Annex II: Approach of the programme evaluation (Analysis Plan)

This Annex presents the analysis plan for the end line evaluation of the Dutch food security programme in Rwanda. Both the approach for the portfolio evaluation as the project evaluation of CATALIST-2 are explained. In addition, hypotheses on the impact and approach are given. Finally, a schedule of the planning of the end line phase and an overview of the documents received by EKN, IOB, and the project implementers are given.

Analysis Plan

Impact Evaluation of the Dutch Food Security Programme in Rwanda Food Security - including a case study of the CATALIST-2 programme

22 February 2016

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1. Introduction

The food security programme of EKN Kigali is presented by the intervention logic as displayed in Figure 1.1:

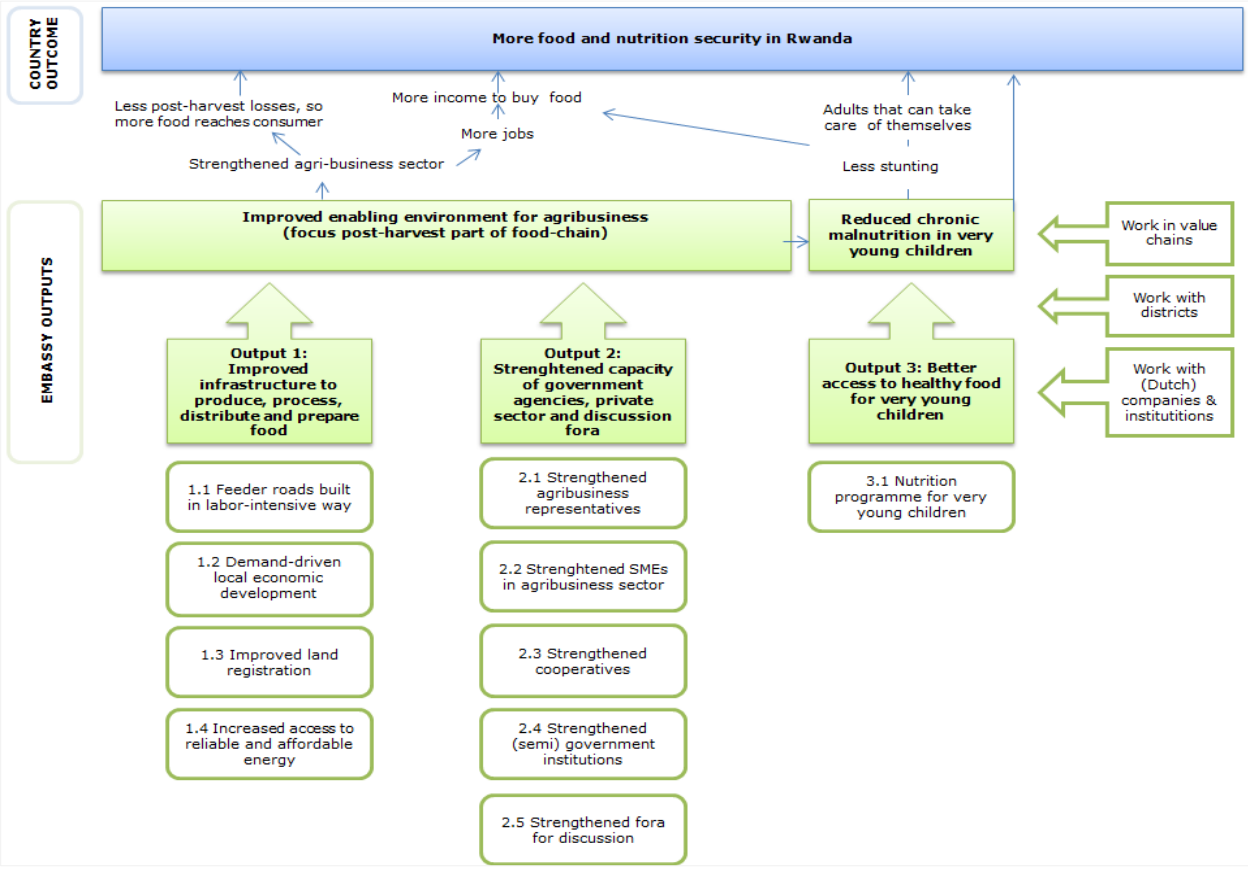

Figure 1.2: Food security intervention logic, Source: MASP 2012 - 2015

In the baseline report the EKN outputs in the intervention logic were linked to the EKN portfolio as shown in Table 1.1. The embassy output contributes to the country outcome. Linking the projects to the outputs in the intervention logic is the starting point to define in what way a project contributes to the Food Security programme of EKN.

Between the baseline and the end line phase we conducted surveys among the projects that were already finalized by 2015. Project implementers were asked to fill in a self-evaluation about the project and its contribution to the food security programme.

We used the intervention logic to assess for those projects to what extent they have met the project objectives and in that way contributed to the EKN food security objectives. In addition, information about the number of direct and indirect beneficiaries was collected. For each project participating in the survey we described the results in terms food availability, food accessibility, food stability, food utilization and private sector development.

Outputs	Relevant projects
Output 1: Improved infrastructure to produce, process, distribute and prepare food.	
1.1 Feeder roads built in labour intensive way	23743 – HIMO PDED II consolidation
1.2 Demand driven local economic development	24371/25542 – Infrastructure investments 24720 – CATALIST-2 25195 – PAREF 2
1.3 Improved land registration	23168 – Land tenure regularisation
1.4 Increased access to reliable and affordable energy	19462 – PAREF 1 19940 – Electricity access programme
Output2: Strengthened capacity of government agencies, private sector and discussion fora.	
2.1 Strengthened agribusiness representatives	19462 - PAREF 1 24720 – CATALIST-2 24871 – Capacity building for food security 24730 – Linking farmers to markets 25059 – Consolidation marshlands
2.2 Strengthened SMEs in agribusiness sector	19160 – Skills development and employment protection 19815 – PROSKID 23743 – HIMO PDED II consolidation 24720 – CATALIST-2
2.3 Strengthened cooperatives	24720 – CATALIST-2 24730 – Linking farmers to markets 25059 – Consolidation marshlands 25454 – Cooperatives support programme
2.4 Strengthened (semi) government institutions	23743 – HIMO PDED II consolidation 24730 – Linking farmers to markets 24871 – Capacity building for food security 25059 – Consolidation marshlands
2.5 Strengthened fora for discussion	24371/25542 – Infrastructure investments 24720 – CATALIST-2
Output 3: Better access to healthy food for very young children	
3.1 Nutrition programme for very young children	25457 – UNICEF

Table 3.4: Food security projects per Embassy output (see fig. 1.1)

The following projects were finalized by 2015:

- **19160** TVET Skills Development and Employment Protection
- **19815** Promotion of Skills Development
- **19940** Electricity Access Program
- **19462** PAREF II (PAREF NL-1) - Programme d'Appui à la Reforestation de 9 Districts des Provinces du Nord et Ouest du Rwanda
- **23743** HIMO PDED II consolidation - Consolidation feeder roads
- **25059** Consolidation of Marshland Development
- **24371** District Infrastructure Investments through RLDSF.

All project implementers of the above-mentioned projects received the survey and responded, except for project 24371.

2. Approach portfolio evaluation end line

During the end line phase the following stages will be followed:

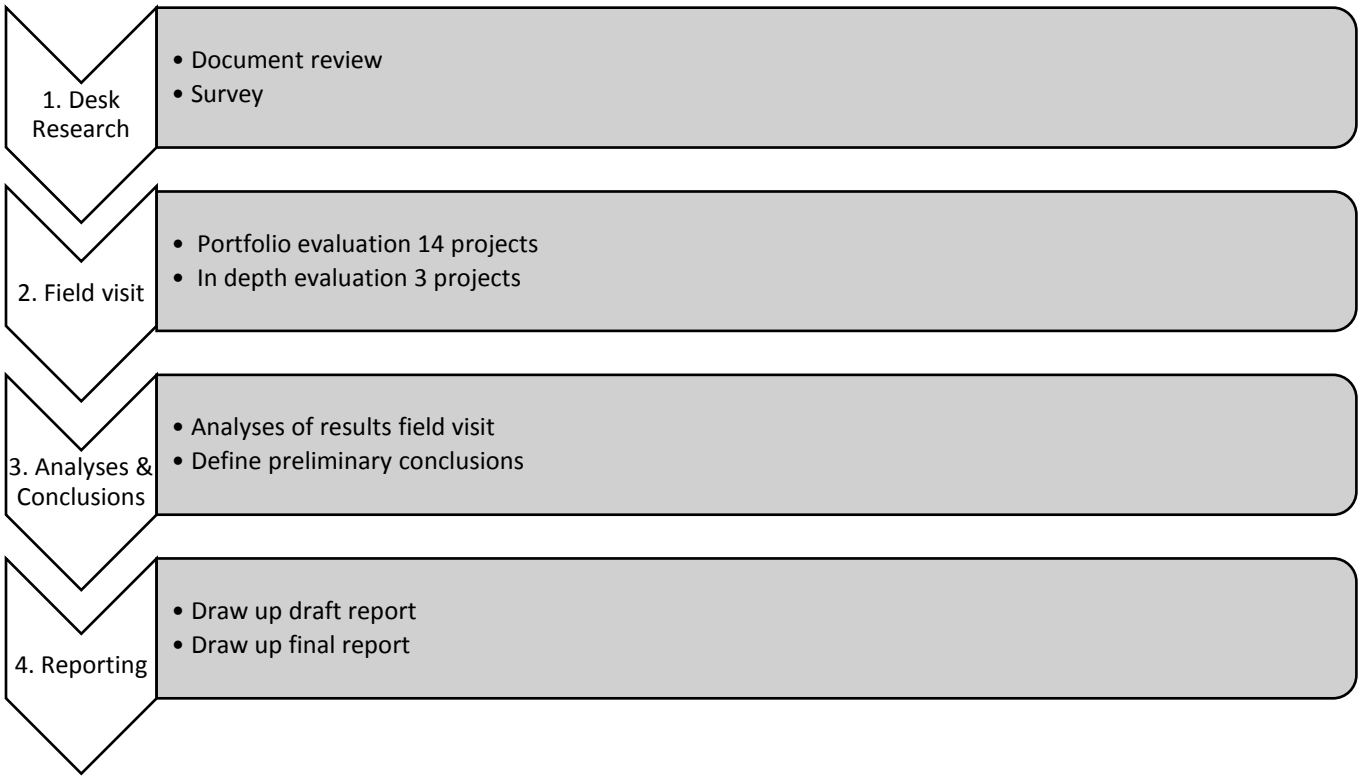

Table 2.1: Stages portfolio evaluation food security Rwanda

2.1 Desk research

The desk research will take place in the Netherlands. The document review of secondary data sources is ongoing. Documents consist of project-level monitoring reports and/ or evaluations conducted by 1. Project implementers, 2. Embassy, 3. Other donors or the Government of Rwanda. Please refer to appendix 1 for available documents per project received either from EKN, IOB or the project implementers (survey).

As discussed during the workshop with IOB relevant documents are not only the food security policy letter of 2011, but also documents such as the country MASP. In addition the new policy letter of 2014, and possibly the new MASP (2014-2017) are important reference points for the *current (2016)* relevance of the projects and will be included in our desk research. With relevance IOB means that it can be concluded that a project was successful and relevant for the older policy letter, but that compared to the new policy letter, this project has become less relevant (with an indication of the cause).

For the Rwanda food security impact evaluation we already started with analyzing the available documents of the projects, conducted the survey for 7 projects as discussed earlier and used the data to assess if the EKN food security objectives are met.

Table 2.2 shows an example of project **19160 TVET Skills Development and Employment Protection**, of which we analyzed the documents based on the BEMO results, the assessment during the baseline study and the survey.

In line with the request of IOB after the workshop in November 2015, we added an additional column named 'other' where we can include additional characteristics as mentioned in the new policy letter of 2014, such as:

- Environmental sustainability / climate change adaptation?
- Characteristics of target group: small, medium farmers; landless, wage labourers?
- Type of food insecurity experienced by beneficiaries (availability, access, utilisation, stability)
- Effect on indirect beneficiaries? (e.g. employment, food availability).

In table 2.3 we linked the project objectives to the results and outcomes and were able to draw some preliminary conclusions. These conclusions will be tested in interviews with project implementers during the end line visit. We will do the same for the remaining projects.

FOOD SECURITY	Food security objective?	Number of direct beneficiaries, and Targeting food insecure?	Increased Food Availability (likely/evidence)	Increased Food Accessibility (likely/evidence)	Enhanced Food Stability (likely/evidence)	Enhanced Food Utilization (likely/evidence)	Private sector development (likely/evidence)	Other (Policy letter 2014)
Sub-objective output indicator: 2.2 Strengthened SMEs in agribusiness sector								
Skills development and employment protection (BEMO, 19160)	Not applicable	Unknown	Not applicable	Not applicable	Not applicable	Not applicable		
Baseline assessment	No additional information	No additional information	If farmers are included and their skills improve, they could use this to implement more efficient producing strategies with higher yields.	Business skills could provide employment opportunities and thereby more income to buy food	No additional information	No additional information		
Survey results	No	- Entrepreneurs, employees, self-employed, job-seekers - 10,000 people (target 3,000), with 4,657 women (52%), received further trainings as part of the Upgrade Your Skills initiative	Income	No mention of this	No mention of this	No mention of this	The aim of the project is: strengthen the SMEs and promote employment opportunities It seems like jobs are created, however the diagram does not contain correct data it seems.	

Table 2.2: Document review project 19160 Skills development and employment protection

Table 2.3: Project objectives linked to results and outcomes 19160 Skills development and employment protection

Project	Objectives	Output	Outcomes	Preliminary conclusions
Sub-objective output indicator: 2.2 Strengthened SMEs in agribusiness sector				
Skills development and employment protection (BEMO, 19160)	1. The economic performance of MSMEs and non-agricultural employment opportunities has significantly improved for poor sections of the population	1. The public authorities (PA) and the private sector (PS) are in a structured dialogue on TVET issues and reach agreement on mutual design, shared responsibilities and joint management of the TVET system. A structured Public Private Dialogue (PPD) is established and a PPD Secretariat was launched (Results Matrix GIZ Report). The Secretariat has received support in the form of training courses and information events have been carried out, while dialogue processes and structures have been established at national and local levels (GIZ Final Report)	1. A platform for the coordination of the public authorities and the private sector in the area of skills development is institutionalized and active. The application of RIA (Regulatory Impact Assessments, an instrument to assess the potential negative effects of new laws and regulations on the private sector) has not been pursued (Results Matrix GIZ Report). Three Public-Private Partnerships (PPP) were launched, leading to a total of 155 male and female entrepreneurs and employees to receive training in financial accounting (GIZ Final Report).	Results matrix (GIZ Report): - 69,342 jobs created until 2013 (including temporary jobs) - Increase in credit and loans to private sector - From 95 (2012) to 240 (2013) exporting companies in Rwanda - Investor Perception Index increased from 71 (2012) to 74.4 (2013) The 2nd objective has been completed. - Skills of trainees were improved - Employability of trained people increased, because of acquired skills - Companies introduced new products, provided better service, and got more income - Training centre increased the number of new trainees With respect to the 1st objective it is unclear if and how SMEs are actually strengthened. The objective is vaguely stated in the first place, as 'strengthened' can have several meanings. GIZ Final Report (p.37): the programme was not primarily aimed at poverty reducation, but it did make a contribution to improving the qualifications of young men and women, who therefore have
	2. The employability of young Rwandans, especially young women, is improved	2. A TVET strategy and an organizational framework for implementation are established and reflect the results of Public Private Dialogue (PPD). Representatives of Rwanda's Chamber of Industry and its construction industry association are collaborating with the Technical and Vocational Schools Association (TEVSA), as well as with the master trainers to develop a strategy for the further education of both TVET school teachers and in-company instructors (GIZ Final Report)	2. A mutually agreed TVET strategy between the PA and the PS is approved and in implementation. While the PS and TVET have started working together more, it is still necessary to include the PS more strongly (GIZ Final Report). The area of labour market interventions has not yet developed an adequate profile.	

Project	Objectives	Output	Outcomes	Preliminary conclusions
		3. Decision makers in TVET better understand the labour market and its developments using various instruments. The Sector Skills Councils have been created in order to align vocational education more closely to the needs of the private sector (GIZ Final Report)	3. Labour market instruments are established and used. The Ministry of Public Service and Labour launched Rwanda's first employment agency (GIZ Final Report). The agency offers career advice and job application training.	better access to more productive employment and a more secure income. The programme has organised a campagin for women and girls to increase their participation in vocational training courses. GIZ Final Report (p.41): The sustainability of the programme was assessed to be good (level 2 on BMZ scale), due to high ownership of the partners and participatory approach . However there is still low financial capacity of Rwandan private sector organizations.
		4. The professional initial training is directed towards the labour market demand. A more demand oriented skills development system has been created through the involvement of the private sector. The Sector Skills Councils (SSC) have been created (Results Matrix GIZ Report).	4. Curricula and Examinations are developed based on the needs expressed by the PS. Increased provision of internship opportunities by private enterprises for male and female participations (Results Matrix GIZ Report). The systematic inclusion of the private sector has been secured through the integration of work experience as part of the school-based training (GIZ Final Report).	
		5. Professional further training is an integral instrument of the TVET system in both formal and non-formal areas. 10,087 people, including 4,815 women (48%), are trained by prive-sector organizations (Results Matrix GIZ Report). More than three times as many people have benefited from training than was originally planned. 9,034 people, including 4,657 women (52%), received training as part of the Upgrade Your Skills (UYS) initiative	5. Skills attained through professional training as well as prior experiential learning are recognized and lead to certification. No data, it proved impossible to carry out an assessment of the skills of the people receiving the training. However private companies are providing an increasing number of work experience places for male and female participants in TVET courses (GIZ Final Report)	

Project	Objectives	Output	Outcomes	Preliminary conclusions
		6. Teachers and Trainers are better trained and the institutional setup allows them to better perform their job Creation of training-of-trainer courses for master trainers working in vocational schools and in companies (Results Matrix GIZ Report). The ToT Task Force is established, a body that develops training of trainer courses for instructors working in TVET schools (GIZ Final Report)	6. A ToT concept is institutionalized, elaborated and implemented aiming at better trainer attraction and retention The TEVSA developed a 'Roaming TOT strategy', involving the provision of further training for vocational teachers. More than 1,000 teachers received further training (GIZ Final Report).	
		7. The potentials of micro enterprises for both professional training and self-employment are better exploited. Related to outcome 7.	7. Specific measures to strengthen micro enterprises are implemented. The employment agency of MIFOTRA created the CEFE course (Creation of Enterprises – Formation of Enterprises) (GIZ Final Report).	
		8. The project concepts and its implementation is coordinated with local and international development partners and possibilities of direct cooperation are identified and implemented. The programme involved the use of international and national, long-term and short-term experts, integrated experts, development workers, national experts, and experts from SES (Senior Experts Service) (GIZ Final Report). There is close collaboration with German FC.	8. Specific possibilities of direct cooperation with development partners have been identified and implemented. Detailed coordination discussions have been held with development partners for the preparation of the trainer-of-trainer courses (GIZ Final Report).	

2.2 Field visit

The second stage of the data collection will take place in Rwanda during the field visit. This is planned in March to carry out the qualitative and quantitative data collection. The field visit aims to verify the findings of the desk research and to study the projects in more detail. The portfolio in Rwanda consists of 15 EKN projects (including CATALIST-2). CATALIST-2 will be assessed in the project evaluation, which is described in chapter 3. During the field visit we will carry out:

A. the portfolio evaluation of all 15 projects for a 'light' assessment;
B. the in-depth qualitative evaluation of 3 projects;
C. the in-depth quantitative and qualitative evaluation of CATALIST-2 (see chapter 3).

2.2.1 Portfolio evaluation

The preparation of the field visit starts with an analysis of the data on outcome and output level for each project in order to assess to what extent the project targets have been met based on the baseline report, document review and survey (as shown in table 2.3). The baseline report summarized the intended outcomes and outputs. In the surveys the project managers reported on the achieved results. Those two sources have been compared (as shown in table 2.3). The field visit will be used to verify through interviews to what extent our findings are correct and to what extent project implementers and EKN staff believe the projects to have contributed to the objectives of the Rwanda country programme and Dutch food security policy.

We intend to conduct face-to-face semi-structured interviews, which offer the benefit of generating interview data that are comparable between respondents whilst also offering the respondent the opportunity to clarify responses, to proceed interactively when answering questions, to volunteer information to the research team and to bring up issues that the evaluation team would not have thought of. We will prepare specific questionnaires for every project with a checklist of topics to discuss and questions. The interviews are focused on:

- seeking clarifications on the various data that we collected from our desk review;
- validating and enriching survey findings;
- cross-checking findings;
- ensuring a balanced perspective.

We intend to interview the following stakeholders:

- 14 project implementers (interviews for CATALIST-2 are described in chapter 3);
- EKN staff (2 interviews);
- Government of Rwanda (1 -2 interviews).

The interviews will take between 1 and 1,5 hour each. In total between 17-20 interviews will take place. It will be possible to organize 4 to 5 interviews per day, depending on the distance to travel. The portfolio interviews will take approximately 5 days.

2.2.2 In-depth evaluation

The in-depth evaluation consists of a total of four projects including the CATALIST-2 programme. The in-depth evaluation of CATALIST-2 will be discussed in chapter 3.

Three of the four projects in the portfolio evaluation are selected from the projects funded by EKN. The projects selected for the in-depth evaluation are:

- **24371/25542** – Infrastructure Investments
- **25059** – Consolidation Marshlands WHH
- **25457** – Access to Food for Young Children.

Initially it was intended to include one centrally managed project in the evaluation that had to be indicated by IOB. On 20 January 2016 it was decided by IOB to leave out the centrally managed project.

The in-depth evaluation contains:

- 3 visits of project locations to have a better insight of the circumstances, results and impact on the beneficiaries.
- 1 additional face-to-face interview with board / staff members per project (next to the portfolio interview)
- 2 Focus Group Discussions with the final beneficiaries of 2 selected projects.

In the inception phase it was agreed with IOB to validate the data collected from the document review and interviews by engaging the (intended) beneficiaries of two projects in focus group discussions (FGDs). The goal of these FGDs is to have a better understanding of the information that is presented in the reports and also to test whether these findings resonate with the target group of the selected projects. The questions to be addressed in the FGDs will depend on the subject and goal of the specific project. One FGD will take place per selected project and therefore two FGDs are scheduled as part of the portfolio evaluation.

General issues to be addressed during the discussions are:

- assessment of the theory of change;
- mapping of the observed results of the intervention on the direct target group;
- mapping of the effect of the intervention on the indirect target group;
- identification of external factors.

For the FGDs we suggest to choose the projects:

- **25457** – Access to Food for Young Children
- **25059** – Consolidation Marshlands WHH.

The focus group discussion could take approximately 3 to 4 hours (including preparation on-site, receiving participants and wrap-up/saying goodbye). We intend to combine the interviews of the portfolio evaluation with the in-depth evaluation on the same day to save time.

Including the portfolio evaluation the field visit will take 7 – 9 working days (flights excluded).

2.3 Analysis and conclusions

Based on the document review, field visit and additional desk research all available information will be analyzed and triangulated in order to answer the evaluation questions. We will use the intervention logic on portfolio level in order to assess to what extent the country programme objectives have been met. By answering the research questions we will analyze to what extent the overall Dutch food security programme objectives of the security policy letter of 2011 have been met and to what extent they are relevant in the context of the new policy letter of 2014. The latter assessment will be done briefly since it was not primarily the objective of this impact evaluation study.

Our draft results will be shared with the over evaluation teams between May-July as suggested by IOB. Based on the draft results we will formulate our preliminary conclusions and will report on our draft report in September 2016.

2.4 Reporting

The report will be structured according to the proposed outline of IOB for the country report. Based on the previous stage we will draw up the draft report in September 2016. After receiving and processing the feedback of IOB, the final report will be delivered in November 2016.

3. Approach project evaluation CATALIST-2

We start with a brief recap of the programme logic and the evaluation questions formulated in the baseline report.

The CATALIST-2 activities in the (local) cassava clusters consist of:

- Information on ISFM (integrated soil fertility management) farming practices through farmer promoters trained by programme facilitators;
- Information on business and financial planning through program facilitators;
- Access to improved cassava cuttings and other inputs (fertilizers, pesticides, herbicides);

The information is provided through trainings. Summarizing, the programme logic assumes that farming households can increase their yield and net income through applying organic and chemical fertilizers, improved cuttings/seeds and soil fertility management practices. Further, it is assumed that farmers have insufficient access to credit, input and output markets, which prevents them from fully realizing the benefits of IFSM. Therefore, the programme works on eliminating these obstacles (see also the diagram, baseline report Fig 3.4, p53).

From the baseline report we copy the evaluation questions (**p56-57**):

3.4.2 Specific evaluations questions

Based on the results chain in Figure 2.1, the evaluation aims to address the following evaluation questions for addressing the impact on the direct beneficiaries of the CATALIST-2 cassava intervention:

First-order effects:

1. Have cassava growing farmers **adopted ISFM farming practices** (use of fertilizers and soil management) as a result of the CATALIST-2 programme (specifically, information on ISFM and proximity to agro-dealers, link to credit market)?

2. Do cassava growing farmers have better **access to credit** as a result of CATALIST-2 programme (specifically, information on business planning and applying for credit, cassava credit arrangement)?

3. How has the **yield of cassava** changed as a result of the CATALIST-2 programme among the targeted cassava growing farmers?

Second-order effects:

4. How has the **output of cassava** changed as a result of the CATALIST-2 programme among the targeted cassava growing farmers?

5. How has the **land used for cassava** changed as a result of CATALIST-2 programme among the targeted cassava growing farmers?

i

Note that the first-order effects are the closest related to CATALIST-2 programme activities. The second and third-order effects are influenced more and more by circumstances and other programmes implemented in the survey area.

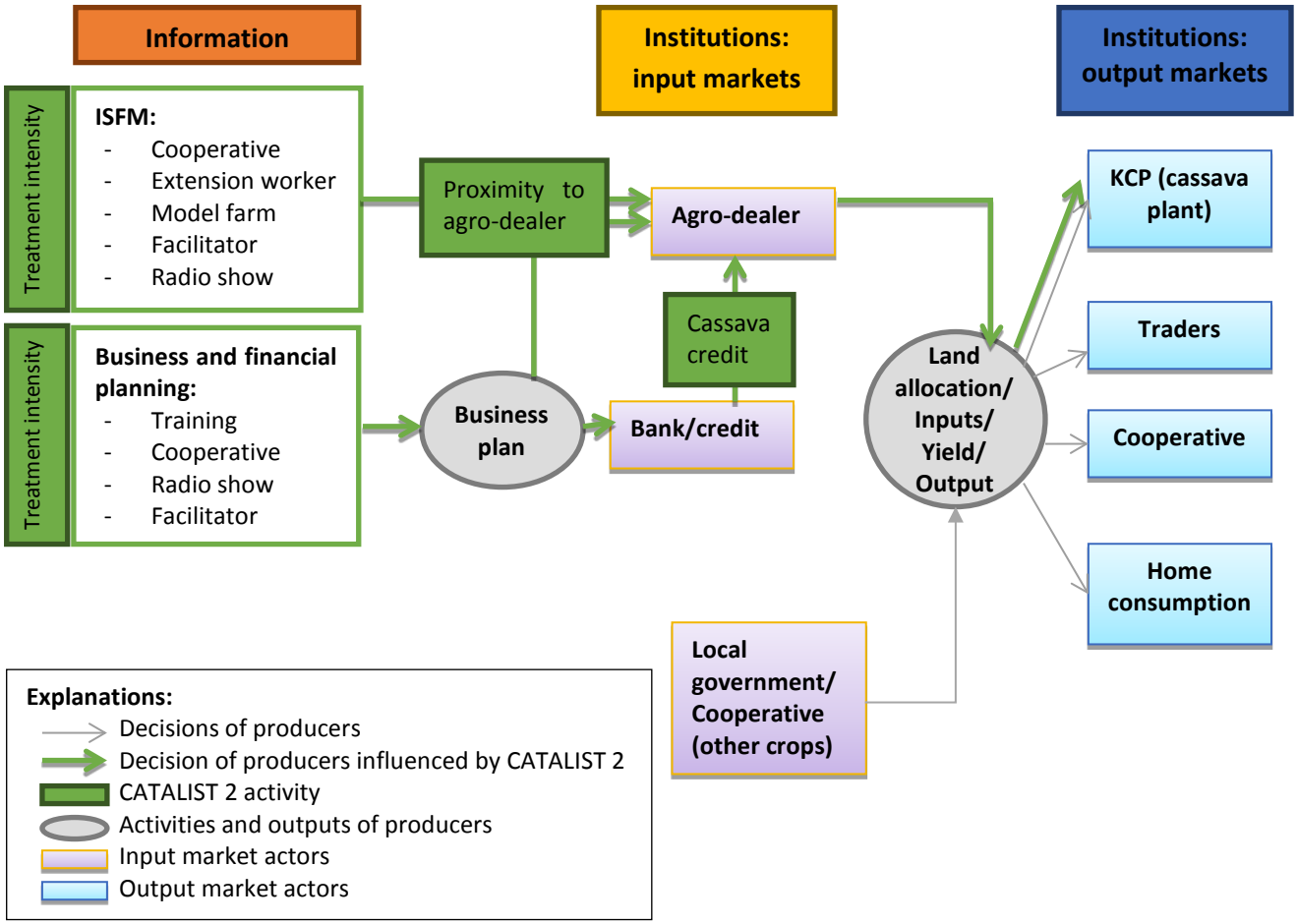

Figure 3.1: Simplified intervention logic, perspective of farming households

The research questions listed all imply a clear analytical structure: the concept in bold is the outcome of interest (the dependent) and the causal determinant of interest is the CATALIST-2 programme. In a regression framework, one of the main identification problems is that farmers self-select into treatment.

Before answering the impact questions we therefore need to consider CATALIST-2 programme participation over the study period using basic targeting questions:

1. To what extent have cassava farmers in the target cells/villages been exposed to CATALIST-2 (according to CATALIST programme data and self-reported participation)?

2. Who are the participants in CATALIST-2 (CL2)? All cells and hh are in principle eligible for treatment. (Study/estimate model of self-selection into treatment, both at cell and hh level).

3.1 Outcome measures (left-hand side variables)

From the list of research questions, we identify the following outcomes as LHS variables.

"First-order effect regressions"

1. ISFM practice adoption: fertilizer/pesticides use (could also be RHS variable in regressions below); Cassava variety planted
2. Access to credit
3. Cassava yield

"Second-order effect regressions"

4. Total cassava output
5. Land area used for cassava
6. Total output, all products

"Third-order effect regressions"

7. Income, hired-in labour, subjective well-being
8. Food security: food consumption, nutritional status (children, female); food diversity indicator

3.2 The right-hand side: treatment indicators and control variables

We aim to make use of two general types of treatment information: from the survey, reported in the community and household questionnaires; and information on the locations (cells) where the programme has been carried out from the implementing NGOs (a.o. Ibakwe). We will report on the comparison of both types of the headline treatment indicators. In the impact analysis we will make use of the survey information if there is little difference between these indicators (if there is a difference we will report how this affect the estimates).

Based on the programme logic and description, the main treatments offered at the cell/village level are Integrated Soil Fertility Management (ISFM) training and Business and Financial Management (BFM) training. Other elements involve improving access to improved cassava varieties and other inputs (herbicides, pesticides, fertilizer). Usually this means informing people about these inputs and "connecting sellers and buyers", occasionally subsidizing.

We measure the treatment at the community (cell) and at the household level in a binary fashion: did treatment T take place in community Z; or did your household participate in treatment T? Then we will explore ways to calculate treatment intensity, e.g. via the number of visits/trainings that took place; or the number of demonstration plots/farms that were created.

Beyond the treatment indicators, a range of community and household characteristics are measured to control for other determinants of the outcomes of interest. A set of basic controls will include household

demographics (size, head education, age, gender) and standard housing and asset indicators, probably an asset index. Some of the controls vary with the outcome that is modeled. For example, for the (cassava) production outcomes we will need to control for soil quality parameters as well as production shocks. In general, it will be important to control for the intervention history of the community, as more than the CATALIST-2 (CL2)programme may be active. For example, if food subsidy programmes are active, this will affect the nutrition status and thus all non-CL2 "confounding" programme activity needs to be captured.

3.3 Analysis plan Rwanda CATALIST

How effective is CATALIST-2? There are two levels to consider this question at: cluster average level and individual level.

The clusters in Rwanda are called cells. We expect to have cells with and without any intervention activity. Within treated cells we expect to have treated and untreated HH.

Once CL2 starts, programme activities in a cell some farmers are more likely to participate and benefit than others. At the cell level, the question to ask is: what is the cell level treatment effect (intention to treat, ITT)? — i.e. how much mean difference does it make for outcome Y to live in cell targeted/visited by CL2? This averages over households who select into treatment and those who do not. This is arguably the parameter of interest for an implementing organization.

For household *i* in cell *j* at time *t* the outcome *y* can be modeled as

$$\mathrm{y_{ijt} = a + b_1.Z_{jt} + c.X_{ijt} + v_j + e_{ijt}}$$

Here *Z* is an indicator equal to one if any CL2 activity took place in the cell during the period t-1 to t. If cluster level programme placement is non-random Z will be correlated with the cell level error term v. We aim to reduce the resulting bias by controlling for (household and) cell level variables that affect cell selection into treatment. Another possibility is to estimate a double difference model

$$y_{ijt} = a + b_1.Z_j + b_2.\mathrm{D(t = 1)} + b_3.D(t = 1).Z_j + c.X_{ijt} + v_j + e_{ijt}$$

Here Z(j) indicates cells that are untreated at baseline but have been treated by end line and so controls for time-invariant unobservables that determine treatment during the study period. The ITT parameter is b_3.

A second impact question relates to programme participation of the individual household (T): what is the household level treatment effect (on the treated) — i.e. what is the mean difference between households that are CL2 treated and those that are not.

$$\mathrm{y_{ijt} = a + b_1.}\boldsymbol{T_{ijt}} \mathrm{+ c.X_{ijt} + v_j + e_{ijt}}$$

A common approach in this case is Instrumental Variables (IV) estimation but finding a credible instrument is often a challenge. In the absence of clear exogenous variation in individual programme participation we need to rely on controlling for household characteristics. In any case, the first stage of the IV will be estimated when we address targeting and participation.

For both 2 and 3, add interaction terms to say something about sub-groups, e.g. are female-headed households affected differentially by CL2?

In conclusion: we have provided an overview of how the effects in the CATALIST-2 programme logic can be translated into lists of measurable concepts, both on the left-hand or outcome side and on the right-hand side (treatment indicators, controls) of the impact equations. We have also sketched how the impact may be identified using regression techniques. While the data analysis will follow this general outline, details will need to be specified along the way.

3.4 Sampling of cells and villages

The sample consists of 3 groups of villages:

A. **Early treatment villages**: Villages that have been reached by CATALIST-2 already before the baseline survey.
    - Information about these locations up to cell level is obtained from the complete list of producers that benefit from CATALIST-2.
    - In these locations we know which farmers are listed under CATALIST-2
    - We only sample villages where there are not too many farmers listed under CATALIST-2 (4-20 farmers per village). This condition is meant to ensure that we sample from villages where CATALIST-2 is introduced only recently. (Unfortunately, we do not have information about the year CATALIST-2 reached a certain location)
B. **Potential treatment villages**: villages in areas where CATALIST-2 is active, however, these villages have not yet been reached by CATALIST-2.
    - These villages are sampled from sectors where cassava is an important crop
    - In addition, these villages are sampled from cells where CATAIST 2 is not (yet) active
C. **Control villages**: villages in areas were CATALIST-2 is not active. These villages are located in Huye district exclusively.
    - These villages are sampled from sectors where cassava is an important crop

In the CATALIST-2 areas (Bugesera, Gisagara, Kamonyi, Muhanga, Nyanza, Ruhango) cells can belong to four non-overlapping categories:

1. CATALIST-2 cells with 10-100 farmers listed ⇒ **this is the sampling base for early treatment villages**
2. CATALIST-2 cells with more than 100 farmers listed or less than 10 farmers listed ⇒ these cells are excluded from the sampling (except in the case of Muhanga, where there were too few cells in category 1)
3. Non-CATALIST-2 cells that are located in sectors where cassava is an important crop ⇒ **this is the sampling base for potential treatment villages**
4. Non-CATALIST-2 cells that are located in sectors where cassava is NOT an important crop ⇒ these cells are excluded from the sampling

The cells are separated based on eligibility for categories A, B and C, while non-eligible cells are excluded from the sampling base altogether.[1]

Each eligible cell for sampling in categories A, B and C are listed twice in the sampling frame. Hence, a maximum of 2 villages can be selected in the sample per cell.[2]

From the sampling frame, cells are selected into the sample based on random sampling. This is implemented by drawing a random number (uniformly distributed between 0 and 1) and ranking the cells from highest to lowest based on the assigned random number.

In the selected cells, one (or two) village(s) is/are randomly selected from the list of villages. The eligibility conditions are verified at the villages again. In category A, villages are selected from the list of villages where between 4-20 farmers have been reached by CATALIST-2 already.

3.4.1 Sampling within villages

In each village, 10 farming households are interviewed.

In all sampled villages, we use the following eligibility criteria for farmers:

- Cassava is one of the 4 most important crops grown by the household.
- The size of cultivated[3] land does not exceed 2 ha (and it is also above zero).

Households are selected using "random walk" methodology and checking the eligibility criteria before the start of the interview.

In the *early treatment* villages (category A), 2 of the 10 households are (randomly) sampled from the farmer's list of CATALIST-2. For the remaining 8 households, care has to be taken not to sample from farmers that are included on the CATALIST-2 farmer's list.

3.4.2 Selecting the sample size for treatment categories

It is important to note that the distribution of *early treatment* and *potential treatment* villages in the sample is chosen with the expectation that at the time of the end line survey around 50% of the sample (400 households) will be exposed to interventions of CATALIST-2.

Given these criteria, the optimal share of early treatment villages in the sample crucially depends on the assumptions about

- the number of new villages reached by the programme between the baseline and end line period; and

[1] Using cells as sampling base (instead of villages) is due to recording farmers at the cell level in the list obtained from IBAKWE. In addition, only listings of cells were available for the surveyed districts at the time of sampling.
[2] In principle, we would randomly sample from a complete list of villages, allowing for multiple draws of villages from a cell. However, for practical considerations, we restrict the number of possible villages from a cell to two.
[3] We chose to select on the size of cultivated land instead of land ownership because we are mainly interested in income from farming irrespective of cultivating their own land or a rented land.

- the number of households reached in both the early treatment and new treatment villages between the baseline and end line period.

These considerations need to be discussed with the implementing NGOs prior to finalizing the sample selection.

According to the information available to us, we proposed the following distribution of villages among the sampling categories and districts:

District	# Early treatment	# Potential treatment	# Control	Total number villages
Bugesera	5	10	0	15
Huye	0	0	10	10
Gisagara	5	6	0	11
Kamonyi	5	6	0	11
Muhanga	5	6	0	11
Nyanza	5	6	0	11
Ruhango	5	6	0	11
Total	**30**	**40**	**10**	**80**

Table 3.1: Sample size of villages

The sampling design in Table 3.1, uses the following assumptions in order to arrive at 400 treated households at the end line:

1. At least 25% of the potential treatment villages will become actual treatment villages by the end line. Hence, at the end line at least 40 villages will have been reached by CATALIST-2.
2. Almost all households in the early treatment villages will be reached by CATALIST-2 by the end line. Note that we only sample 2 such households at the baseline.
3. No similar cassava programme is active in the potential treatment and control villages at the time of the baseline survey. Hence, in total not more than 7.5% of the sample will have participated in the programme prior to the baseline.

3.4.3 Discussion points

1. Discuss what it means to be reached by CATALIST-2 (a) at the village and (b) at the household level. When are households classified as beneficiaries?
    a. Treatment at the village level (e.g. demonstration plot, presence of farmer facilitator, access to inputs)

b. Treatment at the household level (e.g. have participated in meeting/ workshop/ training, heard about ISFM through others)

2. Discuss where do we expect to find effects:
   a. ISFM
   b. Mega-cluster activities
3. Discuss when the intervention should take place so that we can measure it.

Indicators	Interventions happen after	Interventions happen before
Farming practices, access to credit, land allocation.	End 2013-beginning 2014	End 2015-beginning 2016
Yield, output, prices, income; **Food-consumption;** **Food security indicators (less than one month recall).**	End 2012-beginning 2013	End 2014-beginning 2015
Non-food consumption; **Nutritional status.**	Earlier than end 2012-beginning 2013	Earlier than end 2014-beginning 2015

Table 3.2. Timeframe for detectable impacts

4. Discuss the number of new villages expected to be reached.
   - If the number of new villages to be reached in 2014 is small, we need to sample more from villages already reached by the programme (recently reached villages). As described above, we would mostly select households in these villages who have not yet been reached by CATALIST-2.
5. Discuss the number of new households within CATALIST-2 villages to be reached.
   - Where is this number expected to increase the most?
   - Is it important that the farmers get on the list of CATALIST-2, or presence of programme is sufficient?

3.4.5 Feasibility of sampling frame

District	Early treatment		Potential treatment		Control	
	# Possible cells	# Sampled villages	# Possible cells[1]	# Sampled villages	# Possible cells	# Sampled villages
Bugesera	22	5	36	10	-	-

Gisagara	5	5	47	6	-	-
Kamonyi	11	5	30	6	-	-
Muhanga[2]	10	5	53	6	-	-
Nyanza	5	5	35	6	-	-
Ruhango	6	5	29	6	-	-
Huye	-	-	-	-	18	10
Total		**30**		**40**		**10**

Notes:

1. Number of possible potential treatment cells have to be verified at the district offices depending on the sectors where cassava is an important crop.
2. In Muhanga, all CATALIST-2 villages are listed under early treatment due to the small number of CATALIST-2 cells in this district.

Table 3.3 Number of eligible cells and sampled villages

3.4.6 Qualitative evaluation tools for the Rwanda FS evaluation

In addition to the quantitative survey, at the end line we also plan to use qualitative evaluation tools. The particular aim is to address questions on CATALIST's effects on poor and food insecure households and to address institutional outcomes.

Focus Group Discussions (FGDs) will be organized with farmers benefiting from CATALIST-2 in the cassava (mega-)clusters. However, in order to assess longer term impact of the programme, we will conduct the FGDs in villages where CATALIST is already working for a long time. This way, we can interview the earliest adopters of the ISFM farming practices. The same team of qualitative researchers will conduct the FGDs as used for the other selected in-depth projects for the country programme evaluation.

A total of six FGDs are planned in two villages: in both villages one FGD with male beneficiaries, one FGD with female beneficiaries and one FGD with poor/food-insecure households that do not directly benefit from the programme will be implemented. We will interview males and females in separate FGD sessions. The following topics are envisioned for the FGDs with CATALIST-2 beneficiaries:[4]

- How do farmers decide on what crops to grow? Do they use cost-benefit calculation based on expectations? How are these expectations formed (weather, current crop prices, et cetera)? How do farmers feel about producing cassava for selling to the market?
- Which household members participate in the decisions on which crops to grow and in the decisions on how to spend the income earned?
- How are food resources allocated among the household members?
- Why farmers have applied or have not applied the ISFM farming practices?
- Have they visited any CATALIST demonstration plot?
- Why they have or have not used the services (access to inputs, business planning, credit, forward contracting) put in place by the project?
- Do they listen to the radio? What types of stations and shows do they listen to?
- Have they listened to Radio HUGUKA and/or Radio Communautaire?
- On these radio stations, what topic do they remember being discussed?
- Have they ever listened to shows about soil management, agricultural inputs, fertilizer? What about shows on financial planning, agricultural credit?
- How did the project affect the livelihoods of direct beneficiaries?
- Did the project focus on the relevant factors for improving food security?
- Are the changes to agricultural production sustainable?
- Further, we plan to conduct a few FGDs with poor (food-insecure) households who do not directly benefit from the project but may be exposed to (positive or negative) indirect effects. These FGDs will take place in the same villages where we conduct FGDs with beneficiaries. The FGDs will include the following topics:
- Which household members participate in the decisions on income earning activities and in the decisions on how to spend the income earned?

[4] A longer list of beneficiary questions is available from the baseline report.

- How are food resources allocated among the household members?
- How did the food security situation of households change in the past five years? What are the driving factors behind these changes?
- What are the impacts of agricultural intensification on the households in the past five years? What are the positive impacts (e.g. lower food prices, more work opportunities, et cetera)? And what are the negative impacts (e.g. increased land rent, et cetera)?

For the institutional outcomes **key informant interviews** will be conducted with policy stakeholders and implementers of CATALIST-2 like cooperatives, processing units, implementing project staff and government officials, in order to address the impact of CATALIST-2 at the institutional level. Particular examples of stakeholders to be included are the mega-cluster coach, the district agronomist, operatives of the KCP cassava plant, the Rwanda Agricultural Board, the implementers (IFDC, Ibakwe en Caritas), and cooperative leaders.

During the interviews, we will ask about the changes in the institutional setting over the past two years, their expected effects and the contribution of CATALIST-2 to these changes. We will also assess whether all expected outcomes (at the institutional level) have materialized by the end line and provide narrative on their achievement or non-achievement.

4. Hypotheses

During the workshop in November 2015, IOB asked the evaluation teams to present a number of impact pathway hypotheses and approach hypotheses.

4.1 Impact hypotheses

As already introduced in the baseline report, two major assumptions are made in the food security programme in Rwanda. The first one is that agriculture is a very important component of the Rwandan economy and employs many people, and as such, focusing on any activity dealing with farmers will have an impact on food security. The second one is that an increase in households' revenues (i.e. through the HIMO approach or better access to markers) would automatically result in a better position with regards to food security whereas it is not sure how people spend their money. Summarizing, these headline program assumptions are:

1. Projects that contribute to a rural enabling environment (agro-processing, infrastructure etc.), also contribute to improved food security.
2. Focusing on any activity dealing with farmers will have an impact on food security.
3. Increased income improves food consumption in terms of both quantity and nutritional quality.

In addition to the above, hypotheses regarding the specific interventions (CATALIST-2) can be formulated:

1. The training programmes lead to sustained changes in agricultural practice and entrepreneurship.
2. The changes in agricultural practice and entrepreneurship result in improved household income.
3. Increased household income improves food consumption (quantity and nutritional quality) in a manner that benefits all household members, including infants and women.

4.2 Approach hypotheses

In the conclusions of the workshop, IOB describes the hypotheses below which are also related to the ToR and should be covered in the reports:

1. The embassy assures synergy between the Dutch FS programme and the programme of other actors (Government of Rwanda, main other donors).
2. There is synergy between FS and other Dutch policy objectives: Involvement of Dutch expertise and private sector result in win-win situations.

We note here that – with reference to the first approach hypothesis – we will not be in a position to assess the synergy between delegated and centrally funded projects, as we will not collect data on centrally funded projects.

5. Planning

The end line phase already started in the beginning of 2015 and will end in July 2016. The following planning has been made:

Timeline	Activities
Nov 2015	Provide access to documents via Sofia system (IOB)
Dec – March 2016	Preparations qualitative and quantitative evaluations
Dec – Feb 2016	Desk research
Jan – Feb 2016	Send survey to remaining projects Rwanda
Jan 2016	Insight into Catalist-2 during monitoring period
Feb – March 2016	Qualitative and quantitative data collection in Rwanda
May – July 2016	Analysis and share draft results between evaluation teams
Sep 2016	Reporting on draft conclusions
Sep 2016	Draft reports
October 2016	Final reports

Table 3.1: Planning evaluation food security Rwanda

Appendices

Appendix 1. Overview of documents received by EKN, IOB and project implementers

BEMO number	Project	End of project	Documents available
19160	TVET -Skills development and employment protection	February 2013	• EKN/GIZ Final N&F report (Aug-Dec 2013)
			• Survey (Aug 2015)
19462	PAREF II (PAREF NL-1) - Programme d'Appui à la Reforestation de 9 Districts des Provinces du Nord et Ouest du Rwanda	June 2012	• EKN Final N&F report (Sep 2013)
			• BTC Final Report (Jun 2013)
			• Survey (April 2015)
19815	Promotion of Skills Development	December 2013	• EKN Final N&F report (Oct 2014) (doc p.1-66)
			• PSF FSP Project Completion Report 2009-2013 (Mar 2014) (doc p.67-116)
			• Survey (Aug 2015)
19940	Electricity Access Roll Out program	June 2015	• Final Narrative Report (Sep 2014)
			• IOB Impact Evaluation: Energy in Rwanda (includes 19940) (Aug 2014) (EARP p.48)
			• Survey (Oct 2015)
23168/ 23214	Land Tenure Regularization	December 2015	• LTR Annual Review 2013-2014 (Sep 2014)
			• DFID documentation (Nov 2014)
23743	HIMO PDED II consolidation - Consolidation feeder roads	31 March 2014	• Helpage Final Report 2012 - 2014 (Apr 2014)
			• Survey (May 2015)
24371 (17542)	District Infrastructure Investments through RLDSF	June 2013	• EKN Final N&F report (Dec 2013); Annual Activity Report 2012-2013 (Sep 2013)
			• Final Evaluation Report RLDSF (Jun 2013)

24730	Linking Farmers to Markets	January 2013 - December 2016	• Mid-Term Review (Nov 2015)
24793	Front Office Fund		• EKN Review Study of the Floriculture for the Republic in Rwanda (Jul 2013)
			• The Friesian Technical & Financial Feasibility
			• The Friesian Businessplan
			• Proposal "Enhancing Seed Potato Reform in Rwanda" (Feb 2014)
24871	Capacity building for Food Security	November 2016	• EKN N&F report (May 2014)
			• EKN N&F report (Nov 2014)
			• EKN N&F report (May 2015)
25059	Consolidation of Marshland Development	January 2013 - December 2014	• 2nd Half-Annual Report on Activities 2013
			• 3rd Half-Annual Report on Activities 2014
			• Activity Plan 2014
			• Evaluation Report Welthungerhilfe (Dec 2014)
			• Final Report ESIRU 2004-2014 (May 2015)
			• Survey (May 2015)
25195	Support to Participatory Forest Management (PAREF NL-2)	March 2016	• EKN N&F report (Jun 2014) • EKN N&F report (Sept 2014) • EKN N&F report (Apr 2015) • EKN N&F report (Aug 2014)
25454	Cooperatives Support Prog.	May 2016	• EKN N&F + Audit report 2013 (Jul 2014) • CSP Activity Plan 2014 • CSP Annual Report 2014 • CSP Inception Report (Nov 2014) • CSP Activity Plan 2015 • Mid-Term Review (Aug 2015)
25457	Access to Food for Young Children	December 2016 (but likely to be 2-3 months late)	• EKN Nutrition Monitoring mission (Jul 2014) • Progress report 2013-2014 (Nov 2014) • Annual Work Plan 2015 • Indicators, targets and baseline (Excel)

25542	Local Demand Driven Investments projects through RLDSF	December 2016	• Annual Activity Report 2013-2014 (Nov 2014) • Annual Action Plan 2014-2015 (Aug 2014) • Annual Action Plan 2015-2016 (Jun 2015) • Field Visit Report 2014 • ToRs 2014-2015