with the County Ministers of Agriculture, Water and requested the County Governor to allocate KSH 9 million (US$ 90,000) for their proposed green gram processing plant in Makueni County. Such an investment would provide the farmers with a ready market for their produce, the opportunity to value add on their produce and realize higher returns.

- Activity Area 6.4: Institutionalization of famer-led extension system

In 2018, DryDev equipped 1,756 (1,032 women) farmer extension service providers (TOTs, Lead farmers and artisans) with various skills including CA, Post-harvest Management, agroforestry/nursery management, FMNR, land reclamation, RWH, climate-smart agriculture/good agronomic practice, micro-irrigation and financial literacy (Table 6.25).

Table 6.25: Distribution of Farmer Extension Service Providers across thematic areas

| Technology | Mwala | Yatta | Waita | Lower Yatta | Kalawa | Mtito Andei |
|---|---|---|---|---|---|---|
| CA | 9 | 13 | 13 | 16 | 15 | 42 |
| PHM | 20 | 42 | 7 | 11 | 0 | 151 |
| Agroforestry/Nursery management | 21 | 22 | 25 | 30 | 0 | 107 |
| FMNR | 38 | 38 | 41 | 22 | 35 | 42 |
| Land rehabilitation | 0 | 43 | 0 | 55 | 40 | 115 |
| RWH | 49 | 36 | 21 | 29 | 46 | 65 |
| GAP/CSA | 39 | 43 | 53 | 62 | 135 | 192 |
| Micro-irrigation | 47 | 41 | 8 | 18 | 0 | 34 |
| Financial literacy | 1 | 2 | 2 | 21 | 16 | 63 |
| **Total** | **224** | **280** | **170** | **264** | **287** | **811** |

An assessment was conducted for 353 (177 women) extension service providers to evaluate and document the effectiveness of the farmer-to-farmer extension models used in the programme. It was observed that the extension provider-to-farmer ratios have significantly reduced, making it easier for farmers to access extension advisory services (Table 6.26). Farmer extension providers utilized varied means to acquire and transfer new skills and techniques. The main source of new information was government extension staff, and the most utilized transfer modes were phone and group meetings (Figures 6.3 and 6.4).

Table 6.26: Extension Service Providers Vs Farmers ratios

| County | Ward | Programme target population | Farmer Extension Providers | Average Farmer Extension provider, Farmer Ratio |
|---|---|---|---|---|
| Machakos | Mwala | 4,441 | 81 | 55 |
| | Yatta | 7,059 | 272 | 30 |
| Kitui | Waita | 5,754 | 130 | 44 |
| | Lower Yatta | 5,746 | 215 | 27 |
| Makueni | Kalawa | 2,108 | 266 | 8 |
| | Mtito Andei | 9,392 | 797 | 18 |
| **Total** | | **34,500** | **1,761** | **20** |

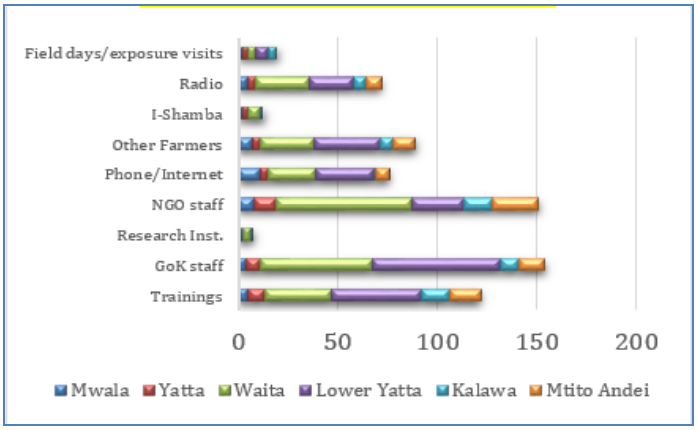


Figure 6.3: Knowledge & skills acquisition

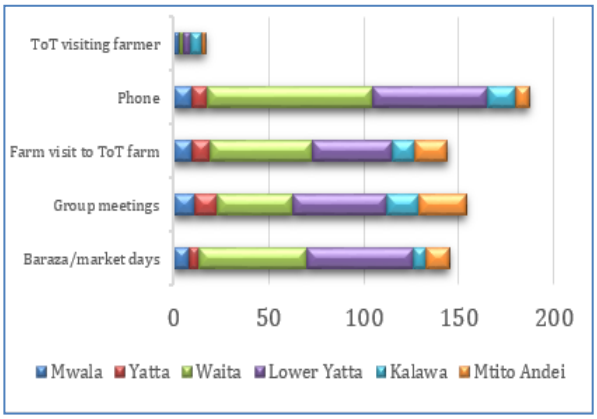


Figure 6.4: Mode of knowledge, skills & technology transfer

### 6.2.7 Work Package 7: Planning, M&E and Scaling of Learning

- Activity Area 7.1: Programme Monitoring conducted:

In 2018, DryDev Kenya reached a total of 19,973 (11,052 women) farmers with different interventions across the WPs, representing 119% of the 2018 annual target (Table 6.27). By December 2018, the programme had cumulatively reached 35,363 (22,974 women) farmers with various interventions, which translates to 102.5% of the overall programme target of 34,500 (Tables 6.28 and 6.29). This good performance resulted from the acceleration strategies adopted by the programme team, such as intensified involvement of key government departments, strengthening of the farmer-led extension system and FOs to effectively deliver services to farmers for sustainability of interventions as the programme phases out in 2019.

Table 6.27: Farmers reached by DryDev Kenya in 2018

| County | 2018 Annual Target | Total number of farmers engaged | No. women farmers engaged | % reached vs target |
|---|---|---|---|---|
| Machakos | 5,600 | 6,764 | 3,699 | 120.7 |
| Makueni | 5,600 | 6,789 | 2,775 | 121.2 |
| Kitui | 5,600 | 6,420 | 4,578 | 114.6 |
| **Total** | **16,800** | **19,973** | **11,052** | **118.9** |

Table 6.28: Farmers reached per Work Package in 2018

| Work Packages | Achievement | | |
|---|---|---|---|
| | Total number of farmers reached | Number of women reached | |
| WP1: Sub-Catchment Natural Resource Management | 9,477 | 5,235 | 55% |
| WP2: On-farm Soil and Water Management | 8,049 | 5,116 | 64% |
| WP3: Agricultural Commodity Production | 9,631 | 6,601 | 69% |
| WP4: Enhancing Market Access | 6,398 | 4,361 | 68% |
| WP5: Financial Services Lining | 6,398 | 4,361 | 68% |
| WP6: Local Governance and Institutional Strengthening | 599 | 197 | 33% |
| WP7: Planning, M&E and Learning | 19,973 | 11,052 | 119% |
| WP8: Policy Analysis and Influencing | **301** | **122** | **41%** |

Table 6.29: Cumulative number of farmers reached since 2015

| Work Packages | Programme Target | Achievement | | | |
|---|---|---|---|---|---|
| | | Total number of farmers reached | | Number of women | |
| WP1 | 34,500 | 20,509 | 60% | 9,199 | 45% |
| WP2 | 34,500 | 20,509 | 60% | 9,199 | 45% |
| WP3 | 16,800 | 20,711 | 123.3% | 14,754 | 71.2% |
| WP4 | 5,600 | 6,398 | 114.3% | 4,361 | 68.2% |
| WP5 | 5,600 | 6,398 | 114.3% | 4,361 | 68.2% |
| WP6 | 180 (FOs) | 351 FOs | - | - | - |
| | 34,500 (Farmers) | 10,497 | 30.4 | 7,382 | 70.3% |
| WP7 | 34,500 | 35,363 | 102.5% | 22,974 | 65% |
| WP8 | 25 (Stakeholders) | 11 | 4% | - | - |
| | 4,500 (Community) | 11,147 | 32.3% | 7,091 | 64% |

To enhance programme monitoring, evaluation and learning, as well as participatory M&E with FOs and local stakeholders, 35 events were undertaken during the period which included programme reporting, reflection, review and planning, programme evaluation and monitoring, farmer database system development, programme management meetings and cross-learning.

- Activity Area 7.2: Participatory M&E with FOs and local stakeholders

To strengthen the programme management, collaborative monitoring and learning, a total of 229 (89 women) programme management committee members, representing 28 sub-locations across all target sub-catchments were trained (Makueni 72 (24 women), Machakos 117 (45 women) and Kitui 40 (16 women)). These included government extension staff, and local administration who developed their own Monitoring, Evaluation and Learning plans, processes and schedules. Participatory review and reflection meetings were conducted quarterly, with the participation of a total of 2,652 (1,590 women) participants which included farmers and technical teams from the government and other stakeholders across the three counties. The lessons and recommendations generated were used to continually inform programme planning and implementation.

- Activity Area 7.3: Scaling of evidence and learning

Data collection was done on the three Action Learning[9] (or PCs) being implemented on: (1) post-harvest management; (2) zai pits; and (3) tree planting. A total of 1,347 (932 W) farmers participated in the action learning during the year (Table 25). In addition, preparation for the county level scaling stakeholders' workshop were initiated. Interventions with evidence-based lessons were identified. These include: farm pond technology, farmer-to-farmer extension approach, ICT and innovation in agribusiness, riparian land conservation and protection, and community-based input access model. Development of briefs is ongoing and will be presented during the planned scaling stakeholders' meetings at the County and national levels in 2019.

[9] Action Learning: A participatory process that facilitates rapid learning by both farmers and scientist while generating data on the performance of options across contexts

An assessment on the viability of the farm pond technology led to development of a Farm Pond Planning[10] (FPP) tool. The FAO and other multilaterals have adopted the tool for scaling as a guide for decision making on the crop enterprises for the projects focusing on farm ponds.

Table 6.30: Farmers participating in Action Learning

| County | Action Learning | | | | | |
|---|---|---|---|---|---|---|
| | Soil & Water Conservation (Zai pit) | | Tree planting | | Post-Harvest Management | |
| | Total | W | Total | W | Total | W |
| Kitui | 420 | 251 | 96 | 43 | 247 | 209 |
| Machakos | 400 | 305 | - | - | - | - |
| Makueni | 122 | 82 | 62 | 42 | - | - |
| Total | **942** | **638** | **158** | **85** | **247** | **209** |

There is scope for the tool to become an app and to thus improve decision-making for financiers and farmers. A story on how the farm pond has been changing lives in the Programme sites may be accessed here. A number of DryDev staff and key policy makers made presentations in the Global Landscape Forum (GLF) at the UN Headquarters, Nairobi, where 1 video, 1 poster and brochures were shared. As a follow up to the GLF Conference, a journalist documented and published a story in the Spore Magazine on the impact of DryDev interventions in Machakos County. Video[11], drone and still-photo footage were taken in December to prepare a Programme overview video for the scaling stakeholders' workshops to be conducted in April and June 2019.

### 6.2.8 Work Package 8: Policy Analysis & Influencing

By end of 2018, DryDev Kenya had engaged a total of 301 (122 women) local level policy implementers in different discussions including validation of the reports, discussions on the government's role in enhancing community policy awareness and implementation as well as encouraging community participation in county policy formulation processes. In addition, a total of 11,147 (7,091 women) farmers have been reached with information on key policy provisions across the counties

- Activity 8.1 County stakeholder mapping/power analysis

Following the formation of a ward level platform (Ward Development Committee) for fostering synergy, sharing innovations and learnings within and across sectors in 2017, a progress review meeting was held In Kalawa - Makueni County, attended by a total of 85 (18 women) multi-sectoral stakeholders. Specific partner plans, implementation approaches, successes, challenges and key lessons were shared. It was determined to hold similar forum twice annually, to be funded by the county government. Stakeholders committed to supporting the implementation of DryDev interventions. The meeting also provided opportunity to learn from others, share reflections and to discuss experiences for up-scaling.

[10] https://drive.google.com/open?id=1cAoAHzksaEMc38e5w6wE3Rt8kuJuAy1e
[11] https://vimeo.com/user7210506/review/341934227/21817fe12d

- Activity Area 8.2: Identification of key policy constraints & possible solutions

DryDev made contributions in the formulation of the County Integrated Development Plans for the period 2018 to 2022, for the three counties. These contributions influenced the allocation of additional resources to the key aspects of the programme. Further, participation during the development of Makueni County Water Policy, Water Regulations, Water Act Kitui County's *Ndengu* (green gram) Policy presented an opportunity to highlight key policy concerns identified during previous policy studies, community sensitization, reflection meetings and other engagements with farmers during implementation which were factored in the processes. In addition, DryDev Kenya collaborated with WRUA, WRA, local administration from county and national government and key line ministry extension staff in convening community-awareness meetings that reached 2,987 (1,860 women) farmers with information on key relevant policy provisions in relation for NRM, agriculture and water management (Table 6.31) as provided in the Water Act 2016, Water Rules 2007, Machakos County Sand Harvesting Act 2014, Forest Conservation and Management Act 2014, Agriculture and Food Authority Act 2013, National Government 2013, and the Chiefs Act 1998 (Revised 2012). In Machakos and Makueni Counties, this resulted in riparian pegging and institutionalization of development by-laws by the WRUAs with guidance from local administration and the WRA.

Table 6.31: Farmers reached with policy awareness-raising and sensitization

| County | Site | Total | Women |
|---|---|---|---|
| Kitui | Waita | 792 | 522 |
| | Lower Yatta | 562 | 376 |
| Machakos | Mwala | 57 | 19 |
| | Yatta | 1,319 | 841 |
| Makueni | Kalawa | 81 | 44 |
| | Mtito Andei | 176 | 58 |
| **Total** | | **2,987** | **1,860** |

- Activity Area 8.3: Networking and alliance building

Meetings were held at Mwala and Yatta (both in Machakos County) to link farmers with the Kenya Small Scale Farmers Forum (KESSFF), a network that provides farmers with a platform to speak as a united voice. This meeting presented the 107 (75 women) farmers from Yatta and 81 (40 women) farmers from Mwala with opportunity to engage with policymakers and seek to improve service delivery and resource allocation. Further, to enhance farmers networking, policy influencing, access to inputs, markets and extension services, the programme supported the federation and formal constitution of 45 FOs into two farmer associations (mango and green grams) in Machakos County (Table 6.32). Efforts to achieve the same in Makueni have been initiated and the programme is currently supporting constitution development to enable their formal registration with the Office of the Attorney General.

Table 6.32: Commodity associations formed in Machakos country in 2018

| County | Name | No. of FOs | Men | Women | Total |
|---|---|---|---|---|---|
| Machakos | Yatta Green gram farmers Association | 20 | 533 | 267 | 800 |
| | Machakos County Mango Value Chain Association | 25 | 336 | 189 | 525 |
| **Total** | | **45** | **869** | **456** | **1,325** |

## 6.3 BURKINA FASO

The DryDev Programme in Burkina Faso targets intervention in six sub-catchments, namely Kongoussi, Bassi, Arbollé, Kyon, Kiembara and Zogoré. Following the restructuring of the country DryDev consortium in mid-2017, the Burkina Faso core team comprises ICRAF as the national lead organization (NLO), and SNV and Tree Aid as Implementing Partners (IPs). SNV is in charge of implementing work packages (WPs) 1, 2, 3, 4, 5, 6 and 8 in the sub-catchments of Kiembara, Kyon and Zogoré, while Tree Aid oversees the implementation of the same WPs in the sub-catchments of Arbollé, Bassi and Kongoussi. ICRAF as NLO is coordinating the programme in the country, as well as leading the work of WP7. This Burkina Faso report for 2018 summarizes the progress made in the implementation of the programme in the period covering January to December 2018. This is presented in sections 6.3.1 to 6.3.8.

### 6.3.1 Work Package 1: Sub Catchment Level Natural Resources Management

Significant achievements were registered in WP1 in 2018, especially in Activity Areas 1.1, 1.3 and 1.4. Appropriate landscape/watershed-level natural resources management (NRM) initiatives were undertaken. It is estimated that, by end of 2018, about 25% of the sub-catchments were covered by footprints of the sub-catchment level NRM initiatives. The same proportion of catchments were under improved NRM management.

- Activity Area 1.1 Sub-catchment Action Planning

The DryDev Burkina team continued the developing and reviewing of sub-catchment management action plans. Six sub-catchments action plans were reviewed and finalized, and a total of 227 community initiatives emerging out of the sub-catchment actions plans implemented in the three sub-catchments of Arbollé, Bassi, and Kongoussi. In total, 4,675 farmers (3,338 women) benefited from this support. Further, the *Sahelian bocage*[12] technique was implemented on a total of 131 ha of community farms in the sub-catchments of Kongoussi, Bassi and Arbollé, to the benefit of 1,370 farmers (Photo 6.14). In addition, DryDev facilitated two study tours, involving 44 farmers (10 women) from the three sub-catchments of Arbollé, Kongoussi and Bassi in two communities (Filly and Guié) with significant experience in implementing the Sahelian bocage. The study tours provided opportunities for DryDev-supported farmers to learn from their peers and enabled them to apply their newly acquired knowledge in their communities and farms.

Photo 6.15: Exchange trips of farmers from Bassi and Kongoussi Sub-catchments on the Sahelian bocage facilities in Filly and Guié,

[12] A soil and water management system, designed in Burkina Faso, that integrates water collection structures, anti-erosion planting, organic fertilization uses, crop rotation and crop diversification. [Girard, H. 2009. Wegoubri, the Sahelian bocage: an integrated approach for environmental preservation and social development in sahelian agriculture (Burkina Faso). Field Action Sci. Rep. 2, 33-39]

- Activity Area 1.2: Local capacity strengthening in sub-catchment management

Building local capacities in the programme approach to sub-catchment management was a key priority for DryDev over the year 2018. DryDev realized in the early stages of the programme the need to strengthen various actors' understanding of the concept of sub-catchment management and its long-term benefits to the local communities and smallholder' farmers. In this regard, DryDev Burkina continued to strengthen the capacities of the sub-catchment management committees through such activities training on sub-catchment approaches and establishing water infrastructure management committees. In the end, six sub-catchment management committees have been set up and revitalized, and 139 capacity-building events related to the management of sub-catchment, involving a total of 1,331 participants, were carried out (Table 6.33).

Table 6.33: Sub-catchment Management Capacity Building

| Sub-Catchment | Number of Sub-catchment management committees | Number of water infrastructure management committees | Number of capacity building events relating to management of sub-catchments | Number of participants attending capacity building events |
|---|---|---|---|---|
| Kyon | 1 | 1 | | 393 |
| Kiembara | 1 | 2 | 57 | 263 |
| Zogoré | 1 | 2 | 7 | 432 |
| Arbollé | 1 | 1 | 12 | 105 |
| Koungoussi | 1 | 4 | 44 | 74 |
| Bassi | 1 | 2 | 19 | 64 |
| **Total** | **6** | **12** | **139** | **1,331** |

In addition, training of trainers on the sub-catchment approach was delivered to 38 community trainers in the three sub-catchments of Kiembara, Kyon, and Zogoré. The topics of the training included mapping out existing natural resources (water, soil, forest, livestock resources) as well as assessing the current situation of these resources in the sub-catchments; assessing current access to and control over the natural resources for each category of users; identifying potential conflicts as well as local measures that can potentially address these; identifying local practice and knowledge and other external options to address the impact of climate change. Community trainers in the three sub-catchments facilitated the development of 11 NRM plans (three sub-catchments and eight villages) by 1,088 participants (526 women) from eight villages. It is anticipated that in 2019, the programme will support the remaining 11 villages in the development of their natural resource management plans. Finally, in the three sub-catchments of Kiembara, Kyon, and Zogoré, the programme conducted training of trainers on improved rectangular zaï, half-moons taking into consideration the slope, contour bunds with stone, contour bunds with earth, heap composting and FMNR for 38 community trainers who in turn trained 905 farmers (410 women) from the three sub-catchments. A total of 18,104 farmers (7992 women) replicated the above technologies on their farms.

- Activity Area 1.3: Water facility development and maintenance

Sustainable management of the natural resources at sub-catchment level involves undertaking water buffering measures that protect banks of water reservoirs, rehabilitating and constructing water harvesting infrastructures and small-scale irrigation systems as well as strengthening management committees that oversee the long-term functioning of the established water harvesting

infrastructures. These measures complement other NRM initiatives that are implemented in the framework of the sub-catchment action plans. In 2018, DryDev Burkina conducted nine capacity building events on water buffering technologies at sub-catchment level. These events were attended by a total of 1,527 farmers (748 women), following which nine initiatives related to water buffering infrastructure and small-scale irrigation were launched. In addition, DryDev mobilized communities in the target sub-catchments to protect banks of water reservoirs and rehabilitate gullies in communal lands through the establishment of fascines, micro-dams, gabions, dikes and zaï. Soils were stabilized against erosion by planting of grasses and tree species namely *Acacia nilotica*, *Balanites aegyptiaca* and *Piliostigma sp*. A total of 826 ha of community lands were put under rehabilitation, which included 36 ha of community gullies in three sub-catchments. These measures are expected to benefit 19,440 producers (9 914 women).

Five water management committees, comprising a total of 36 members (20 women), were established and revitalized in Zogoré (1), Kiembare (2) and Kyon (2) to support the management of water harvesting infrastructures in the sub-catchments. In addition, five silted ponds were rehabilitated and deepened in the sub-catchment of Kongoussi (3), Arbollé (1) and Zogoré (1). These activities helped increase the water storage capacity of the ponds in Zogoré (from 1,000 to 3,017 $m^3$) and Koungoussi (from 2,360 to 15,435 $m^3$). At their peak water contents these ponds can now serve 8,540 heads of cattle and 23,200 small ruminants.

- Activity Area 1.4: Sub-catchment level Restoration/reforestation by FMNR and tree planting

To reinforce the water buffering and soil conservation systems at the sub-catchment level, DryDev implemented several activities in target sub-catchments. Forty-eight training events were carried out on soil conservation, tree planting and FMNR, and 2,995 farmers applied these techniques at sub-catchment level. A total of 2,436 ha of communal lands was restored through the planting of 120,564 tree seedlings in the six sub-catchments of Kyon, Kiembara, Zogore, Arbole, Koungoussi and Bassi (Table 6.34).

Table 6.34: Sub-catchment level Restoration/reforestation by FMNR and tree planting

| Sub-Catchment | Number of training events | Area of land restored through tree planting (Ha) | Number of seedlings used | Number of farmers applying soil conservation, tree planting & FMNR techniques |
|---|---|---|---|---|
| Kyon | 5 | 318 | 15,900 | 1,658 |
| Kiembara | 7 | 324 | 16,190 | 235 |
| Zogoré | 7 | 994 | 49,700 | 464 |
| Arbollé | 6 | 160 | 13,750 | 190 |
| Koungoussi | 17 | 325 | 15,143 | 228 |
| Bassi | 6 | 315 | 9,881 | 220 |
| **Total** | **48** | **2,436** | **120,564** | **2,995** |

In addition, energy-saving initiatives that contribute to reducing household firewood consumption and deforestation were carried out in the six sub-catchments. In efforts to reduce the firewood consumption. Over 2,350 energy-saving stoves were constructed for the benefit of 770 households in

the three sub-catchments of Arbollé, Bassi, and Kongoussi. These efforts helped to reduce firewood consumption by 30-40%, representing a saving of about 16,650,000 FCFA (US$30,000)[13].

In the sub-catchments of Kiembara, Kyon and Zogoré, 60 improved stoves were built for the demonstration of their use in the production of local beer. Building on these demonstrations, about 225 households received improved stoves for which they contributed 47% of the total cost. Additional support for this scheme comes from loans provided by local microfinance institutions to support women beneficiaries of the DryDev programme. Furthermore, crops residues that are often used as source of energy (for cooking) during the first two months after the harvest season were saved to benefit livestock feeding and soil conservation.

DryDev also piloted the use of bio-digestors in the sub-catchments of Kyon and Zogoré. These bio-digesters of 6 $m^3$ each produced 7 tons of high-quality compost (in addition to cooking gas) which was then used as an activator to catalyze the production of 12 tons of compost. Participatory learning activities on tree planting techniques and in situ grafting of Shea were conducted in 2018. A total of 499 farmers (111 women) were trained on tree planting options tailored to the semi-arid context of Burkina Faso. About 5,553 seedlings from four tree species (*Tamarindus indica, Ziziphus mauritiana, Moringa oleifera* and *Adansonia digitata*) were distributed to the farmers participating in the participatory learning activities. The tree planting treatments tested include (i) the size and depth of the planting hole; (ii) the amount of organic manure used; and (iii) the watering regime. A sample of 52 farms in which 627 tree seedlings have been transplanted were then carefully monitored. The parameters measured for each tree species were height, collet diameter and crown diameter. Recovery rates were assessed for each type of treatment. For the grafting, 45 peer trainers (of which 50% were women) from the sub-catchment of Kyon were identified and trained and they have now implemented grafting on 22.62 ha of farmland with 15.4% success rate. This rate was low, but understandable because of mastery of appropriate grafting season (farmers was practicing for the first time). Some of the grafts were also destroyed by fire and children meaning that in situ grafting needs closer monitoring and protection.

Photo 6.16: Action learning on options for Shea grafting in Kyon sub-catchment

[13] Determined by estimates and mini survey of a few households. For these households, before the introduction of improved stoves, they consumed at least 3 cartloads every quarter. With improved cooking stoves, this quantity is reduced to less than one cartload or close to 1/3. The value of the wooden economy is estimated 17,500 FCFA per household. It was estimated that an energy-saving stove saves in average 64 $m^3$ of firewood.

- Activity Area 1.5: Development of forestry and pastoral area management plans

To conserve and enhance the sustainable utilization of available natural resources in the target sub-catchments, DryDev facilitated the development and implementation of two silvopastoral[14] management plans in the sub-catchments of Kongoussi (Sakou Mossi sylv-pastoral zone) and Arbollé (Bendogo sylvo-pastoral zone). These management plans were developed through a participatory process involving different categories of stakeholders - farmer organisations, pastoralists, local government authorities and government technical services. Two management committees of the silvo-pastoral zones were formed, one in Sakou Mossi (12 members, 2 women) and one in Bendogo (12 members, 6 women), to strengthen the management and governance of the two silvo-pastoral zones. In addition, forest surveillance committees were established in Sakou Mossi (20 guards) and in Bendogo (15 guards). These committees benefited from DryDev support by way of donated boots, gloves, torches, bicycles and control gear, all provided to enhance the efficiency of their operations. Further, two categories of activities were planned for the two silvo-pastoral areas. The first category involved the demarcation of the silvo-pastoral area, rehabilitation of degraded areas through tree planting, enrichment with grasses, delineation of livestock corridors as well as the establishment of water infrastructures (boreholes and water reservoirs). The second category of actions involved the strengthening of the governance of the natural resources in the two areas. In this sense, forest management committees were set up and trained in participatory forestry management tools, including drafting of local by-laws, land tenure charters as well as forest users' awareness raising on forest management best practices.

From these efforts, 87 community members attended training events for pastoral and forest areas management, while 67 community members were involved in implementing best practices related to pastoral and forest areas management. Further, 35 km of livestock and pastoral corridor were demarcated, and 605 ha of community pastoral and forest areas were put under improved management. A total of 60,591 community members are currently benefitting from the two silvo-pastoral areas through the harvesting of non-timber forest products (NTFPs), increased availability of fodder for livestock and beekeeping activities. In addition, local by-laws related to the governance and management of the silvo-pastoral areas were broadcasted on local radio stations covering topics such as climate change related to the agricultural calendar; crop management; fire management (early fire and firebreak management) and participatory management of natural resources. Also aired were local rules and convention agreed on the management of the natural resources in the sub-catchments. In total six radio broadcasts were aired, reaching an estimated audience of over 334,400 people in the three sub-catchments of Bassi, Kongoussi and Arbollé.

### 6.3.2 Work Package 2: On-farm Water and Soil Management

DryDev Burkina estimates that, by close of 2018, a total of 2,608 farmers (984 women) were applying climate-smart on-farm water & soil management practices, against the anticipated programme target of 2,700 farmers. A total of 11,181 farmers (2,619 women) participated in various capacity-building events on on-farm water & soil management. Furthermore, about 2,505 ha of agricultural land,

[14] Silvopasture is the practice of integrating trees, forage, and the grazing of domesticated animals in a mutually beneficial way. It utilizes the principles of managed grazing, and it is one of several distinct forms of agroforestry (Wilkipedia)

representing over 92% of the overall anticipated target, has so far been put under improved on-farm water & soil management.

- Activity Area 2.1: On-farm rainwater harvesting promotion

DryDev promoted on-farm rainwater harvesting (RWH) activities to complement and reinforce the impacts of RWH initiatives undertaken at sub-catchment level. On-farm RWH initiatives that were promoted in 2018 include half-moons, improved rectangular zai, pile and thermal composting, micro-dosing, stone lines as well as bunds and gully rehabilitation. Six community-level RWH infrastructures were established to provide water for supplemental irrigation (Photo 6.16). A total of 24,029 farmers (10,500 women) were trained on RWH techniques, and 6,860 farmers were able to apply these techniques on a total of 7,837 ha of agricultural land in the six target sub-catchments (Table 6.35). Management committees were set up, trained and mandated to oversee the management of the water infrastructures.

Photo 6.17: Water harvesting basin for supplemental irrigation of maize in Kiembara sub-catchment

Table 6.35: On-farm rainwater harvesting promotion

| Sub-Catchment | Number of farmers trained on RWH techniques | Number of farmers applying RWH techniques | Number of community-level structures for RWH | Area of agricultural land covered with improved RWH techniques (ha) |
|---|---|---|---|---|
| Kyon | 8,768 | 3,718 | 1 | 516 |
| Kiembara | 3,932 | 1,037 | 2 | 1,710 |
| Zogoré | 5,404 | 1,567 | 2 | 734 |
| Arbollé | 1,238 | 199 | 1 | 1,312 |
| Koungoussi | 1,601 | 43 | 1 | 2,300 |
| Bassi | 3,086 | 301 | 3 | 1,265 |
| **Total** | **24,029** | **6,860** | **10** | **7,837** |

Visits and awareness-raising sessions on RWH and water buffering management were carried out in the six sub-catchments, reaching 3,327 farmers (1283 women). Participatory learning (planned comparison) activities were designed and carried out on the manufacture and use of liquid fertilizers on the production of onion and cabbage vegetables in plots established in two vegetable gardens sites in Dakiegré (sub-catchment of Arbollé) and Bassi (sub-catchment of Bassi). A second planned comparison study involved the contribution of pastoral zones to improving livestock management and reduction of conflicts over access to and control over natural resources.

- Activity Area 2.2: Promotion of on-farm agroforestry

In 2018, DryDev Burkina launched several initiatives aimed at promoting on-farm agroforestry. These initiatives included 48 capacity building events on FMNR, supporting 3,777 farmers to apply FMNR

and agroforestry techniques on their farm lands, and rehabilitating 2,571 ha of degraded lands through FMNR and multi-purpose trees (Table 6.36).

Table 6.36: Promoting on-farm Agroforestry

| Sub-Catchment | Number of capacity building events on FMNR | Number of farmers applying FMRN and agroforestry techniques | Area of agricultural lands covered by FMNR |
|---|---|---|---|
| Kyon | 5 | 49 | 33 |
| Kiembara | 7 | 478 | 398 |
| Zogoré | 7 | 1,361 | 884 |
| Arbollé | 6 | 460 | 412 |
| Koungoussi | 17 | 945 | 537 |
| Bassi | 6 | 484 | 307 |
| **Total** | **48** | **3,777** | **2,571** |

Further, 46 tree nursery operators were trained in nursery establishment, operations and management. Over 120,000 tree seedlings of local multi-purpose species (such as *Faidherbia albida*, *Acacia senegal*, *Zizyphus mauritiana* and *Balanites aegyptiaca*) were raised in the six sub-catchments. In the sub-catchments of Arbollé, Bassi and Koungoussi, the programme supported the development of partnership agreements between the nurseries and the sub-catchment management committees. The seedlings raised in the nurseries were purchased by the sub-catchment management committees and then distributed to local governments and school for planting in public lands. The seedlings were also distributed to farmers implementing soil restoration and conservation measures in both communal lands and individual farms. In the three sub-catchments (Arbollé, Bassi and Kongoussi) revenues generated by the sale of seedlings was about 1,925,000 FCFA (US$3,500). Live fences and windbreaks were established by vegetable garden producers in the three sub-catchments through planting of multi-purpose tree species such as *Lawsonia inermis* and *Moringa oleifera*.

- Activity Area 2.3: Improved on-farm soil conservation and fertility management

On-farm soil conservation and fertility management initiatives were developed and implemented in the 6 target sub-catchments to improve the fertility of agricultural land. A total of 11,541 farmers (6500 women) were trained in composting, use and application of liquid fertilizers and the micro-dose fertilization techniques. A total of 9,537 farmers were able to apply improved soil conservation and fertility management techniques on a total of 12,481 ha of agricultural lands using 25878 t of compost and 3,600 litres of liquid fertilizer (Table 6.37).

Table 6.37: On-farm soil conservation and fertility management

| Sub-Catchment | Farmers trained on soil conservation and fertility management | Number of farmers applying soil conservation and fertility mgt. | Area of agricultural lands covered by soil conservation and fertility mgt (ha). |
|---|---|---|---|
| Kyon | 2,235 | 1,743 | 1,626 |
| Kiembara | 6,359 | 4,960 | 5,125 |
| Zogoré | 1,332 | 1,039 | 761 |
| Arbollé | 202 | 202 | 1,702 |
| Koungoussi | 1,205 | 1,205 | 1,192 |
| Bassi | 208 | 208 | 2,436 |
| **Total** | **11,541** | **9,357** | **12,841** |

Photo 6.18: Compost Making in village of Po in Kyon sub-catchement

- Activity Area 2.4: Promoting small-scale irrigation

DryDev Burkina promoted small-scale irrigation to complement the on-farm rainwater harvesting initiatives implemented in the target sub-catchments. Further, DryDev Burkina facilitated consultations between relevant stakeholders in the sub-catchments of Zogoré, Kiembara, Bassi and Arbollé regarding the improvements of paddy rice farms. Management committees were formed to oversee the management of these rice farms. About 65 ha of agricultural land were developed into rice farms for the benefit 516 farmers (252women) in the four sub-catchments. Rice yields from these fields was 4.7 t/ha, representing an increase of about 74% compared to non-improved rice farms. Total rice production in 2018 was 305,5 tons which will feed about 3394 persons with an estimated value of 42 070 000 FCFA (US$72,534).

The programme also developed three perimeter vegetable gardens, equipped with solar-powered drip irrigation systems, covering a total of 6 ha, in the sub-catchment of Kongoussi, Bassi and Arbollé. About 429 farmers (417 women) were trained on drip irrigation and maintenance of irrigation equipment. In the sub-catchments of Zogoré, Kiembara and Kyon, 15 traditional wells were rehabilitated for the benefit of 209 vegetable producers (137 women). Two new irrigated vegetable sites were set up over an area of 3 ha in the sub-catchments of Zogoré and Kyon. Further, the programme facilitated consultative meetings between producers and local authorities to discuss arrangements for women producers' access and control over land on which their vegetable gardens are situated. In addition, DryDev facilitated the establishment of vegetable garden management committees in all the six sub-catchments. Over 633 women, drawn from the six sub-catchments, were trained on the optimum utilization of water resources for vegetable gardens.

### 6.3.3 Work Package 3: Agricultural Commodity Production

As at end of 2018, the number of farmers participating in training on climate-smart production options was 23,429 (1,192 women), which was just over 50% of the total target of 45,000 farmers. The area of agricultural land covered by climate-smart production options was 9,975 ha.

- Activity Area 3.1: Promoting climate-smart farming options

DryDev promotes climate-smart farming practices to enable farmers cope with the effects of climate change and build their resilience to adapt to the changing and increasing drastic farming landscape. In this regard, DryDev Burkina strengthened the capacity of 18,720 farmers on climate information, crop storage management and conservation, poultry management and disease prevention, agricultural market information system, participatory sub-catchment NRM and fire management. The programme also facilitated the development of local technical assistance on climate-smart agriculture (CSA)

through the promotion of CSA community trainers, dissemination of good practices to other farmers such as improved rectangular zai, composting and half-moon. A total of 15,654 farmers were able to apply CSA practices on about 14,228 ha of agricultural land across the six target sub-catchments (Table 6.38).

Table 6.37: Number of farmers involved and areas covered by climate smart agriculture

| Sub-Catchment | Farmers trained on climate-smart farming practices | Number of farmers applying climate-smart farming practices | Area of agricultural lands covered byclimate-smart farming practices |
|---|---|---|---|
| Kyon | 2,235 | 1,743 | 1,626 |
| Kiembara | 6,359 | 4,960 | 5,125 |
| Zogoré | 1,332 | 1,039 | 761 |
| Arbollé | 1,784 | 1,855 | 2,015 |
| Koungoussi | 3,114 | 3,922 | 3,022 |
| Bassi | 3,896 | 2,135 | 1,679 |
| **Total** | **18,720** | **15,654** | **14,228** |

In the sub-catchments of Arbollé, Kongoussi and Bassi, climate information was disseminated to approximately 334,400 farmers[15] through 21 radio broadcasts. This was achieved through linkage between the programme, the National Meteorology Department and the local radio stations. Plans are underway to formalize this partnership with local radio stations in 2019. Over 558 farmers in the three sub-catchments of Arbollé, Kongoussi and Bassi were able to access climate information. Further, in the sub-catchments of Kyon, Zogoré and Kiembara, DryDev promoted the development of local technical assistance on CSA by providing training to 38 community facilitators and trainers in 19 villages. These community trainers were then able to disseminate CSA techniques to 7,742 farmers (1,178 women) in the three sub-catchments.

- Activity Area 3.2: Promotion of farmer-led extension systems

DryDev supported the development of farmer-led extension services, in the six target sub-catchments, with a view to enabling innovative farmers to assist their peers in the implementation of climate smart agriculture options. In the sub-catchments of Arbollé, Bassi and Kongoussi, a total of 124 in-situ demonstrations led by 287 innovative farmers were carried out to disseminate climate-smart farming practices to other farmers. About 8,794 farmers (4,129 women) benefited from these demonstrations. Further, a total of 200 innovative farmers (21 women) facilitated 35 demonstrations on technology packages. The innovative farmers in the sub-catchment of Arbollé assessed the crop varieties grown in their field demonstrations by comparing the yields of improved versus traditional varieties of beans, maize, sorghum and sesame. In all cases, the improved varieties out-yielded the local, as shown in Table 6.38.

Table 6.38: Yield for improved varieties compared to traditional varieties

| Crop | Yield (kg/ha) | | % Increase |
|---|---|---|---|
| | Local varieties | Improved varieties | |
| Beans | 750 | 1,225 (Komcallé) | 63% |
| Maize | 800 | 1,500 (Barka) | 88% |
| Sorghum | 700 | 1,400 (Kapelga) | 100% |
| Sesame | 450 | 650 (S42) | 44% |

[15] Number of farmers were estimated by the DryDev team together with the local radio management based on a percentage of the radio audience

Photo 6.19: Farmers learning from demonstration plots, in village of Bassi, Bassi sub-catchment

In the sub-catchments of Kyon, Zogoré and Kiembara, 172 innovative farmers established 107 ha to demonstrate the performance of different crop production options. Further, DryDev supported the establishment of 38 extension centres, covering a total of 39 ha across the three sub-catchments of Kyon, Zogoré and Kiembara. The technologies demonstrated in these extension centres included land restoration techniques combined with the use of improved rectangular zaï- and/or half-moon and/or stone lines, FMNR, herbaceous lines, making and use of compost and micro-dosing of mineral fertilizers. Participatory learning was carried out in the sub-catchment of Kiembara to determine the most effective and farmer-friendly technology package.

- Activity Area 3.3: Improving input supply systems

An input supply system (named Sustainable Input Supply System-SISS) was developed and set up in each of the six sub-catchments, to enhance farmers' access to inputs such as seeds (cereals, vegetables, fodder and trees), fertilizers, phyto-sanitary products, or veterinary inputs. In the sub-catchments of Zogoré, Kiembara and Kyon, three sustainable input supply stores were established and placed under the management of respective sub-catchment management committees. Services offered at these stores include (i) an input capital of 50% of the total value of the producer's needs (repayable in kind at the end of the season); (ii) crop insurance in the event of poor rainfall; (iii) access to agro-climatic information; (iv) a warrantage system; and (v) a local advisory support service via DryDev's network of 38 community trainers. In the sub-catchments of Kongoussi, Bassi and Arbollé, three stores with a total storage capacity of approximately 430 tons were rehabilitated and are being used by the community and the local authorities to store emergency food supplies and inputs. These input stores opened the doors for the sub-catchment management committees to secure loans from two microfinance institutions (UBTEC[16] & GRAINE[17]) totaling 42,531,125 FCFA (approx.US$77,329) which was used to purchase 110 tons of chemical fertilizer NPK, 19 tons of urea, 24 tons of organic fertilizers as well as crop insurance, all for the benefit of 1,024 farmers.

DryDev Burkina supported the establishment of a catalytic capital of 27 tons of fertilizers in which the beneficiaries contribute 20% in cash and pay the remaining 80% in kind to feed the warrantage stocks. In 2018, the warrantage system benefited 2,909 farmers in Kongoussi, Bassi and Arbollé sub-catchments. Farmers have mobilized a total of 1,005,600 FCFA (about US$2,000) representing 20% of the value of fertilizers received. The capital reconstituted will serve as a security funds for the

[16] Union of Baoré Tradition of Savings and Credit
[17] The Investment and Savings Assistance Group (GRAINE)

acquisition of inputs for the coming seasons. This initiative benefited 2,909 producers (2,512 women) in the three sub-catchments.

Photo 6.20: Managing a sustainable input supply system in Kiembara and Zogoré sub-catchments

### 6.3.4 Work Package 4: Enhancing Market Access

By the end of 2018, a total of 14,709 people (9,907 women) were engaged in targeted value chains, making the proportion of men and women engaged in selected value chains as 33% and 67%, respectively.

- Activity Area 4.1: Building the capacity of countries in market analysis systems & value chain

In 2018, 29 members of the DryDev Burkina team in the sub-catchments of Kongoussi, Bassi and Arbollé were trained in market system development and value chain analysis. This training, which also included government extension services, local elected governments as well as administrative authorities, exposed the participants to the approaches and tools for developing market systems and analyzing value chains for enhancing the quality of the support and services they are expected to provide to producers' groups in the three sub-catchments.

- Activity Area 4.2: Organizational development of farmer groups

In the sub-catchments of Bassi, Arbollé and Kongoussi, a total of 170 producer organizations, comprising 1,344 members (1,143 Women) involved in the beans and poultry value chains were revitalized and strengthened. The programme also developed linkages between producer groups and markets. For example, a poultry trade center was established in Arbollé, and a business partnership developed between a shea butter micro-enterprise in Arbollé with a soap manufacturing company based in Ouagadougou. Farmers involved in DryDev programme supplied baobab biscuits and powder to micro-enterprises reselling tree products in the neighboring country of Côte d'Ivoire. In addition, 184 farmers from the three sub-catchments (Bassi, Arbollé and Kongoussi) were registered to the Agro-Silvo-Pastoral Market Information System (SIMA), a network of agricultural stakeholders that was established by the Regional Chambers of Agriculture of the North and is backed by the government. The farmers who were registered are now sharing market information with other 1,655 farmers.

In the sub-catchments of Kyon, Kiembara and Zogoré, the programme promoted an approach to aggregate sales of cowpea, millet, sorghum, maize, and groundnuts through the warrantage system. This approach aims at reducing risks of household food insecurity while satisfying their need for financial resources through investment credits. Over 552 farmers (377 women) are currently benefiting from this initiative. Value chain platforms (local poultry, groundnuts, cowpea, shea-butter),

have also been promoted by the programme to strengthen effective collaboration between value chain actors. The programme developed a "low-hanging fruit" business strategy which enables farmer groups to access capital in a relatively short period of time.

- Activity Area 4.3: Farmers' business and entrepreneurship capacity building

The skills of over 1,293 farmers were strengthened in business and entrepreneurship during 2018. A total of 700 women entrepreneurs from the six sub-catchments were trained in processing technologies, packaging, product standardization, innovation and marketing. These trainees were then able to train other 394 members of their micro-enterprises. Another 107 farmers were trained on simple accounting procedures. The immediate effects of these capacity building efforts were seen in increased sales of their products, ranging between 50 and 100%. Further, women entrepreneurs from the six sub-catchments were supported by the programme to access the necessary processing and drying equipment. In addition, 12 business plans were developed, five of which are in the process of being funded.

Photo 6.21: Women group in Zogoré processing local cereals in biscuit (DryDev supported biscuit factory)

- Activity Area 4.4: Developing business plans for the selected value chains

DryDev supported the development of a total of 193 business plans for groups of farmer entrepreneurs across the six target sub-catchments. The programme also facilitated the review of 181 business plans, in collaboration with the Rural Entrepreneurship Resource Center, which is a national government agency supporting small rural businesses. Following these reviews, 21 business plans in the sub-catchment of Bassi (belonging to 20 women groups with a total membership of 480) received funding from UBTEC, a local micro-finance institution, amounting to 20,000,000 FCFA (US$36,000). In addition, DryDev is facilitating the development of a business model of service provision related to phyto-sanitary treatments and the marketing of biological products. This is done in partnership with Bio protect, a national NGO based in Ouagadougou.

A participatory co-learning activity (planned comparison) was conducted to assess the efficiency of two types of onion conservation infrastructure in Boulousi, as well as the impact of onion warrantage on the livelihoods of households from the Relwindé group. The study involved 96 onion farmers who undertook to store and warrantee their harvested onions in two types of infrastructures, namely, the traditional Baore *Ruudu structure* and the Tilgr-baore structure. The study showed that losses in the Tilgr-baore structure were 0.38% and 22.63% after 2 months and 5 months of storage, respectively. In comparison, the losses in the traditional baore structure were 2.78% after 2 months, and 28.48% after 4 months of storage. Further, the study showed that when farmers sold their onions immediately after harvesting, they earned 1,490,880 FCFA (US$2,686), but when they deferred the

sale to more appropriate time, they earned 2,845,500 FCFA (US$5,125). According to the onion women group, some of the benefits of the onion warrantage included contribution to children school fees (8.2% of the producers surveyed), family health (8.4%) and the purchase of food during the lean season (25% of respondents). On the economic side, the storage credit has enabled 32% of the group members to implement income-generating activities with cereal trade being practiced by 44% of producers compared to only 2.4%.

(a) Sorting out the harvested onion

(b) Traditional Baore Ruudu store

(c) Tilgr-baore store

Photo 6.22: Preservation of onion in two different store designs in Boulounsi site in Zogore sub-catchent

- Activity Area 4.5: Multi-stakeholder value chain platforms

DryDev promoted multi-stakeholder value chain platforms to enhance collaboration, networking and alliance building between farmers who are engaged in the trade of the same agricultural value chains in all the six sub-catchments. Twelve value chains platform were established in 2018, and 18 multi-stakeholder consultations organized. In each of the sub-catchments of Arbollé, Bassi and Kongoussi the programme convened four meetings with a view to revitalizing the cowpea and local poultry platforms. These meetings brought together a total of 148 farmers (68 women). In the sub-catchments of Zogoré, Kiembara and Kyon, DryDev facilitated the revitalization of the poultry, onion, peanut and sorghum platforms through training of their management committees on their roles and responsibilities and business plan development. Further, the progarmme helped to organize a multi-stakeholder meeting with the Provincial Union of Bam Cowpea Producers for the benefit of nine communal unions of around 6,000 members. This meeting brought together all the technical and financial partners of the union. The exchanges focused on the revitalization of the cowpea sector in the Bam and the compliance of the member organizations of the union with the West and Central African nations' OHADA uniform act[18].

- Activity Area 4.6: Establishing and strengthening the Market Information System (MIS)

A well-functioning market information system (MIS) plays a vital role in the provision of up-to-date information necessary for commodity exchange, such as availability, market prices and trends in price fluctuation that are key to producer marketing strategies. In 2018, DryDev Burkina facilitated the establishment and strengthening of an MIS in the six sub-catchments. Overall, 5,600 value chain actors benefited from improved access to MIS in the six target sub-catchments. The programme's engagement with the Regional Information Centres revealed three pre-existing MISs in the northern regions. Two of these MISs were PAPSA[19] for grains, oilseeds, pulses, poultry, livestock, NTFPs and

[18] Organisation pour l'harmonisation en Afrique du droit des affaires [Organisation for the Harmonization of Corporate Law in Africa]
[19] Projet d'Amélioration de la Productivité Agricole et de la Securité Alimentaire (PAPSA) [Agricultural Productivity Improvement and Food Security Project]

PAMEFA[20] for vegetable products. The programme supported 134 market information relay producers to register on the third MIS, the Agro-Silvo-Pastoral MIS platform. Over 1,096 farmers (895 women) benefited from market information shared by the MIS relay producers.

Further, DryDev established a partnership with local radio stations operating in the sub-catchments of Arbollé, Bassi and Kongoussi to broadcast market information on agricultural products and post-harvest management. The radio broadcasts reached an estimated 334,400 people from the three sub-catchments of Arbollé, Bassi and Kongoussi. In the sub-catchments of Kyon, Zogoré and Kiembara, local radio stations were also used to disseminate market and agro-meteorological information. These broadcasts registered over 1,693 active listeners (613 women) in the three sub-catchments. DryDev was also able to develop a partnership with mobile phone company Orange for the establishment of a call center and the dissemination of agro-meteorological data and information via its mobile phone network.

### 6.3.5 Work Package 5: Financial Services Linking

By end of 2018, a total of 329 men and 209 women had access to loans amounting to 53,835,500 FCFA (US$ 97,000). A total of 9,394 producers (5,308 women) were provided with business training, advice, and/or mentoring support to the end of 2018.

- Activity Area 5.1: Strengthening village saving groups

In the DryDev target areas, several village saving groups have been set up by farmers and other development organizations to facilitate producer access to finance. Community-based Village saving and loans associations (VSLAs) play a vital role in providing much-needed capital to their members and enabling them to engage in various small businesses. While some of the saving groups demonstrate strong organizational resilience, many groups suffered from weaknesses in organizational development, governance issues, poor networks as well as skills gaps in business and entrepreneurship that hold them back from growing and expanding their businesses. DryDev addressed these problems though capacity building of the members and officials of the saving groups on governance, financial education, saving, financial inclusion as well as support for formal registration. In 2018, DryDev facilitated training events on saving groups for nine community-based financial institutions. About 2,961 saving group members were linked with these community-based financial institutions. Further, DryDev established memorandum of understanding with SEMUS[21] and AZND[22], two local NGOs to build the capacity of local VSLAs in respect to the roles and responsibilities of their management committees, financial education, savings, financial inclusion as well as providing support for the formal registration of these VSLAs. In the sub-catchments of Basi, Arbollé and Kongoussi, 77 VSLAs, comprising 1,668 members, were established. Between 2015 and 2018, these VSLAs have mobilized about 101,000,000 FCFA (US$182,000) in savings.

In the sub-catchments of Zogoré, Kyon and Kiembara, sessions were organized to determine the economic activities to be pursued by their VSLAs. These meetings brought together 94 members of different VSLAs, of which 82 members were women. Training on the principles of credit management

[20] Programme d'Appui à la Modernisation des Exploitations agro–pastorale FAmiliales [Support Program for the Modernization of Family Agro-Pastoral Farms]
[21] Solidarité, Entraide Mutuelle au Sahel [Solidarity, Mutual Aid in the Sahel]
[22] Association Zood Nooma pour le Developpement

was provided by BTEC, a local microfinance institution. The training also included the management of a successful warrantage system.

- Activity Area 5.2 Links with the financial service providers

In 2015, DryDev Burkina commissioned a study to characterize the local market and finance environments in which local farmers and producer organizations operate. This study highlighted poor linkages between producers and financial service providers and observed that most financial products are not tailored to the need of smallholder farmers. In 2018, DryDev sought to address this weakness by facilitating engagement of financial services in the sub-catchment with farmer organizations with a view to advocating for better services and financial products that are tailored to the needs of the farmers and farmer organizations. As a result, seven financial service providers were engaged with DryDev in the six sub-catchments, a total of 137 farmers were linked with the financial services and 20 partnership agreements were established between farmer organizations and financial institutions. Further, a workshop on the development of financial services for the beneficiaries of the programme was convened and attended by delegates from local micro financial service providers, sub-catchment management committees and technical partners. Local financial service providers mobilized about 8,325,000 FCFA (US$15,500) to enable warrantage groups to access microloans. A total of nine loan agreements were established with two microfinance institutions in the sub-catchments of Kyon, Kiembara and Zogoré for the purchase of inputs worth 42,735,000 FCFA (about US$77,000) as well as with six groups of rural financial services. Linkages with the rural financial services providers has helped to develop onion and cereal warrantage.

In the Kongoussi sub-catchment, 18 local model poultry producers were provided with training on small business development, to enable them develope fast-growing business opportunities. They were also equipped with roasting rollers as a contribution to their need for machinery and equipment to enhance local poultry production. It is anticipated that this equipment will contribute to increasing poultry production in the sub-catchment, from 9,000 to 22,000 per year. In addition, five producer organizations from the sub-catchment of Kongoussi, Bassi and Arbollé were provided with an assortment of processing and drying equipment to enable them develope quick win business opportunities. Furthermore, the programme was able to rehabilitate three stores, one each in Bassi (with a capacity of 150 tons), in Sakou (50 tons) and in Baribci (30 tons) in the sub-catchment of Kongoussi. The construction of two warrantage warehouses (100 tons each) started in Saye and Arbollé and is expected to be completed in 2019. To reduce post-harvest losses in the sub-catchments of Kyon, Kiembara and Zogoré, and enable the communities to benefit from better market prices through storage / destocking, 18 stores were rehabilitated. These stores provided storage for an additional 600 tons of dry products. The program also built five onion storage facilities with a capacity of 40 tons.

Photo 6.23 Warrantage store, in village of Saye, Bassi sub-catchment

### 6.3.6 Work Package 6: Local Governance & Institutional Strengthening

As of end of 2018, the number of local duty-bearers and farmer institutions with improved skills, knowledge, resources and/or motivation to meet their responsibilities was 1,241 people (685 women). Overall, 408 meetings involving 24,062 men and 13,920 women were organized for capacity-building events related to WP 6.

- Activity Area 6.1 Strengthening farmer organizations (FOs)

In 2018, DryDev Burkina facilitated 12 capacity-building events involving 28 farmer organizations in the six target sub-catchments. Representatives of farmer organizations were trained on the OHADA uniform act and their registration into economic interest groups (GIE). Training was also provided tor farmer organizations and central government local extension agents on the new Burkina Faso land tenure law and the pastoralism law. The objective of these trainings was to enable farmer organizations to successfully transition from Law 41 to the OHADA Uniform Act and Law 034 in Burkina Faso. Overall, 268 people including members of farmer's organizations, customary and religious authorities, government extension agents and members of local governments were trained on the OHADA law.

- Activity Area 6.2 Local government institution capacity building

DryDev conducted training for 21 central government local extension agents (agriculture, livestock and environment) as well as local government members from the six target sub-catchments, on the OHADA law. They were then able to facilitate feedback sessions on the OHADA law, at the commune level.

- Activity Area 6.3 Multi-purpose multi-stakeholder platforms

DryDev faciliated the development of six multi-stakeholder platforms in the six target sub-catchments. This involved organising and structuring several value chains platforms and strengthening dialogue between local communities, local public services and decentralized local governments. Sixteen meetings / dialogues were held with the revitalized platforms which involved a total of 1,241 beneficiary farmers (685 women) from across the six sub-catchments.

### 6.3.7 Work Package 7: Planning, M&E and Scaling of Learning

By end of 2018, a total of 131 scaling stakeholders had been engaged and were actively promoting the uptake of evidence and learning generated under the DryDev Burkina Faso programme. This high achievement results from actively engaging and strengthening the capacity of local stakeholders (through using community trainers and innovation farmers) to enable then scale up successful programme interventions. By end of 2018, the cumulative total number of farmers reached in Burkina Faso was 41,772 (22,379 women), against the programme target of 45,000.

- Activity Area 7.1: Programme monitoring

In 2018, the DryDev Burkina team carried out 26 field monitoring visits through all the six sub-catchments. Ten review meetings were convened by the country technical team to review the progress in, and plan for subsequent implementation of DIP2018 activities. In addition, two joint quality monitoring (JQM) missions, led by ICRAF, were conducted to all six sub-catchments during the year. The recommendations formulated by the JQM missions were useful in strengthening

programme planning and interventions, and correcting mistakes made by the country programme team.

The number of farmers reached by various DryDev interventions (by WP) in 2018 was 38,587 (21,972 women) (Table 6.39). Cumulatively from 2015 to 2018, DryDev Burkina has reached a total of 41,772 farmers (22,379 women) against the programme total of 45,000 (Table 6.40). Among the farmers reached, 69% are poor, 15% very poor and 16% non-poor. The number of youth (15-35 years old) reached to December 2018 was 16,766 (7,945 women) (Table 6.41).

Table 6.39: Number of farmers reached in various Work Packages in 2018

| Work Package | Number of farmer reached | | |
|---|---|---|---|
| | Men | Women | Total |
| Work Package 1 | 15,601 | 20,614 | 36,215 |
| Work Package 2 | 16,615 | 21,972 | 38,587 |
| Work Package 3 | 15,161 | 11,599 | 26,760 |
| Work Package 4 | 3,663 | 7,383 | 11,046 |
| Work Package 5 | 1,903 | 3,706 | 5,609 |
| Work Package 6 | 6,999 | 12,167 | 19,166 |
| Work Package 7 | 14,682 | 4,590 | 19,272 |
| Work Package 8 | 196 | 44 | 240 |
| **Total** | **16,615** | **21,972** | **38,587** |

Table 6.40: Cumulative number of farmers reached in each Work Package from 2015 to 2018

| Work Package | Number of farmer reached | | |
|---|---|---|---|
| | Men | Women | Total |
| Work Package 1 | 19,393 | 22,379 | 41,772 |
| Work Package 2 | 19,393 | 22,379 | 41,772 |
| Work Package 3 | 17,453 | 12,622 | 30,075 |
| Work Package 4 | 4,802 | 9,907 | 14,709 |
| Work Package 5 | 3,645 | 5,119 | 8,764 |
| Work Package 6 | 7,215 | 13,100 | 20,315 |
| Work Package 7 | 19,393 | 22,379 | 41,772 |
| Work Package 8 | 369 | 147 | 516 |
| **Total** | **19,393** | **22,379** | **41,772** |

Table 6.41: Youth (15-35 years old) reached in DryDev from 2015 to 2018

| Sub-Catchments | Number of youth reached | | |
|---|---|---|---|
| | Men | Women | Total |
| Arbollé | 885 | 759 | 1,644 |
| Bassi | 2,013 | 1,765 | 3,778 |
| Kiembara | 995 | 892 | 1,887 |
| Kongoussi | 2,068 | 1,939 | 4,007 |
| Kyon | 1,468 | 1,375 | 2,843 |
| Zogoré | 1,392 | 1,215 | 2,607 |
| **Total** | **8,821** | **7,945** | **16,766** |

- Activity Area 7.2 Participatory M&E with FOs and local stakeholders

Over this reporting period, six participatory assessment and planning meetings were held in each of the target sub-catchment. Twelve participatory monitoring / learning events were organized with farmer organizations and local actors, and a total of 1,200 farmers (480 women) and 36 other stakeholders were involved in planning, monitoring and evaluating the interventions carried out in their communities.

- Activity Area 7.3: Scaling of evidence and learning

In 2018, the DryDev communication unit at ICRAF-NLO received an additional grant from the CGIAR[23] GLDC[24] programme, to produce a five-minute video depicting activities on the recovery of degraded lands. The objective was to produce and use suitable videos to encourage the return of the young miners of Kiembara to agriculture. This video[25] was broadcasted on national television channels and social media, with the French and English versions recording more than 30,000 and 20,000 viewers, respectively. Further, four videos were produced on warrantage, onion conservation, sustainable input supply system, technology packages scaled up by DryDev in the sub-catchments of Zogoré, Kiembara and Kyon. In addition, eight technical briefs were produced, documenting the experience of the programme in areas such as shea butter production, sustainable input supply system, processing of NTFPs, cooperatives of users of agricultural equipment, lowlands development, rehabilitation of degraded lands and the results of field tests on the new rectangular zaï. A monthly newsletter and a bi-annual magazine were initiated and are regularly produced to share evidence and DryDev Burkina success stories with partners.

In the sub-catchment of Bassi, Kongoussi and Arbollé, the programme conducted three field visits with the national media to showcase programme activities in the target communities. Training was also held for the country programme team on the use of social networks. Six knowledge-sharing events with scaling stakeholders, and a total of 261 scaling stakeholders participated in experience sharing events. By the end of the year, 23 communication materials had been produced and circulated with a view to sharing evidence and lessons learned under DryDev Burkina.


Photo 6.24 DryDev bi-annual newsletter and monthly newsletters

[23] Consultative Group of International Agricultural Research
[24] Grain Legumes and Dryland Cereals
[25] Site web DryDev (English): https://drydev.org/video/young-people-from-kiembaras-artisanal-gold-sites-restore-degraded-lands-french/
Site youtube de GLDC: https://www.youtube.com/watch?v=U0a-MiEHaMw&feature=youtu.be
Agribusiness TV (français): http://agribusinesstv.info/fr/burkina-faso-les-jeunes-des-sites-auriferes-artisanaux-de-kiembara-reviennent-a-lagriculture-grace-a-des-strategies-innovantes-de-restauration-des-terres-degradees/

### 6.3.8 Work Package 8: Policy Analysis & Influencing

By the end of 2018, a total of 268 policy makers and other relevant stakeholders were meaningfully seeking to bring about targeted policy and institutional reforms, arising from DryDev Burkina work under WP 8.

- **Activity Area 8.1: Develop further evidence on identified constraints in policy implementation**

In 2017, DryDev Burkina formulated three policy briefs relate to (a) Forest governance, (b) Forest-based economic opportunities and c) Access to and control over land and forest resources. These policy briefs were then reviewed, edited and expanded in collaboration with ICRAF in 2018. Also in 2018, DryDev convened two workshops in Ouahigouya, North region of Burkina Faso and in Kaya (Centre North region). These workshops involved key decision makers and local authorities of the two regions. The objective of the workshops was to share and disseminate to policy makers and local authority's key policy constraints related to the above three policy thematic as well as recommendations that have been formulated in the three policy briefs. As a result, local decision and policy makers were further engaged and committed to influencing relevant policies that affect smallholder's farmers in the two regions.

Further, a study entitled "*Analysis of Agricultural Input and Equipment Supply Policies and Systems in Burkina Faso*" was conducted in 2018 to analyze national statistics on input supply, financing of the sector and to assess the different strategies, policy and mechanisms for access to inputs and equipment in Burkina Faso as well as in the Sahel sub-region. This study found a gradual and structural decline in total productivity factors over years in Burkina Faso and recommended that Burkina Faso must develop an improved agricultural input and equipment supply strategy to reverse the current trend. The study has also proposed a review of the existing policy on agricultural input supply system, including the Government taking advantage of the mechanisms and systems developed by other players such as the SISS (Sustainable Inputs Supply System) developed by SNV and the Green Cross supply system. It further recommended that half of the government grants allocated to the current inputs system should be used to establish a guarantee fund for farmer's organizations that will incentivize the aggregation of input purchases under the coordination of a central structure that can be the Burkina Faso National Centre for Agricultural Inputs and Equipment. The above recommendation considers producer insights through field interviews as well as experience from other on-going initiatives developed by other organizations. The reform will help improve access to quality inputs and materials and will foster financial inclusion in rural areas in the long run. It is anticipated that the findings of the study will be shared with relevant stakeholders in the first quarter of 2019.

- **Activity Area 8.2: Stakeholder mapping and engagement**

To strengthen policy dialogue between farmer organizations and policy makers, DryDev organized two regional workshops in the North and Centre North regions (in which are located the sub-catchment of Kongoussi, Bassi and Arbollé), that brought together regional governors, local public institutions, local elected governments, civil society and local pastoralist associations. The objective of this regional workshop was to set up regional advocacy platforms (alliances and advocacy groups) and to lay the foundations for their action plans. In addition, a workshop involving advocacy group members for the local authorities, local government representative as well as local government departments was held to formally establish the Advocacy Group for the North and Centre North and draft their advocacy action plan. A total of 36 people attended these workshops on advocacy and

lobbying. Further, two advocacy plans were developed by four umbrella farmer organizations (the Women Association of Kiembara, Beog Nere Association, Rega Development Association both from Zogoré and YIYE Association of Women of Sourou). These organization are doing the advocacy on the topic of promotion of agricultural value chains, access to finance and markets, and the law on pastoralism.

A training session in advocacy and lobbying for farmer organizations was convened through partnership between DryDev, the Resilience Growth in Sahel program (REGIS-AG) and the V4C program (funded by DGIS). The training, which was attended by four farmer organizations supported by DryDev (the Women's Association of Kiembara, Beog Nere Association, Rega Development Association and YIYE Association of Women of Sourou), sought to strengthen the skills and capacities of the participants in developing their own advocacy and policy influencing plans were. These FOs were further supported to map out key stakeholders in the programme area, analyze power dynamics through use of a power matrix and to identify advocacy themes and formulate their theory of change.

- Activity Area 8.3: Raise awareness on policy provisions and constraints

The objective of the awareness-raising campaigns is to ensure that key stakeholders are well informed of the main constraints in policy implementation and commit to act towards policy change. During the year 2018, a policy advocacy campaign was organized in the regions of North Centre, North and Centre West in which are located the sub-catchments of Kongoussi, Bassi and Arbollé. The objectives of the campaigns were to share policy review recommendation with a wide audience and to lobby decision makers for policy action. Those involved in the policy advocacy campaign where deputies of the National Assembly, representatives of the Association of Regions of Burkina Faso, representatives of the Association of Municipalities of Burkina, representative of Burkina's Network of Municipalities, TREE AID, the Burkina Faso Forest Governance Group, projects and programs operating in the programme area as well as media organizations.

Photo 6.25 Participants of the advocacy campaign, in Kongoussi, Kongoussi sub-catchment

## 6.4 MALI

The DryDev programme in Mali is implemented in ten sub-catchments covering 83 villages in the regions of Sikasso, Ségou and Mopti, as follows:

- Region of Sikasso: Menamba 1, Kiffosso 1, Koumbia in the District of Yorosso
- Region of Ségou: Cinzana (Fanbougou) in the district of Segou, Tominian (Kondala) Mandiakuy (Mouina) in the district of Tominian
- Region of Mopti: Soroly (Dologou), Bara-Sara (Mandoli) in the district of Bandiagara, Ségué (Kogo), Kani-Bonzon (Sadia-Dogon) in the district of Bankass

DryDev Mali is implemented by a consortium of four organizations, namely,

- Sahel Eco, as the national lead organization (NLO) and implementer for the region of Mopti,
- The Malian Association for Public Education and Protection of the Environment (AMEPPE) implementing partner for the region of Segou,
- The Malian Association for Awareness Raising and Sustainable Development (AMEDD) implementing partner for the region of Sikasso, and
- OXFAM America is responsible for Work Package (WP) 4 (enhancing market access) and WP 5 (financial services linking) in all the intervention regions and sub catchments.

The consortium partners are supported by strategic government agencies like the Agency for the Environment and Sustainable Development (AEDD); the National Directorate of Water and Forests (DNEF); the National Directorate of Hydraulics & Energy (DNHE), the National Directorate of Agriculture (DNA); and the Institute of Rural Economy (IER). Mali targets to reach a total of 53,286 farmers (27,176 women) in the programme duration. The following sections present the report of activities carried out and achievements made in 2018.

### 6.4.1 Work Package 1: Sub Catchment Level Natural Resources Management

By the end of 2018, a total of 46,437 farmers (20,328 women), in the ten intervention sub-catchments, were engaged by DryDev Mali in the management and restoration of natural resources on an area measuring 19,367 ha. This represents 87% of the target farmers engaged and 26% of the proportion of sub-catchments covered by sub-catchment level natural resource management (NRM) initiatives.

- Activity Area 1.1: Sub catchment action plan development

A meeting was held with the sub-catchment management committees of the ten intervention sub-catchments, to formulate the strategies for implementing the DIP2018 activities (Photo 6.27). In addition, 16 meetings were organised in the 16 villages covered by DryDev in the district of Yorosso, attended by the members of the integrated water management committees and the elected councils of the municipalities of Menamba1, Kiffosso1 and Koumbia, to review the achievements made in and plan for implementation of DIP2018. A total of 1,668 community members (391 women) attended these meetings.

Photo 6.26: Workshop in Fambougou Segou to share DryDev achievements in 2017 and discuss DIP2018

The different communities mobilised 120 farmer groups in the different sub-catchments of Kondala (33 groups), Mouina (45 groups) and Fambougou (42 groups) for the implementation of NRM initiatives on communal land. Each of these groups comprised 25 people, giving a total of 3,000 farmers mobilised for the implementation of integrated water resources management (IWRM) plans. Further, the IWRM committees of Kondala, Fambougou and Mouina played key roles in the identification of trees growers and the monitoring of tree planting in their respective sub-catchments. In Kondala alone, 46 farmers volunteered to plant trees on 48 ha of individual farmlands. Communities were also mobilised in the sub-catchments of Soroly, Kogo, Sadia-Dogon and Mandoli to participate to the construction of two micro dams, a gabion and excavation/deepening of ponds. Other activities and results obtained in Activity Area 1.1 include the following:

- Developing an interactive map of DryDev intervention sites: http://www.drydev-cartographie.com/drydev., showing target villages where DryDev intervene, outputs generated by programme as well as illustrative photos and short videos.
- Spatial management plans were developed for the communes of Kiffosso 1, Menamba 1 and Koumbia. These plans will help the municipalities better manage these communes, including the NRM interventions.
- The forest management plan (FMP) for the Kiffosso1 forest was updated as part of the Local Spatial Planning Plans (SLAT) for the commune. The updated plan will allow the communities living in the vicinity of the forest to work together with the municipal and local authorities and the government forestry service towards more sustainable and inclusive management and utilization of forest resources. In the process of developing the FMP, 16 members of the cooperative of wood and charcoal producers were trained to enhance their roles in managing the sustainable exploitation of the forest resources.
- Meetings to bring together participants from the 40 villages of the sub-catchments of Kondala and Mouina, respective sub-catchments management committees, village chiefs, village councils, and the customary chiefs, and leaders of women and youth groups were convened to exchange and validate the consensus rules and by-laws for managing the communal / village-level natural resources. A total of 191 (98 women) participants attended these consultative meetings.

- Activity Area 1.2: Local capacity strengthening in sub-catchment management

Meetings were organised in six communities of the sub-catchments of Sadia dogon, Kogo and Mandoli to agree on the use of water collected in the DryDev constructed pond, and also train community members on how to maintain the ponds. A total of 137 people (37 women) attended these meetings. DryDev supported the community of Kanian in the sub-catchment of Kondala to

establish a committee of six people to manage water ponds and pastoral wells which were constructed by DryDev support. Further, a total of 300 farmers (42 women) drawn from the villagers Kiffosso 1, Barèna and Bagadina (sub-catchments of Kiffosso1, Menamba 1 and Koumbia in Yorosso) attended meetings to prescribe the rules and procedures for the managing the village water ponds. A total of 147 farmers (26 women) from villages of Menamba 1, Menamba 2, Barèna, and Bagadina were trained on irrigated farming as well as the management of ponds and dams. Further, a total of 1,866 people (1,410 women), from across nine sub-catchments, were trained in the construction and use of improved (energy-saving) clay stoves. Following these trainings, a total of 5,571 energy-saving stoves were constructed and are now being used in the different sub-catchments (Table 6.42).

Training was also provided to 747 people (274 women), consisting of forest brigades of Yorosso, forest users and other community members, on the laws and regulations governing local forest management, the rights and duties of forest users, roles and responsibilities of forest brigades.

Table 6.42: Improved stoves construction and farmer engaged

| Sub-catchment | Improved stoves constructed | Farmers mobilized | |
|---|---|---|---|
| | | Total | Women |
| Kiffosso 1, Menamba 1 and Koumbia | 632 | 90 | 90 |
| Soroly | 350 | 320 | 99 |
| Mandoli | 300 | 86 | 35 |
| Sadia Dogon | 777 | 367 | 239 |
| Kogo | 1750 | 184 | 128 |
| Kondala | 1572 | 791 | 791 |
| Fambougou | 190 | 28 | 28 |
| **Total** | **5,571** | **1,866** | **1,410** |

- Activity Area 1.3: Development/maintenance of water buffering

DryDev provided support to enable the rehabilitation of 19.5 ha of a previously degraded site using a combination of stones line and gabions in the sub-catchment of Dolorogou (Bandiagara district). This land is now used for millet and vegetable. Also, in the sub-catchments of Kondala and Mouina in Tominian district, a 26 km gully was treated with gabions, fascines and earth bunds (Table 6.43), enabling the protection and rehabilitation of 58.5 ha of degraded lands against water erosion and opening a road between villages and communities that had been cut off from each other by the gully.

Table 6.43: Length of gully treated in each sub-catchment

| Sub-catchments | Village | Length of gully in Km | Total number of farmers mobilized for these activities | Number of Women |
|---|---|---|---|---|
| Kondala | Kanséné | 1.5 | 21 | 7 |
| | Sokoro | 1.5 | 15 | 9 |
| | Kondala | 1 | 22 | 4 |
| | Sadian | 1 | 23 | 11 |
| | Minso | 1 | 21 | 3 |
| Mouina | Kona | 7 | 12 | 4 |
| | Wodiokuy | 4 | 11 | 0 |
| | Kominalo | 5 | 20 | 4 |
| | Sabara | 4 | 15 | 0 |
| **Total** | | **26 km** | **182** | **42** |

A total of 1,150 trees of Eucalyptus, African Mahogany (*Khaya senegalensis*) and Anacardium species were planted by 116 (36 women) farmers along ponds and water streams in the sub-catchments of Mouina (village of Vanekuy, Bokuy, Bomboro, Sabara) and Kondala (village of Kanian). In the region of Mopti, DryDev supported the construction of six ponds in the villages of Gani, Guile dogon and Garou dow (sub-catchment of Mandoli), and villages of Bagourou, Kani-Bonzon and Kani-Komolé (sub-catchment of Sadia Dogon). These ponds are now able to retain up to 6,452 $m^3$ of water for animal use. Further, a 220 $m^3$ capacity water pond was constructed in the communal pastoral area of Kanian village (sub-catchment of Kondala). This intervention has also enhanced beekeeping and production of honey in the area, through the installation of 21 Kenyan hives all around the ponds. In the village of Sadian (sub catchment of Kondala), a water pump was rehabilitated to facilitate access to drinking clean water to 90 households. The existing management committee was restructured and is now composed of seven members (four women). In addition, three concrete water tanks, each holding 10 $m^3$ of water, were constructed in the villages of Hanekuy (sub-catchment of Kondala) and Sabara (sub-catchment of Mouina) to facilitate access to water for 94 vegetable-growing farmers. DryDev also supported the drilling of four bore holes in the villages of Hanekuy and Tayo (sub-catchment of Kondala), Sabara (sub-catchment of Mouina) and Maki Were (sub-catchment of Fambougou) to facilitate access to water for vegetable production.

Thanks to the availability of the water retained by the different water buffering infrastructures built with the support of DryDev, the communities in the villages of Douna, Wassadialan, et Sonsorobougou (Fambougou), Kansènè, Minso, Daga and Sokoro (Kondala) and Kenekuy, Boumboro, Vanekuy, Tiou-Tiou, Pèrakuy, Kombiokuy, Mandiakuy, Kiffosso1 were able to undertake rice production and banana plantations on a total area of 86.23 ha. In the sub-catchment of Kiffosso 1, a total of 6.5 ha of land was used for banana and rice production in the villages of Makoungo (4.5 ha) and Kiffosso 1 (2 ha). A total of 1,800 shoots of banana were planted. In the village of Vanekuy (sub-catchment of Mouina Sub) rehabilitation of a gabion dam resulted in increasing the water capture and storage to support rice production on a 10 ha piece of land that supports 62 farmers, in addition to 30 women group that are also producing vegetables on a 0.73 ha piece of land. Finally, in the sub-catchments of Kondala and Fambougou, DryDev mobilised the villages of Minso, Kansene and Vanekuy to construct earth bunds to buffer runoff water. This enabled 654 farmers to undertake the production of rainfed rice, sorghum and maize on 65 ha. These simple infrastructures enabled the production of 126.45 tons of paddy rice, 836 kg of sorghum, and 712 kg of maize.

- Activity Area 1.4: Sub catchment-level Afforestation and FMNR

DryDev facilitated the planting of a total of 44,390 trees, covering a total area of 266.25 ha across nine sub-catchments (Table 6.44). A total of 294 ha of village forest closures was established (Table 6.45). It is expected that these protected forest areas will have long-term positive impacts on the biodiversity of the area. Further, DryDev mobilised the communities in the ten intervention sub-catchments to plant tree seedlings across degraded village forests area and apply farmer managed natural regeneration (FMNR). A total of 1,368.81 ha of land was covered by these initiatives (Table 6.46).

Table 6.44: Trees planted on village landscapes across different sub-catchments

| Sub-catchments | Number of trees planted | Area covered (ha) | Survival rate (%) |
|---|---|---|---|
| Sadia dogon, Kogo, Mandoli | 2,830 | 6.81 | 75 |
| Fambougou, Kondala and Mouina | 26,769 | 228.44 | 50 |
| Kiffosso1, Ménamba1 and Koumbia | 14,791 | 31 | 89 |
| **Total** | **44,390** | **266.25** | **71.4** |

Table 6.45: Area of village forest closures established across five sub-catchments

| Sub-catchment | Village | Area covered by forest closures (ha) |
|---|---|---|
| Kondala | Hanekuy | 50 |
| | Minso | 10 |
| | Tayo | 70 |
| Mouina | Sabara | 30 |
| Fambougou | Falémé | 5 |
| | Ouendia | 10 |
| Kogo | Kogo | 23 |
| | Bentingue | 22 |
| | Domé | 59 |
| Kiffosso1 | Lopégué | 15 |
| **Total** | | **294** |

Table 6.46: Landscape restoration activities carried out in various sub-catchments and villages in 2018

| Sub-catchments | Villages | Activity carried out | Area covered (ha) | Number of farmers Involved |
|---|---|---|---|---|
| Sadian dogon | Endé Guinékanda, Oualia, Telly, Kani Bonzon, Dianwely and Sadia dogon | Stabilization of moving sand dunes by planting cuttings of Euphorbia | 23.5 | 1,279 (601W) |
| Fambougou | Ouendia | FMNR | 2 | 40 (10W) |
| Kogo | Kogo | Protection of 350 trees of lianas, plum, tamarind, balanite, grape, kapok tree and wild date through FMNAR approach and Planting of Panicum laetum 40kg, Alysicarpus ovalifolius 10kg et le Cenchrus biflorus 10kg | 0.25 | 150 (50W) |
| Kogo, Mandoli, Sadia Dogon and Soroly | | Planting 8,910 tree s eedlings of moringa (1,175), grafted mango tree (410), baobab (1,475), *Acacia sieberiana* (3,825), Henna (200), Balazan (500), Eucalyptus (1,100) and *Acacia colei* (225) | 78.5 | 312 (48W) |
| Fambougou | Donna Ouendia, Wassadiala, Cinzana village, Sanogola | Combination of deep ploughing, tree planting, earth bunds and seeding of fodder species (Panicum and cowpea) | 1,095 | 336 (132W) |
| Mouina | Bokuy, Sabara, Kominalo and Tiou-Tiou | | 26 | |
| Kondala | Kanséné, Hanékuy, Minso, Tayo | | 29 | |
| Kiffosso 1, Menamba 1 and Koumbia | | Planting of 19,308 African Mahogany and tamarind trees | 193.06 | |

Photo 6.27: Planting of Euphorbia on Sand dunes in the sub-catchment of Sadian Dogon in Mopti region

- Activity Area 1.5: Development of forest & pastoral management plans

Degradation of grazing areas by livestock are major causes of conflicts between farmers and livestock keepers. To mitigate these conflicts, 2,668 ha of livestock grazing areas were enriched with the seedling of herbaceous fodders. This included 106 km (2,500 ha) of livestock corridors delineated in the sub-catchments of Kogo and Sadian dogon in the region of Mopti. In the village of Ouayasso sub-catchment of Koumbia, 4 km of livestock corridors were delineated. These corridors are expected to facilitate animal movement from the village to drinking water points constructed by DryDev, as well as the larger livestock transhuman corridors at the municipality level. A total of 220 farmers (12 women) were mobilized to seed 80 ha of the delineated livestock corridors with fodder grass species, namely 40 kg of *Panicum leatum*, 10 kg of *Alysicarpus ovalifolius* and 10 kg of *Cenchrus biflorus*. An additional 80 ha of grazing areas in the sub-catchments of Kiffosso 1 and Menamba 1 were seeded with 127 kg of *Bracharia rizusiensus*. These interventions are expected to improve the availability of animal feeds and reduce conflicts. Further, a vaccination park and a pastoral well were constructed in the sub-catchment of Kondala. Two pastoral wells were drilled in the villages of Guilé dogon and Kani-Bonzon. A drinking area for animals (comprising a drilling equipped with solar water pumping system, a 20 $m^3$ water storage tank and a drinking trough measuring 10 m by 1.5m) was constructed in the village of Zangasso sub-catchment of Kiffosso 1. This investment also included the provision of a tapped water outlet for domestic use. In the village of Kansene, the community ws mobilised and supported to construct an embarkation wharf to facilitate the boarding of cattle sold in the villages of Kondala, Kansene and Sagara all in the sub-catchment of Kondala. A management committee was established to ensure the management of the loading ramp. This facility is expected to benefit 11 villages, with a total population of 4,399 inhabitants, in the sub-catchment of Kondala and beyond.
Concerning capacity building, a total of 1,080 farmers (360 women) from the sub-catchments of Sadia Dogon and Kogo were sensitized on the laws and regulations governing pastoral management in Mali. Further, a total of 645 messages were formulated and widely broadcasted on three local radios (Kanuya, Koury Kan, and Shiignè) to inform the population on the local convention for the sustainable

management of natural resources, including pastoral grazing area in the sub-catchments of Kiffosso 1, Menamba 1 and Koumbia. Similar broadcasts were aired by the local "radio Moutian" in Tominian that covers 11 villages in the sub-catchments of Kondala as well as villages outside the sub-catchments. These radio broadcasts enabled the populations to understand the rights, roles and duties of each actor as prescribed in the pastoral charter of Mali.

### 6.4.2 Work Package 2: On-farm Water and Soil Management

From 2015 to end of 2018, a total of 34,472 farmers (10,156 women) participated in various capacity building events on improved on-farm water and soil management techniques promoted by DryDev Mali. As a result, an estimated 28,852 farmers (8,918 women) are currently practicing the promoted pratices on total farm land area of 12,885 ha. This good performance has been due to the high interest of the farmers in the technologies promoted by DryDev, particularly the production and use of compost. The technique used in composting, the rapid composting method, was particularly attractive to farmers.

- Activity Area 2.1: On-farm rain water harvesting promotion

In 2018, a total 10,515 ha of farmland across the ten sub-catchments were covered by various on-farm soil and water conservation options. These activities mobilized 9,171 farmers (2,277 women) (Table 6.47).

Table 6.47: Summary of land area covered by on-farm soil and water conservation options and farmers involved

| Region | Sub-catchment | Techniques applied | Area covered with on-farm soil and water conservation options (ha) | Farmers mobilized on-farm soil and water conservation | |
|---|---|---|---|---|---|
| | | | | Total | Women |
| Sikasso | Kiffosso 1 | Earth bunds (ACN) | 4,404 | 2,776 | 766 |
| | Koumbia | | 4,220 | 1,681 | 427 |
| | Menamba 1 | | 941 | 1,942 | 275 |
| Segou | Kondala | Stone bunds and zai pits, | 51.75 | 325 | 113 |
| | Mouina | Stone bunds, earth bunds, and half-moons | 107.3 | 290 | 186 |
| | Fambougou | Vegetated earth bunds | 96 | 598 | 42 |
| Mopti | Kogo | Stone bunds, earth bunds, and half-moons | 231 | 725 | 60 |
| | Sadia dogon | | 124 | 465 | 135 |
| | Mandoli | | 225 | 375 | 94 |
| | Soroly | | 278 | 540 | 179 |
| **Total** | | | **10,515** | **9,717** | **2,277** |

- Activity Area 2.2: On-farm agroforestry promotion
-

A total of 2,194 ha of farmland, across the ten sub-catchments, were covered with FMNR activities. These activities wre carried out by a total of 2,365 farmers (632 women) (Table 6.48).

Table 6.48: Sumamry of land area covered by on-farm agroforestry activities and farmers involved

| Region | Sub-catchment | Techniques applied | Area covered with agroforestry activities (ha) | Farmers mobilized for on-farm agroforestry | |
|---|---|---|---|---|---|
| | | | | Total | Women |
| Sikasso | Kiffosso 1 | tree planting (3280 seedling planted with 90% survival rate | 202 | 250 | |
| | Koumbia | tree planting (8500 seedling planted with 90% survival rate | 325 | | |
| | Menamba 1 | tree planting (1 115 seedling planted with 90% survival rate | 83 | | |
| Segou | Fambougou | FMNR | 114 | 202 | 12 |
| | Kondala | FMNR | 182 | 816 | 400 |
| | Mouina | Individual groves+ FMNR | 38 | 87 | 26 |
| Mopti | Kogo | FMNR | 271 | 260 | 54 |
| | Sadia dogon | FMNR | 779 | 460 | 39 |
| | Mandoli | FMNR | 100 | 110 | 30 |
| | Soroly | FMNR | 100 | 180 | 71 |
| **Total** | | | **2,194** | **2,365** | **632** |

- Activity Area 2.3: Soil conservation and fertility enhancement

DryDev Mali supported the communities to produce 73,726.88 tons of compost across the ten sub-catchments. These were applied on a total of 3,690.65 ha of land in soil fertility enhancement activities that mobilized a total of 4,073 farmers (703 women) (Table 6.49; Photo 6.29).

Table 6.49: Land area covered by soil fertility enhancement activities and farmers involved

| Region | Sub-catchment | Techniques applied | Area covered with soil fertility enhancement activities (ha) | Farmers mobilized for soil fertility enhancement activities | |
|---|---|---|---|---|---|
| | | | | Total | Women |
| Sikasso | Kiffosso 1 | Rapid compost production | 464 | 274 | 9 |
| | Koumbia | | 568 | 128 | 7 |
| | Menamba 1 | | 338 | 86 | 1 |
| Segou | Kondala | Rapid compost production | 338.44 | 1,170 | 36 |
| | Fambougou | | 327 | | |
| | Mouina | | 730.21 | | |
| Mopti | Kogo | Rapid compost production and animal roaming on farmlands | 925 | 680 | 162 |
| | Sadia dogon | | | 1,200 | 333 |
| | Mandoli | | | 270 | 74 |
| | Soroly | | | 265 | 81 |
| **Total** | | | **3,690.65** | **4,073** | **703** |

(a) On farm water conservation technique (Zai combined with stone line and composting in sub catchment of Kondala (left)

(b) FMNR in the sub catchment of Kogo in Mopti region (middle)

(c) Earth bunds in the sub-catchment of Koumbia in Yorosso district (right)

Photo 6.28: Implementing different water and soil fertility management practices on farmlands

- Activity Area 2.4: Small-scale irrigation promotion

With ICRAF a study tour was organized for 13 people from Mali (seven members of DryDev partner staff and six members of sub-catchments management committees) to Burkina Faso to study successful collection of runoff water collection basins (BECR[26]). This study tour enabled the participants to learn the techniques and methods for constructing BECR structures, as well as engage directly with Burkina Faso farmers who have adopted the BCER technologies. Following this study tour, five BCER were constructed in the sub-catchment of Mandoli (in the villages of Mandoli (300 $m^3$), Thy (300 $m^3$), Guilé dogon (390 $m^3$), Telly (300 $m^3$) and Endé Toro (300 $m^3$). Five other BCER were constructed in the three sub-catchments of Fambougou, Kondala and Mouina, which mobilised about 500 $m^3$ of water to be used for rice and vegetable production. The BCER also increase the underground water recharge in wells in their vicinity. In addition, three BCER structures of 300 $m^3$ each were established in the villages of Kiffosso1, Sindé and Ménamba1 by pilot producers. Other water supply activities included:

- In the village of Thy (sub-catchment of Mandoli), one well was dug to provide water for trees nursery production.
- In the villages of Zangousso, Dorosso and Siéla in the sub-catchments of Kiffosso 1, Memamba 1 and Koumbia, three bore holes were drilled for water to produce banana and papaya.

In 2018, solar water pumping systems were installed in the sub-catchments of Kiffosso 1, Menamba, Mouina, Fambougou, Mandoli, and Dologou which enabled irrigation of a total area of 18.98 ha for vegetable production. Three committees were established in Zangousso, Siéla and Dorosso to manage the banana and papaya production perimeters established in these villages. Gabion dams were rehabilitated in Vanekuy (sub-catchment of Mouina) to provide water for vegetable production by women groups in the villages. Thirty women in the village of Vanekuy were provided with seeds (African eggplant, onion, and Mongolian tomato, Roma tomato, carrot) to start vegetable production on an area of 0.73 ha. In addition, following the rehabilitation of the bridge dam of Makoungo (sub-catchment of Kiffosso 1), a total of 6.5 ha of land was put under banana production in the villages of Makoungo (4.5 ha) and Kiffosso 1 (2 ha), where a total of 1,800 shoots of banana are now established. Further, in the sub-catchments of Fambougou and Mouina, a number of fenced vegetable gardens (totalling 4 ha) were installed and fitted with solar water pumping systems in the villages of Sanogola, Kondala, Bokuy and Tiou-Tiou. A total of 153 women are currently exploiting these gardens for their income-generating vegetable production activities. The Mali DryDev team also undertook to monitor

[26] BCER-basin de collecte des eaux de ruissellement

and assess the performance of vegetable production gardens that had been installed in previous years. Table 6.50 summarises vegetable production (shallot, mint, garlic, chili peppers, potato, tomatoes, cucumber, papaya, okra, cabbage, lettuce) and the monetary value of the products sold on the market.

Table 6.50: Value of vegetables produced in the sub-catchments of Kondala and Fambougou region of Segou

| Sub-Catchments | Villages | Number of Vegetables Producers | Value of vegetable sold | |
|---|---|---|---|---|
| | | | FCFA | US$ |
| Kondala | Kanséné | 30 (30W) | 1,766,475 | 3,073 |
| | Kanian | 31 (31W) | 456,450 | 794 |
| | Tayo | 31 (31W) | 175,770 | 306 |
| | Hanekuy | 32 (30W) | 117,700 | 205 |
| Fambougou | Dona | 64 (54W) | 1,375,800 | 2,393 |
| **Total** | | **188 (186W)** | **3,892,465** | **6,770** |

### 6.4.3 Work Package 3: Agricultural Commodity Production

A total of 22,996 farmers (9,453 women) have participated in various capacity building events on climate-smart climate production options, such as the use of climatic information to plan agriculture calendar, use of improved and adapted vegetable seeds, fertiliser microdosing techniques, honey production with improved hives, fish production, animal fattening and poultry raising techniques. These practices are currently practiced by 6,932 farmers (5,700 women) on farmland covering 6,249 ha, which represents 89.27% of the 7,000 ha targeted for improved climate-smart production options.

- Activity Area 3.1: Promotion of climate smart agricultural practices

Six farmer field schools (FFSs) were established in the sub-catchments of Kogo, Sadia, Mandoli and Soroly. These FFSs are aimed at demonstrating intercropped millet and cowpea crops in the same plot to showcase practical experience on climate smart agriculture techniques. A total of 130 lead farmers (46 women) from other villages of the sub-catchments of Sadia dogon, Kogo, Mandoli and Soroly were invited to visit these demonstration sites as part of the programme action-learning activities. An exchange visit was organized for 30 farmers (9 women) from the sub-catchment of Kiffosso 1, Menamba 1 and Koumbia N'Togonasso district of Koutiala to learn intercropping and permaculture techniques in a modern farm belonging to Mr Zamohoo.

To improve household food security and also provide opportunity for family cash income, two new fish ponds were constructed to service the villages of Bokuy, Kominalo, Mandiakuy and Sabara (sub-catchment of Mouina), Kanssene and Kondala (sub-catchment of Kondala), Sanogola and Wassadialan (sub-catchment of Fambougou), Dologou (sub-catchment of Soroly) and Ende Ouo (sub-catchment of Sadia Dogon). The fish ponds were installed next to the vegetable gardens to benefit from the solar-powered water supply system installed in the gardens. These fish ponds were stocked with 3,974 fingerlings of catfish and carp. After domestic consumption, a total of 198 kg of catfish were sold for a total value of 198,000 FCFA (approx. US$ 344), which was used by the fish pond management committee to purchase new 1,528 fingerlings. In the region of Sikasso, three water ponds constructed

by DryDev in the villages of Menamba 1, Barena and Bagadina were stocked with 7,500 fingerlings of Tilapia and Clarias. This activity was supported by the local fish technical service of Yorosso.

Other activities carried out under Activity Area 3.1 included:

- A total of 1,755 radio messages (on the techniques of microdose, FMNR, and honey production with improved hives) were widely broadcasted on three local radios (Kanuya, Koury Kan, Kaira, Jamana and Shiignè) to the communities of the sub-catchments of Kiffosso 1, Menamba 1, and Koumbia and beyond, between June and September 2018.
- DryDev provided support to the local Weather Assistance Group (GLAM) of the district of Bankass to disseminate 72 radio messages in local languages (Dogon, Bambara and Fulani) on weather, hydrological situation, crop status and phytosanitary situation, pasture status, and other climate information on the local radio station “SENO Bankass”. This information is used by the producers to plan their agriculture and livestock activities.
- DryDev supported the installation of 35 rain gauges in the villages of the three target sub-catchment in the region of Segou (Kondala, Fambougou and Mouina), thus enabling the communities to collect rainfall data which is shared with the meteorological service.
- A total of 510 modern (Kenyan) beehives were installed in target sub-catchments in the regions of Mopti (100), Segou (200) and Sikasso (210).
- A total of 152 farmers (110 women), drawn from the sub-catchments of Kondala and Mouina, were trained on the techniques of sheep fattening and poultry and pig farming.
- Representatives of the management committees of the input supply shops established in the sub-catchments of Fambougou, Kondala and Mouina were linked to the research and agronomic centre at Cinzana. This was intended to facilitate farmers' access to improved and adapted seeds. DryDev facilitated 4,612 farmers (948 women) to access a total of 1,766 kg of improved and adapted seeds of 320 kg of sorghum (CSM.63E), 600 kg of fonio (KASSAMBARA R 1, and NIATIA), 150 kg of maize (SOTUBAKA): 50 kg of sesame (S42), 363 kg of cowpea (FAKASON, GANASHONI), 183 kg of groundnut (YIRIWATIGA) and 100 kg of rice (COMICAL).
- Further, through the input supply shops installed in Cinzana village, Kansene and Vanekuy (sub-catchments of Fambougou, Kondala and Mouina), DryDev facilitated the access to vegetable seeds (winter shallot, okra, chilli, carrot, lettuce, cabbage, and beet) by 337 vegetable farmers in the village gardens across the target sub-catchments. For example, a total of 2,997 kg of winter shallots, valued at 1,900,000 FCFA (approx.US$3,306), was harvested by 182 vegetable producers in Kondala and Mouina sub-catchments alone.
- Training was provided by ICRAF to the technical staff of DryDev Mali on biopesticide production and utilisation. The knowledge gains were then passed on to vegetable farmers. A total of 407 farmers (343 women) were trained by the DryDev team in the production and utilisation of different doses of biopesticides, as opposed to chemical pesticides. The products used in the production of biopesticides are Neem leaves and tobacco whose effectiveness were compared to the application of the non-systemic insecticide "lambda super" (a.i. lambda cyhalothrin) with doses of 5% and 10%, as part of the programme’s planned comparison approach (Table 6.51). The vegetables used in these tests were lettuce, tomatoes, cabbage, chilli, potato, green beans and okra. Producers appreciated the technique as it is less costly than chemical pesticides.

Table 6.51: Farmers trained and engaged in this participatory action learning

| Sub-catchment | Villages | Farmers trained in the use of bio pesticides | Farmers engaged in planned comparison involving biopesticides |
|---|---|---|---|
| Fambougou | Sanogola, Dona Cinzana Gare | 297 (282) | 45 (6) |
| Kondala | Kanian, Kansene Tayo | | |
| Mouina | Kominalo, Sabara | | |
| Sadia Dogon | Ende Ouo, Ende Ogodengo | 23 (23) | 10 (10) |
| Kiffosso 1 | Lopegue | 87 (38) | 35 (4) |
| Koumbia | Ouayasso, Tebere | | |
| **Total** | | **407 (343)** | **90 20)** |

- Activity Area 3.3: Improving input supply systems

In 2018 DryDev facilitated the building of four new input supply shops in the villages of Kominalo (sub-catchment of Mouina), Kiffosso1, Koumbia and Menamba1 (all in similar sub-catchments names) to enhance the availability and access to quality inputs. Management committees were set up to oversee the running of these stores, and their members trained so as to give them the necessary management skills. Similar training was given to 30 farmers (13 women) drawn from the agricultural input warehouses of Ende Ouo, Ende Guinekanda, Ende Ogodengou, Oualia, Kani-Kombole, Mandoli and Thy in the sub-catchments of Kogo, Sadia Dogon, and Mandoli in Mopti region. The existence of these shops has considerably improved the access to quality agricultural inputs for 39,210 farmers who live and farm in these sub-catchments. The use of improved and climate-adapted seeds has been beneficial to the producers and especially with the late arrival of the rainy season in 2018.

### 6.4.4 Work Package 4: Enhancing Market Access

To increase the participation of smallholder farmers in lucrative value chains, a total of 10,896 farmers (4,783 women) have been structured into 260 cooperatives around 16 sectors and 29 agricultural enterprises set up with legal registration and trained in basic principles of entrepreneurship. A total of 129 business plans have also developed for selected value chains. Market information systems (MIS) using telephone, local radios and public announcements were developed and used by value chain actors. As a result, 150 tons of millet and sorghum were sold in 2018 by the members of 57 cooperatives supported by DryDev for a total value of 36,217,173 FCFA (approx. US$ 62,991). In total, 23,947 farmers (11,295 women) were able to improve their market access, which is 45% of the targeted 53,289 farmers.

- Activity Area 4.1: Organizational development for producer groups

A total of 120 meetings were organized to link actors in the different segments of the value chains promoted by DryDev (i.e. cooperatives of cereal producers and sellers, suppliers of seeds, animal fatteners, traders, and micro finance institutions). Following these meetings, a total of 53 contracts were signed with a view to enhance the value chain actors' access to loans. These value chains actors were then able to mobilize loans worth 31,688,250 FCFA (approx. US$55,110) for the benefit of 1,140 farmers (558 women). From these loans, farmers were able to expand their operations and commence new ventures. A total of 215 sheep were bought by cooperatives for fattening, 30.65 tons of cattle feed were purchased from suppliers by animal fatteners, and 120 litres of Balanites and

tamarind juice were processed and sold by women groups. A total of 201 leaders (53 women) of 19 unions of value chain cooperatives attended five workshops organised to strengthen their operational capacity regarding discharging their duties and responsibilities in the cooperatives. Participants were drawn from the sub-catchments of Kogo (33), Sadia Dogon (41), Mandoli (20), Soroly (20), Menamba (20), Koumbia (40) and Kiffosso (27). Meetings were also organized between farmers and the agriculture extension staff in the different sub-catchments to discuss the supply of inputs in 2018. This facilitation enabled 332 farmers (135 women) to purchase 20.6 tons of fertilizer at a reduced price of 12,650 FCFA (US$ 22) per bag, which is lower than the prevailing market price. Further, a total of 124 value chains cooperatives were supported to obtain legal status in accordance with the OHADA[27] act which governs cooperatives in West and Central Africa. This legal recognition opens the way for the cooperatives to engage with financial institutions, large buyers, input suppliers and other value chains actors.

- Activity Area 4.2: Business & entrepreneurial skills development for producers

Seven trainings were organised in the sub-catchments of Sadia Dogon, Kogo, Soroly and Mandoli to train the members of value chain cooperatives on financial management and storage tools. A total of 217 persons (39 women), representing 89 value chain cooperatives, participated in these trainings which equipped the cooperatives with appropriate tools for the management of their activities. DryDev Mali also facilitated the participation of 25 members (2 women) of value chain cooperatives from the sub-catchments of Sadia dogon, Kogo, Barassara and Soroly to an exposure visit to the cooperative of maize producers "COPROMA / B" in the village of Goualala, commune of Wassoulou Ballé district of Yanfolila in the region of Sikasso. The objective of this visit was to expose the participants to various production techniques and processing of maize. Further, 179 members (140 women) of seven cooperatives from selected target sub-catchments of Mopti and Segou regions were trained in the basic principles of entrepreneurship (Table 6.52). The DryDev Mali programme facilitated the participation of 13 value chain actors from across the ten sub-catchments who are active processors of cereals, non-timber forest products (NTFPs), peanut and soybean to an exhibition fair organised in Kayes (Photo 6.30).

Table 6.52: Participants from cooperatives trained on entrepreneurship

| Region | Sub-catchment | Name of cooperative | Number of beneficiaries | |
|---|---|---|---|---|
| | | | Total | Women |
| Segou | Fambougou | Djlguiya | 20 | 20 |
| Segou | Fambougou | Tiéssiri | 30 | 0 |
| Mopti | Mandoli | Bodjinabara | 21 | 19 |
| Mopti | Mandoli | Djirignamagou | 31 | 31 |
| Mopti | Sadia dogon | Yakéné de Guinékanda | 28 | 28 |
| Mopti | Sadia dogon | Meredjouga | 19 | 18 |
| Segou | Kondala | Badenya | 30 | 24 |
| Total | | | 179 | 140 |

[27] OHADA (Organisation pour l'Harmonisation en Afrique du Droit des Affaires/ Organisation for the Harmonization of Business Law in Africa)

Photo 6.29: Exhibition of food products processed by DryDev at the agricultural fair in Kayes

- Activity Area 4.3: Business plans development for selected value chains

In 2018, 13 cooperatives in the sub-catchments of Sadia dogon, Soroly, Kondala and Fambougou were supported to develop 129 business plans. These business plans were presented to microfinance institutions, three (RMCR, NYESIGUISO and CVECA (Mopti)) of which awarded loans worth 16,350,000 FCFA (US$28 435) to enable 526 cooperative members (268 women) to implement their business plans (Table 6.53).

Table 6.53: Values of business plans developed by cooperatives

| Sub-Catchment | # | Village | Value chains/name of cooperative | Financial institution | Number of beneficiaries | | Total budget of the business plan | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Total | Women | FCFA | USD |
| Sadia Dogoni | 1 | Telly | Amakéné - animal fattening | CVECA | 25 | 0 | 500 000 | 870 |
| | 2 | Telly | Souadjouka - animal fattening | CVECA | 15 | 15 | 500 000 | 870 |
| | 3 | Kanikombolé | Mèrèwoudjou - animal fattening | CVECA | 25 | 23 | 750 000 | 1 304 |
| | 4 | Kanikombolé | Mèrèkouno - animal fattening | CVECA | 40 | 9 | 1 000 000 | 1 739 |
| | 5 | Endé Toro | Amaiguéré - animal fattening | CVECA | 25 | 19 | 500 000 | 870 |
| Kondala | 6 | Kanséné | Gninta - Commercialisation of millet | RMCR | 90 | 44 | 2 000 000 | 3 478 |
| | 7 | Kanséné | Dienkafo - animal fattening | RMCR | 82 | 37 | 2 000 000 | 3 478 |
| | 8 | Kondala | Badeyan - Commercialisation of millet | RMCR | 26 | 23 | 2 000 000 | 3 478 |
| | 9 | Kondala | Fasso jigui - animal fattening | RMCR | 27 | 14 | 3 100 000 | 5 391 |
| | 10 | Kondala | SANIYA - Commercialisation of millet | RMCR | 28 | 23 | 2 000 000 | 3 478 |
| | 11 | Kondala | Comité Gire - Commercialisation of millet | RMCR | 18 | 1 | 1 000 000 | 1 739 |
| Fambougou | 12 | Fambougou | Diantoyèrèla – Commercialisation of millet | NYESIGUISO | 29 | 0 | 500 000 | 870 |
| Soroly | 13 | Soroly | Molibèmo - animal fattening | CVECA | 96 | 60 | 500 000 | 870 |
| TOTAL | | | | | 526 | 268 | 16 350 000 | 28 435 |

- **Activity Area 4.4: Strengthen multi-stakeholder value chain platforms**

No activity was planned in 2018 under this activity area.

- **Activity Area 4.5: Establish and strengthen market information system**

DryDev Mali tested an MIS that combines the use of cell phone text messaging, traditional public announcements and local radios broadcasting. This system facilitated the exchange of information and interaction between business ventures and 12,422 value chains actors (5,808 women). As a result, 150 tons of millet and sorghum were sold by the members of 57 cooperatives supported by DryDev for a total value of exchange worth 36,229,000 FCFA (US$62,991) as shown in Table 6.54. Further, this MIS enabled 90 members (43 women) of the cooperatives Jèkafo of Kansene (sub-catchment of Kondala) to sell fattened sheep as part of their business plan. Information on the prices of cereals and other products in the different markets continues to be disseminated through this MIS.

Table 6.54: Volume of cereals sold (millet and fonio) through the market information system tested

| Sub-catchment where the market information system is tested | Number of village covered | Number of cooperative engaged | Unions benefiting the market information system | Quantity of products sold | Unit cost/tons | Value of sale | |
|---|---|---|---|---|---|---|---|
| | | | | | | FCFA | US$ |
| Fambougou | 14 | 35 | Union of dried cereals (fonio and millet) | 80 | 245 000 | 19 600 000 | 34 087 |
| Kondala | 4 | 6 | Union Fonio and Union Millet | 25 | 215 000 | 5 375 000 | 9 348 |
| Mouina | 1 | 1 | Union of fonio and millet seeds producers | 5 | 400 000 | 2 000 000 | 3 478 |
| Sadia Dogon | 8 | 8 | Union of millet | 36,5 | 205 000 | 7 482 000 | 13 012 |
| Mandoli | 3 | 6 | Union of millet | 2,6 | 205 000 | 533 000 | 927 |
| Kogo | 1 | 1 | Union of millet | 1 | 205 000 | 1 230 000 | 2 139 |
| **TOTAL** | **31** | **57** | **6** | **150** | | **36 220 000** | **62 991** |

### 6.4.5 Work Package 5: Financial Services Linking

Since programme inception, internal saving mobilised through the village savings and loans associations (VSLAs) has enabled a total of 10,896 farmers (4,783 women) to access to credit amounting to 67,418,175 FCFA (approximately US$117,249). Further, building the capacity of members of the cooperatives and linking them to financial service providers had enabled 5,843 farmers (2,861 women), who are members of 78 cooperatives, to access loans from eight financial institutions, amounting to 31,304,725 FCFA (approx. US$54,443) to implement various business plans through warrantage of value chain products.

- **Activity Area 5.1: Strengthen village savings and credit associations**

In 2018, the 'Ssaving for Change' training manual, developed in earlier years, was used to train 439 members of 20 new VSLAs on basic financial management. DryDev also facilitated the discussion between microfinance institutions and members of value chain cooperatives on the terms for available loan facilities. These activities contributed to the strengthening of 341 VSLA groups who were able to mobilise a total of 54,848,675 FCFA (US$95,389) from domestic savings. This amount was redistributed as loans to the members of the groups to enable them to start their own income-generating activities.

- **Activity Area 5.2: Linkages with financial service providers**

The villages of Telly (sub catchment of Sadia dogon), Zangousso, and Ouendia (sub-catchment of Kiffosso 1) worked with the DryDev team to mobilize building materials (sand and stones) in readiness for the construction of three warrantage warehouses whose construction has been planned for 2019. Twenty-four value chains cooperatives were supported by DryDev by facilitating their linkage with microfinance institutions (MFIs). From these efforts, six MFIs (IMF CVECA, IMF RMCR, IMF Nyessigiso; IMF Soroyiriwaso, IMF Kafo Jiginew) were able to advance loans totalling 28,455,000 FCFA (US$49,487) to these value chain cooperatives (Table 6.55). The loans were used to finance various business plans and warrantage systems involving selected value chain products.

Table 6.55: Summary of loan access through financial services providers.

| Region | Sub-catchment | Number of cooperative | Loan Amount (US$) | Financial institutions |
|---|---|---|---|---|
| Mopti | Sadia Dogon | 10 | 15 913 | IMF CVECA |
| | Soroly | 3 | 2 609 | IMF CVECA |
| Ségou | Kondala | 7 | 24 522 | IMF RMCR |
| | Fambougou | 3 | 4 878 | IMF Nyessigiso; IMF Soroyiriwaso |
| Sikasso | Kiffosso | 1 | 1 565 | IMF Kafo Jiginew |
| **Total** | | **24** | **49 487** | |

### 6.4.6 Work Package 6: Local Governance & Institutional Strengthening

Activities relating to strengthening local governance and institutions involved a total of 46,437 members (20,328 women) of 166 farmers' organizations, 36 farmers' umbrella organizations, local multi-stakeholder consultation platforms, elected municipal officials and their staff, as well as government technical service officers. Following various capacity-building efforts, a total of 1,689 leaders (294 women) of these organizations are currently providing improved services to their members. The 2017 uptake survey conducted in Mali revealed that 36% of respondents were satisfied with the quality of services provided by their organizations, and 39% testified that these services are delivered on time.

- Activity Area 6.1: Farmer organization strengthening and Activity Area 6.2: Capacity development for local government institutions

Training was provided to 77 participants (9 women) from 18 farmer organizations on themes relating to agriculture land law and its application, land tenure and how to secure ownership, land transactions, and the role of the village land commission. The same themes were also used to provide training to 54 local administrative officials (prefect and sub-prefects, municipalities' offices, general secretaries of communes and village chiefs). This training contributed to improve their knowledge on agriculture land tenure in Mali. Further, 48 local and customary chiefs (16 village chiefs, 16 customary chiefs and 16 village councillors) were trained on the prevention and management of community and intercommunity conflicts.

- Activity Area 6.3: Multi-stakeholder, Multi-issue Platforms

A training workshop was organized to strengthen the capacity of the Municipal Land Commission of the rural commune of Mandiakuy (Sub-catchment of Mouina) and enhance their ability to fulfil their responsibilities in the management of land issues, including mediating conflicts between land users (Photo 6.31). A total of 44 participants (2 women) from these commissions attended the training workshop.

Photo 6.30: Training of the members of the Municipal Land Commission of the rural commune of Mandiakuy (sub-catchment of Mouina)

### 6.4.7 Work Package 7: Planning, M&E and Scaling of Learning

By end of 2018, 78 scaling stakeholders had been identified out of the targeted 100 and are already participating actively in the scaling up of technologies promoted by DryDev in the ten sub-catchments covered in Mali. These stakeholders are composed of village resources persons (peer trainers), members of the sub-catchment management committees, technical services staff, local authorities, farmers' organizations and NGO partners in the area and the leaders of stakeholder consultation frameworks.

- Activity Area 7.1: Programme Monitoring

DryDev conducted training on data collection and transmission using the ODK platform. Participants in the training included 15 field technical staff of DryDev Mali, five heads of project (heading or managing DryDev in each implementing partner), and the national lead organisation. Other activities carried out under this activity area include the revision of the strategy for the participation of producers in the collection and transmission of data and the exploitation and updating of the database. The three DryDev PMEL officers of Burkina Faso, Mali and Niger organized and participated in a meeting held in Niger to exchange ideas and learn from each other what it takes to collect reliable and appropriate data to improve the quality of data and reports, and how to evaluate the effects of activities on beneficiaries. During the year in review, four workshops were organised to draft the quarterly report and to plan for the following quarter. These meetings enabled the country technical team to review progress made, constraints faced by the field facilitators and to formulate strategies to step up the implementation of planned activities. In addition, ICRAF and Sahel Eco (the Mali national lead organization) conducted one joint quality monitoring (JQM) exercise in September 2018. The first JQM process, that had been scheduled for April had to be cancelled due to security concerns. In its place, a special joint technical and core team session was convened by ICRAF, in July, to enable a thorough round-table review of the programme progress in Mali. Further, 14 members of the country programme team, comprising the NLO representatives, the managers of the implementing partners and representatives of the strategic partners from government extension services and ICRAF representatives, conducted field monitoring visits to all ten sub-catchments. The objective of this mission was to review the progress being made in the implementation of activities and the difficulties encountered. Recommendations were made for the implementing partners to intensify DryDev interventions and improve the quality of some of the interventions already made.

A team from ICRAF, comprising the DryDev Programme Manager and the ICRAF Water Specialist from Nairobi, visited some of the water buffering infrastructures developed by DryDev Mali. The mission, which was held in March 2018, visited and reviewed the dams, ponds, wells, boreholes and other water works that had been constructed through DryDev assistance in Menamba, Bagadina and Barèna, Tébéré and Lopégué, and Makoungo - all located in the three sub-catchments of Kiffosso 1, Menamba 1 and Koumbia in Yorosso district. Recommendations were made for better utilization of the water buffered by these infrastructures, and for correction of some design flaws.

The DryDev Mali team facilitated the carrying out of the external programme review during the period between May and June 2018. The external review was conducted by a team commissioned by the Ministry of Foreign Affairs of the Netherlands (DryDev donors) (Photo 6.32). An introductory meeting was held with the country team, followed by further meetings with stakeholders and beneficiaries of the programme. Following the external review, DryDev Mali developed an action plan for implementing those recommendations were possible to implement immediately, while carrying

into DIP2019 those that required more planning and more financial resources to implement. DryDev Mali did not conduct an update survey in 2018, following advice by ICRAF, so as to concentrate on finishing programme implementation in preparation for an endline impact study expected to be carried out early in 2019.

Photo 6.31: External review team during field visit in the sub-catchment of Koumbia

- Activity Area 7.2: Participatory M&E with FOs & local stakeholders

Data collection continued smoothly throughout the year in review. A wide range of data was collected regularly by field facilitator and resources persons in the 82 intervention villages to inform the different indicators of DryDev monitoring system. This data was uploaded to the PMEL framework using ODK platform. In addition, regular visits were organised in all the sub-catchments by the local technical services (agriculture, fisheries, forestry, and the municipalities) and the sub-catchment management committees to monitor the uptake of the technologies by the farmers. These field visits also served as important data collection activities.

- Activity Area 7.3: Scaling of evidence and learning (ICRAF to co-lead)

Communication materials, such as brochures and flyers, presenting DryDev's vision, approaches and achievements were produced and circulated widely in various forums and events. One documentary video depicting DryDev Mali's achievements was produced and and circulated in different social media platforms, including Facebook and YouTube. The 24 min video can be accessed from the link: https://www.youtube.com/watch?v=ZcTZlNHnrXA&feature=share .

### 6.4.8 Work Package 8: Policy Analysis & Influencing

DryDev Mali provided resources and support for the advocacy work undertaken by the civil society network during the process of the adoption of the new Agricultural Land Act of Mali. By end of 2018. DryDev Mali had identified 60 key decision-makers and stakeholders who are able to significantly deliver targeted policies and institutional reforms.

- **Activity Area 8.1: Policy constraints and challenges identification**

DryDev Mali spearheaded the formulation of tree policy briefs covering (1) securing agricultural land, (ii) scaling agroforestry practices, and (iii) financing agricultural production.

- **Activity Area 8.2: Networking and alliance building**

Training workshops were organised in Tominian, Segou and Bankass to disseminate the new agricultural land tenure law adopted by the government of Mali in 2017. This activity was implemented by DryDev Mali in collaboration with the Advocacy Network for Agricultural Land Securitization in Mali. These trainings allowed the participants, which included judges, lawyers, development NGOs and the media, to understand themes relating to agriculture land law and its application decrees, land tenure and how to secure ownership and land transaction and the role of the village land commissions.

- **Activity Area 8.3: Lobbying and advocacy**

DryDev Mali collaborated with the network RP-SéFA[28] to formulate a manifesto that was submitted to the candidates for the presidency at July 2018 presidential election in Mali. This manifesto called on the candidates to commit to the promotion of sustainable family farming systems and to ensure security of smallholder farmers' land. The manifesto was signed by half of the candidates. Unfortunately, the candidate who won the election was one of those who had declined to sign the manifesto. The activity on agriculture risk financing instrument was not implemented in 2018 and has been planned in 2019. DryDev Mali maintained regular social media presence to enhance its visibility and also advocate for wider policy engagements.

[28] RP-SéFA: Réseau de Plaidoyer pour la Sécurisation Foncière Agricole (Advocacy Network for Agriculture Land Security

## 6.5 NIGER

The DryDev Programme in Niger is implemented in four municipalities (Aguié, Dogon Kiria, Droum and Malbaza), following the dropping of the fifth municipality (Torodi) in 2017. The four municipalities were served by a consortium of four partners, namely, CARE Niger as the national lead organization (NLO), Karkara, AREN and RAIL. Each partner was responsible for implementing field level activities within one municipality, save for CARE who served as the Niger NLO as well as taking up the implementation of the programme in Dogon Kiria. The following Sections 6.5.1 to 6.5.8 present a report of activities carried out and results obtained in Niger in 2018.

### 6.5.1 Work Package 1: Sub Catchment Level Natural Resources Management

In 2018 DryDev Niger carried out a study using drones to assess the level of vegetation index within the project area. The study clearly showed that all the five sites sampled (totaling 2,800 ha) had a vegetation index greater than zero. Measurements made during baseline sampling showed that 25% of the sites had a vegetation index equal to zero. Further, in 2018, an additional 12,169 ha were covered by land rehabilitation activities, giving a cumulative total (from 2015 to 2018) of 48,163 ha against a programme target of 45,000 ha.

- Activity Area 1.1: Sub catchment management plans developed

In 2018 DryDev Niger reviewed 26 cluster development plans and set up 18 umbrella bodies in Droum, Malbaza and Dogon Kiria, to facilitate the implementation of the plans. In addition, two agreements were developed in Malbaza to supplement the 22 existing ones. These agreements aimed at streamlining the participatory management of communal resources such as water, agro forestry parks and pasture lands. The contents and provisions of these agreements were disseminated through radio broadcasts and cluster forums.

- Activity Area 1.2: Capacity development in sub catchment management

The programme organized training sessions for 63 management committees and grassroot land committees (COFOBs) with a view of strengthening their capacities. A total of 33 COFOBs were trained in Malbaza and 30 in Dogon Kiria. In addition, 12 missions were conducted to raise the awareness of the communities on the roles of the Integrated Water Resources Management (IWRM) and COFOBs in ensuring land security and conserving community resources. A total of 840 producers (340 women) in Droum were reached in these awareness-creating activities. Further, 30 community sensitization sessions were broadcast in local radios in Malbaza, which contributed to reducing land related conflicts.

- Activity Area 1.3: Rehabilitation / Restoration of degraded lands

The work of rehabilitating degraded pastoral lands by mechanical and biological means continued in 2018, covering an additional 1,638 ha of pasture lands and 200 km of livestock transit corridors in Aguié and Dogon Kiria. To support the return of herbaceous and woody vegetation, four species (*Eragrostis tremula, Cenchrus bifloris, Cassia tora, Alysicarpus spp*) were sown on grazing lands in the four communes of Droum, Aguié, Malbaza and Dogon Kiria. A total of 167,600 trees were planted, covering a total of 127 ha and making a total of 304,173 trees so far planted against the target of 150,000. These activities were supported by 85 tree nursery operators (spread across the four communes) that had been supported by the programme. Analysis of the pasture availability in previously degraded lands in the villages of Kourmoudoutan and Ifrinkawane, in the rural commune of

Malbaza, revealed that 1,584-ton dry matter was available in a total land area of 224 ha, an increase of 400 tons compared to the results of 2017. Table 6.56 presents a summary of activities carried out and results obtained under Activity Area 1.3.

Table 6.56: Results of activities carried out and community contributions

| Commune | Area of land under CES-DRS# (Ha) | Area of sida treated (Ha) | # of trees produced | Area of land seeded (Ha) | Length of fire breaks (Km) | Length livestock transist corridors (Km) |
|---|---|---|---|---|---|---|
| Dogon Kiria | 133 | 280 | 30,000 | 150 | 0 | 0 |
| Malbaza | 0 | 150 | 42,150 | 67 | 0 | 0 |
| Aguié | 4 | 300 | 45,000 | 250 | 6 | 100 |
| Droum | 80 | 0 | 49,459 | 74 | 0 | 0 |
| **Total** | **217** | **730** | **166,609** | **541** | **6** | **100** |
| Targets | 210 | 750 | 150,000 | 747 | 1 | 200 |

# CES-DRS : Soil and Water Conservation and Soil Defense and Restoration

### Activity Area 1.4: Water buffering promotion

Feasibility studies were conducted in the four DryDev communes (Droum, Aguié, Malbaza and Dogon Kiria) to determine the feasibility, relevance and cost implications of various water buffering practices, and to generate implementation plans for those found to be feasible. Out of the 30 pastoral basins found to be feasible, only 17 were initiated, with 15 of them completed in 2018 (Table 6.57). These water buffering structures enabled the recharged of ground water, increased biomass biodiversity, and increased crop yields that benefitted 400 households in Droum. Further, the basins constricted in pastoral areas were able to extend the availability of water for livestock by three months, enabling the usually normadic pupulations to maintain some level of sedentary life for a longer period than usual. The DryDev Niger programme also sought to strengthen the strategic partnership with the National Directorate of Rural Engineering (NDRE) by using the institution's experts to train senior regional and district staff on pond construction

Table 6.57: Contribution of communes and level of country achievement on water harvesting structures

| Commune | Ponds | Filter dykes | Weirs | GulyKoris | Pastoral basins |
|---|---|---|---|---|---|
| Dogon Kiria | - | - | 0 | 0 | 6 |
| Malbaza | 1 | 1 | - | 1 | 4 |
| Aguié | 5 | - | - | - | 5 |
| Droum | - | 5 | 2 | 2 | - |
| Total achieved | 6 | 6 | 2 | 3 | 15 |
| **Targets** | **4** | **6** | **3** | **8** | **30** |

Pastoral Pond in Aguié

Weir in Droum

Photo 6.32 Water buffering structures

### Activity Area 1.5: Resource mobilization for sub catchment management

To empower the innovation platforms and enable them take over the management of DryDev activities, 27 members of the platforms of Aguié, Malbaza and Droum were trained on the development of micro-projects and resurce mobilization. Following this training, the members of the innovation platforms of Droum and Malbaza developed two and one projects, respectively, that are currently awaiting funding.

## 6.5.2 Work Package 2: On-farm Water and Soil Management

DryDev Niger estimates that the number of farmers exposed to water harvesting technologies in 2018 exceeded 18,000, which is about 35% of the programme target. Also, the promotion of good practices and technologies for adaptation to climate change and good soil management reached 5,774 farmers (4,930 women) who participated in various capacity building events and other WP2 activities. An aditional 14,329 ha of farmland (38% of the target) was covered by improved water and soil management (such as ponds, hedgerow farming, zai, FMNR, mulching, composting, micro-dose and bio-pesticides) in 2018.

- ### Activity Area 2.1: On farm rain water harvesting

DryDev Niger carried out activities to enhance on-farm water harvesting with a view to stabilizing productivity of the farm enterprises, even on bad years. The team also promoted the construction and use of zai and water ponds. A total of 27 water ponds were constructed across the internetion sites, benefiting cereal production in Aguié, Dogon Kkiria and Malbaza and vegetable gardens in Droum. In addition, the water harvested through these structures enabled the expansion of the Sahelian Bocage[29] system (initiated in 2017) to 340 ha, for the benefit of additional 350 producers. The practices implemented increased ceral yields by 100 to 400%, while farm household income from sales of vegetables, during the dry period, increased from 35,000 FCFA (approx. US$61) to 100,000 FCFA (US$ 175) for 100 $m^2$ plots.

[29] An integrated system combining water collection structures, anti-erosion planting, organic fertilization uses, crop rotation, crop diversification

Photo 6.34 Sahel bocage for vegetable production in Droum (left) and Malbaza(right)

- Activity Area 2.2: Agro forestry and Farmer Managed Natural Regeneration (FMNR)

DryDev Niger trained 35 tree nursery operators on the production and grafting of multiple purpose trees. The trainees were also given assorted equipment composed of plastic pots, tree (*Ziziphus mauritiana*) seeds and grafting equipment. In addition, a series of grafting campaign was conducted in the four intervention communes, including training and nassisting farmers to graft *Ziziphus mauritiana* trees. A total of 1,995 grafts were carried out to the benefit of 1,539 farmers (344 women). The rate of success of the grafts was estimated at 91%. Use of manure and supplemental irrigation were observed to improve the chances of success of the graftings.

Other activities carried out under Activity Area 2.2 included the following:

- The production of 137,173 seedlings of Moringa in the community nurseries of Droum and Malbaza, in which 48,244 women were reached. Eleven community-based forums were organized on FMNR to support the operationalization of committees for the protection of agroforestry parks. A total of 556 producers (142 women) from the four target communes attended these forums.
- A total of 211 farmers (33 women) were trained to conduct planned comparison studies on the use of bio-pesticides to control pests of cowpea, groundnut and other crops. Other training focused on the manufacturing and application of bio-pesticides based on chilli and neem seeds, measures for protecting sprayers and the environment, as well as the adverse effects of the use of industrial pesticides.

- Activity Area 2.3: Soil Fertility Enhancement

DryDev Niger conducted an evaluation of 669 peer trainers from the four communes, who had benefited from trainings on various topics in 2016 and 2017. Out of the 669 peer trainers evaluated, 468 were considered qualified to appropriately transfer acquired skills to other farmers. A retraining plan was developed by technical services for the poor performing peer trainers with a view to providing close supervision to heir neighbouring farmers. These peer trainers in turn reached 16,551 farmers with information and technology for combining FMNR, water harvesting and soil fertility. The programme prepared three audio meesages in Hausa language, which were broadcast to 27,000 farmers by telephone, local radio stations and BBC Hausa radio. To enhance the availability of quality compost and production of gas for cooking and lighting, the programme installed 14 bio-digesters in Droum (2), Aguié (3), Malbaza (2) and Dogon Kiria (7). The capacities of the bio-digesters ranged from 5 to 14 $m^3$, and the compost yield averaged 10 carts per biodigester. Further, a total of 2,000 farmers (500 women) were provided with two tarpaulins and 1 kg of urea to support their compost production activities. A total of 76 tons of compost was produced in Malbaza and 40 tons in Dogon Kiria. This compost benefitted both rainfed crop fields and market gardening crops. In Malbaza, use of compost is more important on market gardening. From this technology, the programme was able to

increase food production in all implementing fields, which enabled farmers to participate in market economies and enhance their fiancnial and social capabilities.

- Activity Area 2.4: Small Scale Irrigation

The DryDev Niger team continued the promotion of small-scale irrigation using harvested surface runoff water (reservoirs and ponds) and underground (borehole) water to augment rainfall and guarantee year-round agricultural production. Six market gardens were developed - three at Droum (Tchalliga, Koumtchi and Baourou), two at Malbaza (Salewa and Goumbi) and one at Dogon Kiria (Karchabou), to benefit a total of 1,338 farmers (719 women). The gardents are equipped with boreholes and solar porwered watering systems to provide for irrigated vegetable production on a total of 98.5 ha. The high investment cost prevented the attainment of the set target of 12 vegetable garden sites. In Droum, 100 women and youth in eight villages were provided with 30 drip irrigation kits. In Aguié, 32 beneficiaries were provided with 32 kits. Twenty-one women and youth groups were trained on how to set up and maintain drip irrigation kits.

Photo 6.35 Production on developed market gardening sites

### 6.5.3 Work Package 3: Agricultural Commodity Production

The 2017 uptake survey report had rated the proportion of farmers pursuing climate smart production options in Niger at 57%. According to DryDev Niger monitoring reports, this rate was estimated to have increased to 66% by the end of 2018. Further, as at end of December 2018, a total of 5,782 farmers (4,922 women) practiced climate-smart production techniques promoted by DryDev on approximately 7,517 ha of farmland.

- Activity Area 3.1: Agro-silvo-pastoral systems developed

In 2018, the Niger programme team continued to implement activities that enhance and diverfy on-farm production systems involving appropriate agro-sylvo pastoral practices, with a view to ensuring year-round production and increased food security. In Droum, pond water made it possible to introduce vegetable gardening in the rainy season and continuing production using supplemental irrigation. This has enhanced off-season vegetable and food crop production.


6.36 Farm under supplemental irrigation using pond water in Droum

Other activities carried out under Activity Area 3.1 were:

- Training of 183 peer trainer farmers (48 women) from the four target communes on rainfed production of cereals, legumes, millet, sorghum, cowpea, groundnut and vegetable gardening
- A total of 178 peer trainer farmers (14 women) were trained in Droum and Aguié on vegetable gardening covering processes ranging from nursery preparation to crop harvesting.
- Information on good practices for producing millet, sorghum, cowpea, groundnut and sesame were recorded in Hausa language and broadcast in Hausa language and 60 broadcasts were made in radios in Malbaza, Aguié and Droum. In Dogon Kiria, the information was circulated through telephone sms service. Another radio broadcast on agricultural best practices was aired four times in Aguié and six times in Malbaza, reaching more than 100,000 farmers.
- Fifty demonstration plots were installed in Aguié and Dogon Kiria to showcase good production practices for the improved seeds of sesame (5ha), groundnut (2ha) and cowpea (3ha).
- Two training sessions were conducted on climate change and the importance of improved seeds, attended by peer edicators from Aguié (50 participants), Malbaza (32 participants), Droum (200 youth) and Dogon Kiria (42 youth).
- Production plans were established for 13 vegetable garden sites in Malbaza (four sites), Aguié (one site), Dogon Kiria (three sites) and Droum (five sites).
- Farm operating accounts were established for seven groundnut and cowpea seed producers and one onion seed producer in the communes of Dagon Kiria, Malbaza and Droum.
- Ten users of communal agricultural and processing equipment (CUMAT) were trained on the management and operation of different agricultural equiment.

Further, to enhance the diversification of livelihoods and enhance cropping and livestock integration, the following activities were conducted:

- Semi-intensive poultry production system was promoted. A total of 362 vulnerable youth (252 women) were provided with poultry kits[30]. Four poultry farms were established in Malbaza and Aguié. Poultry production in Dogon Kiria mobilized 1,000,000 FCFA (US$ 1,750) from which 500,000 FCFA (US$ 877) were used to construct an input kit (seeds and fertilizer) for the beneficiaries.
- Forty-five youth (including four girls) were trained in Malbaza, Droum and Dogon Kiria on the construction and use of locally fabricated incubators.

[30] The size of a poultry kit varied from location to location: in Aguié, poultry kits comprised 10 Guinea fowls, three hens and one rooster; in Droum (three hens and one rooster); in Malbaza, and Dogon Kiria (10 Guinea fowls).

- Beekeeping was introduced as a mixed enterprise within the vegetable sites at Droum (Droum, Koudouma, Machya villages) and at the rehabilitated / FMNR sites at Aguié (Guidan Galadima, Dan saga) with a view to diverifying sources of household incomes. Ten beekeepers were trained and equipped in Droum. Two beekeepers at the market gardening site of Dan Sawani, Droum, harvested 18 litres of honey that earned them $175 in eight months.
- DryDev contributed to restocking of small ruminants for 357 women members of 65 MMD[31] groups in the communes of Dogon Kiria, Malbaza, Aguié and Droum. A total of 357 goats were distributed to recipient members under that Habanayé[32] arrangement.


Photo 6.37 A locally fabricated incubator with Guinea fowl eggs

- Activity Area 3.2 Sustainable input supply system established

To enhance inclusive access to agricultural inputs, DryDev Niger identified and strengthened the network of 63 agro-dealers in 2018. In 2017 these agro-dealers had been given grants in amounting to 2,600,000 FCFA (approx. $4,561) to strengthen their working capital in the four programme intervention communes. In 2018, 54 agro-dealers were strengthened and equipped in the four communes. Eight of these agro-dealers were animal husbandary input salers in Aguié, while three were input shops operating in Malbaza. Six mobile input shops were opened at the vegetable garden sites of Droum. A total of 22,915 farmers (10,685 women) were able to access farm inputs in Droum 3,880 (986 women), Malbaza 12,522 (6,138 women), Aguié 4,913 (women 2,921) and Dogo Kiria 1,600 (640 women). Further, DryDev Niger established 26 cooperatives in Aguié (12) and Dogon Kiria (7) and Malbaza (7) to support the use of agricultural equipment, and a further five cooperatives in Droum to enhance access to processing equipment.

To enhance the quality of animal health services, 32 community animal health workers (CAHW) from the four communes were retrained on the role and importance of private veterinary service (SVPP), the functions and limitations of a community animal health worker, practice of vaccination, prophylaxis schedule, diseases of domestic animals and their treatment. A communal committee was set up to network CAHWs and enhance their effectiveness to meet the population's demand. Each CAHW is linked to an SVPP to enhance the provision of livestock pharmaceuticals and ensure close monitoring / supervision. Further, training on community-based management of malnutrition using local products was given to 256 women members of 128 MMD groups in Aguié and 17 women

[31] Mata Masu Dubara (literally Women on the Move) – Niger's version of village ssavings and loans association
[32] An arrangement where each beneficiary of the introduced commodity agrees to pass over the first product of the commodity to another member

from 17 groups in Dogon Kiria. The objective of this training was to strengthen the efforts towards the prevention of malnutrition by boosting community-based self screening and promotion of optimal feeding using available local products.

### 6.5.4 Work Package 4: Enhancing Market Access

By end of 2018, a total of 20,225 farmers (5,035 women) had access to markets through the sale of value chain products, or 66% of the overall target. A total of 1,812 farmers (all women) were involved in the processing of products such as cowpeas, groundnut and others.

- Activity Area 4.1: Building capacity in market systems and value chains

To improve the operation of market linkages put in place in 2017, 21 staff of DryDev partners and communal agriculture and livestock services were trained on the logic and principles of value chains organisation the relevance and constitution of statistics on supply and demand, as well as on the development of business plans. This training enabled the staff to review sector plans, initiate data collection on product availability and produce business plans for 13 vegetable gardening sites in Aguié (1), Dogon Kiria (3), Droum (5) and Malbaza (4).

- Activity Area 4.2: Value chain group establishment and strengthening

Eleven plans for developing Niger's five value chain products (cowpea, groundnut, sesame, poultry, sugar cane) were reviewed and simplified with a view to highlighting the key activities needed to spur their improvements, seize business opportunities and increase their performance. Eight warehouses were constructed in Aguie (4), Dagon Kiria (3) and Malbaza (1) as part of the efforts towards strengthening the five selected value chains.

- Activity Area 4.3: Market information system strengthening

A market information system (MIS) by the name "Allo Dubaru" was set up by DryDev Niger in 2018, with the support of the Impact Com Media and Orange in the country. The system, which is based on 93 local informants who are part of the informal information network, is expected to serve 600 stakeholders by providing daily information on prices, market characteristics, currency exchange rates, access to market, availability and flow of products between 21 markets. Further, this system will also be used to broadcast three audio on the promoted technological packages (under WP2) and appropriate techniques for growing millet, sorghum, cowpea, groundnut and sesame (under WP3).

- Activity Area 4.4: Agro - processing promotion

A total of 292 women from 12 groups across the four communes were trained on groundnut and cowpea processing. To promote the production of NTFPs, 100 women from Droum and 50 women from Aguié (members of MMD groups) were trained in soap making. Further, to support local processing and enhance the income-generating activities for women and youth, five cooperatives for the use of agricultural equipment and processing (CUMAT) were set up in Droum to extract groundnut oil.

### 6.5.5 Work Package 5: Financial Services Linking

By end of 2018, a total of 21,725 farmers had access to credit through saving groups and financial institutions. However, only a small number of farmers (9,808) were saving with financial institutions including VSLAs and banks. Overall, VSLAs (MMD groups in Niger) performed better than the MFIs in providing credit services to farmers in the programme sites. In 2018, MMD groups in DryDev sites saved approximately US$124,566 and loaned out US$146,600 to 1,608 men and 5,657 women farmers.

- Activity Area 5.1: Village savings and credit associations

The DryDev Niger team undertook to restructure the market garden sites in Droum, Dogon Kiria, Malbaza and Aguié to conform to the provisions of the new OHADA[33] law. Ninety-four organizations were set up and aligned with the OHADA law around sectors or market gardening sites. These organizations facilitate the creation of an equity capital, the organisation of collective works, the supply of inputs and equipment, and training by peers. They also have the mandate to organize product trading. Fifty-five village facilitators of the MMD (VSLA) groups derived from the four communes were retrained on their roles and responsibilities in providing supervisory services to the groups, organizational dynamics, statutory texts and regulations, and fund management and cash operations. Other topics covered in the training included steps for setting up a group network, the different bodies of a network, general assemblies of the network and the delegates, and the oversight responsibilities of the board of governors, the monitoring committee and other specialized committees. Further, 22 MMD networks were set up in Dogon Kiria (1), Malbaza (13), Aguié (7) and Droum (1) with a view to enhancing the impact of loans granted by MMD groups, improving the support services provided to communities and facilitation of loans from micro-financne institutions (MFIs). Each commune set up a network of village agents to facilitate co-learning in management changes. This transparent mobilization of savings led other MMD groups to comply with the new OHADA law.

In 2018, the savings mobilized by the MMD from the four communes amounted to 72,861,176 FCFA (equivalent to US$132,493), with a sum of 109,807,814 FCFA (approx. $199,650) issued as loans (Table 6.58). This good performance can be explained by the structuring of MMD groups in networks, regular monitoring of village agents and transparency in management. To build the external and internal resource mobilization and management capacity for operational farmer groups, 218 leaders (chairpersons, treasurers and general secretary) of Droum, Dogon Kiria and Malbaza were trained in financial management. This training served as a forum to guide the selection of investment niches, loan facilitation and management, MFI selection, operating account maintenance. The achievements of this training are also useful for managers in the control of costs and equities, especially the selection of investment areas.

Table 6.58: Performances of MMD savings and loans in DryDev intervention communes in 2018

| Commune | Savings (FCFA) | Loans Granted (FCFA) |
|---|---|---|
| Droum | 9,657,000 | 6,685,000 |
| Malbaza | 45,842,176 | 85,760,814 |
| Aguié | 13,908,000 | 13,908,000 |
| Dogon Kiria | 3,454,000 | 3,454,000 |
| **Total** | **72,861,176** | **109,807,814** |

[33] Organisation pour l'Harmonistion en Afrique du droit des Affaires (Organization for the Harmonization of Business Law in Africa)

- Activity Area 5.2: Link actors to financial service providers

A workshop was convened in Droum, with the support of the Regional Chamber of Agriculture (CRA), to link farmer organizations, local actors and MFIs and create awareness of the financial products available in the MFIs. A total of 45 participants (10 women) from innovation platforms, youth laboratory, farmers organizations and state technical services participated in the workshop. Other efforts to link farmers to MFIs were made in Aguié by CRA and sa'a Federation[34]. Further, two missions were conducted by DryDev and a local MFI to enhance access to credit for 22 farmers organizations and 550 farmers. Unfortunately, not much success came from these missions, as the MFIs did not find the the DryDev type interventions sufficiently bankable.

### 6.5.6 Work Package 6: Local Governance & Institutional Strengthening

In Niger, innovation platforms are the basis of the implementation of DryDev activities and the sustainability of all programme interventions. By end of 2018, a total of 120 community leaders, including innovation platform leaders, received training on management and development of action plans. The report of DryDev Niger monitoring activities showed that by end of 2018, about 70% of community residents perceived that the services delivered by innovation platform leaders were of high quality.

- Activity Area 6.1: Innovation Platforms Promotion

A diagnostic survey was conducted by the municipality technical services, innovation platforms and social innovation laboratory to determine the strengths and weaknesses of farmer organizations and MMD/VSLA groups opeating in the programme intervention communes. The survey revealed that a total of 158 farmer organizations and 419 MMD / VSLA groups operated in the programme sites, but that these organizations and groups did not adhere to many of the statutory provisions and were poor in resource mobilization due to lack of bankable business and action plans. To address this gap, a training session on leadership and good governance was conducted in in the four communes for 120 members (43 women) of these farmers organizations. In addition, coordination meetings were held between innovation platforms and farmer organizations in Malbaza (attended by 199 participants, including 169 women) and Aguié (45 participants, 18 women) with a view to enhancing common approaches and developing common objectives. Further, a training session was held for six local cluster facilitators in Malbaza to enhance the facilitation techniques of the participants.

### 6.5.7 Work Package 7: Planning, M&E and Scaling of Learning

By the end of 2018, a total of 60 scaling stakeholders were actively promoting DryDev interventions.

- Activity Area 7.1: Program monitoring

To enhance the quality of programme implementation and scaling up of improved practices, DryDev Niger conducted several programme monitoring missions which included the participation of the staff of government technical services, administrative and customary authorities (prefect, mayor chief of canton), active partners, and innovation platform members in each of the four target communes. These missions also served as forums for information exchange, experience sharing, and expression of

[34] A farmer group based in Maradi

commitment by authorities on the sustainability of achievements. In addition, joint teams of ICRAF and CARE conducted two formal Joint Quality Monitoring (JQM) exercises in 2018, covering the communes of Malbaza - Dogon Kiria in July and Droum- Aguié in September. In all, a total of 22 monitoring and technology dissemination missions were conducted by the Niger DryDev team in 2018.

An external programme evaluation process was conducted in May 2018. This process, which was comminioned by the Dutch Ministry of Foreign Affairs and coordinated by ICRAF, produced a wide range of recommendations which the Niger team began implementing in the second half (third quarter) of the year. Those recommendations that required major financial and organizational input were included in DIP2019 activities and budgets, to be implemented in 2019.

The annual technology adoption survey was not done in 2018. This decision by ICRAF arose from the need for the programme teams to adequately prepare for the endline impact study that was expected early 2019. However, the Niger programme team conducted a series of aerial studies (using the drone technology) to assess the extent of environmental recovery arising from land regeneration activities under WP 1. Reports were written, and films were made that have been shown in different fora and have been well received and appreciated. From the drone pictures, thematic maps were produced with evidence of DryDev achievements in the study conducted highlighted.

- Activity Area 7.2: Participatory M&E with FOs, IPs and stakeholders

Quarterly meetings were held in each commune during the year, to plan for implementation and receive feedback from for past activities. Two strategic coordination and review meetings were held in April and September 2018, attended by the programme team (staff of the NLO and the implementing partners), government technical service, representatives of local institutions and the representatives of the innovation platform. Further, the annual review and planning workshop was held in October 2018, to review the progress made and achievements realized in implementing DIP2018, and also plan for DIP2019.

- Activity Area 7.3: Scaling of evidence and learning

Two meetings were held under the auspices of Droum Consultation Framework, which was convened by the Droum Town Hall with the support of DryDev and the USAID-funded REGIS-ER Project. The meetings, which were attended by other donors and communal technical service, gave opportunity for different projects and donors to share their approaches and achievements in aspects relating to conservation agriculture, soil and water conservation techniques, livestock production, VSLA, village development committee, health and nutrition as well as water and sanitation. Further, two review-sharing and learning workshops were held in each of the four intervention communes with a view to drawing lessons from the activities done and results obtained in 2017, capturing and sharing success stories, evidence and lessons learned, and designing strategies for scaling out these evidences and success cases. A series of programme infomercials was produced and broadcast on the two most popular national television channels (Tele Sahel and Bonferey) on three thematic packages - bocage, VSLA and poultry farming. Feedback workshops on the findings of the 2017 uptake survey were conducted in each commune. The results of the 2017 surveys showed increased adoption of compost, improved seeds and strengthening of the community-based seed systems. Finally, 31 learning and experience-sharing meetings were convened across the intervention communes, as shown in Table 6.59.

Table 6.59: Number of learning and experience-sharing meetings held with the communities in different communes.

| Commune | Number of learning and experience sharing meetings | Number visit per Topics | Topics |
|---|---|---|---|
| Droum | 9 | 3 | Manufacturing solid soda soap, MMD groups, Bocage |
| Dogon Kiria | 8 | 2 | Improved seeds demonstration |
| Malbaza | 8 | 2 | Integrated vegetable gardening and seed demonstrations |
| Aguié | 6 | 2 | Bio pesticides and seed demonstrations |

### 6.5.8 Work Package 8: Policy Analysis & Influencing

By end of 2018, a total of 13 policy makers and other policy stakeholders were meaningfully seeking to bring about targeted policy and institutional reforms.

- Activity Area 8.1: Policy awareness raising

DryDev Niger planned and implemented several policy awareness activities at the local government level for purposes of enhancing good governance guided by a sound legal and policy framework. Workshops were held at each commune, and *ad hoc* committees formed to enhance the understanding of, and enforce the laws and codes governing forestry, water, community life and funding for rural community activities. Some of the achievements of these awareness-raising efforts included:

- The formation of an ad hoc committee in charge of conducting policy caravans and radio broadcasts;
- Issuance of land security titles, leading to reduced conflicts arising from land inheritance decisions;
- Increased exposure of expropriation practices from customary authorities;
- Significant reduction in destructive practices such as overcutting of trees and mining of forest resources;
- Creation of a collaboration framework between innovation platforms and radio stations to facilitate the airing of policy advocacy activities;
- Enhanced public awareness of communal council responsibilities and increased accountability of communal leaders to the general population;
- Increased responsibility of the innovation platforms in ensuring prudent management communal resources; and
- Forty copies of pagivolts or flannel board visual aids (natural resource management (NRM) guide) were produced and disseminated.

- Activity Area 8.2: Policy influencing at local and national levels

The DryDev team in Niger had, in earlier assessments, identified weaknesses in the way the rural police enforced the management of inter-communal lands and agro forestry parks. A training session was organized by the county land commission (COFODEP) on how to enhance the ownership of and enforce adherence to the laws and rural codes governing NRM. This training was attended by the

secretary general of the prefecture, prefects, canton chiefs, chiefs of Fulani grouping, village chiefs, mayors, chairmen of clusters; representatives of innovation platform boards, communal councillors, communal technical services (environment, agriculture and livestock) and religious leaders. Further, advocacy activities were conducted at communal, district and regional levels, covering such topics as the institutionalization of innovation platforms, development and use of land development plans, and financing of agricultural activities by local governments. The initial results of these advocacy activities included:

- Commitment by municipal authorities and elected representatives to suspend cropping contracts in the classified forest of Dan Kada in Aguié;
- Commitment of communal and district authorities of Malbaza to safeguard and ensure appropriate management of the rehabilitated communal areas in Kourmoudoutan and Ifrikawane;
- Increased interest in facilitating the participation and contribution of the private sector in local governance;
- The registration of the innovation platform of Malbaza, by the municipal council of Malbaza, in the institutional framework of the Municipality. Similar actions are also expected in Droum, Aguié and Dogon Kiria;
- Commitments of Municipality Town Halls to involve the innovation platforms in the management of the local system of inputs and agricultural equipment.

These results will be monitored for their effectiveness with a view to enhancing impacts.